

Language, Style and Format drivers for **Listings**

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Abstract

This article describes the implementation of the language drivers for the listings package.

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1 Installation and configuration

```

1 %% The listings package is copyright 1996--2004 Carsten Heinz, and
2 %% continued maintenance on the package is copyright 2006--2007 Brooks
3 %% Moses. From 2013 on the maintenance is done by Jobst Hoffmann.
4 %% The drivers are copyright 1997/1998/1999/2000/2001/2002/2003/2004/2006/
5 %% 2007/2013 any individual author listed in this file.
6 %%
7 %% This file is distributed under the terms of the LaTeX Project Public
8 %% License from CTAN archives in directory macros/latex/base/lppl.txt.
9 %% Either version 1.3c or, at your option, any later version.
10 %%
11 %% This file is completely free and comes without any warranty.
12 %%
13 %% Send comments and ideas on the package, error reports and additional
14 %% programming languages to Jobst Hoffmann at <j.hoffmann@fh-aachen.de>.
15 %%
16 <*install>
17 \input docstrip
18 \preamble
19 \endpreamble
20
21 \ifToplevel{
22 \usedir{tex/latex/listings}
23 \keepsilent
24 \askonceonly
25 }

```

```

26
27
28 \generate{
29   \file{lstlang1.sty}{\from{lstdrvrs.dtx}{lang1}}
30   \file{lstlang2.sty}{\from{lstdrvrs.dtx}{lang2}}
31   \file{lstlang3.sty}{\from{lstdrvrs.dtx}{lang3}}
32 }
33
34 \generate{
35   \file{listings-acm.prf}{\from{lstdrvrs.dtx}{acm-prf}}
36   \file{listings-bash.prf}{\from{lstdrvrs.dtx}{bash-prf}}
37   \file{listings-fortran.prf}{\from{lstdrvrs.dtx}{fortran-prf}}
38   \file{listings-hansl.prf}{\from{lstdrvrs.dtx}{hansl-prf}}
39   \file{listings-lua.prf}{\from{lstdrvrs.dtx}{lua-prf}}
40   \file{listings-python.prf}{\from{lstdrvrs.dtx}{python-prf}}
41   \file{listings-rexx.prf}{\from{lstdrvrs.dtx}{rexx-prf}}
42 }
43
44
45 \ifToplevel{
46 \Msg{*}
47 \Msg{* You probably need to move all created '.sty' and '.cfg'}
48 \Msg{* files into a directory searched by TeX.}
49 \Msg{*}
50 \Msg{* Run 'lstdrvrs.dtx' through LaTeX2e to get the documentation.}
51 \Msg{*}
52 }
53
54 \endbatchfile
55 </install>
56 <*config>

```

We mainly define default dialects.

```

57 \ProvidesFile{listings.cfg}[2024/05/25 1.10b listings configuration]
58 \def\lstlanguagefiles
59   {lstlang0.sty,lstlang1.sty,lstlang2.sty,lstlang3.sty}
60 \lstset{defaultdialect=[R/3 6.10]ABAP,
61         defaultdialect=[2005]Ada,
62         defaultdialect=[68]Algol,
63         defaultdialect=[gnu]Awk,
64         defaultdialect=[ANSI]C,
65         defaultdialect=[light]Caml,
66         defaultdialect=[1985]Cobol,
67         defaultdialect=[WinXP]command.com,
68         defaultdialect=[ISO]C++,
69         defaultdialect=[95]Fortran,
70         defaultdialect=[11.0]Mathematica,
71         defaultdialect=[OMG]OCL,
72         defaultdialect=[Standard]Pascal,
73         defaultdialect=[2]Python,

```

```

74     defaultdialect=[67]Simula,
75     defaultdialect=[plain]TeX,
76     defaultdialect=[97]VRML}
77 \lstalias[]{\TclTk}[tk]{tcl}

```

And now some shortcuts for the ABAP versions (provided by Knut Lickert). I (Knut) think the leading R/2, R/3 is not necessary (The support for R/2 is finished). The version number with letter is important for the runtime-system, but the programming language should be the same for each version.

```

78 \lstalias[6.1]{ABAP}[R/3 6.10]{ABAP}
79 \lstalias[3.1]{ABAP}[R/3 3.1C]{ABAP}
80 \lstalias[4.6]{ABAP}[R/3 4.6C]{ABAP}
81 </config>
82 <+lang1>\ProvidesFile{lstlang1.sty}
83 <+lang2>\ProvidesFile{lstlang2.sty}
84 <+lang3>\ProvidesFile{lstlang3.sty}
85 <+acm-prf>\ProvidesFile{listings-acm.prf}
86 <+bash-prf>\ProvidesFile{listings-bash.prf}
87 <+fortran-prf>\ProvidesFile{listings-fortran.prf}
88 <+hansl-prf>\ProvidesFile{listings-hansl.prf}
89 <+lua-prf>\ProvidesFile{listings-lua.prf}
90 <+python-prf>\ProvidesFile{listings-python.prf}
91 <+rexx-prf>\ProvidesFile{listings-rexx.prf}
92 <-config> [2024/05/25 1.10b listings language file]

```

2 Language drivers

2.1 Abap

Knut Lickert added support for Abap.¹

```

93 <*lang2>
94 %%
95 %% Abap definition by Knut Lickert
96 %%

```

There are some other new commands in release 6.10. They will follow later, but up to now I don't work with 6.10.

```

97 \lst@definelanguage[R/3 6.10]{ABAP}[R/3 4.6C]{ABAP}%
98 {morekeywords={try,endtry},%
99 }[keywords,comments,strings]
100 \lst@definelanguage[R/3 4.6C]{ABAP}[R/3 3.1]{ABAP}%
101 {morekeywords={method,ref,class,create,object,%
102     methods,endmethod,private,protected,public,section,%
103     catch,system-exceptions,endcatch},%
104 },%

```

¹In this section 'I' is Knut Lickert.

```

105   moreprocnamekeys={class},%
106   literate={->}{${\rightarrow}}1{=>}{${\Rightarrow}}1,%
107   }[keywords,comments,strings,procnames]

```

Yes there are also some more releases in R/3 (2.1...), but I know them not really. So let's start with R/3 3.1.

```

108 \lst@definelanguage[R/3 3.1]{ABAP}[R/2 5.0]{ABAP}{}%

```

As I remember all this commands exists in R/2. Many commands are new in R/2 5.0 (compared with R/2 4.3). But as I am not using R/2 4.3 any more, I start with R/2 5.0.

```

109 \lst@definelanguage[R/2 5.0]{ABAP}{%
110   sensitive=f,%
111   procnamekeys={report,program,form,function,module},%
112   morekeywords={*, add, after, alias, analyzer, and, append, appending,%
113     area, assign, at, authority-check, before, binary, blank, break-point,%
114     calendar, call, case, change, changing, check, clear, cnt, co, collect,%
115     commit, common, component, compute, condense, corresponding, cos, cp,%
116     cs, currency-conversion, cursor, data, database, dataset, decimals,%
117     define, delete, deleting, dequeue, describe, detail, dialog, directory,%
118     div, divide, do, documentation, during, dynpro, else, end-of-page,%
119     end-of-selection, endat, endcase, enddo, endfor, endform, endif,%
120     endloop, endmodule, endselect, endwhile, enqueue, exceptions, exit,%
121     exp, export, exporting, extract, field, fields, field-groups,%
122     field-symbols, find, for, form, format, free, from, function,%
123     generating, get, giving, hide, id, if, import, importing, in, incl,%
124     include, initial, initialization, input, insert, interrupt, into, is,%
125     language, leave, leading, left-justified, like, line, lines,%
126     line-count, line-selection, list-processing, load, local, log, logfile,%
127     loop, margin, mark, mask, memory, menu, message, mod, modify, module,%
128     move, move-text, multiply, na, new, new-line, new-page, no-gaps, np,%
129     ns, number, obligatory, occurs, of, on, or, others, output, parameter,%
130     parameters, parts, perform, pf-status, places, position, process,%
131     raise, raising, ranges, read, refresh, refresh-dynpro, reject, remote,%
132     replace, report, reserve, reset, restart, right-justified, run, screen,%
133     scroll, search, segments, select, select-options, selection-screen,%
134     set, shift, sin, single, sqrt, start-of-selection, statement,%
135     structure, submit, subtract, summary, summing, suppress, system, table,%
136     tables, task, text, time, to, top-of-page, trace, transaction,%
137     transfer, transfer-dynpro, translate, type, unpack, update,%
138     user-command, using, value, when, where, while, window, with, workfile,%
139     write},%
140   morecomment=[l]" ,%
141   morecomment=[f][commentstyle][0]*,%
142   morestring=[d]' %
143 }[keywords,comments,strings,procnames]

```

This section for R/2 4.3 is not really maintained. It is just what I remember of the past.

```

144 \lst@definelanguage[R/2 4.3]{ABAP}[R/2 5.0]{ABAP}%

```

```

145 {deletekeywords={function,importing,exporting,changing,exceptions,%
146         raise,raising}%
147 }[keywords,comments,strings]
148 </lang2>

```

2.2 ACM

ACM is the language of the Aspen Custom Modeler (<http://www.aspentech.com/products/aspen-custom-modeler.aspx>), the language definition was provided by Stefan Pinnow. It is intended for writing models. Maximilian Dammann pointed out the missing keyword “Description”.

```

149 (*lang2)
150 %%
151 %% ACM and ACMscript definition
152 %% (c) 2013 Stefan Pinnow
153 %%
154 \lst@definelanguage{ACM}{%
155     morekeywords={ abs, After, acos, And, As, asin, atan, At, Call,%
156         Compatibility, Connect, cos, cosh, Create, Delay, Description,%
157         Difference, Do, Else, ElseIf, End, EndFor, EndIf, EndParallel,%
158         EndState, EndSwitch, EndText, EndWith, exp, External, Fixed, For,%
159         ForEach, Free, Global, Hidden, If, Implementation, In, Initial, Input,%
160         InterSection, IntegerSet, Invoke, Is, Language, Library, Link, Log10,%
161         LogE, Max, Min, Model, Of, Once, Options, Output, Parallel, Parameter,%
162         Pause, Port, Print, Private, Procedure, Product, Ramp, Repeat, Restart,%
163         Return, Round, Runs, Sigma, sin, sinh, Size, Snapshot, sqr, sqrt,%
164         SRamp, State, Stream, StringSet, Structure, Switch, SubRoutine,%
165         SymDiff, tan, tanh, Task, Text, Time, Then, Truncate, Union, Until,%
166         Uses, Variable, Wait, When, With, WithIn, Workspace},%
167     sensitive=false,%
168     morecomment=[l]{//},%
169     morecomment=[s]{/*}{*/},%
170     string=[b]{"},%
171 }[keywords,comments,strings]
172 </lang2>

```

In addition to writing models there is a language ACMscript, which is similar to VBScript. According to Stefan Pinnow this language is used for writing scripts for the models.

```

173 (*lang2)
174 \lst@definelanguage{ACMscript}[] {VBScript}{%
175     morekeywords={%
176         ElseIf,False,In,Resume,True%
177     },%
178     deletekeywords={%
179         Abs,Array,Clear,CreateObject,CStr,Err,ForReading,ForWriting,%
180         OpenTextFile,Replace,WriteLine%

```

```

181 }%
182 }[keywords,comments,strings]
183 </lang2>

Stefan Pinnow also supplied a definition of a style for printing ACM code:
184 (*acm-prf)
185 \usepackage[rgb, x11names]{xcolor}
186
187 \definecolor{Comments}{rgb}{0.00,0.50,0.00}
188 \definecolor{KeyWords}{rgb}{0.00,0.00,0.63}
189 \definecolor{Strings}{rgb}{0.84,0.00,0.00}
190
191 \lstdefinestyle{ACM}{%
192   basicstyle=\scriptsize\ttfamily,%
193   keywordstyle=\color{KeyWords},%
194   showstringspaces=false,%
195   identifierstyle=\color{black},%
196   commentstyle=\color{Comments},%
197   stringstyle=\color{Strings},%
198   frame=shadowbox,%           % for ACM-Code scrartcl commented out
199   %   frame=1,%             % line on the left side
200   rulesepcolor=\color{black},%
201   numbers=left,%             % left
202   firstnumber=1,%
203   stepnumber=5,%
204   columns=fixed,%           % to prevent inserting spaces
205   fontadjust=true,%
206   basewidth=0.5em,%
207   captionpos=t,%
208   abovecaptionskip=\smallskipamount,% same amount as default
209   belowcaptionskip=\smallskipamount,% in caption package
210 }%

This code is provided in the file listings-acm.prf, see section 2.4.1 (Preferences)
of the listings documentation.
211 </acm-prf>

```

2.3 ACSL

This language was provided by Andreas Matthias. I'm sorry for forgetting to add this language for a long time.

```

212 (*lang1)
213 %%
214 %% ACSL definition (c) 2000 by Andreas Matthias
215 %%
216 \lst@definlanguage{ACSL}[90]{Fortran}%
217   {morekeywords={algorithm,cinterval,constant,derivative,discrete,%
218                 dynamic,errtag,initial,interval,maxterval,mininterval,%

```



```

219         merror,xerror,nsteps,procedural,save,schedule,sort,%
220         table,terminal,term,variable},%
221     sensitive=false,%
222     morecomment=[1]!%
223 }[keywords, comments]%
224 </lang1>

```

2.4 Ada

Data come from

- BARNES, JOHN GILBERT PRESSLIE: **Programming in Ada plus language reference manual**; © 1991 Addison-Wesley Publishing Company, Inc.; ISBN 0-201-56539-0.

Torsten Neuer added support for Ada 95. I changed the definition to reduce the required string memory.

```

225 (*lang1)
226 %%
227 %% Ada 95 definition (c) Torsten Neuer
228 %%
229 %% Ada 2005 definition (c) 2006 Santiago Urue~{n}a Pascual
230 %%                               <Santiago.Uruena@upm.es>
231 %%
232 \lst@definlanguage[2005]{Ada}[95]{Ada}%
233 {morekeywords={interface,overriding,synchronized}}%
234 \lst@definlanguage[95]{Ada}[83]{Ada}%
235 {morekeywords={abstract,aliased,protected,queue,tagged,until}}%
236 \lst@definlanguage[83]{Ada}%
237 {morekeywords={abort,abs,accept,access,all,and,array,at,begin,body,%
238     case,constant,declare,delay,delta,digits,do,else,elsif,end,entry,%
239     exception,exit,for,function,generic,goto,if,in,is,limited,loop,%
240     mod,new,not,null,of,or,others,out,package,pragma,private,%
241     procedure,raise,range,record,rem,renames,return,reverse,select,%
242     separate,subtype,task,terminate,then,type,use,when,while,with,%
243     xor},%
244     sensitive=f,%
245     morecomment=[1]--,%
246     morestring=[m]" ,% percent not defined as stringizer so far
247     morestring=[m]'%
248 }[keywords,comments,strings]
249 </lang1>

```

2.5 Algol

Data come from

- UWE PAPE: **Programmieren in ALGOL 60**; © 1973 Carl Hanser Verlag München; ISBN 3-446-11605-2
- FRANK G. PAGAN: **A practical guide to ALGOL 68**; © 1976 by John Wiley & Sohn Ltd.; ISBN 0-471-65746-8 (Cloth); ISBN 0-471-65747-6 (Pbk).

The definition of Algol 68 doesn't support comments enclosed by ϕ .

```

250 (*lang3)
251 \lst@definlanguage[68]{Algol}%
252 % ??? should 'i' be a keyword
253 {morekeywords={abs,and,arg,begin,bin,bits,bool,by,bytes,case,channel,%
254     char,co,comment,compl,conj,divab,do,down,elem,elif,else,empty,%
255     end,entier,eq,esac,exit,false,fi,file,flex,for,format,from,ge,%
256     goto,gt,heap,if,im,in,int,is,isnt,le,leng,level,loc,long,lt,lwb,%
257     minusab,mod,modab,mode,ne,nil,not,od,odd,of,op,or,ouse,out,over,%
258     overab,par,plusab,plusto,pr,pragmat,prio,proc,re,real,ref,repr,%
259     round,sema,shl,short,shorten,shr,sign,skip,string,struct,then,%
260     timesab,to,true,union,up,upb,void,while},%
261     sensitive=f,% ???
262     morecomment=[s]{\#}{\#},%
263     keywordcomment={co,comment}%
264 }[keywords,comments,keywordcomments]%
265 \lst@definlanguage[60]{Algol}%
266 {morekeywords={array,begin,Boolean,code,comment,div,do,else,end,%
267     false,for,goto,if,integer,label,own,power,procedure,real,step,%
268     string,switch,then,true,until,value,while},%
269     sensitive=f,% ???
270     keywordcommentsemicolon={end}{else,end}{comment}%
271 }[keywords,keywordcomments]%
272 </lang3)

```

2.6 Assembler

Credits go to Michael Franke.

```

273 (*lang3)
274 %%
275 %% Motorola 68K definition (c) 2006 Michael Franke
276 %%
277 \lst@definlanguage[Motorola68k]{Assembler}{%
278     morekeywords={ABCD,ADD,%
279         ADDA,ADDI,ADDQ,ADDX,AND,ANDI,ASL,ASR,BCC,BLS,BCS,BLT,BEQ,BMI,BF,BNE,%
280         BGE,BPL,BGT,BT,BHI,BVC,BLE,BVS,BCHG,BCLR,BRA,BSET,BSR,BTST,CHK,CLR,%
281         CMP,CMPA,CMPI,CMPM,DBCC,DBLS,DBCS,DBLT,DBEQ,DBMI,DBF,DBNE,DBGE,DBPL,%
282         DBGT,DBT,DBHI,DBVC,DBLE,DBVS,DIVS,DIVU,EOR,EORI,EXG,EXT,ILLEGAL,JMP,%
283         JSR,LEA,LINK,LSL,LSR,MOVE,MOVEA,MOVEM,MOVEP,MOVEQ,MULS,MULU,NBCD,NEG,%
284         NEGX,NOP,NOT,OR,ORI,PEA,RESET,ROL,ROR,ROXL,ROXR,RTE,RTR,RTS,SBCD,%
285         SCC,SLS,SCS,SLT,SEQ,SMI,SF,SNE,SGE,SPL,SGT,ST,SHI,SVC,SLE,SVS,STOP,%
286         SUB,SUBA,SUBI,SUBQ,SUBX,SWAP,TAS,TRAP,TRAPV,TST,UNLK},%

```

```

287 sensitive=false,%
288 morecomment=[1]*,%
289 morecomment=[1];%
290 }[keywords,comments,strings]
291  $\langle$ /lang3)
    Credits go to Andrew Zabolotny.
292  $\langle$ *lang3)
293 %%
294 %% x86masm definition (c) 2002 Andrew Zabolotny
295 %%
296 \lst@definelanguage[x86masm]{Assembler}%
297 {morekeywords={al,ah,ax,eax,bl,bh,bx,ebx,cl,ch,cx,ecx,dl,dh,dx,edx,%
298 si,esi,di,edi,bp,ebp,sp,esp,cs,ds,es,ss,fs,gs,cr0,cr1,cr2,cr3,%
299 db0,db1,db2,db3,db4,db5,db6,db7,tr0,tr1,tr2,tr3,tr4,tr5,tr6,tr7,%
300 st,aaa,aad,aam,aas,adc,add,and,arpl,bound,bsf,bsr,bswap,bt,btc,%
301 btr,bts,call,cbw,cdq,clc,cld,cli,clts,cmc,cmp,cmps,cmpsb,cmpsw,%
302 cmpsd,cmpxchg,cwd,cwde,daa,das,dec,div,enter,hlt,idiv,imul,in,%
303 inc,ins,int,into,invd,invlpg,iret,ja,jae,jb,jbe,jc,jcxz,jecxz,%
304 je,jg,jge,jl,jle,jna,jnae,jnb,jnbe,jnc,jne,jng,jnge,jnl,jnle,%
305 jno,jnp,jns,jnz,jo,jp,jpe,jpo,js,jz,jmp,lahf,lar,lea,leave,lgdt,%
306 lidt,lldt,lmsw,lock,lods,lodsb,lodsw,lodsd,loop,loopz,loopnz,%
307 loope,loopne,lfs,les,lfs,lfs,lss,lsl,ltr,mov,movs,movsb,movsw,%
308 movsd,movsx,movzx,mul,neg,nop,not,or,out,outs,pop,popa,popad,%
309 popf,popfd,push,pusha,pushad,pushf,pushfd,rcl,rcr,rep,repz,%
310 repne,repz,repnz,ret,retf,rol,ror,sahf,sal,sar,sbb,scas,seta,%
311 setae,setb,setbe,setc,sete,setg,setge,setl,setle,setna,setnae,%
312 setnb,setnbe,setnc,setne,setng,setnge,setnl,setnle,setno,setnp,%
313 setns,setnz,seto,setp,setpe,setpo,sets,setz,sgdt,shl,shld,shr,%
314 shrd,sidt,sldt,smsw,stc,std,sti,stos,stosb,stosw,stosd,str,sub,%
315 test,verr,verw,wait,wbinvd,xadd,xchg,xlatb,xor,fabs,fadd,fbld,%
316 fbstp,fchs,fclex,fcom,fcos,fdecstp,fdiv,fdivr,ffree,fiadd,ficom,%
317 fidiv,fidivr,fild,fimul,fincstp,finit,fist,fisub,fisubr,fld,fld1,%
318 fldl2e,fldl2t,fldlg2,fldln2,fldpi,fldz,fldcw,fldenv,fmul,fnop,%
319 fpatan,fprem,fprem1,fptan,frndint,frstor,fsave,fscale,fsetpm,%
320 fsin,fsincos,fsqrt,fst,fstcw,fstenv,fstsw,fsub,fsubr,ftst,fucom,%
321 fwait,fxam,fxch,fxtract,fyl2x,fyl2xp1,f2xm1},%
322 morekeywords=[2]{.align,.alpha,assume,byte,code,comm,comment,.const,%
323 .cref,.data,.data?,db,dd,df,dosseg,dq,dt,dw,dword,else,end,endif,%
324 endm,endp,ends,eq,equ,.err,.err1,.err2,.errb,.errdef,.errdif,%
325 .erre,.erridn,.errnb,.errndef,.errnz,event,exitm,extrn,far,%
326 .fardata,.fardata?,fword,ge,group,gt,high,if,if1,if2,ifb,ifdef,%
327 ifdif,ife,ifidn,ifnb,ifndef,include,includelib,irp,irpc,label,%
328 .lall,le,length,.lfcond,.list,local,low,lt,macro,mask,mod,.model,%
329 name,ne,near,offset,org,out,page,proc,ptr,public,purge,qword,%
330 radix,record,rept,.sall,seg,segment,.seq,.sfcond,short,size,%
331 .stack,struct,subttl,tbyte,.tfcond,this,title,type,.type,width,%
332 word,.xall,.xcref,.xlist},%
333 alsoletter=.,alsodigit=?,%
334 sensitive=f,%

```

```

335   morestring=[b]",%
336   morestring=[b]',%
337   morecomment=[l];%
338   }[keywords,comments,strings]
339 </lang3>

```

2.7 Awk

Thanks to Dr. Christoph Giess for providing these definitions.

```

340 (*lang1)
341 %%
342 %% awk definitions (c) Christoph Giess
343 %%
344 \lst@definlanguage[gnu]{Awk}[POSIX]{Awk}%
345   {morekeywords={and,asort,bindtextdomain,compl,dcgettext,gsub,%
346     lshift,mktime,or,rshift,strftime,strtonum,systemtime,xor,extension}%
347   }%
348 \lst@definlanguage[POSIX]{Awk}%
349   {keywords={BEGIN,END,close,getline,next,nextfile,print,printf,%
350     system,fflush,atan2,cos,exp,int,log,rand,sin,sqrt,srand,gsub,%
351     index,length,match,split,sprintf,strtonum,sub,substr,tolower,%
352     toupper,if,while,do,for,break,continue,delete,exit,function,%
353     return},%
354     sensitive,%
355     morecomment=[l]\#,%
356     morecomment=[l]//,%
357     morecomment=[s]{/*}{*/},%
358     morestring=[b]"%
359   }[keywords,comments,strings]
360 </lang1>

```

2.8 Basic

Credits go to Robert Frank.

```

361 (*lang1)
362 %%
363 %% Visual Basic definition (c) 2002 Robert Frank
364 %%
365 \lst@definlanguage[Visual]{Basic}
366   {morekeywords={Abs,Array,Asc,AscB,AscW,Atn,Avg,CBool,CByte,CCur,%
367     CDate,CDBl,Cdec,Choose,Chr,ChrB,ChrW,CInt,CLng,Command,Cos,%
368     Count,CreateObject,CSng,CStr,CurDir,CVar,CVDate,CVErr,Date,%
369     DateAdd,DateDiff,DatePart,DateSerial,DateValue,Day,DDB,Dir,%
370     DoEvents,Environ,EOF,Error,Exp,FileAttr,FileDateTime,FileLen,%
371     Fix,Format,FreeFile,FV,GetAllStrings,GetAttr,%
372     GetAutoServerSettings,GetObject,GetSetting,Hex,Hour,IIf,%
373     IMEStatus,Input,InputB,InputBox,InStr,InstB,Int,Integer,IPmt,%
374     IsArray,IsDate,IsEmpty,IsError,IsMissing,IsNull,IsNumeric,%

```

```

375 IsObject, LBound, LCase, Left, LeftB, Len, LenB, LoadPicture, Loc, LOF, %
376 Log, Ltrim, Max, Mid, MidB, Min, Minute, MIRR, Month, MsgBox, Now, NPer, %
377 NPV, Oct, Partition, Pmt, PPmt, PV, QBColor, Rate, RGB, Right, RightB, Rnd, %
378 Rtrim, Second, Seek, Sgn, Shell, Sin, SLN, Space, Spc, Sqr, StDev, StDevP, %
379 Str, StrComp, StrConv, String, Switch, Sum, SYD, Tab, Tan, Time, Timer, %
380 TimeSerial, TimeValue, Trim, TypeName, UBound, Ucase, Val, Var, VarP, %
381 VarType, Weekday, Year}, % functions
382 morekeywords=[2]{Accept, Activate, Add, AddCustom, AddFile, AddFromFile, %
383 AddFromTemplate, AddItem, AddNew, AddToAddInToolbar, %
384 AddToolboxProgID, Append, AppendChunk, Arrange, Assert, AsyncRead, %
385 BatchUpdate, BeginTrans, Bind, Cancel, CancelAsyncRead, CancelBatch, %
386 CancelUpdate, CanPropertyChange, CaptureImage, CellText, CellValue, %
387 Circle, Clear, ClearFields, ClearSel, ClearSelCols, Clone, Close, Cls, %
388 ColContaining, ColumnSize, CommitTrans, CompactDatabase, Compose, %
389 Connect, Copy, CopyQueryDef, CreateDatabase, CreateDragImage, %
390 CreateEmbed, CreateField, CreateGroup, CreateIndex, CreateLink, %
391 CreatePreparedStatement, CreateProperty, CreateQuery, %
392 CreateQueryDef, CreateRelation, CreateTableDef, CreateUser, %
393 CreateWorkspace, Customize, Delete, DeleteColumnLabels, %
394 DeleteColumns, DeleteRowLabels, DeleteRows, DoVerb, Drag, Draw, Edit, %
395 EditCopy, EditPaste, EndDoc, EnsureVisible, EstablishConnection, %
396 Execute, ExtractIcon, Fetch, FetchVerbs, Files, FillCache, Find, %
397 FindFirst, FindItem, FindLast, FindNext, FindPrevious, Forward, %
398 GetBookmark, GetChunk, GetClipString, GetData, GetFirstVisible, %
399 GetFormat, GetHeader, GetLineFromChar, GetNumTicks, GetRows, %
400 GetSelectedPart, GetText, GetVisibleCount, GoBack, GoForward, Hide, %
401 HitTest, HoldFields, Idle, InitializeLabels, InsertColumnLabels, %
402 InsertColumns, InsertObjDlg, InsertRowLabels, InsertRows, Item, %
403 KillDoc, Layout, Line, LinkExecute, LinkPoke, LinkRequest, LinkSend, %
404 Listen, LoadFile, LoadResData, LoadResPicture, LoadResString, %
405 LogEvent, MakeCompileFile, MakeReplica, MoreResults, Move, MoveData, %
406 MoveFirst, MoveLast, MoveNext, MovePrevious, NavigateTo, NewPage, %
407 NewPassword, NextRecordset, OLEDrag, OnAddinsUpdate, OnConnection, %
408 OnDisconnection, OnStartupComplete, Open, OpenConnection, %
409 OpenDatabase, OpenQueryDef, OpenRecordset, OpenResultset, OpenURL, %
410 Overlay, PaintPicture, Paste, PastSpecialDlg, PeekData, Play, Point, %
411 PopulatePartial, PopupMenu, Print, PrintForm, PropertyChanged, Pset, %
412 Quit, Raise, RandomDataFill, RandomFillColumns, RandomFillRows, %
413 rdoCreateEnvironment, rdoRegisterDataSource, ReadFromFile, %
414 ReadProperty, Rebind, ReFill, Refresh, RefreshLink, RegisterDatabase, %
415 Reload, Remove, RemoveAddInFromToolbar, RemoveItem, Render, %
416 RepairDatabase, Reply, ReplyAll, Requery, ResetCustom, %
417 ResetCustomLabel, ResolveName, RestoreToolbar, Resync, Rollback, %
418 RollbackTrans, RowBookmark, RowContaining, RowTop, Save, SaveAs, %
419 SaveFile, SaveToFile, SaveToolbar, SaveToOLE1File, Scale, ScaleX, %
420 ScaleY, Scroll, Select, SelectAll, SelectPart, SelPrint, Send, %
421 SendData, Set, SetAutoServerSettings, SetData, SetFocus, SetOption, %
422 SetSize, SetText, SetViewport, Show, ShowColor, ShowFont, ShowHelp, %
423 ShowOpen, ShowPrinter, ShowSave, ShowWhatsThis, SignOff, SignOn, Size, %
424 Span, SplitContaining, StartLabelEdit, StartLogging, Stop, %

```

```

425     Synchronize, TextHeight, TextWidth, ToDefaults, TwipsToChartPart, %
426     TypeByChartType, Update, UpdateControls, UpdateRecord, UpdateRow, %
427     Upto, WhatsThisMode, WriteProperty, ZOrder}, % methods
428 morekeywords=[3]{AccessKeyPress, AfterAddFile, AfterChangeFileName, %
429     AfterCloseFile, AfterColEdit, AfterColUpdate, AfterDelete, %
430     AfterInsert, AfterLabelEdit, AfterRemoveFile, AfterUpdate, %
431     AfterWriteFile, AmbienChanged, ApplyChanges, Associate, %
432     AsyncReadComplete, AxisActivated, AxisLabelActivated, %
433     AxisLabelSelected, AxisLabelUpdated, AxisSelected, %
434     AxisTitleActivated, AxisTitleSelected, AxisTitleUpdated, %
435     AxisUpdated, BeforeClick, BeforeColEdit, BeforeColUpdate, %
436     BeforeConnect, BeforeDelete, BeforeInsert, BeforeLabelEdit, %
437     BeforeLoadFile, BeforeUpdate, ButtonClick, ButtonCompleted, %
438     ButtonGotFocus, ButtonLostFocus, Change, ChartActivated, %
439     ChartSelected, ChartUpdated, Click, ColEdit, Collapse, ColResize, %
440     ColumnClick, Compare, ConfigChageCancelled, ConfigChanged, %
441     ConnectionRequest, DataArrival, DataChanged, DataUpdated, DblClick, %
442     Deactivate, DeviceArrival, DeviceOtherEvent, DeviceQueryRemove, %
443     DeviceQueryRemoveFailed, DeviceRemoveComplete, DeviceRemovePending, %
444     DevModeChange, Disconnect, DisplayChanged, Dissociate, %
445     DoGetNewFileName, Done, DonePainting, DownClick, DragDrop, DragOver, %
446     DropDown, EditProperty, EnterCell, EnterFocus, Event, ExitFocus, %
447     Expand, FootnoteActivated, FootnoteSelected, FootnoteUpdated, %
448     GotFocus, HeadClick, InfoMessage, Initialize, IniProperties, %
449     ItemActivated, ItemAdded, ItemCheck, ItemClick, ItemReloaded, %
450     ItemRemoved, ItemRenamed, ItemSeletected, KeyDown, KeyPress, KeyUp, %
451     LeaveCell, LegendActivated, LegendSelected, LegendUpdated, %
452     LinkClose, LinkError, LinkNotify, LinkOpen, Load, LostFocus, %
453     MouseDown, MouseMove, MouseUp, NodeClick, ObjectMove, %
454     OLECompleteDrag, OLEDragDrop, OLEDragOver, OLEGiveFeedback, %
455     OLESetData, OLEStartDrag, OnAddNew, OnComm, Paint, PanelClick, %
456     PanelDblClick, PathChange, PatternChange, PlotActivated, %
457     PlotSelected, PlotUpdated, PointActivated, PointLabelActivated, %
458     PointLabelSelected, PointLabelUpdated, PointSelected, %
459     PointUpdated, PowerQuerySuspend, PowerResume, PowerStatusChanged, %
460     PowerSuspend, QueryChangeConfig, QueryComplete, QueryCompleted, %
461     QueryTimeout, QueryUnload, ReadProperties, Reposition, %
462     RequestChangeFileName, RequestWriteFile, Resize, ResultsChanged, %
463     RowColChange, RowCurrencyChange, RowResize, RowStatusChanged, %
464     SelChange, SelectionChanged, SendComplete, SendProgress, %
465     SeriesActivated, SeriesSelected, SeriesUpdated, SettingChanged, %
466     SplitChange, StateChanged, StatusUpdate, SysColorsChanged, %
467     Terminate, TimeChanged, TitleActivated, TitleSelected, %
468     TitleActivated, UnboundAddData, UnboundDeleteRow, %
469     UnboundGetRelativeBookmark, UnboundReadData, UnboundWriteData, %
470     Unload, UpClick, Updated, Validate, ValidationError, WillAssociate, %
471     WillChangeData, WillDissociate, WillExecute, WillUpdateRows, %
472     WithEvents, WriteProperties}, % VB-events
473 morekeywords=[4]{AppActivate, Base, Beep, Call, Case, ChDir, ChDrive, %
474     Const, Declare, DefBool, DefByte, DefCur, DefDate, DefDbl, DefDec, %

```

```

475     DefInt,DefLng,DefObj,DefSng,DefStr,Deftype,DefVar,DeleteSetting,%
476     Dim,Do,Else,ElseIf,End,Enum,Erase,Event,Exit,Explicit,FileCopy,%
477     For,ForEach,Friend,Function,Get,GoSub,GoTo,If,Implements,Kill,%
478     Let,LineInput,Lock,Lset,MkDir,Name,Next,OnError,On,Option,%
479     Private,Property,Public,Put,RaiseEvent,Randomize,ReDim,Rem,%
480     Reset,Resume,Return,Rmdir,Rset,SavePicture,SaveSetting,%
481     SendKeys,SetAttr,Static,Sub,Then,Type,Unlock,Wend,While,Width,%
482     With,Write},% statements
483     sensitive=false,%
484     keywordcomment=rem,%
485     MoreSelectCharTable=\def\lst@BeginKC@{% chmod
486         \lst@ResetToken
487         \lst@BeginComment\lst@GPmode{{\lst@commentstyle}%
488             \lst@Lmodetrue\lst@modetrue}\@empty},%
489     morecomment=[l]{'},%
490     morecomment=[s]{/*}{*/},%
491     morestring=[b]" ,%
492     }[keywords,comments,strings,keywordcomments]
493 </lang1>

```

Thanks to Jonathan de Halleux for reporting a missing comma after `MoreSelectCharTable`, which was the cause of a problem reported by Robert Frank. Martina Hansel also found the bug and the fix.

2.9 Clean

Thanks to José Romildo Malaquias. Markus Pahlow found a missing comma.

```

494 <*lang3>
495 %%
496 %% Clean definition (c) 1999 Jos'e Romildo Malaquias
497 %%
498 %% Clean 1.3 : some standard functional language: pure, lazy,
499 %%             polymorphic type system, modules, type classes,
500 %%             garbage collection, functions as first class citizens
501 %%
502 \lst@definelanguage{Clean}%
503 {otherkeywords={:,:,:,::,=,::=,=:,>,->,<-,<-:, \{, \}, \{|, | \}, \#, \#!, |, \&,%
504     [, ], !, ., \\ \, ;, _},%
505     morekeywords={from,definition,implementation,import,module,system,%
506         case,code,if,in,let,let!,of,where,with,infix,infixl,infixr},%
507     moreendkeywords={True,False,Start,Int,Real,Char,Bool,String,World,%
508         File,ProcId},%
509     sensitive,%
510     morecomment=[l]//,% missing comma: Markus Pahlow
511     morecomment=[n]{/*}{*/},%
512     morestring=[b]"%
513     }[keywords,comments,strings]
514 </lang3>

```

2.10 Corba IDL

This language definition is due to Jens T. Berger Thielemann.

```
515 (*lang2)
516 %%
517 %% Corba IDL definition (c) 1999 Jens T. Berger Thielemann
518 %%
519 \lst@definelanguage[CORBA]{IDL}%
520 {morekeywords={any,attribute,boolean,case,char,const,context,default,%
521     double,enum,exception,fixed,float,in,inout,interface,long,module,%
522     native,Object,octet,oneway,out,raises,readonly,sequence,short,%
523     string,struct,switch,typedef,union,unsigned,void,wchar,wstring,%
524     FALSE,TRUE},%
525     sensitive,%
526     moredirectives={define,elif,else,endif,error,if,ifdef,ifndef,line,%
527     include,pragma,undef,warning},%
528     moredelim=[directive]\#,%
529     morecomment=[l]//,%
530     morecomment=[s]{/*}{*/},%
531     morestring=[b]"%
532 }[keywords,comments,strings,directives]%
533 </lang2)
```

2.11 C, C++, et al

```
534 (*lang1)
```

Michael Fiedler provided the following list of new introduced keywords for C++11.

```
535 \lst@definelanguage[11]{C++}[ISO]{C++}%
536 {morekeywords={alignas,alignof,char16_t,char32_t,constexpr,%
537     decltype,noexcept,nullptr,static_assert,thread_local},%
538 }%
```

Michael Piefel suggested some more changes and added GNU C++. For compatibility the ‘ANSI’ language is defined in terms of ISO.

```
539 \lst@definelanguage[ANSI]{C++}[ISO]{C++}{}%
```

Michael Piefel suggested some more changes and added GNU C++.

```
540 \lst@definelanguage[GNU]{C++}[ISO]{C++}%
541 {morekeywords={__attribute__,__extension__,__restrict__,__restrict__,%
542     typeof,__typeof__},%
543 }%
544 \lst@definelanguage[Visual]{C++}[ISO]{C++}%
545 {morekeywords={__asm,__based,__cdecl,__declspec,dlllexport,%
546     dllimport,__except,__fastcall,__finally,__inline,__int8,__int16,%
547     __int32,__int64,naked,__stdcall,thread,__try,__leave},%
548 }%
549 \lst@definelanguage[ISO]{C++}[ANSI]{C}%
550 {morekeywords={and,and_eq,asm,bad_cast,bad_typeid,bitand,bitor,bool,%
551     catch,class,compl,const_cast,delete,dynamic_cast,explicit,export,%
552     false,friend,inline,mutable,namespace,new,not,not_eq,operator,or,%
```



```

553     or_eq,private,protected,public,reinterpret_cast,static_cast,%
554     template,this,throw,true,try,typeid,type_info,typename,using,%
555     virtual,wchar_t,xor,xor_eq},%
556 }%
557 </lang1>

```

Objective-C is due to Detlev Dröge.

```

558 (*lang1)
559 %%
560 %% Objective-C definition (c) 1997 Detlev Droege
561 %%
562 \lst@definlanguage[Objective]{C}[ANSI]{C}
563 {morekeywords={bycopy,id,in,inout,oneway,out,self,super,%
564     @class,@defs,@encode,@end,@implementation,@interface,@private,%
565     @protected,@protocol,@public,@selector},%
566     moredirectives={import}}%
567 }%
568 </lang1>

```

Jörg Viermann provided the keywords for Handel-C.

```

569 (*lang1)
570 %%
571 %% Handel-C definition, refer http://www.celoxica.com
572 %%
573 \lst@definlanguage[Handel]{C}[ANSI]{C}
574 {morekeywords={assert,chan,chanin,chanout,clock,delay,expr,external,%
575     external_divide,family,ifselect,in,inline,interface,internal,%
576     internal_divid,intwidth,let,macro,mpram,par,part,prialt,proc,ram,%
577     releasesema,reset,rom,select,sema,set,seq,shared,signal,try,%
578     reset,trysema,typeof,undefined,width,with,wom},%
579 }%
580 </lang1>
581 (*lang1)
582 \lst@definlanguage[ANSI]{C}%
583 {morekeywords={auto,break,case,char,const,continue,default,do,double,%
584     else,enum,extern,float,for,goto,if,int,long,register,return,%
585     short,signed,sizeof,static,struct,switch,typedef,union,unsigned,%
586     void,volatile,while},%
587     sensitive,%
588     morecomment=[s]{/*}{*/},%
589     morecomment=[l]//,% nonstandard
590     morestring=[b]" ,%
591     morestring=[b]' ,%
592     moredelim=[directive]\#,%
593     moredirectives={define,elif,else,endif,error,if,ifdef,ifndef,line,%
594     include,pragma,undef,warning}}%
595 }[keywords,comments,strings,directives]%

```

```
596 </lang1>
597 <*lang1>
```

Thanks go to Martin Brodbeck.

```
598 %%
599 %% C-Sharp definition (c) 2002 Martin Brodbeck
600 %%
601 \lst@definelanguage[Sharp]{C}%
602 {morekeywords={abstract,base,bool,break,byte,case,catch,char,checked,%
603     class,const,continue,decimal,default,delegate,do,double,else,%
604     enum,event,explicit,extern,false,finally,fixed,float,for,foreach,%
605     goto,if,implicit,in,int,interface,internal,is,lock,long,%
606     namespace,new,null,object,operator,out,override,params,private,%
607     protected,public,readonly,ref,return,sbyte,sealed,short,sizeof,%
608     static,string,struct,switch,this,throw,true,try,typeof,uint,%
609     ulong,unchecked,unsafe,ushort,using,virtual,void,while,%
610     as,volatile,stackalloc},% Kai K\ "ohne
611     sensitive,%
612     morecomment=[s]{/*}{*/},%
613     morecomment=[l]//,%
614     morestring=[b]"
615 }[keywords,comments,strings]
616 </lang1>
```

2.12 Caml and Objective Caml

Patrick Cousot mailed me the definition. Tom Hirschowitz added two keywords.

```
617 <*lang2>
618 %%
619 %% (Objective) Caml definition (c) 1999 Patrick Cousot
620 %%
621 %% Objective CAML and Caml light are freely available, together with a
622 %% reference manual, at URL ftp.inria.fr/lang/caml-light for the Unix,
623 %% Windows and Macintosh OS operating systems.
624 %%
625 \lst@definelanguage[Objective]{Caml}[light]{Caml}
626 {deletekeywords={not,prefix,value,where},%
627     morekeywords={assert,asr,class,closed,constraint,external,false,%
628     functor,include,inherit,land,lazy,lor,lsl,lsr,lxor,method,mod,%
629     module,new,open,parser,private,sig,struct,true,val,virtual,when,%
630     object,ref},% TH
631 }%
632 \lst@definelanguage[light]{Caml}
633 {morekeywords={and,as,begin,do,done,downto,else,end,exception,for,%
634     fun,function,if,in,let,match,mutable,not,of,or,prefix,rec,then,%
635     to,try,type,value,where,while,with},%
636     sensitive,%
637     morecomment=[n]{(*)}{(*)},%
```

```

638  morestring="[b]",%
639  moredelim=[directive]\#,%
640  moredirectives={open,close,include}%
641  }[keywords,comments,strings,directives]%
642 </lang2>

```

2.13 Common Intermediate Language

This language definition for CIL (Common Intermediate Language, part of Microsoft's .NET interface) was provided by Olaf Conradi Akim Demaille pointed out that the support for Algol was broken, but that came from a long missing '@' in the following `lst@definelanguage`.

```

643 (*lang3)
644 \lst@definelanguage{CIL}{%
645  morekeywords=[1]{assembly, beforefieldinit, class, default, cdecl, cil,%
646  corflags, culture, custom, data, entrypoint, fastcall, field, file,%
647  hidebysig, hash, il, imagebase, locals, managed, marshall, maxstack,%
648  mresource, method, module, namespace, publickey, stdcall, subsystem,%
649  thiscall, unmanaged, vararg, ver, vtfixup,%
650  % types
651  bool, char, float32, float64, int, int8, int16, int32, int64, method,%
652  native, object, string, modopt, modreq, pinned, typedref, valuetype,%
653  unsigned, void,%
654  % defining types
655  abstract, ansi, auto, autochar, beforefieldinit, boxed, class,%
656  explicit, extends, implements, interface, famandassem, family,%
657  famorassem, inherits, nested, override, pack, private, property,%
658  public, rtspecialname, sealed, sequential, serializable, size,%
659  specialname, static, unicode,%
660  % postfix
661  algorithm, alignment, extern, init, from, nometadata, with},%
662  morekeywords=[2]{add, and, arglist, beq, bge, bgt, ble, blt, bne, br,%
663  break, brfalse, brtrue, call, calli, ceq, cgt, ckfinite, clt, conv,%
664  cpblk, div, dup, endfilter, endfinally, initblk, jmp, ldarg, ldarga,%
665  ldc, ldftn, ldind, ldloc, ldloca, ldnull, leave, localloc, mul, neg,%
666  nop, not, or, pop, rem, ret, shl, shr, starg, stind, stloc, sub,%
667  switch, xor,%
668  % prefix
669  tail, unaligned, volatile,%
670  % postfix
671  un, s, ovf,%
672  % object
673  box, callvirt, castclass, cpobj, ctor, ctor, initobj, isinst, ldelem,%
674  ldelema, ldfld, ldflda, ldlen, ldobj, ldsfld, ldsflda, ldstr, ldtoken,%
675  ldvirtftn, mkrefany, newarr, newobj, refanytype, refanyval, rethrow,%
676  sizeof, stelem, stfld, stobj, stsfld, throw, unbox},%
677  sensitive=true,%
678  morecomment=[1]{//},%

```

```

679  morestring=[b]"%
680 }[keywords,comments,strings]
681 /<lang3)

```

2.14 Cobol

Keywords are not marked if their names are broken by EOL, for example DEBUG-CONTENTS. Sometimes portions of a string are not printed as a string. This happens if the double quote is not doubled to insert a quote, e.g. `"bad" cobol` won't be printed correctly.

```

682 (*<lang2)

683 \lst@definlanguage[ibm]{Cobol}[1985]{Cobol}%
684  {morekeywords={ADDRESS,BEGINNING,COMP-3,COMP-4,COMPUTATIONAL,%
685    COMPUTATIONAL-3,COMPUTATIONAL-4,DISPLAY-1,EGCS,EJECT,ENDING,%
686    ENTRY,GOBACK,ID,MORE-LABELS,NULL,NULLS,PASSWORD,RECORDING,%
687    RETURN-CODE,SERVICE,SKIP1,SKIP2,SKIP3,SORT-CONTROL,SORT-RETURN,%
688    SUPPRESS,TITLE,WHEN-COMPILED},%
689  }%

690 \lst@definlanguage[1985]{Cobol}[1974]{Cobol}%
691  {morekeywords={ALPHABET,ALPHABETIC-LOWER,ALPHABETIC-UPPER,%
692    ALPHANUMERIC,ALPHANUMERIC-EDITED,ANY,CLASS,COMMON,CONTENT,%
693    CONTINUE,DAY-OF-WEEK,END-ADD,END-CALL,END-COMPUTE,END-DELETE,%
694    END-DIVIDE,END-EVALUATE,END-IF,END-MULTIPLY,END-PERFORM,END-READ,%
695    END-RECEIVE,END-RETURN,END-REWRITE,END-SEARCH,END-START,%
696    END-STRING,END-SUBTRACT,END-UNSTRING,END-WRITE,EVALUATE,EXTERNAL,%
697    FALSE,GLOBAL,INITIALIZE,NUMERIC-EDITED,ORDER,OTHER,%
698    PACKED-DECIMAL,PADDING,PURGE,REFERENCE,RELOAD,REPLACE,STANDARD-1,%
699    STANDARD-2,TEST,THEN,TRUE},%
700  }%

701 \lst@definlanguage[1974]{Cobol}%
702  {morekeywords={ACCEPT,ACCESS,ADD,ADVANCING,AFTER,ALL,ALPHABETIC,ALSO,%
703    ALTER,ALTERNATE,AND,ARE,AREA,AREAS,ASCENDING,ASSIGN,AT,AUTHOR,%
704    BEFORE,BINARY,BLANK,BLOCK,BOTTOM,BY,CALL,CANCEL,CD,CF,CH,%
705    CHARACTER,CHARACTERS,CLOCK-UNITS,CLOSE,COBOL,CODE,CODE-SET,%
706    COLLATING,COLUMN,COMMA,COMMUNICATION,COMP,COMPUTE,CONFIGURATION,%
707    CONTAINS,CONTROL,CONTROLS,CONVERTING,COPY,CORR,CORRESPONDING,%
708    COUNT,CURRENCY,DATA,DATE,DATE-COMPILED,DATE-WRITTEN,DAY,DE,%
709    DEBUG-CONTENTS,DEGUB-ITEM,DEBUG-LINE,DEBUG-NAME,DEBUG-SUB1,%
710    DEBUG-SUB2,DEBUG-SUB3,DEBUGGING,DECIMAL-POINT,DECLARATIVES,%
711    DELETE,DELIMITED,DELIMITER,DEPENDING,DESCENDING,DESTINATION,%
712    DETAIL,DISABLE,DISPLAY,DIVIDE,DIVISION,DOWN,DUPLICATES,DYNAMIC,%
713    EGI,ELSE,EMI,ENABLE,END,END-OF-PAGE,ENTER,ENVIRONMENT,EOP,EQUAL,%
714    ERROR,ESI,EVERY,EXCEPTION,EXIT,EXTEND,FD,FILE,FILE-CONTROL,%
715    FILLER,FINAL,FIRST,FOOTING,FOR,FROM,GENERATE,GIVING,GO,GREATER,%
716    GROUP,HEADING,HIGH-VALUE,HIGH-VALUES,I-O,I-O-CONTROL,%
717    IDENTIFICATION,IF,IN,INDEX,INDEXED,INDICATE,INITIAL,INITIATE,%
718    INPUT,INPUT-OUTPUT,INSPECT,INSTALLATION,INTO,INVALID,IS,JUST,%

```

```

719 JUSTIFIED,KEY,LABEL,LAST,LEADING,LEFT,LENGTH,LESS,LIMIT,LIMITS,%
720 LINAGE,LINAGE-COUNTER,LINE,LINE-COUNTER,LINES,LINKAGE,LOCK,%
721 LOW-VALUE,LOW-VALUES,MEMORY,MERGE,MESSAGE,MODE,MODULES,MOVE,%
722 MULTIPLE,MULTIPLY,NATIVE,NEGATIVE,NEXT,NO,NOT,NUMBER,NUMERIC,%
723 OBJECT-COMPUTER,OCCURS,OF,OFF,OMITTED,ON,OPEN,OPTIONAL,OR,%
724 ORGANIZATION,OUTPUT,OVERFLOW,PAGE,PAGE-COUNTER,PERFORM,PF,PH,PIC,%
725 PICTURE,PLUS,POINTER,POSITION,PRINTING,POSITIVE,PRINTING,%
726 PROCEDURE,PROCEDURES,PROCEED,PROGRAM,PROGRAM-ID,QUEUE,QUOTE,%
727 QUOTES,RANDOM,RD,READ,RECEIVE,RECORD,RECORDING,RECORDS,REDEFINES,%
728 REEL,REFERENCES,RELATIVE,RELEASE,REMAINDER,REMOVAL,RENAMES,%
729 REPLACING,REPORT,REPORTING,REPORTS,RERUN,RESERVE,RESET,RETURN,%
730 REVERSED,REWIND,REWRITE,RF,RH,RIGHT,ROUNDED,RUN,SAME,SD,SEARCH,%
731 SECTION,SECURITY,SEGMENT,SEGMENT-LIMIT,SELECT,SEND,SENTENCE,%
732 SEPARATE,SEQUENCE,SEQUENTIAL,SET,SIGN,SIZE,SORT,SORT-MERGE,%
733 SOURCE,SOURCE-COMPUTER,SPACE,SPACES,SPECIAL-NAMES,STANDARD,START,%
734 STATUS,STOP,STRING,SUB-QUEUE-1,SUB-QUEUE-2,SUB-QUEUE-3,SUBTRACT,%
735 SUM,SYMBOLIC,SYNC,SYNCHRONIZED,TABLE,TALLYING,TAPE,TERMINAL,%
736 TERMINATE,TEXT,THAN,THROUGH,THRU,TIME,TIMES,TO,TOP,TRAILING,TYPE,%
737 UNIT,UNSTRING,UNTIL,UP,UPON,USAGE,USE,USING,VALUE,VALUES,VARYING,%
738 WHEN,WITH,WORDS,WORKING-STORAGE,WRITE,ZERO,ZEROES,ZEROS},%
739 alsodigit=-,%
740 sensitive=f,% ???
741 morecomment=[f][commentstyle][6]*,%
742 morestring=[d]"% ??? doubled
743 }[keywords,comments,strings]

```

commentstyle (not the surrounding brackets) have been added after a bug report by Stephen Reindl.

```
744 </lang2>
```

2.15 Comal 80

The data is from

- BORGE R. CHRISTENSEN: **Strukturierte Programmierung mit COMAL 80** [aus dem Dänischen übertragen und bearbeitet von Margarete Kragh]; 2., verb. Auflage – München; Wien: Oldenburg, 1985; ISBN 3-486-26902-X.

```

745 <*lang3>
746 \lst@definlanguage{Comal 80}%
747 {morekeywords={AND,AUTO,CASE,DATA,DEL,DIM,DIV,DO,ELSE,ENDCASE,ENDIF,%
748     ENDPROC,ENDWHILE,EOD,EXEC,FALSE,FOR,GOTO,IF,INPUT,INT,LIST,LOAD,%
749     MOD,NEW,NEXT,NOT,OF,OR,PRINT,PROC,RANDOM,RENUM,REPEAT,RND,RUN,%
750     SAVE,SELECT,STOP,TAB,THEN,TRUE,UNTIL,WHILE,ZONE},%
751     sensitive=f,% ???
752     morecomment=[1]//,%
753     morestring=[d]"%
754 }[keywords,comments,strings]
755 </lang3>

```

2.16 COMMAND.COM Batch Files

This definition for DOS and Windows batch files is from Stephan Hennig.

```
756 (*lang3)
757 \lst@definelanguage[WinXP]{command.com}%
758 {morekeywords={assoc,at,attrib,bootcfg,break,cacls,call,cd,chcp,chdir,%
759     chkdsk,chkntfs,cls,cmd,cmdextversion,color,comp,compact,convert,copy,%
760     date,defined,del,dir,diskcomp,diskcopy,do,doskey,echo,else,endlocal,%
761     erase,errorlevel,exist,exit,fc,find,findstr,for,format,ftype,goto,%
762     graftabl,help,if,in,label,md,mkdir,mode,more,move,not,off,path,%
763     pause,popd,print,prompt,pushd,rd,recover,ren,rename,replace,rmdir,%
764     set,setlocal,shift,sort,start,subst,time,title,tree,type,ver,%
765     verify,vol,xcopy},%
766     sensitive=false,%
767     alsoother={@},%
768     alsoletter={\%~:~/},%
769     morecomment=[1]{rem},%
770     morecomment=[1]{reM},%
771     morecomment=[1]{rEm},%
772     morecomment=[1]{rEM},%
773     morecomment=[1]{Rem},%
774     morecomment=[1]{ReM},%
775     morecomment=[1]{REm},%
776     morecomment=[1]{REM},%
777     morestring=[d]"%
778 }[keywords,comments,strings]
779 (/lang3)
```

2.17 Comsol Multiphysics

Comsol Multiphysics (Prior to version 3.2 known as Femlab) can be used standalone or as an extension to MatLab. This definition is due to Martin Heller.

Unfortunately, there is a conflict in that Comsol is case-insensitive, whereas Matlab is case-sensitive; listings does not currently support different case-sensitivities in the same listing.

```
780 (*lang3)
781 \lst@definelanguage{Comsol}%
782 {morekeywords={%
783     adaption,arc1,arc2,arrayr,assemble,aseminit,beziercurve2,block2,%
784     block3,bsplinecurve2,bsplinecurve3,bsplinesurf3,bypassplot,cardg,%
785     ccoeffgroup,chamfer,checkgeom,circ1,circ2,coeff2cell,comsol,%
786     cone2,cone3,Contents,createhexes,createprisms,createquads,csgbl2,%
787     csgbl3,csgcmpbz,csgimplbz,csginitaux,csginitnr,csgproputil,%
788     csgrbconv,csgunique3,csguniquep,csgversion,csgvvovl,curve2,%
789     curve3,cylinder2,cylinder3,dst2str,defastget,display,drawgetobj,%
790     drawreobj,drawsetobj,dst,duplicate,dxflayers,dxfread,dxfwrite,%
791     econes2,econes3,eigloop,elconstr,elcplbnd,elcplextr,elcplproj,%
```

```

792   elcplscalar,elempty,elemreobj,eleqc,eleqw,elevate,elgeom,ellip1,%
793   ellip2,ellipsoid2,ellipsoid3,ellipsoidgen_fl23,elmat,elovar,%
794   elpconstr,elshape,elvar,elvarm,embed,extrude,face3,faceprim3,%
795   fastsetop,fem2jxfem,femblocksu,femdiff,femeig,femexport,femgui,%
796   femimport,femiter,femlab,femlin,femmesh,femmeshexp,femlin,%
797   femplot,femsfun,femsim,femsimlowlevel,femsimserver,femsol,%
798   femsolver,femstate,femstruct,femtime,femwave,festyle,fieldnames,%
799   fillet,fl1d,fl2d,fl3d,flaction,flafun,flapconvert,flapobj,%
800   flaxisequal,flbase,flbinary,flc1hs,flc2hs,flcanpnt,flcell2draw,%
801   flclear,flcolorbar,flcompact,flconeplot,flcontour2mesh,%
802   flcontour2meshaux,flconvreact,flconvreact1d,flconvreact2d,%
803   flconvreact3d,flcyl,fldc1hs,fldc2hs,fldegree,fldegreer3,%
804   fldegreet3,fldimvarset,fldisp,fldraw2cell,fldrawnow,fldsmhs,%
805   fldsmhsign,flvalmat,flexch,flexchprop,flfastgeom,flform,flgc,%
806   flgco,flgdconv,flgeom2cellstr,flgeomadj,flgeomarcize,flgeomec,%
807   flgeomed,flgeomepol,flgeomex,flgeomfc,flgeomfd,flgeomfdp,%
808   flgeomff1,flgeomff2,flgeomfn,flgeomfs,flgeomgetlocalsys,%
809   flgeominit,flgeominitprop,flgeomittransform,flgeomloft,flgeommesh,%
810   flgeomnbs,flgeomnes,flgeomnmr,flgeomnv,flgeompsinv,flgeomrmsing,%
811   flgeomrotp,flgeomsd,flgeomsdm,flgeomse,flgeomsf2,flgeomspm,%
812   flgeomtransform,flgeomud,flgeomvtx,flgetdraw,flheat,flheat1d,%
813   flheat2d,flheat3d,flhelmholtz,flhelmholtz1d,flhelmholtz2d,%
814   flhelmholtz3d,flim2curve,flinterp1,fliscont,flismember,%
815   flisnumeric,fljaction,fllaplace,fllaplace1d,fllaplace2d,%
816   fllaplace3d,flload,flloadfl,flloadmatfile,flloadmfile,%
817   fllobj2cellstr,flmakeevalstr,flmapsoljac,flmat2str,flmatch,%
818   flmesh2spline,flmesh2splineaux,flml65setup,flngdof,flnull,%
819   flnullorth,flpde,flpdeac,flpdec,flpdec1d,flpdec2d,flpdec3d,%
820   flpdedc,flpdedc2d,flpdedc3d,flpdedf,flpdedf1d,flpdedf2d,%
821   flpdedf3d,flpdees,flpdees2d,flpdees3d,flpdeg,flpdeg1d,flpdeg2d,%
822   flpdeg3d,flpdeht,flpdeht1d,flpdeht2d,flpdeht3d,flpdems,flpdems2d,%
823   flpdems3d,flpdens,flpdens2d,flpdens3d,flpdepn,flpdeps,flpdem3d,%
824   flpdew,flpdew1d,flpdew2d,flpdew3d,flpdewb,flpdewb1d,flpdewb2d,%
825   flpdewb3d,flpdewc,flpdewc1d,flpdewc2d,flpdewc3d,flpdewe,%
826   flpdewe3d,flpdewp,flpdewp2d,flpdewp3d,flplot,flpoisson,%
827   flpoisson1d,flpoisson2d,flpoisson3d,flpric2,flpric3,flreobj,%
828   flreport,flresolvepath,flsave,flschrodinger,flschrodinger1d,%
829   flschrodinger2d,flschrodinger3d,flsde,flsdp,flsdt,flsetalpha,%
830   flsetdraw,flsmhs,flsmhsign,flspnull,fltherm_cond1,fltrg,flversion,%
831   flversions,flverver,flwave,flwave1d,flwave2d,flwave3d,%
832   flwriteghist,formstr,gdsread,gencyl2,gencyl3,genextrude,%
833   genextrudeaux,geom,geom0,geom0get,geom1,geom1get,geom2,geom2get,%
834   geom3,geom3get,geom3j2m,geom3m2j,geomaddlblmargin,geomanalyze,%
835   geomarrayr,geomassign,geomcoerce,geomcomp,geomconnect,geomcopy,%
836   geomcsg,geomdel,geomedit,geomexport,geomfile,geomget,%
837   geomgetlabels,geomgetwrkpln,geomimport,geominfo,geominfoaux,%
838   geomlblplot,geomload,geomnumparse,geomobject,geomparse,geomplot,%
839   geomplot1,geomplot2,geomplot3,geomposition,geompropoutil,%
840   geomreconstruct,geomreobj,geomserver,geomspline,geomsurf,%
841   geomupdate,get,getfemgeom,getisocurve,getjptr,getmesh,getsdim,%

```

```

842     getvmatrixexch,handlesolnumstr, helix1, helix2, helix3, hexahedron2, %
843     hexahedron3, histfrommat, idst, igesread, importplotdata, isempty, %
844     isfield, isfunc, isscript, javaclass, jproputil, jptr2geom, jptrgeom1, %
845     jptrgeom1_fl23, jptrgeom2, jptrgeom2_fl23, jptrgeom3, jptrgeom3_fl23, %
846     keiter, line1, line2, loadobj, loft, matlabinterpdata, mesh2geom, %
847     meshassign, meshcaseadd, meshcasedel, meshcaseutil, meshcheck, %
848     meshembed, meshenrich, meshenrich1, meshenrich2, meshenrich3, %
849     meshexport, meshextend, meshextrude, meshget, meshimport, meshinit, %
850     meshintegrate, meshmap, meshoptim, meshparse, meshplot, meshplot1, %
851     meshplot2, meshplot3, meshplotproputil, meshpoi, meshproputil, %
852     meshptplot, meshqual, meshrefine, meshrevolve, meshsmooth, %
853     meshsmooth2, meshsweep, meshvolume, minus, mirror, mkreflparams, %
854     mmsolve, modetype, move, moveglobalfields, mphproputil, mtimes, %
855     multiphysics, mypostinterp, notscript, onlyelsconstr, outassign, %
856     parangeom, pde2draw, pde2equ, pde2fem, pde2geom, pdeblxpd, plus, point1, %
857     point2, point3, poisson, poly1, poly2, postanim, postapplysettings, %
858     postarrow, postarrowbnd, postcolorbar, postcont, postcontdomind, %
859     postcoord, postcopyprop, postcrossplot, postdistrprops, posteval, %
860     postflow, postfnd, postgeomplot, postgetfem, postgetstylecolor, %
861     postglobaleval, postglobalplot, postgp, postinit, postint, postinterp, %
862     postiso, postlin, postmakecontcol, postmax, postmaxmin, postmin, %
863     postmkcontbar, postmknormexpr, postmovie, postnewplot, %
864     postoldmaxminprops, postpd2pm, postplot, postplotconstants, %
865     postpm2pd, postprinc, postprincbnd, postprocgui, postproputil, %
866     postslice, postsurf, posttet, posttitle, print2file, pyramid2, %
867     pyramid3, rect1, rect2, restorefields, revolve, rmfield, rotate, %
868     rotmatrix, scale, serialize, set, setmesh, sh2str, sharg_2_5, shbub, %
869     shdisc, shdiv, shherm, shlag, shvec, simplecoerce, simreobj, siblocks, %
870     solassign, solid0, solid1, solid2, solid3, solidprim3, solproputil, %
871     solsize, solveraddcases, sphere2, sphere3, spiceimport, splineaux, %
872     split, splittoprim, square1, square2, stlread, submode, submodes, %
873     subsasgn, subsref, tangent, taucs, tetrahedron2, tetrahedron3, %
874     tobsplines, torus2, torus3, transform, update, updateassoc, %
875     updateassocinfo, updatefem, updateguistruct, updateobj, vrmlread, %
876     xmeshinfo, xmeshinit}, %
877     sensitive=false, %
878     morecomment=[1]\%, %
879     morestring=[m] '%
880 }[keywords, comments, strings]
881 </lang3>

```

2.18 bash, csh, and sh

csh is from Kai Below, but he pointed out that some keywords are probably missing.

```

882 (*lang1)
883 %%
884 %% csh definition (c) 1998 Kai Below

```



```

885 %%
886 \lst@definelanguage{csh}
887   {morekeywords={alias,awk,cat,echo,else,end,endif,endsw,exec,exit,%
888     foreach,glob,goto,history,if,logout,nice,nohup,onintr,repeat,sed,%
889     set,setenv,shift,source,switch,then,time,while,umask,unalias,%
890     unset,wait,while,@,env,argv,child,home,ignoreeof,noclobber,%
891     noglob,nomatch,path,prompt,shell,status,verbose,print,printf,%
892     sqrt,BEGIN,END},%
893   morecomment=[l]\#,%
894   morestring=[d]"%
895 }[keywords,comments,strings]

```

Thanks to Riccardo Murri for the following two definitions. Scott Pakin pointed out some missing keywords (`elif`, `in` for `sh`, `caller`, `compopt`, `coproc`, `dirs`, `help`, `mapfile`, `readarray` for `bash`) to the current maintainer. The `sh` list of keywords was checked against the “Manual of the Bourne Shell on Version 7”, found at <http://www.in-ulm.de/~mascheck/bourne/v7/>, last visited on 2014/09/06. Ralf Schandl indicated the missing of an apostrophe as delimiter of strings.

```

896 %%
897 %% bash,sh definition (c) 2003 Riccardo Murri <riccardo.murri@gmx.it>
898 %%
899 \lst@definelanguage{bash}[] {sh}%
900   {morekeywords={alias,bg,bind,builtin,caller,command,compgen,compopt,%
901     complete,coproc,declare,disown,dirs,enable,fc,fg,help,history,%
902     jobs,let,local,logout,mapfile,printf,pushd,popd,readarray,select,%
903     set,suspend,shopt,source,times,type,typeset,ulimit,unalias,wait},%
904   }%
905 \lst@definelanguage{sh}%
906   {morekeywords={awk,break,case,cat,cd,continue,do,done,echo,elif,else,%
907     env,esac,eval,exec,exit,export,expr,false,fi,for,function,getopts,%
908     hash,history,if,in,kill,login,newgrp,nice,nohup,ps,pwd,read,%
909     readonly,return,set,sed,shift,test,then,times,trap,true,type,%
910     ulimit,umask,unset,until,wait,while},%
911   morecomment=[l]\#,%
912   morestring=[d]"%,%
913   morestring=[d]'%
914 }[keywords,comments,strings]
915 </lang1>

```

Jobst Hoffmann copied the definition of a style for printing Fortran code to a style for printing shell programs:

```

916 <*bash-prf>
917 \usepackage[rgb,x11names]{xcolor}
918
919 % common settings
920 \lstset{%
921   frame=tlb,%           the frame is open on the right side
922   resetmargins=false,%
923   rulesepcolor=\color{black},%

```

```

924 numbers=left,%                % left
925 numberstyle=\tiny,%
926 numbersep=5pt,%
927 firstnumber=1,%
928 stepnumber=5,%
929 columns=fixed,%              % to prevent inserting spaces
930 fontadjust=true,%
931 keepspaces=true,%
932 basewidth=0.5em,%
933 captionpos=t,%
934 abovcaptionskip=\smallskipamount,% same amount as default
935 belowcaptionskip=\smallskipamount,% in caption package
936 }
937 % settings for colored printing
938 \lstdefinestyle{bash}{%
939   backgroundcolor=\color{yellow!10},%
940   basicstyle=\small\ttfamily,%
941   identifierstyle=\color{black},%
942   keywordstyle=\color{blue},%
943   keywordstyle={[2]\color{cyan}},%
944   keywordstyle={[3]\color{olive}},%
945   stringstyle=\color{teal},%
946   commentstyle=\itshape\color{orange},%
947 }%
948 % settings for back and white printing
949 \lstdefinestyle{bashbw}{%
950   backgroundcolor={},%
951   basicstyle=\small\ttfamily,%
952   identifierstyle={},%
953   keywordstyle=\bfseries,%
954   stringstyle=\itshape,%
955   commentstyle=\slshape,%
956   rulesepcolor=\color{black},%
957 }%

```

This code is provided in the file `listings-bash.prf`, see section 2.4.1 (Preferences) of the listings documentation.

```
958 (/bash-prf)
```

2.19 Delphi

I took the data from Delphi 1.0 (?) online help. Christian Gudrian provided the ‘double slash’ comment.

```

959 (*lang2)

960 \lst@definelanguage{Delphi}%
961   {morekeywords={and,as,asm,array,begin,case,class,const,constructor,%
962     destructor,div,do,downto,else,end,except,exports,file,finally,%
963     for,function,goto,if,implementation,in,inherited,inline,%
964     initialization,interface,is,label,library,mod,nil,not,object,of,%

```

```

965     or,packed,procedure,program,property,raise,record,repeat,set,%
966     shl,shr,string,then,to,try,type,unit,until,uses,var,while,with,%
967     xor,%
968     absolute,abstract,assembler,at,cdecl,default,dynamic,export,%
969     external,far,forward,index,name,near,nodefault,on,override,%
970     private,protected,public,published,read,resident,storedDir,%
971     virtual,write},%
972 morendkeywords={Abs,AddExitProc,Addr,AllocMem,AnsiCompareStr,%
973     AnsiCompareText,AnsiLowerCase,AnsiUpperCase,Append,AppendStr,%
974     ArcTan,AssignCrt,Assigned,AssignFile,BlockRead,BlockWrite,Break,%
975     ChangeFileExt,ChDir,Chr,CloseFile,ClrEol,ClrScr,Concat,Continue,%
976     Copy,Cos,CSeg,CursorTo,Date,DateTimeToFileDate,DateTimeToStr,%
977     DateTimeToString,DateToStr,DayOfWeek,Dec,DecodeDate,DecodeTime,%
978     Delete,DeleteFile,DiskFree,DiskSize,Dispose,DisposeStr,%
979     DoneWinCrt,DSeg,EncodeDate,EncodeTime,Eof,Eoln,Erase,Exclude,%
980     Exit,Exp,ExpandFileName,ExtractFileExt,ExtractFileName,%
981     ExtractFilePath,FileAge,FileClose,FileDateToDateTime,FileExists,%
982     FileGetAttr,FileGetDate,FileOpen,FilePos,FileRead,FileSearch,%
983     FileSeek,FileSetAttr,FileSetDate,FileSize,FillChar,FindClose,%
984     FindFirst,FindNext,FloatToDecimal,FloatToStrF,FloatToStr,%
985     FloatToText,FloatToTextFmt,Flush,FmtLoadStr,FmtStr,Format,%
986     FormatBuf,FormatDateTime,FormatFloat,Frac,Free,FreeMem,GetDir,%
987     GetMem,GotoXY,Halt,Hi,High,Inc,Include,InitWinCrt,Insert,Int,%
988     IntToHex,IntToStr,IOResult,IsValidIdent,KeyPressed,Length,Ln,Lo,%
989     LoadStr,Low,LowerCase,MaxAvail,MemAvail,MkDir,Move,New,NewStr,%
990     Now,Odd,Ofs,Ord,ParamCount,ParamStr,Pi,Pos,Pred,Ptr,Random,%
991     Randomize,Read,ReadBuf,ReadKey,ReadLn,ReAllocMem,Rename,%
992     RenameFile,Reset,Rewrite,RmDir,Round,RunError,ScrollTo,Seek,%
993     SeekEof,SeekEoln,Seg,SetTextBuf,Sin,SizeOf,SPtr,Sqr,Sqrt,SSeg,%
994     Str,StrCat,StrComp,StrCopy,StrDispose,StrECopy,StrEnd,StrFmt,%
995     StrLCat,StrLComp,StrLComp,StrLCopy,StrLen,StrLFmt,StrLComp,%
996     StrLower,StrMove,StrNew,StrPas,StrPCopy,StrPos,StrScan,StrRScan,%
997     StrToDate,StrToDateTime,StrToFloat,StrToInt,StrToIntDef,%
998     StrToTime,StrUpper,Succ,Swap,TextToFloat,Time,TimeToStr,%
999     TrackCursor,Trunc,Truncate,TypeOf,UpCase,UpperCase,Val,WhereX,%
1000    WhereY,Write,WriteBuf,WriteChar,WriteLn},%
1001 sensitive=f,%
1002 morecomment=[s]{(*){(*)},%
1003 morecomment=[s]{\{\}\{\}\},%
1004 morecomment=[l]{//},% 2001 Christian Gudrian
1005 morestring=[d]'%
1006 }[keywords,comments,strings]
1007 </lang2>

```

2.20 Eiffel

Data is from

- BERTRAND MEYER: **Eiffel: the language**; Prentice Hall International (UK) Ltd, 1992; ISBN 0-13-247925-7.

```

1008 <*lang2>
1009 \lst@definelanguage{Eiffel}%
1010 {morekeywords={alias,all,and,as,BIT,BOOLEAN,CHARACTER,check,class,%
1011     creation,Current,debug,deferred,do,DOUBLE,else,elseif,end,%
1012     ensure,expanded,export,external,false,feature,from,frozen,if,%
1013     implies,indexing,infix,inherit,inspect,INTEGER,invariant,is,%
1014     like,local,loop,NONE,not,obsolete,old,once,or,POINTER,prefix,%
1015     REAL,redefine,rename,require,rescue,Result,retry,select,%
1016     separate,STRING,strip,then,true,undefine,unique,until,variant,%
1017     when,xor},%
1018     sensitive,%
1019     morecomment=[1]--,%
1020     morestring=[d] ",%
1021 }[keywords,comments,strings]

```

The key=value stringtest=false has been removed after a bug report from Xavier Crégut.

```
1022 </lang2>
```

2.21 Elan

The data come from

- LEO H. KLINGEN, JOCHEN LIEDTKE: **Programmieren mit ELAN**; B.G. Teubner, Stuttgart 1983; ISBN 3-519-02507-8.

```

1023 <*lang3>
1024 \lst@definelanguage{Elan}%
1025 {morekeywords={ABS,AND,BOOL,CAND,CASE,CAT,COLUMNS,CONCR,CONJ,CONST,%
1026     COR,DECR,DEFINES,DET,DIV,DOWNTO,ELIF,ELSE,END,ENDIF,ENDOP,%
1027     ENDPACKET,ENDPROC,ENDREP,ENDSELECT,FALSE,FI,FILE,FOR,FROM,IF,%
1028     INCR,INT,INV,LEAVE,LENGTH,LET,MOD,NOT,OF,OP,OR,OTHERWISE,PACKET,%
1029     PROC,REAL,REP,REPEAT,ROW,ROWS,SELECT,SIGN,STRUCT,SUB,TEXT,THEN,%
1030     TRANSP,TRUE,TYPE,UNTIL,UPTO,VAR,WHILE,WITH,XOR,%
1031     maxint,sign,abs,min,max,random,initializerandom,subtext,code,%
1032     replace,text,laenge,pos,compress,change,maxreal,smallreal,floor,%
1033     pi,e,ln,log2,log10,sqrt,exp,tan,tand,sin,sind,cos,cosd,arctan,%
1034     arctand,int,real,lastconversionok,put,putline,line,page,get,%
1035     getline,input,output,sequentialfile,maxlinelaenge,reset,eof,%
1036     close,complexzero,complexone,complexi,complex,realpart,imagpart,%
1037     dphi,phi,vector,norm,replace,matrix,idn,row,column,sub,%
1038     replacerow,replacecolumn,replaceelement,transp,errorstop,stop},%
1039     sensitive,%
1040     morestring=[d] "%
1041 }[keywords,strings]
1042 </lang3>

```

2.22 Erlang

Thanks to Daniel Gazard.

```
1043 (*lang3)
1044 %%
1045 %% Erlang definition (c) 2003 Daniel Gazard
1046 %%
1047 \lst@definlanguage{erlang}%
1048 {morekeywords={abs,after,and,apply,atom,atom_to_list,band,binary,%
1049     binary_to_list,binary_to_term,bor,bsl,bsr,bxor,case,catch,%
1050     date,div,element,erase,end,exit,export,float,float_to_list,%
1051     get,halt,hash,hd,if,info,import,integer,integer_to_list,%
1052     length,link,list,list_to_atom,list_to_float,list_to_integer,%
1053     list_to_tuple,module,node,nodes,now,of,or,pid,port,ports,%
1054     processes,put,receive,reference,register,registered,rem,%
1055     round,self,setelement,size,spawn,throw,time,tl,trace,trunc,%
1056     tuple,tuple_to_list,unlink,unregister,whereis,error,false,%
1057     infinity,nil,ok,true,undefined,when},%
1058 otherkeywords={->,!,[,],\{,\}},%
1059 morecomment=[l]\%,%
1060 morestring=[b]"%,%
1061 morestring=[b]'%
1062 }[keywords,comments,strings]
1063 (/lang3)
```

2.23 Euphoria

Detlef Reimers sent me the language definition.

```
1064 (*lang2)
1065 %%
1066 %% Euphoria definition (c) 1998 Detlef Reimers
1067 %%
1068 \lst@definlanguage{Euphoria}%
1069 % for Euphoria 2.0, Rapid Deployment Software, Kanada
1070 {morekeywords={abort,and,and_bits,append,arctan,atom,by,call,%
1071     call_proc,call_func,c_proc,c_func,clear_screen,close,%
1072     command_line,compare,constant,cos,do,date,else,elsif,end,exit,%
1073     find,floor,for,function,getc,getenv,get_key,gets,global,%
1074     get_pixel,if,include,integer,length,log,match,machine_func,%
1075     machine_proc,mem_copy,mem_set,not,not_bits,or,object,open,%
1076     or_bits,procedure,puts,position,prepend,print,printf,power,peek,%
1077     poke,pixel,poke4,peek4s,peek4u,return,rand,repeat,remainder,%
1078     routine_id,sequence,sqrt,sin,system,sprintf,then,type,to,time,%
1079     trace,tan,while,with,without,xor,xor_bits},%
1080 sensitive,%
1081 morecomment=[l]--,%
1082 morestring=[d]'%,%
1083 morestring=[d]"%
```

```

1084 }[keywords,comments,strings]
1085 </lang2>

```

2.24 Fortran

Took things from

- KARL HANS MÜLLER: **Fortran 77: Programmieranleitung**; 3., völlig neu bearb. Aufl. – Mannheim; Wien; Zürich: Bibliographisches Institut, 1984; ISBN 3-411-05804-8
- THOMAS MICHEL: **Fortran 90: Lehr- und Handbuch**; Mannheim; Leipzig; Wien; Zürich: BI-Wiss.-Verlag, 1994; ISBN 3-411-16861-7.

Another source for Fortran keywords is <http://fortranwiki.org/fortran/show/Keywords> where the keywords for Fortran 2003 and 2008 are taken from.

```

1086 <*lang1>

```

The current version of Fortran (Fortran 2018) is defined by ISO/IEC 1539-1:2018, for a deeper insight have a look at <https://wg5-fortran.org/f2018.html>. It contains ? new keywords, ? of them consisting of two words: FAIL IMAGE, so the list of keywords contains the single parts FAIL and IMAGE. So there is the following definition of Fortran 2018 keywords

```

1087 \lst@definelanguage[18]{Fortran}[08]{Fortran}{%
1088 morekeywords={FAIL, IMAGE, NON_RECURSIVE},%

```

and procedures:

```

1089 morekeywords=[3]{GET_TEAM, TEAM_NUMBER, IMAGE_TEAMS, NUM_IMAGES,
1090 THIS_IMAGE, FAILED_IMAGES, STOPPED_IMAGES, IMAGES_STATUS, CO_BROADCAST,
1091 CO_MAX, CO_MIN, CO_SUM, CO_REDUCE, ATOMIC_ADD, ATOMIC_AND, ATOMIC_OR,
1092 ATOMIC_XOR, ATOMIC_FETCH_ADD, ATOMIC_FETCH_AND, ATOMIC_FETCH_OR,
1093 ATOMIC_FETCH_XOR, ATOMIC_FETCH_CAS, IEEE_GET_MODES, IEEE_SET_MODES,
1094 IEEE_FMA, IEEE_SIGNBIT, IEEE_INT, IEEE_REM, IEEE_MAX_NUM,
1095 IEEE_MAX_NUM_MAG,
1096 IEEE_MIN_NUM, IEEE_MAX_NUM_MAG, IEEE_NEXT_DOWN, IEEE_NEXT_UP,
1097 IEEE_SUPPORT_DATATYPE, IEEE_QUIET_EQ, IEEE_QUIET_GE, IEEE_QUIET_GT,
1098 IEEE_QUIET_LE, IEEE_QUIET_LT, IEEE_QUIET_NE, IEEE_SIGNALING_EQ,
1099 IEEE_SIGNALING_GE, IEEE_SIGNALING_GT, IEEE_SIGNALING_LE,
1100 IEEE_SIGNALING_LT, IEEE_SIGNALING_NE}%
1101 }%

```

The Fortran 2008 version is defined by ISO/IEC 1539-1:2010. It contains nine new keywords, four of them consisting of two words: ERROR STOP, SYNC ALL, SYNC IMAGES, SYNC MEMORY, so the list of keywords contains the single parts ALL, ERROR, IMAGES, MEMORY, and SYNC.

```

1102 \lst@definelanguage[08]{Fortran}[03]{Fortran}{%
1103 morekeywords={ALL, BLOCK, CODIMENSION, CONCURRENT, CONTIGUOUS, CRITICAL,%
1104 ERROR, IMAGES, LOCK, MEMORY, SUBMODULE, SYNC, UNLOCK},%

```

New procedures in Fortran 2008:

```
1105  morekeywords=[3]{ACOSH, ASINH, ATANH, ATOMIC_DEFINE, ATOMIC_REF,%  
1106    BESSEL_J0, BESSEL_J1, BESSEL_JN, BESSEL_Y0, BESSEL_Y1, BESSEL_YN,%  
1107    BGE, BGT, BLE, BLT, C_SIZEOF, COMPILER_OPTIONS, COMPILER_VERSION,%  
1108    DSHIFTL, DSHIFTR, ERF, ERFC, ERFC_SCALED, EXECUTE_COMMAND_LINE,%  
1109    FINDLOC, GAMMA, HYPOT, IALL, IANY, IMAGE_INDEX, IPARITY, LCOBOUND,%  
1110    LEADZ, LOG_GAMMA, MASKL, MASKR, MERGE_BITS, NORM2, NUM_IMAGES,%  
1111    PARITY, POPCNT, POPPAR, SHIFTA, SHIFTL, SHIFTR, STORAGE_SIZE,%  
1112    THIS_IMAGE, TRAILZ, UCBOUND}%  
1113 }%
```

Fortran 2003 introduces the following keywords:

```
1114 \lst@definelanguage[03]{Fortran}[95]{Fortran}{%  
1115  morekeywords={ABSTRACT, ASSOCIATE, ASYNCHRONOUS, BIND, CLASS, DEFERRED,%  
1116    ENUM, ENUMERATOR, EXTENDS, FINAL, FLUSH, GENERIC, IMPORT,%  
1117    NON_OVERRIDABLE, NOPASS, PASS, PROTECTED, VALUE, VOLATILE, WAIT},%  
1118 }
```

These are new options/specifiers:

```
1118  morekeywords=[2]{DECIMAL, ENCODING, IOMSG, ROUND},%
```

And also some new procedures:

```
1119  morekeywords=[3]{C_ASSOCIATED, C_F_POINTER, C_F_PROCPONTER, C_FUNLOC,%  
1120    C_LOC, COMMAND_ARGUMENT_COUNT, EXTENDS_TYPE_OF, GET_COMMAND,%  
1121    GET_COMMAND_ARGUMENT, GET_ENVIRONMENT_VARIABLE, IS_IOSTAT_END,%  
1122    MOVE_ALLOC, NEW_LINE, SAME_TYPE_AS, SELECTED_CHAR_KIND}%  
1123 }%
```

Denis Girou proposed to have Fortran 95 and Fortran 90 to be equivalent.

```
1124 \lst@definelanguage[90]{Fortran}[95]{Fortran}{}
```

There is no `morecomment=[f]` in Fortran 90 since otherwise `CONTAINS` could start a comment. This problem was reported by Magne Rudshaug. Moreover the keyword `INCLUDE` is due to him.

```
1125 \lst@definelanguage[95]{Fortran}[77]{Fortran}{%  
1126  deletekeywords=SAVE,%  
1127  morekeywords={ALLOCATABLE, ALLOCATE, ASSIGNMENT, CASE, CONTAINS, CYCLE,%  
1128    DEALLOCATE, DEFAULT, EXIT, INCLUDE, IN, NONE, OUT, INTENT, INTERFACE,%  
1129    MODULE, NAMELIST, NULLIFY, ONLY, OPERATOR, OPTIONAL, OUT, POINTER,%  
1130    PRIVATE, PUBLIC, RECURSIVE, RESULT, SELECT, SEQUENCE, TARGET, TYPE,%  
1131    USE, WHERE, WHILE, BLOCKDATA, DOUBLEPRECISION, ENDBLOCKDATA, ENDFILE,%  
1132    ENDFUNCTION, ENDINTERFACE, ENDMODULE, ENDPROGRAM, ENDSELECT,%  
1133    ENDSUBROUTINE, ENDTYPE, ENDWHERE, INOUT, SELECTCASE},%
```

Theses keys were missing from the 1.4 version of listings:

```
1134    ELEMENTAL, ELSEWHERE, FORALL, PURE,%
```

This is another key missing from the 1.4 version of listings:

```
1135    PROCEDURE},%
```

The list of option keywords/specifiers new in Fortran 90 and 95:

```
1136  morekeywords=[2]{ACTION, ADVANCE, DELIM, IOLENGTH, LEN, NAME, NML, PAD,%  
1137    POSITION, READWRITE, SIZE, STAT},% corrected NML from NMT
```

and the list of intrinsic procedures new in Fortran 90 and 95:

```
1138 morekeywords=[3]{ACHAR, ADJUSTL, ADJUSTR, ALL, ALLOCATED, ANY, ASSOCIATED,%  
1139 BIT_SIZE, BTEST, CEILING, COUNT, CPU_TIME, CSHIFT, DATE_AND_TIME, DIGITS,%  
1140 DOT_PRODUCT, EOSHIFT, EPSILON, EXPONENT, FLOOR, FRACTION, HUGE, IACHAR,%  
1141 IAND, IBCLR, IBITS, IBSET, ICHAR, IEOR, IOR, ISHFT, ISHFTC, KIND, LBOUND,%  
1142 LEN_TRIM,% left out LOGICAL  
1143 MATMUL, MAXEXPONENT, MAXLOC, MAXVAL, MERGE, MINEXPONENT, MINLOC, MINVAL,%  
1144 MODULO, MVBITS, NEAREST, NOT, NULL, PACK, PRECISION, PRESENT, PRODUCT,%  
1145 RADIX, RANDOM_NUMBER, RANDOM_SEED, RANGE, RANK, REPEAT, RESHAPE,%  
1146 RRRSPACING, SCALE, SCAN, SELECTED_INT_KIND, SELECTED_REAL_KIND,%  
1147 SET_EXPONENT, SHAPE, SINH, SIZE, SPACING, SPREAD, SUM, SYSTEM_CLOCK,%  
1148 TINY, TRANSFER, TRANSPOSE, TRIM, UBOUND, UNPACK, VERIFY},%  
1149 deletacomment=[f],% no fixed comment line: 1998 Magne Rudshaug  
1150 morecomment=[l]!%  
1151 }%
```

As proposed by Jörn Wilms keywords are *not* case sensitive. Also, note that Fortran 77 (and fixed-format source in later versions) allows space in keywords; thus, this list contains some of the more common variants (e.g., ‘GO TO’ and ‘GOTO’).

```
1152 \lstdefinlanguage[77]{Fortran}{%
```

Jobst Hoffmann divided the list of keywords into two lists. The first list contains the statement keywords, the second list contains the option keywords/specifiers and values. This makes the different meanings of the keywords distinguishable.

```
1153 morekeywords={ASSIGN, BACKSPACE, CALL, CHARACTER, %  
1154 CLOSE, COMMON, COMPLEX, CONTINUE, DATA, DIMENSION, DO, DOUBLE, %  
1155 ELSE, ELSEIF, END, ENDIF, ENDDO, ENTRY, EQUIVALENCE, EXTERNAL, %  
1156 FILE, FORMAT, FUNCTION, GO, TO, GOTO, IF, IMPLICIT, %  
1157 INQUIRE, INTEGER, INTRINSIC, LOGICAL, %  
1158 OPEN, PARAMETER, PAUSE, PRECISION, PRINT, PROGRAM, READ, REAL, %  
1159 RETURN, REWIND, SAVE, STOP, SUBROUTINE, THEN, %  
1160 WRITE},%  
1161 morekeywords=[2]{ACCESS, BLANK, BLOCK, DIRECT, EOF, ERR, EXIST,%  
1162 FMT, FORM, FORMATTED, IOSTAT, NAMED, NEXTREC, NUMBER, OPENED,%  
1163 REC, RECL, SEQUENTIAL, STATUS, TYPE, UNFORMATTED, UNIT},%
```

And here is another list: the list of intrinsic procedures (remember: all functions belong to the Fortran language specification!)

```
1164 morekeywords=[3]{INT, DBLE, CMPLX, ICHAR, CHAR, AINT, ANINT,% left out real  
1165 NINT, ABS, MOD, SIGN, DIM, DPROD, MAX, MIN, AIMAG, CONJG, SQRT,%  
1166 EXP, LOG, LOG10, SIN, COS, TAN, ASIN, ACOS, ATAN, ATAN2, SINH,%  
1167 COSH, TANH, LGE, LGT, LLE, LLT, LEN, INDEX},%
```

And here is the last list: fortran operators:

```
1168 morekeywords=[4]{AND, EQ, EQV, FALSE, GE, GT, OR, LE, LT, NE, NEQV,%  
1169 NOT, TRUE},%  
1170 sensitive=f,%% not Fortran-77 standard, but allowed in Fortran-95 %%  
1171 morecomment=[f]*,%  
1172 morecomment=[f]C,%  
1173 morecomment=[f]c,%  
1174 morestring=[d]",%% not Fortran-77 standard, but allowed in Fortran-95 %%
```



```

1175   morestring=[d]’%
1176   }[keywords,comments,strings]
1177 </lang1>

    Jobst Hoffmann supplied a definition of a style for printing Fortran code:
1178 <*fortran-prf>
1179 \usepackage[rgb, x11names]{xcolor}
1180
1181 % common settings
1182 \lstset{%
1183   frame=tlb,%           the frame is open on the right side
1184   resetmargins=false,%
1185   rulesepcolor=\color{black},%
1186   numbers=left,%           % left
1187   numberstyle=\tiny,%
1188   numbersep=5pt,%
1189   firstnumber=1,%
1190   stepnumber=5,%
1191   columns=fixed,%           % to prevent inserting spaces
1192   fontadjust=true,%
1193   keepspaces=true,%
1194   basewidth=0.5em,%
1195   captionpos=t,%
1196   abovcaptionskip=\smallskipamount,% same amount as default
1197   belowcaptionskip=\smallskipamount,% in caption package
1198 }
1199 % settings for colored printing
1200 \lstdefinestyle{fortran}{%
1201   backgroundcolor=\color{yellow!10},%
1202   basicstyle=\small\ttfamily,%
1203   identifierstyle=\color{black},%
1204   keywordstyle=\color{blue},%
1205   keywordstyle={[2]\color{cyan}},%
1206   keywordstyle={[3]\color{olive}},%
1207   stringstyle=\color{teal},%
1208   commentstyle=\itshape\color{orange},%
1209 }%
1210 % settings for back and white printing
1211 \lstdefinestyle{fortranbw}{%
1212   backgroundcolor={},%
1213   basicstyle=\small\ttfamily,%
1214   identifierstyle={},%
1215   keywordstyle=\bfseries,%
1216   stringstyle=\itshape,%
1217   commentstyle=\slshape,%
1218   rulesepcolor=\color{black},%
1219 }%

```

This code is provided in the file `listings-fortran.prf`, see section 2.4.1 (Preferences) of the listings documentation.

```
1220 </fortran-prf>
```

2.25 GAP—Groups, Algorithms, Programming

GAP is a System for Computational Discrete Algebra, a description can be found at <http://www.gap-system.org/>. Heiko Oberdiek provided a language definition without knowing this language, so any error should be announced to the current maintainer of the listings package.

```
1221 <*lang2>
1222 %%
1223 %% GAP definition
1224 %% (c) 2013 Heiko Oberdiek
1225 %%
1226 \lst@definlanguage{GAP}{%
1227   morekeywords={%
1228     Assert,Info,IsBound,QUIT,%
1229     TryNextMethod,Unbind,and,break,%
1230     continue,do,elif,%
1231     else,end,false,fi,for,%
1232     function,if,in,local,%
1233     mod,not,od,or,%
1234     quit,rec,repeat,return,%
1235     then,true,until,while%
1236   },%
1237   sensitive,%
1238   morecomment=[l]\#,%
1239   morestring=[b]" ,%
1240   morestring=[b]' ,%
1241 }[keywords,comments,strings]
1242 </lang2>
```

2.26 Go—Groups, Algorithms, Programming

From [https://en.wikipedia.org/wiki/Go_\(programming_language\)](https://en.wikipedia.org/wiki/Go_(programming_language)): Go (often referred to as Golang) is a programming language created by Google in 2009 by Robert Griesemer, Rob Pike, and Ken Thompson. Go is a statically typed, compiled language in the tradition of C, with memory safety, garbage collection, structural typing, and CSP-style concurrency. The compiler, tools, and source code are all free and open source.

Christian Maurer provided the following language definition.

```
1243 <*lang3>
1244 %%
1245 %% Go definition
1246 %% (c) 2018 Christian Maurer
1247 %%
1248 \lst@definlanguage{Go}{%
1249   morekeywords={append,bool,break,byte,case,chan,close,complex,%
```

```

1250     complex128,complex64,const,continue,copy,default,defer,delete,%
1251     else,error,fallthrough,false,float32,float64,for,func,go,goto,%
1252     if,imag,import,int,int16,int32,int64,int8,interface,iota,len,%
1253     make,map,new,nil,package,panic,print,println,range,real,%
1254     recover,return,rune,select,string,struct,switch,true,type,%
1255     uint,uint16,uint32,uint64,uint8,uintptr,var},%
1256 sensitive,%
1257 morecomment=[s]{/*}{*/},%
1258 morecomment=[l]//,%
1259 morestring=[b]’,%
1260 morestring=[b]" ,%
1261 morestring=[s]{‘}{’},%
1262 }[keywords,comments,strings]
1263 </lang3>

```

2.27 Guarded Command Language (GCL)

As you can read below, Mark van Eijk provided this language definition.

```

1264 <lang2>
1265 %%
1266 %% Guarded Command Language (GCL) definition
1267 %% (c) 2002 Mark van Eijk
1268 %%
1269 \lst@definlanguage{GCL}%
1270 {morekeywords={const,con,var,array,of,skip,if,fi,do,od,div,mod},%
1271 literate={| []{\ensuremath{|\hspace -0.1em[]}}2%
1272     [] |{\ensuremath{[]\hspace -0.1em|}}2%
1273     {[]}{\ensuremath{[ \hspace -0.1em]}}2%
1274     {->}{\ensuremath{\rightarrow}}2%
1275     {==}{\ensuremath{\equiv}}2%
1276     {>=}{\ensuremath{\geq}}2%
1277     {<=}{\ensuremath{\leq}}2%
1278     {/\ \ }{\ensuremath{\land}}2%
1279     {\ \ /}{\ensuremath{\lor}}2%
1280     {!}{\ensuremath{\lnot}}1%
1281     {!=}{\ensuremath{\neq}}2%
1282     {max}{\ensuremath{\uparrow}}1%
1283     {min}{\ensuremath{\downarrow}}1,%
1284 sensitive=f,%
1285 morecomment=[s]{\{\}\},%
1286 morestring=[d]’%
1287 }[keywords,comments,strings]
1288 </lang2>

```

2.28 Gnuplot

Thanks to Dr. Christoph Giess for providing this definition.

```

1289 <*lang2>
1290 %%
1291 %% gnuplot definition (c) Christoph Giess
1292 %%
1293 \lst@definlanguage{Gnuplot}%
1294 {keywords={abs,acos,acosh,arg,asin,asinh,atan,atan2,atanh,besj0,%
1295     besj1,besy0,besy1,ceil,cos,cosh,erf,erfc,exp,floor,gamma,ibeta,%
1296     inverf,igamma,imag,invnorm,int,lgamma,log,log10,norm,rand,real,%
1297     sgn,sin,sinh,sqrt,tan,tanh,column,tm_hour,tm_mday,tm_min,tm_mon,%
1298     tm_sec,tm_wday,tm_yday,tm_year,valid,cd,call,clear,exit,fit,%
1299     help,if,load,pause,plot,print,pwd,quit,replot,reread,reset,save,%
1300     set,show,shell,splot,test,update,angles,arrow,autoscale,border,%
1301     boxwidth,clabel,clip,cntrparam,contour,data,dgrid3d,dummy,%
1302     format,function,functions,grid,hidden3d,isosamples,key,keytitle,%
1303     label,logscale,mapping,offsets,output,parametric,pointsize,%
1304     polar,rrange,samples,size,style,surface,terminal,tics,time,%
1305     timefmt,title,trange,urange,variables,view,vrange,xdata,xlabel,%
1306     xmargin,xrange,xtics,mxtics,mytics,xdtics,xmtics,xzeroaxis,%
1307     ydata,ylabel,yrange,ytics,ydtics,ymtics,yzeroaxis,zdata,zero,%
1308     zeroaxis,zlabel,zrange,ztics,zdtics,zmtics,timefm,using,title,%
1309     with,index,every,thru,smooth},%
1310     sensitive,%
1311     comment=[1]\#,%
1312     morestring=[b]" ,%
1313     morestring=[b]' ,%
1314 }[keywords,comments,strings]
1315 </lang2>

```

2.29 Hansl/Gretl

Thanks to Ignacio Díaz-Emparanza, Riccardo (Jack) Lucchetti, and Sven Schreiber for providing the definition of hansl. Hansl is the gretl scripting language (see <http://gretl.sourceforge.net>).

```

1316 <*lang2>
1317 \lst@definlanguage{hansl}{%
1318     showstringspaces = false, %
1319     morekeywords={ % hansl commands:
1320         add, adf, anova, append, ar, ar1, arbond, arch, arima, biprobit, break,%
1321         boxplot, chow, clear, coeffsum, coint, coint2, corr, corrgm, cusum,%
1322         data, dataset, delete, diff, difftest, discrete, dpanel, dummify,%
1323         duration, elif, else, end, endif, endloop, eqnprint, equation,%
1324         estimate, eval, fcast, flush, foreign, fractint, freq, function,%
1325         funcerr, garch, genr, gmm, gnuplot, graphpg, hausman, heckit, help,%
1326         hplot, hsk, hurst, if, include, info, intreg, join, kpss, labels, lad,%
1327         lags, ldiff, leverage, levinlin, logistic, logit, logs, loop, mahal,%
1328         makepkg, markers, meantest, midasreg, mle, modeltab, modprint, modtest,%
1329         mpi, mpols, negbin, nls, normtest, nulldata, ols, omit, open, orthdev,%
1330         outfile, panel, pca, pergm, plot, poisson, print, printf, probit,%
1331         pvalue, quantreg, qlrttest, qqplot, quit, rename, reset, restrict,%

```

```

1332  rmpplot, run, runs, scatters, sdiff, set, setinfo, setobs, setopt,%
1333  setmiss, smpl, spearman, square, store,%
1334  summary, system, tabprint, textplot, tobit, tsls, var, varlist,%
1335  vartest, vecm, vif, wls, xcorr, xtab, debug, return, catch, pkg,%
1336  arma, deriv, params, hessian, for, foreach, while, const},%
1337  morekeywords=[2]{ % accessors:
1338  \ $nobs, \ $nvars, \ $pd, \ $t1, \ $t2, \ $tmax, \ $datatype, \ $test,%
1339  \ $pvalue, \ $qlrbreak, \ $rlnl, \ $stopwatch, \ $unit, \ $obsmajor,%
1340  \ $obsminor, \ $obsmicro, \ $obsdate, \ $windows, \ $version, \ $error,%
1341  \ $seed, \ $huge, \ $ess, \ $T, \ $rsq, \ $sigma, \ $df, \ $ncoeff, \ $lnl,%
1342  \ $gmmcrit, \ $aic, \ $bic, \ $hqc, \ $trs, \ $dw, \ $dwpval, \ $Fstat,%
1343  \ $chisq, \ $diagtest, \ $diagpval, \ $pmanteau, \ $uhat, \ $yhat, \ $llt,%
1344  \ $ahat, \ $sample, \ $h, \ $coeff, \ $stderr, \ $vcv, \ $rho, \ $compan,%
1345  \ $xtxin, \ $vecGamma, \ $vma, \ $fevd, \ $evals, \ $jalpha, \ $jbeta,%
1346  \ $jvbeta, \ $s00, \ $s11, \ $s01, \ $ec, \ $hausman, \ $sargan, \ $sysGamma,%
1347  \ $sysA, \ $sysB, \ $fcst, \ $fcse, \ $coeff_ci, \ $ehat, \ $mlprobs,%
1348  \ $xlist, \ $ylist, \ $command, \ $depvar, \ $model, \ $system, \ $sysinfo},%
1349  morekeywords=[3]{ % functions
1350  BFGScmax, BFGSmax, GSSmax, I, NMmax, NRmax, abs, acos, acosh,%
1351  aggregate, argname, array, asin, asinh, atan, atanh, atof, bessel,%
1352  bkfilt, bootci, bootpval, boxcox, bread, bwfilt, bwrite, cdemean, cdf,%
1353  cdiv, cdummify, ceil, cholesky, chowlin, cmult, cnameget, cnameset,%
1354  cnorm, cnumber, cols, corr, corrgm, cos, cosh, cov, critical, cum,%
1355  curl, dayspan, defarray, defbundle, deflist, deseas, det, diag,%
1356  diagcat, diff, digamma, dnorm, dropcoll, dsort, dummify, easterday,%
1357  ecdf, eigengen, eigensym, eigsolve, epochday, errmsg, exists, exp,%
1358  fcstats, fdjac, feval, fevd, fft, ffti, filter, firstobs, fixname,%
1359  floor, fracdiff, fraclag, freq, gammafun, genseries, getenv, getinfo,%
1360  getkeys, getline, ghk, gini, ginv, grab, halton, hdprod, hfdiff,%
1361  hflags, hfldiff, hflist, hpfilt, imaxc, imaxr, imhof, iminc, iminr,%
1362  inbundle, infnorm, inlist, instring, int, inv, invcdf, invmills, invpd,%
1363  irf, irr, isconst, isdiscrete, isdummy, isnan, isoconv, isodate,%
1364  iwishart, jsonget, jsongetb, juldate, kdensity, kdsmooth, kfilter,%
1365  kmeier, kpsscric, ksetup, ksimdata, ksimul, ksmooth, kurtosis, lags,%
1366  lastobs, ldet, ldiff, lincomb, linearize, ljungbox, lngamma, loess,%
1367  log, log10, log2, logistic, lower, lrcovar, lrvar, max, maxc, maxr,%
1368  mcorr, mcov, mcovg, mean, meanc, meanr, median, mexp, mgradient, min,%
1369  minc, minr, missing, misszero, mlag, mlincomb, mnormal, mols, monthlen,%
1370  movavg, mpiallred, mpibcast, mpirecv, mpireduce, mpiscatter, mpisend,%
1371  mpols, mrandgen, mread, mreverse, mrls, mshape, msortby, muniform,%
1372  mweights, mwrite, mxtab, naalen, nadarwat, nelem, ngetenv, nlines,%
1373  nobs, normal, normtest, npcorr, npv, nullspace, numhess, obslabel,%
1374  obsnum, ok, onenorm, ones, orthdev, pdf, pergm, pexpand, pmax, pmean,%
1375  pmin, pnobs, polroots, polyfit, princomp, printf, prodc, prodr, psd,%
1376  psdroot, pshrink, psum, pvalue, pxnobs, pxsum, qform, qlrpval, qnorm,%
1377  qrdecomp, quadtable, quantile, randgen, randgen1, randint, rank,%
1378  ranking, rcond, readfile, regsub, remove, replace, resample, rnameget,%
1379  rnameset, round, rows, sd, sdc, sdiff, seasonals, selifc, selifr, seq,%
1380  setnote, simann, sin, sinh, skewness, sleep, smpls, span, sort, sortby,%
1381  sprintf, sqrt, square, sscanf, sst, stringify, strlen, strncmp,%

```

```

1382     strsplit, strstr, strstrip, strsub, strvals, substr, sum, sumall, sumc,%
1383     sumr, svd, svm, tan, tanh, toepsolv, tolower, toupper, tr, transp,%
1384     trimr, typeof, typestr, uniform, uniq, unvec, upper, urcpval, values,%
1385     var, varname, varnames, varnum, varsimul, vec, vech, weekday, wmean,%
1386     wsd, wvar, xmax, xmin, xmlget, zeromiss, zeros, NMmin, GSSmin,%
1387     BFGScmin, BFGSmin },%
1388     morekeywords=[4]{ % genr aliases:
1389     null, series, scalar, matrix, string, list, bundle, strings, matrices,%
1390     bundles, lists%
1391     },%
1392     sensitive=t,%
1393     morecomment=[l]{\#},%
1394     morecomment=[s]{/*}{*/},%
1395     morestring=[b]{"}%
1396 }%
1397 \lstalias{gretl}{hansl}
1398 </lang2>

```

The developers of the hansl support also supplied a definition of a style for printing hansl code:

```

1399 (*hansl-prf)
1400 \usepackage[rgb, x11names]{xcolor}
1401
1402 % settings for black and white
1403 \lstdefinestyle{hanslbw}{%
1404     keywordstyle = \bfseries,
1405     keywordstyle = [2]\bfseries,
1406     keywordstyle = [3]\itshape,
1407     keywordstyle = [4]\underbar,
1408     commentstyle = \ttfamily,
1409     stringstyle = \ttfamily
1410 }
1411 % settings for colored printing
1412 \lstdefinestyle{hanslcolor}{%
1413     basicstyle = \small\ttfamily,
1414     keywordstyle = \color{red},
1415     keywordstyle = [2]\color{green},
1416     keywordstyle = [3]\color{cyan},
1417     keywordstyle = [4]\color{olive},
1418     commentstyle = \color{blue}\rmfamily, %
1419     stringstyle = \color{magenta},
1420     moredelim = [1][\color{green}]{--}
1421 }%

```

This code is provided in the file `listings-hansl.prf`, see section 2.4.1 (Preferences) of the listings documentation.

```

1422 </hansl-prf>

```

2.30 Haskell

Thanks to Peter Bartke for providing the new definition.

```
1423 (*lang2)
1424 %%
1425 %% Haskell98 as implemented in Hugs98. See http://www.haskell.org
1426 %% All keywords from Prelude and Standard Libraries
1427 %% (c) 1999 Peter Bartke
1428 %%
1429 \lst@definelanguage{Haskell}%
1430   {otherkeywords={=>},%
1431   morekeywords={abstype,if,then,else,case,class,data,default,deriving,%
1432   hiding,if,in,infix,infixl,infixr,import,instance,let,module,%
1433   newtype,of,qualified,type,where,do,AbsoluteSeek,AppendMode,%
1434   Array,BlockBuffering,Bool,BufferMode,Char,Complex,Double,Either,%
1435   FilePath,Float,Int,Integer,IO,IOError,Ix,LineBuffering,Maybe,%
1436   Ordering,NoBuffering,ReadMode,ReadWriteMode,ReadS,RelativeSeek,%
1437   SeekFromEnd,SeekMode,ShowS,StdGen,String,Void,Bounded,Enum,Eq,%
1438   Eval,ExitCode,exitFailure,exitSuccess,Floating,Fractional,%
1439   Functor,Handle,HandlePosn,IOMode,Integral,List,Monad,MonadPlus,%
1440   MonadZero,Num,Numeric,Ord,Random,RandomGen,Ratio,Rational,Read,%
1441   Real,RealFloat,RealFrac,Show,System,Prelude,EQ,False,GT,Just,%
1442   Left,LT,Nothing,Right,WriteMode,True,abs,accum,accumArray,%
1443   accumulate,acos,acosh,all,and,any,ap,appendFile,applyM,%
1444   approxRational,array,asTypeOf,asin,asinh,assoc,atan,atan2,atanh,%
1445   bounds,bracket,bracket_,break,catch,catMaybes,ceiling,chr,cis,%
1446   compare,concat,concatMap,conjugate,const,cos,cosh,curry,cycle,%
1447   decodeFloat,delete,deleteBy,deleteFirstBy,denominator,%
1448   digitToInt,div,divMod,drop,dropWhile,either,elem,elems,elemIndex,%
1449   elemIndices,encodeFloat,enumFrom,enumFromThen,enumFromThenTo,%
1450   enumFromTo,error,even,exitFailure,exitWith,exp,exponent,fail,%
1451   filter,filterM,find,findIndex,findIndices,flip,floatDigits,%
1452   floatRadix,floatRange,floatToDigits,floor,foldl,foldM,foldl1,%
1453   foldr,foldr1,fromDouble,fromEnum,fromInt,fromInteger,%
1454   fromIntegral,fromJust,fromMaybe,fromRat,fromRational,%
1455   fromRealFrac,fst,gcd,genericLength,genericTake,genericDrop,%
1456   genericSplitAt,genericIndex,genericReplicate,getArgs,getChar,%
1457   getContents,getEnv,getLine,getProgName,getStdGen,getStdRandom,%
1458   group,groupBy,guard,hClose,hFileSize,hFlush,hGetBuffering,%
1459   hGetChar,hGetContents,hGetLine,hGetPosn,hIsClosed,hIsEOF,hIsOpen,%
1460   hIsReadable,hIsSeekable,hIsWritable,hLookAhead,hPutChar,hPutStr,%
1461   hPutStrLn,hPrint,hReady,hSeek,hSetBuffering,hSetPosn,head,%
1462   hugsIsEOF,hugsHIsEOF,hugsIsSearchErr,hugsIsNameErr,%
1463   hugsIsWriteErr,id,ioError,imagPart,index,indices,init,inits,%
1464   inRange,insert,insertBy,interact,intersect,intersectBy,%
1465   intersperse,intToDigit,ioeGetErrorString,ioeGetFileName,%
1466   ioeGetHandle,isAlreadyExistsError,isAlreadyInUseError,isAlpha,%
1467   isAlphaNum,isAscii,isControl,isDenormalized,isDoesNotExistError,%
1468   isDigit,isEOF,isEOFError,isFullError,isHexDigit,isIEEE,%
```

```

1469     isIllegalOperation, isInfinite, isJust, isLower, isNaN, %
1470     isNegativeZero, isNothing, isOctDigit, isPermissionError, isPrefixOf, %
1471     isPrint, isSpace, isSuffixOf, isUpper, isUserError, iterate, ixmap, %
1472     join, last, lcm, length, lex, lexDigits, lexLitChar, liftM, liftM2, %
1473     liftM3, liftM4, liftM5, lines, listArray, listToMaybe, log, logBase, %
1474     lookup, magnitude, makePolar, map, mapAccumL, mapAccumR, mapAndUnzipM, %
1475     mapM, mapM_, mapMaybe, max, maxBound, maximum, maximumBy, maybe, %
1476     maybeToList, min, minBound, minimum, minimumBy, mkPolar, mkStdGen, %
1477     mplus, mod, msum, mzero, negate, next, newStdGen, not, notElem, nub, nubBy, %
1478     null, numerator, odd, openFile, or, ord, otherwise, partition, phase, pi, %
1479     polar, pred, print, product, properFraction, putChar, putStr, putStrLn, %
1480     quot, quotRem, random, randomIO, randomR, randomRIO, randomRs, randoms, %
1481     rangeSize, read, readDec, readFile, readFloat, readHex, readInt, readIO, %
1482     readList, readLitChar, readLn, readParen, readOct, readSigned, reads, %
1483     readsPrec, realPart, realToFrac, recip, rem, repeat, replicate, return, %
1484     reverse, round, scaleFloat, scanl, scanl1, scanr, scanr1, seq, sequence, %
1485     sequence_, setStdGen, show, showChar, showEFloat, showFFloat, %
1486     showFloat, showGFloat, showInt, showList, showLitChar, showParen, %
1487     showSigned, showString, shows, showsPrec, significand, signum, sin, %
1488     sinh, snd, sort, sortBy, span, split, splitAt, sqrt, stderr, stdin, stdout, %
1489     strict, subtract, succ, sum, system, tail, tails, take, takeWhile, tan, %
1490     tanh, toEnum, toInt, toInteger, toLower, toRational, toUpper, transpose, %
1491     truncate, try, uncurry, undefined, unfoldr, union, unionBy, unless, %
1492     unlines, until, unwords, unzip, unzip3, unzip4, unzip5, unzip6, unzip7, %
1493     userError, when, words, writeFile, zero, zip, zip3, zip4, zip5, zip6, zip7, %
1494     zipWith, zipWithM, zipWithM_, zipWith3, zipWith4, zipWith5, zipWith6, %
1495     zipWith7}, %
1496     sensitive, %
1497     morecomment=[1]--, %
1498     morecomment=[n]{\{-}\{-\}}, %
1499     morestring=[b]"%
1500 } [keywords, comments, strings]
1501 </lang2>

```

2.31 HTML

I'm quite the opposite of a HTML wizard. In particular this is true for the defined keywords. Matthias Bethke helped me out and extended the list.

```

1502 <*lang1>
1503 \lst@definelanguage{HTML}%
1504   {morekeywords={A, ABBR, ACRONYM, ADDRESS, APPLET, AREA, B, BASE, BASEFONT, %
1505     BDO, BIG, BLOCKQUOTE, BODY, BR, BUTTON, CAPTION, CENTER, CITE, CODE, COL, %
1506     COLGROUP, DD, DEL, DFN, DIR, DIV, DL, DOCTYPE, DT, EM, FIELDSET, FONT, FORM, %
1507     FRAME, FRAMESET, HEAD, HR, H1, H2, H3, H4, H5, H6, HTML, I, IFRAME, IMG, INPUT, %
1508     INS, ISINDEX, KBD, LABEL, LEGEND, LH, LI, LINK, LISTING, MAP, META, MENU, %
1509     NOFRAMES, NOSCRIPT, OBJECT, OPTGROUP, OPTION, P, PARAM, PLAINTEXT, PRE, %
1510     OL, Q, S, SAMP, SCRIPT, SELECT, SMALL, SPAN, STRIKE, STRING, STRONG, STYLE, %
1511     SUB, SUP, TABLE, TBODY, TD, TEXTAREA, TFOOT, TH, THEAD, TITLE, TR, TT, U, UL, %

```



```

1512     VAR,XMP,%
1513     accesskey,action,align,alink,alt,archive,axis,background,bgcolor,%
1514     border,cellpadding,cellspacing,charset,checked,cite,class,classid,%
1515     code,codebase,codetype,color,cols,colspan,content,coords,data,%
1516     datetime,defer,disabled,dir,event,error,for,frameborder,headers,%
1517     height,href,hreflang,hspace,http-equiv,id,ismap,label,lang,link,%
1518     longdesc,marginwidth,marginheight,maxlength,media,method,multiple,%
1519     name,nohref,noresize,noshade,nowrap,onblur,onchange,onclick,%
1520     ondblclick,onfocus,onkeydown,onkeypress,onkeyup,onload,onmousedown,%
1521     profile,readonly,onmousemove,onmouseout,onmouseover,onmouseup,%
1522     onselect,onunload,rel,rev,rows,rowspan,scheme,scope,scrolling,%
1523     selected,shape,size,src,standby,style,tabindex,text,title,type,%
1524     units,usemap,valign,value,valuetype,vlink,vspace,width,xmlns},%
1525     tag=**[s]<>,%
1526     sensitive=f,%
1527     morestring=[d]" ,% ??? doubled

```

Now we take care of comments. We don't enter comment mode if we aren't inside <>.

```

1528     MoreSelectCharTable=%
1529     \lst@CArgX--\relax\lst@DefDelimB{}{}%
1530     {\ifnum\lst@mode=\lst@tagmode\else
1531       \expandafter\@gobblethree
1532       \fi}%
1533     \lst@BeginComment\lst@commentmode{{\lst@commentstyle}}%
1534     \lst@CArgX--\relax\lst@DefDelimE{}{}%
1535     \lst@EndComment\lst@commentmode
1536   }[keywords,comments,strings,html]%

```

Peter Biechle reported a problem which was due to missing `\@empty` in value of `SelectCharTable`. And after receiving a bug report from Jochen Schneider I converted the version 0.21 contents of `MoreSelectCharTable` to version 1.0.

```

1537 </lang1>

```

2.32 IDL

The definition is from Jürgen Heim.

```

1538 <*lang2>
1539 %%
1540 %% IDL definition (c) 1998 Juergen Heim
1541 %%
1542 \lst@definlanguage{IDL}%
1543 {morekeywords={and,begin,case,common,do,else,end,endcase,enderror,%
1544   endfor,endif,endrep,endwhile,eq,for,function,ge,goto,gt,if,le,lt,%
1545   mod,ne,not,of,on_ioerror,or,pro,repeat,return,then,until,while,%
1546   xor,on_error,openw,openr,openu,print,printf,printu,plot,read,%
1547   readf,readu,writu,stop},%
1548   sensitive=f,%
1549   morecomment=[1];,%

```

```

1550   morestring=[d]’%
1551   }[keywords,comments,strings]
1552 </lang2>

```

2.33 Inform

Thanks to Jonathan Sauer for this language definition. Ulrike Fischer pointed out that `\lstdefinlanguage` should be `\lst@definlanguage`.

```

1553 (*lang2)

1554 %%
1555 %% Inform definition (c) 2003 Jonathan Sauer
1556 %%
1557 \lst@definlanguage{Inform}{%
1558   % Language keywords
1559   morekeywords={breakdo,else,false,for,has,hasnt,if,%
1560     in,indirect,jump,notin,nothing,NULL,objectloop,ofclass,%
1561     private,property,provides,return,rfalse,rtrue,self,string,%
1562     switch,to,true,until,while,with,%
1563     creature,held,multiexcept,multiheld,multiinside,noun,number,%
1564     scope,topic},%
1565   %
1566   % Inform functions
1567   morekeywords=[2]{box,child,children,font,give,inversion,metaclass,move,%
1568     new_line,parent,print,print_ret,read,remove,restore,sibling,%
1569     save,spaces,quit,style,bold,underline,reverse,roman remaining,%
1570     create,destroy,recreate,copy},%
1571   %
1572   % Inform definitions
1573   morekeywords=[3]{Attribute,Array,Class,Constant,Default,End,Endif,Extend,%
1574     Global,Ifdef,Iffalse,Ifndef,Ifnot,Iftrue,Include,Object,%
1575     Property,Verb,Release,Serial,Statusline},%
1576   %
1577   % Library attributes
1578   morekeywords=[4]{absent,animate,clothing,concealed,container,door,edible,%
1579     enterable,female,general,light,lockable locked,male,moved,%
1580     neuter,on,open,openable,pluralname,proper,scenery,scored,%
1581     static,supporter,switchable,talkable,transparent,visited,%
1582     workflag,worn},%
1583   %
1584   % Library properties
1585   morekeywords=[5]{n_to,s_to,e_to,w_to,ne_to,nw_to,se_to,sw_to,in_to,%
1586     out_to,u_to,d_to,add_to_scope,after,article,articles,before,%
1587     cant_go,capacity,daemon,describe,description,door_dir,door_to,%
1588     each_turn,found_in,grammar,initial,inside_description,invent,%
1589     life,list_together,name number,orders,parse_name,plural,%
1590     react_after,react_before,short_name,short_name_indef,time_left,%
1591     time_out,when_closed,when_open,when_on,when_off,%
1592     with_key},%

```

```

1593 %
1594 % Library routines
1595 morekeywords=[6]{Achieved,AfterRoutines,AllowPushDir,Banner,ChangePlayer,%
1596   CommonAncestor,DictionaryLookup,GetGNAOfObject,HasLightSource,%
1597   IndirectlyContains,IsSeeThrough,Locale,LoopOverScope,LTI_Insert,%
1598   MoveFloatingObjects,NextWord,NextWordStopped,NounDomain,%
1599   ObjectIsUntouchable OffersLight,ParseToken,PlaceInScope,PlayerTo,%
1600   PronounNotice,PronounValue,ScopeWithin,SetPronoun,SetTime,%
1601   StartDaemon,StartTimer,StopDaemon,StopTimer,TestScope,TryNumber,%
1602   UnsignedCompare,WordAddress,WordInProperty,WordLength,%
1603   WriteListFrom,YesOrNo},%
1604 %
1605 % Library, entry points
1606 morekeywords=[7]{AfterLife,AfterPrompt,Amusing,BeforeParsing,ChooseObjects,%
1607   DarkToDark,DeathMessage,GamePostRoutine GamePreRoutine,%
1608   Initialise,InScope,LookRoutine,NewRoom,ParseNoun,ParseNumber,%
1609   ParserError,PrintRank,PrintTaskName,PrintVerb,TimePasses,%
1610   UnknownVerb},%
1611 %
1612 % Library constants
1613 morekeywords=[8]{NEWLINE_BIT,INDENT_BIT,FULLINV_BIT,ENGLISH_BIT,%
1614   RECURSE_BIT,ALWAYS_BIT,TERSE_BIT,PARTINV_BIT,DEFART_BIT,%
1615   WORKFLAG_BIT,ISARE_BIT,CONCEAL_BIT},%
1616 %
1617 % Library,meta actions
1618 morekeywords=[9]{Pronouns,Quit,Restart,Restore,Save,Verify,ScriptOn,%
1619   ScriptOff,NotifyOn,NotifyOff,Places,Objects,Score,FullScore,Version,%
1620   LMode1,LMode2,LMode3},%
1621 %
1622 % Library,main actions
1623 morekeywords=[10]{Close,Disrobe,Drop,Eat,Empty,EmptyT,Enter,Examine,%
1624   Exit,GetOff,Give,Go,GoIn,Insert,Inv,InvTall,InvWide,Lock,Look,Open,%
1625   PutOn,Remove,Search,Show,SwitchOff,SwitchOn,Take,Transfer,%
1626   Unlock VagueGo, Wear},%
1627 %
1628 % Library,stub actions
1629 morekeywords=[11]{Answer,Ask,AskFor,Attack,Blow,Burn,Buy,Climb,%
1630   Consult,Cut,Dig,Drink,Fill,Jump,JumpOver,Kiss,Listen,LookUnder,%
1631   Mild,No,Pray,Pull,Push,PushDir,Rub,Set,SetTo,Sing,Sleep,Smell,%
1632   Sleep,Smell,Sorry,Squeeze,Strong,Swim,Swing,Taste,Tell,Think,%
1633   ThrowAt,Tie,Touch,Turn,
1634   Wait,Wake,WakeOther,Wave,WaveHands,Yes},%
1635 %
1636 otherkeywords={->,<-->},%
1637 sensitive=false,%
1638 morestring=[d]{"},%
1639 morecomment=[l]{"!}%
1640 }[keywords,comments,strings]
1641 </lang2>

```

2.34 Java and other JVM based languages

Robert Wenner sent in the first of the following two definitions.

```
1642 (*lang1)
1643 %%
1644 %% AspectJ definition (c) Robert Wenner
1645 %%
1646 \lst@definlanguage[AspectJ]{Java}[]{}{Java}%
1647 {morekeywords={%
1648     adviceexecution,after,args,around,aspect,aspectOf,before,%
1649     call,cflow,cflowbelow,%
1650 % declare error,declare parents,declare precedence,
1651 % declare soft,declare warning,
1652     execution,get,handler,if,initialization,issingleton,pointcut,%
1653     percfow,percfowbelow,perthis,pertarget,preinitialization,%
1654     privileged,proceed,returning,set,staticinitialization,strictfp,%
1655     target,this,thisEnclosingJoinPoint,thisJoinPoint,throwing,%
1656     within,withincode},%
1657 MoreSelectCharTable=%
1658     \lst@DefSaveDef{'.}\lst@umdot{\lst@umdot\global\let\lst@derefop\@empty}%
1659     \ifx\lst@derefinstalled\@empty\else
1660         \global\let\lst@derefinstalled\@empty
1661 \lst@AddToHook{Output}%
1662 {\lst@ifkeywords
1663     \ifx\lst@derefop\@empty
1664         \global\let\lst@derefop\relax
1665     \ifx\lst@thestyle\lst@gkeywords\sty
1666         \ifx\lst@currstyle\relax
1667             \let\lst@thestyle\lst@identifierstyle
1668         \else
1669             \let\lst@thestyle\lst@currstyle
1670         \fi
1671     \fi
1672 \fi}
1673 \fi}
1674 \lst@AddToHook{BOL}{\global\let\lst@derefop\relax}%
1675 \lst@AddTo\lst@ProcessSpace{\global\let\lst@derefop\relax}%
1676 \fi
1677 }%
1678 (/lang1)
```

Got data from <http://java.sun.com>.

```
1679 (*lang1)
1680 \lst@definlanguage{Java}%
1681 {morekeywords={abstract,boolean,break,byte,case,catch,char,class,%
1682     const,continue,default,do,double,else,extends,false,final,%
1683     finally,float,for,goto,if,implements,import,instanceof,int,%
1684     interface,label,long,native,new,null,package,private,protected,%
1685     public,return,short,static,super,switch,synchronized,this,throw,%
```

```

1686     throws,transient,true,try,void,volatile,while},%
1687     sensitive,%
1688     morecomment=[l]//,%
1689     morecomment=[s]{/*}{*/},%
1690     morestring=[b]" ,%
1691     morestring=[b]' ,%
1692 }[keywords,comments,strings]

```

Herbert Voss added the keyword label.

```

1693 </lang1>

```

2.34.1 JVMIS—The Java bytecode instructions

Martine Gautier made the following contribution.

```

1694 (*lang1)
1695 %%
1696 %% ByteCodeJava definition (c) 2004 Martine Gautier
1697 %%
1698 \lst@definlanguage{JVMIS}%
1699 {morekeywords={aload,astore,acnst_null,aload,aload_0,aload_1,%
1700     aload_2,aload_3,anewarray,areturn,arraylength,astore,astore_0,%
1701     astore_1,astore_2,astore_3,athrow,baload,bastore,bipush,caload,%
1702     castore,checkcast,d2f,d2i,d2l,dadd,daload,dastore,dcmpg,dcmpl,%
1703     dconst_0,dconst_1,ddiv,dload,dload_0,dload_1,dload_2,dload_3,%
1704     dmul,dneg,drem,dreturn,dstore,dstore_0,dstore_1,dstore_2,%
1705     dstore_3,dsub,dup,dup_x1,dup_x2,dup2,dup2_x1,dup2_x2,f2d,%
1706     f2i,f2l,fadd,faload,fastore,fcmpg,fcmpl,fconst_0,fconst_1,%
1707     fconst_2,fdiv,fload,fload_0,fload_1,fload_2,fload_3,fmul,%
1708     fneg,frem,freturn,fstore,fstore_0,fstore_1,fstore_2,fstore_3,%
1709     fsub,getfield,getstatic,goto,goto_w,i2b,i2c,i2d,i2f,i2l,i2s,%
1710     iadd,iaload,iand,iastore,iconst_0,iconst_1,iconst_2,iconst_3,%
1711     iconst_4,iconst_5,ldiv,if_acmpeq,if_acmpne,if_icmpeq,if_icmpne,%
1712     if_icmplt,if_cmpge,if_cmpgt,if_cmple,ifeq,ifne,iflt,ifge,ifgt,%
1713     ifle,ifnonnull,ifnull,iinc,iload,iload_0,iload_1,iload_2,%
1714     iload_3,imul,ineg,instanceof,invokeinterface,invokespecial,%
1715     invokestatic,invokevirtual,ior,irem,ireturn,ishl,ishr,istore,%
1716     istore_0,istore_1,istore_2,istore_3,isub,iushr,ixor,jsr,jsr_w,%
1717     l2d,l2f,l2i,ladd,laload,land,lastore,lcmp,lconst_0,lconst_1,%
1718     ldc,ldc_w,ldc2_w,ldiv,lload,lload_0,lload_1,lload_2,lload_3,%
1719     lmul,lneg,lookupswitch,lor,lrem,lreturn,lshl,lshr,lstore,%
1720     lstore_0,lstore_1,lstore_2,lstore_3,lsub,lushr,lxor,%
1721     monitorenter,monitorexit,multianewarray,new,newarray,nop,pop,%
1722     pop2,putfield,putstatic,ret,return,saload,sastore,sipush,swap,%
1723     tableswitch,wide,limit,locals,stack},%
1724 }[keywords]%
1725 </lang1>

```

2.34.2 Scala

Bastian Germann asked to include the Scala definition provided by Frank Teubler (2009). Here it is—the definition has got a small overhaul according to the Scala syntax published for version 2.13 (<https://scala-lang.org/files/archive/spec/2.13/spec.pdf>):

```
1726 (*lang3)
1727 \lst@definelanguage{Scala}{%
1728   morekeywords={abstract,case,catch,class,def,%
1729     do,else,extends,false,final,finally,%
1730     for,forSome,if,implicit,import,lazy,macro,match,%
1731     mixin,new,null,object,override,package,%
1732     private,protected,requires,return,sealed,%
1733     super,this,trait,true,try,%
1734     type,val,var,while,with,yield},%+
1735   otherkeywords={_, :, =, =>, <-, <\%, <:, >:, \#, @},%
1736   sensitive,%
1737   morecomment=[l]//,%
1738   morecomment=[n]{/*}{*/},%
1739   morestring=[b]" ,%
1740   morestring=[b]' ,%
1741   morestring=[b]"" ,%
1742 }[keywords,comments,strings]
```

Remark: This definition contains the keywords `mixin` and `requires`, which don't belong to the official Scala 2.13 language definition, the keywords `forSome`, `macro`, and `throw`, which were missing in listings prior than v1.10a, are added silently. The Unicode operators `\u21D2` and `\u2190`, which have the ASCII equivalents `=>` and `<-`, are also reserved but cannot be used with PDF_TE_X.

Deloo asked for Scala 3.0 support. The following code according to <https://docs.scala-lang.org/scala3/reference/syntax.html> is a simple approach, listings cannot correctly support soft keywords, because they are context dependent.

```
1743 \lst@definelanguage[3.0]{Scala}[]{Scala}{%
1744   morekeywords={as, derives, end, enum, export, extension, given},
1745   morekeywords=[2]{infix, inline, opaque, open, transparent}
1746   otherkeywords={=>, ?=>, =>}, % => isn't recognized, even after
1747                       % the keyword => is deleted
1748   alsoletter={*, +, -, |},
1749   deletekeywords={<\%, _, forSome, macro, mixin, requires, this},
1750 }[keywords,comments,strings]
1751 </lang3>
```

2.35 ksh

Thanks to Jeffrey Ratcliffe for this language definition.

```
1752 (*lang3)
```

```

1753 \lst@definlanguage{ksh}
1754 {morekeywords={alias,awk,cat,echo,else,elif,fi,exec,exit,%
1755     for,in,do,done,select,case,esac,while,until,function,%
1756     time,export,cd,eval,fc,fg,kill,let,pwd,read,return,rm,%
1757     glob,goto,history,if,logout,nice,nohup,onintr,repeat,sed,%
1758     set,setenv,shift,source,switch,then,umask,unalias,%
1759     unset,wait,@,env,argv,child,home,ignoreeof,noclobber,%
1760     noglob,nomatch,path,prompt,shell,status,verbose,print,printf,%
1761     sqrt,BEGIN,END},%
1762     morecomment=[l]\#,%
1763     morestring=[d]" ,%
1764     morestring=[d]' ,%
1765     morestring=[d]' %
1766 }[keywords,comments,strings]
1767 </lang3>

```

Herbert Voss suggested to add the string delimiter ‘.

2.36 Lingo

Thanks to Mark Schade for this language definition.

```

1768 <*lang3>
1769 \lst@definlanguage[Lingo]{%
1770     morekeywords={abort, after, and, before, do, down, halt, me, new, not,%
1771     of, on, or, otherwise, pass, put, result, return, set, tell, the, then,%
1772     to, with, repeat, while, case, if, else, true, false, global, property,%
1773     \_global, \_key, \_mouse, \_movie, \_player, \_sound, \_system, abbr,%
1774     abbrev, abbreviated, abs, actionsenabled, activateapplication,%
1775     activatewindow, active3drenderer, activecastlib, activewindow,%
1776     actorlist, add, addat, addbackdrop, addcamera, addchild, addmodifier,%
1777     addoverlay, addprop, addtoworld, addvertex, alert, alerthook,%
1778     alignment, allowcustomcaching, allowgraphicmenu, allowsavelocal,%
1779     allowtransportcontrol, allowvolumecontrol, allowzooming,%
1780     alphathreshold, ambient, ambientcolor, ancestor, angle, anglebetween,%
1781     animationenabled, antialias, antialiasthreshold, append,%
1782     applicationname, applicationpath, appminimize, atan, attenuation,%
1783     attributevalue, auto, autoblend, automask, autotab, axisangle, back,%
1784     backcolor, backdrop, backgroundcolor, backspace, beep, beepon,%
1785     beginrecording, beginsprite, beveldepth, beveltype, bgcolor, bias,%
1786     bitand, bitmap, bitmapsizes, bitnot, bitor, bitrate, bitspersample,%
1787     bitxor, blend, blendconstant, blendconstantlist, blendfactor,%
1788     blendfunction, blendfunctionlist, blendlevel, blendrange, blendsource,%
1789     blendsourcelist, blendtime, bone, bonesplayer, border, both, bottom,%
1790     bottomcap, bottomradius, bottomspacing, boundary, boundsphere, box,%
1791     boxdropshadow, boxtype, breakconnection, breakloop, brightness,%
1792     broadcastprops, browsername, buffersize, build, buttonsenabled,%
1793     buttonstyle, buttontype, bytesstreamed, boolean, cachedocverify,%
1794     cachesize, call, callancestor, camera, cameracount, cameraposition,%
1795     camerarotation, cancelidleload, castlib, castlibnum, castmemberlist,%

```

1796 center, centerregpoint, centerstage, changearea, channelcount, char,%
1797 characteraset, charpostoloc, chars, charspacing, charonum,%
1798 checkboxaccess, checkboxtype, checkmark, checknetmessages, child,%
1799 chunksize, clearatrender, clearcache, clearerror, clearframe,%
1800 clearglobals, clearvalue, clickloc, clickmode, clickon, clone,%
1801 clonedeep, clonemodelfromcastmember, clonemotionfromcastmember, close,%
1802 closed, closewindow, closeplib, collision, collisiondata,%
1803 collisionnormal, color, world, colorbuffer, colorbufferdepth,%
1804 colordepth, colorlist, colorrange, colors, colorsteps, commanddown,%
1805 comments, compressed, connecttonetserver, constrainh, constraint,%
1806 constrainv, continue, controldown, controller, coppixels,%
1807 copyrightinfo, copyto, copytoclipboard, cos, count, cpuhogticks,%
1808 creaseangle, creases, [contains], createfolder, createmask,%
1809 creatematte, creationdate, creator, crop, cross, crossproduct,%
1810 cuepassed, cuepointnames, cuepointtimes, currentloopstate,%
1811 currentspritenum, currenttime, cursor, cursorsize, curve, cylinder,%
1812 ate, day, deactivateapplication, deactivatewindow, debug,%
1813 debugplaybackenabled, decaymode, defaultrect, defaultrectmode, delay,%
1814 delete, deleteall, deleteat, deletecamera, deletefolder, deleteframe,%
1815 deletegroup, deletelight, deletemodel, deletemodelresource,%
1816 deletemotion, deleteone, deleteprop, deleteshader, deletetexture,%
1817 deletevertex, density, depth, depthbufferdepth, desktoprectlist,%
1818 diffuse, diffusecolor, diffuselightmap, digitalvideotimescale,%
1819 digitalvideotype, direction, directionalcolor, directionalpreset,%
1820 directtostage, disableimagingtransformation, displayface, displaymode,%
1821 distanceto, distribution, dither, done, doneparsing, dot, dotproduct,%
1822 doubleclick, downloadnetthing, drag, draw, drawrect, dropshadow,%
1823 duplicate, duplicateframe, duration, editable, editshortcutsenabled,%
1824 elapsedtime, emissive, emitter, empty, emulatemultibuttonmouse,%
1825 enabled, enablehotspot, end, endangle, endcolor, endframe,%
1826 endrecording, endsprite, endtime, enter, enterframe, environment,%
1827 erase, error, eventpassmode, exchange, exists, exit, exitframe,%
1828 exitlock, exp, externalevent, externalparamcount, externalparamname,%
1829 externalparamvalue, extractalpha, extrude3d, face, fadein, fadeout,%
1830 fadeto, far, field, fieldofview, filename, fill, fillcolor, fillcycles,%
1831 fillldirection, filled, fillmode, filloffset, fillscale, findempty,%
1832 findlabel, findpos, findposnear, finishidleload, firstindent,%
1833 fixedlinespace, fixedrate, fixstagesize, flashrect, flashtostage, flat,%
1834 fliph, flipv, float, floatp, floatprecision, flush, flushinputevents,%
1835 fog, folderchar, font, fontsize, fontstyle, forecolor, forget, frame,%
1836 framecount, framelabel, framepalette, framerate, frameready,%
1837 framescript, framesound1, framesound2, framestohms, frametempo,%
1838 frametransition, freeblock, freebytes, fromcastmember, fromimageobject,%
1839 front, frontwindow, generatenormals, getaprop, getat,%
1840 getbehaviordescription, getbehaviortooltip, getboneid, geterror,%
1841 geterrorstring, gethardwareinfo, gethotspotrect, getlast,%
1842 getlatestnetid, getnetaddresscookie, getneterrorstring, getnetmessage,%
1843 getnetoutgoingbytes, getnettext, getnormalized, getnthfilenameinfolder,%
1844 getnumberwaitingnetmessages, getone, getpeerconnectionlist, getpixel,%
1845 getplaylist, getpos, getpref, getprop, getproptat,%

1846 getpropertydescriptionlist, getrendererservices, getstreamstatus,%
1847 gettemppath, getworldtransform, globals, glossmap, go, gotoframe,%
1848 gotonetmovie, gotonetpage, gradienttype, gravity, group, handler,%
1849 handlers, height, heightvertices, high, highlightpercentage,%
1850 highlightstrength, hilite, hither, hittest, hmstoframes, hold, hotspot,%
1851 html, hyperlink, hyperlinkclicked, hyperlinkrange, hyperlinks,%
1852 hyperlinkstate, id3tags, identity, idle, idlehandlerperiod,%
1853 idleloaddone, idleloadmode, idleloadperiod, idleloadtag,%
1854 idlereadchunksize, ilk, image, imagecompression, imageenabled,%
1855 imagequality, immovable, importfileinto, inflate, ink, inker,%
1856 inlineimeenabled, insertbackdrop, insertframe, insertoverlay, inside,%
1857 installmenu, instance, integer, integerp, interface, interpolate,%
1858 interpolateto, intersect, index, interval, inverse, invert, invertmask,%
1859 isbusy, isinworld, isoktoattach, ispastcuepoint, item, itemdelimiter,%
1860 kerning, kerningthreshold, key, keyboardfocussprite, keycode, keydown,%
1861 keydownscript, keyframeplayer, keypressed, keyup, keyupscript, label,%
1862 labellist, last, lastchannel, lastclick, lastevent, lastframe, lastkey,%
1863 lastroll, left, leftindent, length, lengthvertices, level, lifetime,%
1864 light, line, linearlist, linecolor, linecount, linedirection,%
1865 lineheight, lineoffset, linepostolocv, linesize, linkas, linked, list,%
1866 listp, loaded, loadfile, loc, loch, locked, locktranslation,%
1867 loctocharpos, locv, locvtolinepos, locz, lod, log, long, loop,%
1868 loopcount, loopendtime, loopsremaining, loopstarttime, machinetype,%
1869 magnitude, map, mapImageToStage, mapmembertostage, mapstagetomember,%
1870 margin, marker, markerlist, mask, max, maxinteger, maxspeed, mci,%
1871 media, mediaready, member, membernum, members, memorysize, menu, mesh,%
1872 meshdeform, milliseconds, min, minspeed, modal, mode, model, modela,%
1873 modelb, modelresource, modelsunderloc, modelsunderray, modelunderloc,%
1874 modified, modifiedby, modifieddate, modifier, modifiers, month,%
1875 mostrecentcuepoint, motion, mousechar, mousedown, mousedownscript,%
1876 mouseenter, mouseh, mouseitem, mouseleave, mouselevel, mouseline,%
1877 mousetoc, mousemember, mouseoverbutton, mouseup, mouseupoutside,%
1878 mouseupscript, mousev, mousewithin, mouseword, move, moveablesprite,%
1879 movetoback, movetofront, movevertex, movevertexhandle, movewindow,%
1880 movie, movieaboutinfo, moviecopyrightinfo, moviefilefreesize,%
1881 moviefilesize, moviefileversion, movieimagecompression,%
1882 movieimagequality, movienam, moviepath, movierate, movietime,%
1883 moviextralist, mpegplayer, multiply, multisound, name, near,%
1884 nearfiltering, neighbor, netabort, netdone, neterror, netlastmoddate,%
1885 netmime, netpresent, netstatus, nettextrresult, netthrottleticks,%
1886 newcamera, newcurve, newgroup, newlight, newmesh, newmodel,%
1887 newmodelresource, newmotion, newshader, newtexture, next, none,%
1888 normalize, normallist, normals, nothing, notify, nudge, number,%
1889 numchannels, numparticles, numsegments, numtochar, objectp, offset,%
1890 open, openresfile, openwindow, openxlib, optiondown, organizationname,%
1891 originalfont, originh, originmode, originpoint, originv, orthoheight,%
1892 overlay, pageheight, palette, palettemapping, paletteref, paletteindex,%
1893 pan, paragraph, param, paramcount, parent, parsestring, particle,%
1894 pasteclipboardinto, path, pathname, pathstrength, pattern, pause,%
1895 pausedatstart, pausestate, percentplayed, percentstreamed, period,%

1896 perpendicularto, persistent, pi, picture, picturep, plane, platform,%
1897 play, playbackmode, playfile, playing, playlist, playnext, playrate,%
1898 point, pointat, pointatorientation, pointinhyperlink, pointofcontact,%
1899 pointtochar, pointtoitem, pointtoline, pointtoparagraph, pointtoword,%
1900 position, positionreset, posterframe, postnettext, power,%
1901 preferred3drenderer, preload, preloadbuffer, preloadeventabort,%
1902 preloadmember, preloadmode, preloadmovie, preloadnetthing, preloadram,%
1903 preloadtime, premultiply, prepareframe, preparemovie, prerotate,%
1904 prescale, pretranslate, previous, primitives, printfrom,%
1905 productversion, projection, projectionangle, propList, proxyserver,%
1906 pttohotspotid, puppet, puppetpalette, puppetsound, puppetsprite,%
1907 puppettempo, puppettransition, purgepriority, qtregisteraccesskey,%
1908 qtunregisteraccesskey, quad, quality, queue, quit, quote, radius,%
1909 ramneeded, random, randomseed, randomvector, rateshift, rawnew, read,%
1910 readvalue, recordfont, rect, ref, reflectionmap, reflectivity, region,%
1911 registerforevent, registerscript, regpoint, regpointvertex,%
1912 removebackdrop, removefromworld, removelast, removemodifier,%
1913 removeoverlay, rename, renderer, rendererdevicelist, renderformat,%
1914 renderstyle, resetworld, resizewindow, resolution, resolve, resolvea,%
1915 resolveb, resource, restart, resume, reverttoworlddefaults, rewind,%
1916 rgb, rgba4444, rgba5550, rgba5551, rgba5650, rgba8880, rgba8888, right,%
1917 rightindent, rightmousedown, rightmouseup, rollover, romanlingo,%
1918 rootlock, rootnode, rotate, rotation, rotationreset, rtf, runmode,%
1919 runpropertydialog, safeplayer, samplecount, samplerate, samplesize,%
1920 save, savedlocal, savemovie, scale, scalemode, score, scorecolor,%
1921 scoreselection, script, scriptexecutionstyle, scriptinstancelist,%
1922 scriptlist, scriptnum, scriptsenabled, scripttext, scripttype,%
1923 scrollbyline, scrollbypage, scrolltop, sds, searchcurrentfolder,%
1924 searchpath, searchpaths, seconds, selectedtext, selection, selend,%
1925 selstart, sendallsprites, sendevent, sendnetmessage, sendsprite,%
1926 serialnumber, setalpha, setaprop, setat, setcollisioncallback,%
1927 setflashproperty, setnetbufferlimits, setnetmessagehandler, setpixel,%
1928 setplaylist, setpref, setprop, setscriptlist, settrakenabled,%
1929 setvariable, shader, shaderlist, shadowpercentage, shadowstrength,%
1930 shapetype, shiftdown, shininess, shockwave3d, short, showglobals,%
1931 showlocals, showprops, showresfile, showxlib, shutdown, silhouettes,%
1932 sin, size, sizerange, skew, sleep, smoothness, sort, sound, soundbusy,%
1933 soundchannel, sounddevice, sounddevicelist, soundenabled,%
1934 soundkeepdevice, soundlevel, soundmixmedia, source, sourcerect, space,%
1935 specular, specularcolor, specularlightmap, sphere, spotangle,%
1936 spotdecay, sprite, spritenum, spritespacetoworldspace, sqrt, stage,%
1937 stagebottom, stagecolor, stageleft, stageright, stagetoflash, stagetop,%
1938 standard, startangle, startframe, startmovie, starttime, starttimer,%
1939 state, static, status, stepframe, stilldown, stop, stopevent,%
1940 stopmovie, stoptime, stream, streammode, streamname, streamsize,%
1941 streamstatus, string, stringp, strokecolor, strokewidth, style,%
1942 subdivision, sweep, swing, switchcolordepth, symbol, symbolp,%
1943 systemdate, tab, tabcount, tabs, tan, target, tellstreamstatus,%
1944 tension, text, texture, texturecoordinatelist, texturecoordinates,%
1945 texturelayer, texturelist, texturemember, texturemode, texturemodelist,%

```

1946   texturerenderformat, texturerepeat, texturerepeatlist,%
1947   texturetransform, texturetransformlist, texturetype, thumbnail, ticks,%
1948   tilt, time, timeout, timeouthandler, timeoutkeydown, timeoutlapsed,%
1949   timeoutlength, timeoutlist, timeoutmouse, timeoutplay, timeoutscript,%
1950   timer, timescale, title, titlevisible, toon, top, topcap, topradius,%
1951   topspacing, trace, traceload, tracelogfile, trackcount, trackenabled,%
1952   tracknextkeytime, tracknextsampletime, trackpreviouskeytime,%
1953   trackpreviousampletime, trackstarttime, trackstoptime, tracktext,%
1954   tracktype, trails, transform, transitiontype, translate,%
1955   triggercallback, trimwhitespace, tunneldepth, tweened, tweenmode, type,%
1956   [transparent], union, unload, unloadmember, unloadmovie,%
1957   unregisterallevents, update, updateframe, updatelock,%
1958   updatemovieenabled, updatestage, url, usealpha, usediffusewithtexture,%
1959   usefastquads, usehypertextstyles, uselineoffset, userdata, username,%
1960   value, vector, version, vertex, vertexlist, vertices, video,%
1961   videoforwindowspresent, viewh, viewpoint, viewscale, viewv, visibility,%
1962   visible, void, voidp, volume, volumeinfo, wait, waitforinetconnection,%
1963   warpmode, width, widthvertices, wind, window, windowlist,%
1964   windowpresent, windowtype, word, wordwrap, world, worldposition,%
1965   worldspacetospritespace, worldtransform, wraptransform,%
1966   wraptransformlist, write, writevalue, xaxis, xtra, xtralist, xtras,%
1967   yaxis, year, yon, zaxis, zoombox, zoomwindow, repeat, Conditional,%
1968   Boolean, TypeDef, Statement, Operator, String, Comment, Identifier,%
1969   Special, x, y, z},%
1970   sensitive=false,%
1971   morecomment=[l]{--},%
1972   morestring=[b]",%
1973 }[keywords,comments,strings]
1974 %   \begin{macrocode}
1975 </lang3>

```

2.37 Lisp, AutoLisp and Emacs Lisp (elisp)

Most data are from

- GUY STEELE: **Common Lisp**; Copyright 1990 by Digital Equipment Corporation; ISBN 1-55558-042-4.

Thanks to Aslak Raanes for the ‘single comment’ delimiters. The keywords are the ‘one-word’ functions and macros of Common Lisp, i.e. words not containing a minus. But I left out the `caaaaar`, ... functions. If anyone types them in, I’d like to get them. Hilmar Preuße informed about an issue mentioned at <https://bugs.debian.org/499422>, the issue got corrected.

```

1976 (*lang2)
1977 \lst@definlanguage{Lisp}%
1978   {morekeywords={abort,abs,acons,acos,acosh,adjoin,alphanumericp,alter,%
1979     append,apply,apropos,aref,arrayp,ash,asin,asinh,assoc,atan,atanh,%
1980     atom,bit,boole,boundp,break,butlast,byte,catenate,ceiling,cerror,%
1981     char,character,characterp,choose,chunk,cis,close,clrhash,coerce,%

```

```

1982 collect,commonp,compile,complement,complex,complexp,concatenate,%
1983 conjugate,cons,consp,constantp,continue,cos,cosh,cotruncate,%
1984 count,delete,denominator,describe,directory,disassemble,%
1985 documentation,dpb,dribble,ed,eighth,elt,enclose,endp,eq,eql,%
1986 equal,equalp,error,eval,evalhook,evenp,every,exp,expand,export,%
1987 expt,fboundp,fceiling,fdefinition,ffloor,fifth,fill,find,first,%
1988 float,floatp,floor,fmakunbound,format,fourth,fround,ftruncate,%
1989 funcall,functionp,gatherer,gcd,generator,gensym,gentemp,get,getf,%
1990 gethash,identity,imagpart,import,inspect,integerp,intern,%
1991 intersection,tively,isqrt,keywordp,last,latch,lcm,ldb,ldiff,%
1992 length,list,listen,listp,load,log,logand,logbitp,logcount,logeqv,%
1993 logior,lognand,lognor,lognot,logtest,logxor,macroexpand,%
1994 makunbound,map,mapc,mapcan,mapcar,mapcon,maphash,mapl,maplist,%
1995 mask,max,member,merge,min,mingle,minusp,mismatch,mod,namestring,%
1996 nbutlast,nconc,nintersection,ninth,not,notany,notevery,nreconc,%
1997 nreverse,nsublis,nsubst,nth,nthcdr,null,numberp,numerator,nunion,%
1998 oddp,open,packagep,pairlis,pathname,pathnamep,phase,plusp,%
1999 position,positions,pprint,previous,princ,print,proclaim,provide,%
2000 random,rassoc,rational,rationalize,rationalp,read,readtablep,%
2001 realp,realpart,reduce,rem,remhash,remove,remprop,replace,require,%
2002 rest,revappend,reverse,room,round,rplaca,rplacd,sbit,scan,schar,%
2003 search,second,series,set,seventh,shadow,signal,signum,sin,sinh,%
2004 sixth,sleep,some,sort,split,sqrt,streamp,string,stringp,sublis,%
2005 subseq,subseries,subsetp,subst,substitute,subtypep,svref,sxhash,%
2006 symbolp,tailp,tan,tanh,tenth,terpri,third,trueename,truncate,%
2007 typep,unexport,unintern,union,until,values,vector,vectorp,warn,%
2008 write,zerop,and,assert,case,ccase,cond,ctypcase,decf,declaim,%
2009 defclass,defconstant,defgeneric,defmacro,defmethod,defpackage,%
2010 defparameter,defsetf,defstruct,deftype,defun,defvar,do,dolist,%
2011 dotimes,ecase,encapsulated,etypecase,flet,formatter,gathering,%
2012 incf,iterate,labels,let,locally,loop,macrolet,mapping,or,pop,%
2013 producing,prog,psetf,psetq,push,pushnew,remf,return,rotatef,%
2014 setf,shiftf,step,time,trace,typecase,unless,untrace,when},%
2015 sensitive=false,% ???
2016 alsodigit=-,%
2017 morecomment=[l];,%
2018 morecomment=[s]{\#|}{|\#},% 1997 Aslak Raanes
2019 morestring=[b]"%
2020 }[keywords,comments,strings]

2021 </lang2>
2022 < *lang2>

Stefan Lagotzki warned me to define this as a lisp dialect ...

2023 %%
2024 %% AutoLISP/VisuallISP - Stefan Lagotzki, info@lagotzki.de
2025 %%
2026 \lst@definlanguage[Auto]{Lisp}%
2027 {morekeywords={abs,acad_colordlg,acad_helpdlg,acad_strlsort,%
2028 action_tile,add_list,alert,alloc,and,angle,angtof,angtos,append,%

```

2029 apply, arx, arxload, arxunload, ascii, assoc, atan, atof, atoi, atom, %
 2030 atoms-family, autoarxload, autoload, Boole, boundp, caddr, cadr, car, %
 2031 cdr, chr, client_data_tile, close, command, cond, cons, cos, cvunit, %
 2032 defun, defun-q, defun-q-list-ref, defun-q-list-set, dictadd, dictnext, %
 2033 dictremove, dictrename, dictsearch, dimx_tile, dimy_tile, distance, %
 2034 distof, done_dialog, end_image, end_list, entdel, entget, entlast, %
 2035 entmake, entmakex, entmod, entnext, entsel, entupd, eq, equal, *error*, %
 2036 eval, exit, exp, expand, expt, fill_image, findfile, fix, float, foreach, %
 2037 function, gc, gcd, get_attr, get_tile, getangle, getcfg, getcname, %
 2038 getcorner, getdist, getenv, getfiled, getint, getkeyword, getorient, %
 2039 getpoint, getreal, getstring, getvar, graphscr, grclear, grdraw, gread, %
 2040 grtext, grvecs, handent, help, if, initdia, initget, inters, itoa, lambda, %
 2041 last, layoutlist, length, list, listp, load, load_dialog, log, logand, %
 2042 logior, lsh, mapcar, max, mem, member, menucmd, menugroup, min, minus, %
 2043 mode_tile, namedobjdict, nentsel, nentselp, new_dialog, not, nth, %
 2044 null, numberp, open, or, osnap, polar, prin1, princ, print, progn, prompt, %
 2045 quit, quote, read, read-char, read-line, redraw, regapp, rem, repeat, %
 2046 reverse, rtos, set, set_tile, setcfg, setenv, setfunhelp, setq, %
 2047 setvar, setview, sin, slide_image, sinvalid, sqrt, ssadd, ssdel, ssget, %
 2048 ssgetfirst, sslength, ssmemb, ssnamed, ssnamedx, sssetfirst, startapp, %
 2049 start_dialog, start_image, start_list, strcase, strcat, strlen, subst, %
 2050 substr, tablet, tblnext, tblobjname, tblsearch, term_dialog, terpri, %
 2051 textbox, textpage, textscr, trace, trans, type, unload_dialog, untrace, %
 2052 vector_image, ver, vl-acad-defun, vl-acad-undefun, vl-arx-import, %
 2053 vl-bb-ref, vl-bb-set, vl-catch-all-apply, %
 2054 vl-catch-all-error-message, vl-catch-all-error-p, vl-cmdf, vl-consp, %
 2055 vl-directory-files, vl-doc-export, vl-doc-import, vl-doc-ref, %
 2056 vl-doc-set, vl-every, vl-exit-with-error, vl-exit-with-value, %
 2057 vl-file-copy, vl-file-delete, vl-file-directory-p, vl-file-rename, %
 2058 vl-file-size, vl-file-systime, vl-filename-base, %
 2059 vl-filename-directory, vl-filename-extension, vl-filename-mktemp, %
 2060 vl-get-resource, vl-list*, vl-list->string, %
 2061 vl-list-exported-functions, vl-list-length, vl-list-loaded-vlx, %
 2062 vl-load-all, vl-load-com, vl-load-reactors, vl-member-if, %
 2063 vl-member-if-not, vl-position, vl-prin1-to-string, %
 2064 vl-princ-to-string, vl-propagate, vl-registry-delete, %
 2065 vl-registry-descendants, vl-registry-read, vl-registry-write, %
 2066 vl-remove, vl-remove-if, vl-remove-if-not, vl-some, vl-sort, %
 2067 vl-sort-i, vl-string->list, vl-string-elt, vl-string-left-trim, %
 2068 vl-string-mismatch, vl-string-position, vl-string-right-trim, %
 2069 vl-string-search, vl-string-subst, vl-string-translate, %
 2070 vl-string-trim, vl-symbol-name, vl-symbol-value, vl-symbolp, %
 2071 vl-unload-vlx, vl-vbaload, vl-vbarun, vl-vlx-loaded-p, vlax-3D-point, %
 2072 vlax-add-cmd, vlax-create-object, vlax-curve-getArea, %
 2073 vlax-curve-getDistAtParam, vlax-curve-getDistAtPoint, %
 2074 vlax-curve-getEndParam, vlax-curve-getEndPoint, %
 2075 vlax-curve-getParamAtDist, vlax-curve-getParamAtPoint, %
 2076 vlax-curve-getPointAtDist, vlax-curve-getPointAtParam, %
 2077 vlax-curve-getStartParam, vlax-curve-getStartPoint, %
 2078 vlax-curve-isClosed, vlax-curve-isPeriodic, vlax-curve-isPlanar, %

```

2079     vlax-curve-getClosestPointTo,%
2080     vlax-curve-getClosestPointToProjection,vlax-curve-getFirstDeriv,%
2081     vlax-curve-getSecondDeriv,vlax-dump-object,%
2082     vlax-ename->vla-object,vlax-erased-p,vlax-for,%
2083     vlax-get-acad-object,vlax-get-object,vlax-get-or-create-object,%
2084     vlax-get-property,vlax-import-type-library,vlax-invoke-method,%
2085     vlax-ldata-delete,vlax-ldata-get,vlax-ldata-list,vlax-ldata-put,%
2086     vlax-ldata-test,vlax-make-safearray,vlax-make-variant,%
2087     vlax-map-collection,vlax-method-applicable-p,%
2088     vlax-object-released-p,vlax-product-key,%
2089     vlax-property-available-p,vlax-put-property,vlax-read-enabled-p,%
2090     vlax-release-object,vlax-remove-cmd,vlax-safearray-fill,%
2091     vlax-safearray-get-dim,vlax-safearray-get-element,%
2092     vlax-safearray-get-l-bound,vlax-safearray-get-u-bound,%
2093     vlax-safearray-put-element,vlax-safearray-type,%
2094     vlax-safearray->list,vlax-tmatrix,vlax-typeinfo-available-p,%
2095     vlax-variant-change-type,vlax-variant-type,vlax-variant-value,%
2096     vlax-vla-object->ename,vlax-write-enabled-p,vlisp-compile,%
2097     vlr-acdb-reactor,vlr-add,vlr-added-p,vlr-beep-reaction,%
2098     vlr-command-reactor,vlr-current-reaction-name,vlr-data,%
2099     vlr-data-set,vlr-deepclone-reactor,vlr-docmanager-reactor,%
2100     vlr-dwg-reactor,vlr-dxf-reactor,vlr-editor-reactor,%
2101     vlr-insert-reactor,vlr-linker-reactor,vlr-lisp-reactor,%
2102     vlr-miscellaneous-reactor,vlr-mouse-reactor,vlr-notification,%
2103     vlr-object-reactor,vlr-owner-add,vlr-owner-remove,vlr-owners,%
2104     vlr-pers,vlr-pers-list,vlr-pers-p,vlr-pers-release,%
2105     vlr-reaction-names,vlr-reaction-set,vlr-reactions,vlr-reactors,%
2106     vlr-remove,vlr-remove-all,vlr-set-notification,%
2107     vlr-sysvar-reactor,vlr-toolbar-reactor,vlr-trace-reaction,%
2108     vlr-type,vlr-types,vlr-undo-reactor,vlr-wblock-reactor,%
2109     vlr-window-reactor,vlr-xref-reactor,vports,wcmatch,while,%
2110     write-char,write-line,xdroom,xdsize,zerop},%
2111     alsodigit=>,%
2112     otherkeywords={1+,1-},%
2113     sensitive=false,%
2114     morecomment=[1];,%
2115     morecomment=[1];;,%
2116     morestring=[b]"%
2117 }[keywords,comments,strings]
2118 </lang2>
2119 (*lang2)

```

A first approach to elisp by one of the maintainers (Jobst Hoffmann), it is far away from completeness, the list of keywords is defined according the to the needs of the maintainer...

```

2120 \lst@definelanguage{elisp}[] {Lisp}{%
2121     morekeywords={begin, car, cdr, cons, define, display, drop, filter,%
2122     hash-ref, hash-set, if, load-file, lambda, length, map, message,%
2123     progn, quote, require, setq, string-append, take, vector,%

```

```

2124 },%
2125 sensitive,%
2126 alsodigit=->,%
2127 otherkeywords={1+,1-},%
2128 sensitive=true,%
2129 morecomment=[1];,%
2130 morecomment=[1];;%
2131 morestring=[b]"%
2132 }[keywords,comments,strings]
2133 </lang2>

```

2.38 LLVM

LLVM provides a collection of modular and reusable compiler and toolchain technologies, all further information can be found at its home page <http://llvm.org/>. Scott Pakin provided a language definition for the LLVM intermediate presentation according to <http://llvm.org/docs/>.² The language provides

```

2134 (*lang3)
2135 \lst@definelanguage{LLVM}{%
2136   morekeywords={%

```

- Instructions

```

2137         ret,br,switch,indirectbr,invoke,resume,unreachable,%
2138         add,fadd,sub,fsub,mul,fmul,udiv,sdiv,fdiv,urem,srem,frem,%
2139         shl,lshr,ashr,and,or,xor,%
2140         extractelement,insertelement,shufflevector,%
2141         extractvalue,insertvalue,%
2142         alloca,load,store,fence,cmpxchg,atomicrmw,getelementptr,%
2143         trunc,zext,sext,fptrunc,fpext,fptoui,fptosi,uitofp,sitofp,ptrtoint,%
2144         inttoptr,bitcast,to,%
2145         icmp,fcmp,phi,select,call,va_arg,landingpad,%

```

- Atomic operations – some duplication with the above

```

2146         xchg,add,sub,and,nand,or,xor,max,min,umax,umin,%

```

- Comparisons

```

2147         eq,ne,ugt,uge,ult,ule,sgt,sge,slt,sle,%
2148         false,oeq,ogt,oge,olt,ole,one,ord,ueq,ugt,uge,ult,ule,uno,true,%

```

- Linkage types

```

2149         private,linker_private,linker_private_weak,linker_private_weak_def_auto,%
2150         internal,available_externally,linkonce,common,weak,appending,extern_weak,%
2151         linkonce_odr,weak_odr,external,dllimport,dllexport,%

```

²In this section ‘I’ is Scott Pakin.

- Function headers


```
2152         define,declare,%
```
- Parameter attributes


```
2153         zeroext,signext,inreg,byval,sret,noalias,nocapture,next,%
```
- Garbage collector names


```
2154         gc,%
```
- Function attributes


```
2155         address_safety,alignstack,alwaysinline,nonlazybind,inlinehint,naked,%
2156         noimplicitfloat,noinline,noredzone,noreturn,nounwind,optsize,readnone,%
2157         readonly,returns_twice,ssp,sspreq,uwtable,%
```
- Module-level inline assembly


```
2158         module,asm,%
```
- Data layout


```
2159         target,datalayout,%
```
- Inline assembler expressions


```
2160         sideeffect,alignstack,%
```
- Other keywords – I’m probably missing some here.


```
2161         nuw,nsw,exact,inbounds,unnamed_addr},%
2162         morekeywords=[2]{%
```
- Types


```
2163         i1,i2,i4,i8,i16,i32,i64,i128,i256,i512,i1024,% <-- Most common integers
2164         half,float,double,x86_fp80,fp128,ppc_fp128,x86mmx,%
2165         void,label,metadata},%
2166         alsoletter=.,%
2167         sensitive=false,%
2168         morecomment=[1];,%
2169         morestring=[b]"%
2170     }
```

```
2171 </lang3>
```


2.39 Logo

I don't know where the keywords are from and what kind of Logo it is. Help me!

```
2172 (*lang3)
2173 \lst@definelanguage{Logo}%
2174 % ??? {end,unix} also keywords
2175 {morekeywords={and,atan,arctan,both,break,bf,bl,butfirst,butlast,%
2176   cbreak, close,co,continue,cos,count,clearscreen,cs,debut,%
2177   describe,diff,difference,ed,edit,either,empty,equalp,er,erase,%
2178   errpause,errquit,fifp,fileprint,fifty,filetype,fip,fileprint,%
2179   fird,fileread,fity,filetype,fiwd,fileword,f,first,or,fp,fprint,%
2180   fput,fty,ftype,full,fullscreen,go,bye,goodbye,gprop,greaterp,%
2181   help,if,iff,iffalse,ift,iftrue,nth,item,keyp,llast,lessp,list,%
2182   local,lput,make,max,maximum,memberp,memtrace,min,minimum,namep,%
2183   not,numberp,oflush,openr,openread,openw,openwrite,op,output,%
2184   pause,plist,pots,pow,pprop,pps,pr,print,product,quotient,random,%
2185   rc,readchar,rl,readlist,remprop,repcount,repeat,request,rnd,run,%
2186   se,sentence,sentencep,setc,setcolor,setipause,setqpause,po,show,%
2187   sin,split,splitscreen,sqrt,stop,sum,test,text,textscreen,thing,%
2188   to,tone,top,toplevel,type,untrace,wait,word,wordp,yaccdebug,is,%
2189   mod,remainder,trace,zerop,back,bk,bto,btouch,fd,forward,fto,%
2190   ftouch,getpen,heading,hit,hitoot,ht,hideturtle,loff,lampoff,lon,%
2191   lampon,lt,left,lot,lotoot,lto,ltouch,penc,pencolor,pd,pendown,pe,%
2192   penerase,penmode,pu,penup,px,penreverse,rt,right,rto,rtoch,%
2193   scrunch,seth,setheading,setscrunch,setscrunch,setxy,shownp,st,%
2194   showturtle,towardsxy,clean,wipeclean,xcor,ycor,tur,turtle,%
2195   display,dpy},%
2196   sensitive=f% ???
2197 }[keywords]%
2198 (/lang3)
```

2.40 Lua

Stephan Hennig contributed the Lua keywords.

```
2199 (*lang2)
```

We begin with the keywords for Lua 5.0:

```
2200 %%
2201 %% Lua definitions (c) 2013 Stephan Hennig
2202 %%
2203 \lst@definelanguage[5.0]{Lua}{%
```

To enable highlighting of library keywords, the dot needs to be a letter.

```
2204   alsoletter={.},%
```

The language definition knows

- language keywords

```
2205   morekeywords=[1]{%
2206     and, break, do, else, elseif, end, false, for, function, if, in, %
```

```

2207         local, nil, not, or, repeat, return, then, true, until, while,%
2208     },%

    • the standard library identifiers

2209     morekeywords=[2]{%

        – coming from the base library

2210         _G, _LOADED, _REQUIREDNAME, _VERSION, LUA_PATH,%
2211         assert, collectgarbage, dofile, error, gcinfo, getfenv,%
2212         getmetatable, ipairs, loadfile, loadlib, loadstring, newproxy,%
2213         next, pairs, pcall, print, rawequal, rawget, rawset, require,%
2214         setfenv, setmetatable, tonumber, tostring, type, unpack, xpcall,%

        – coming from the coroutine library

2215         coroutine, coroutine.create, coroutine.resume,%
2216         coroutine.status, coroutine.wrap, coroutine.yield,%

        – the debug library

2217         _TRACEBACK, debug, debug.debug, debug.gethook, debug.getinfo,%
2218         debug.getlocal, debug.getupvalue, debug.sethook, debug.setlocal,%
2219         debug.setupvalue, debug.traceback,%

        – the io library

2220         io, io.close, io.flush, io.input, io.lines, io.open, io.output,%
2221         io.popen, io.read, io.stderr, io.stdin, io.stdout, io.tmpfile,%
2222         io.type, io.write,%

        – the mathematical library

2223         __pow, math, math.abs, math.acos, math.asin, math.atan, math.atan2,%
2224         math.ceil, math.cos, math.deg, math.exp, math.floor, math.frexp,%
2225         math.ldexp, math.log, math.log10, math.max, math.min, math.mod,%
2226         math.pi, math.pow, math.rad, math.random, math.randomseed, math.sin,%
2227         math.sqrt, math.tan,%

        – the os library

2228         os, os.clock, os.date, os.difftime, os.execute, os.exit, os.getenv,%
2229         os.remove, os.rename, os.setlocale, os.time, os.tmpname,%

        – the string library

2230         string, string.byte, string.char, string.dump, string.find,%
2231         string.format, string.gfind, string.gsub, string.len, string.lower,%
2232         string.rep, string.sub, string.upper,%

        – the table library

2233         table, table.concat, table.foreach, table.foreachi, table.getn,%
2234         table.insert, table.remove, table.setn, table.sort,%
2235     },%

```

and some additional identifiers

```
2236 morekeywords=[2]{%
2237     _PROMPT, _PROMPT2, arg,%
2238 },%
```

These are the common language settings

```
2239 sensitive=true,%
2240 % single line comments
2241 morecomment=[1]{--},%
2242 % multi line comments
2243 morecomment=[s]{--[{}-{}]},%
2244 % backslash escaped strings
2245 morestring=[b]" ,%
2246 morestring=[b]' ,%
2247 % multi line strings
2248 morestring=[s]{[{}-{}]},%
2249 }[keywords,comments,strings]
```

And here are the new definitions for Lua 5.1:

```
2250 \lst@definelanguage[5.1]{Lua}[5.0]{Lua}{%
```

There are some deletions

```
2251 deletekeywords=[2]{%
```

concerning

- the base library

```
2252     _LOADED, _REQUIREDNAME, LUA_PATH, gcinfo, loadlib,%
```

- the debug library

```
2253     _TRACEBACK,%
```

- the mathematical library

```
2254     __pow, math.mod,%
```

- the string library

```
2255     string.gfind,%
```

- the table library

```
2256     table.foreach, table.foreachi, table.getn, table.setn,%
2257 },%
```

and some new identifiers in standard libraries like

```
2258 morekeywords=[2]{%
```

- the base library

```
2259     load, select,%
```

- coroutine library

```
2260         coroutine.running,%
```

- debug library

```
2261         debug.getfenv, debug.getmetatable, debug.getregistry, debug.setfenv,%
2262         debug.setmetatable,%
```

- the mathematical library

```
2263         math.cosh, math.fmod, math.huge, math.modf, math.sinh, math.tanh,%
```

- the package library which itself is new in Lua 5.1

```
2264         module, package, package.config, package.cpath, package.loaded,%
2265         package.loaders, package.loadlib, package.path, package.preload,%
2266         package.seeall,%
```

- the string library and

```
2267         string.gmatch, string.match, string.reverse,%
```

- the table library

```
2268         table.maxn,%
2269     },%
```

In Lua 5.1 long bracket comments were introduced also

```
2270     morecomment=[s]{--[{}]=},%
2271     morecomment=[s]{--[{}]=},%
2272     morecomment=[s]{--[{}]=},%
2273     morecomment=[s]{--[{}]=},%
2274     morecomment=[s]{--[{}]=},%
2275     morecomment=[s]{--[{}]=},%
2276     morecomment=[s]{--[{}]=},%
2277     morecomment=[s]{--[{}]=},%
2278     morecomment=[s]{--[{}]=},%
2279     morecomment=[s]{--[{}]=},%
```

as well as long bracket strings

```
2280     morestring=[s]{[{}]=},%
2281     morestring=[s]{[{}]=},%
2282     morestring=[s]{[{}]=},%
2283     morestring=[s]{[{}]=},%
2284     morestring=[s]{[{}]=},%
2285     morestring=[s]{[{}]=},%
2286     morestring=[s]{[{}]=},%
2287     morestring=[s]{[{}]=},%
2288     morestring=[s]{[{}]=},%
2289     morestring=[s]{[{}]=},%
2290 }[keywords,comments,strings]
```

Lua 5.2 again has some changed features. These are

```
2291 \lst@definelanguage[5.2]{Lua}[5.1]{Lua}{%
```

- new language keywords

```
2292     morekeywords=[1]{%  
2293         goto,%  
2294     },%
```

- deleted identifiers from the standard libraries like

```
2295     deletekeywords=[2]{%  
  
    – the base library  
2296         getfenv, loadstring, module, newproxy, setfenv, unpack,%  
  
    – the debug library  
2297         debug.getfenv, debug.setfenv,%  
  
    – the mathematical library  
2298         math.log10,%  
  
    – the package library and  
2299         package.loaders, package.seeall,%  
  
    – the table library  
2300         table.maxn,%  
2301     },%
```

Again there are some new identifiers in the standard libraries

```
2302 morekeywords=[2]{%
```

like

- the base library

```
2303     rawlen,%
```

- the bit library

```
2304     bit32, bit32.arshift, bit32.band, bit32.bnot, bit32.bor,%  
2305     bit32.btest, bit32.bxor, bit32.extract, bit32.lrotate,%  
2306     bit32.lshift, bit32.replace, bit32.rrotate, bit32.rshift,%
```

- the debug library

```
2307     debug.getuservalue, debug.setuservalue, debug.upvalueid,%  
2308     debug.upvaluejoin,%
```

- the package library

```
2309     package.searchers, package.searchpath,%
```

- the table library

```
2310         table.pack, table.unpack,%
2311     },%
```

There is a new additional identifier

```
2312 morekeywords=[2]{%
2313     _ENV,%
2314 },%
```

and labels are also new in Lua 5.2

```
2315 moredelim=[s][keywordstyle3]{:}{:},%
2316 }[keywords,comments,strings]
```

In January 2015 Lua 5.3 was released, Stephan Hennig again contributed the Lua keywords.

```
2317 \lst@definelanguage[5.3]{Lua}[5.2]{Lua}{%
```

- some libraries are deprecated, so the following identifiers are deleted

```
2318     deletekeywords=[2]{%
```

– the bit32 library

```
2319         bit32, bit32.arshift, bit32.band, bit32.bnot, bit32.bor,%
2320         bit32.btest, bit32.bxor, bit32.extract, bit32.lrotate,%
2321         bit32.lshift, bit32.replace, bit32.rrotate, bit32.rshift,%
```

– the mathematical library

```
2322         math.atan2, math.cosh, math.frexp, math.ldexp, math.pow,%
2323         math.sinh, math.tanh,%
2324     },%
```

Again there are some new identifiers in the standard libraries

```
2325 morekeywords=[2]{%
```

like

- the coroutine library

```
2326     coroutine.isyieldable,%
```

- the mathematical library

```
2327     math.maxinteger, math.mininteger, math.tointeger, math.type,%
2328     math.ult,%
```

- the string library

```
2329     string.pack, string.packsize, string.unpack,%
```

- the table library

```
2330     table.move,%
```

- the utf-8 library

```

2331         utf8, utf8.char, utf8.charpattern, utf8.codepoint, utf8.codes,%
2332         utf8.len, utf8.offset,%
2333     },%
2334 }[keywords,comments,strings]
2335 </lang2>

```

Stephan Hennig also supplied a definition of a style for printing Lua code:

```

2336 (*lua-prf)
2337 \usepackage[rgb, x11names]{xcolor}
2338 \lstdefinestyle{Lua}{%
2339     language=[5.2]Lua,
2340     basicstyle=\ttfamily,
2341     columns=spaceflexible,
2342     keywordstyle=\bfseries\color{Blue4},% language keywords
2343     keywordstyle=[2]\bfseries\color{RoyalBlue3},% std. library identifiers
2344     keywordstyle=[3]\bfseries\color{Purple3},% labels
2345     stringstyle=\bfseries\color{Coral4},% strings
2346     commentstyle=\itshape\color{Green4},% comments
2347 }

```

This code is provided in the file `listings-lua.prf`, see section 2.4.1 (Preferences) of the `listings` documentation.

```

2348 </lua-prf)

```

2.41 Make

Rolf Niepraschk sent me the new definitions. Markus Pahlow found a missing comma and added some keywords, which improve the highlighting with `makemacrouse=true` (but I haven't tested this).

```

2349 (*lang2)
2350 %%
2351 %% Make definitions (c) 2000 Rolf Niepraschk
2352 %%
2353 \lst@definelanguage[gnu]{make}%
2354 {morekeywords={SHELL,MAKE,MAKEFLAGS,$@,$\,$<,$?,$^,$+,$*,%
2355     @,^,<,\%,+,%?,*,% Markus Pahlow
2356     export,unexport,include,override,define,ifdef,ifneq,ifeq,else,%
2357     endif,vpath,subst,patsubst,strip,findstring,filter,filter-out,%
2358     sort,dir,notdir,suffix,basename,addsuffix,addprefix,join,word,%
2359     words,firstword,wildcard,shell,origin,foreach,%
2360     @D,@F,*D,*F,\%D,\%F,<D,<F,^D,^F,+D,+F,?D,?F,%
2361     AR,AS,CC,CXX,CO,CPP,FC,GET,LEX,PC,YACC,YACCR,MAKEINFO,TEXI2DVI,%
2362     WEAVE,CWEAVE,TANGLE,CTANGLE,RM,M2C,LINT,COMPILE,LINK,PREPROCESS,%
2363     CHECKOUT,%
2364     ARFLAGS,ASFLAGS,CFLAGS,CXXFLAGS,COFLAGS,CPPFLAGS,FFLAGS,GFLAGS,%
2365     LDFLAGS,LOADLIBES,LFLAGS,PFLAGS,RFLAGS,YFLAGS,M2FLAGS,MODFLAGS,%

```

```

2366     LINTFLAGS,MAKEINFO_FLAGS,TEXI2DVI_FLAGS,COFLAGS,GFLAGS,%
2367     OUTPUT_OPTION,SCCS_OUTPUT_OPTION,% missing comma: Markus Pahlow
2368     .PHONY,.SUFFIXES,.DEFAULT,.PRECIOUS,.INTERMEDIATE,.SECONDARY,%
2369     .IGNORE,.SILENT,.EXPORT_ALL_VARIABLES,MAKEFILES,VPATH,MAKESHELL,%
2370     MAKELEVEL,MAKECMDGOALS,SUFFIXES},%
2371     sensitive=true,
2372     morecomment=[1]\#,%
2373     morestring=[b]"%
2374 }[keywords,comments,strings,make]%

2375 \lst@definelanguage{make}
2376 {morekeywords={SHELL,MAKE,MAKEFLAGS,$@,$%,$<,$?,$^,$+,$*},%
2377     sensitive=true,%
2378     morecomment=[1]\#,%
2379     morestring=[b]"%
2380 }[keywords,comments,strings,make]%

```

The two [b]-arguments have been added after a bug report by Dr. Jobst Hoffmann
2381 (/lang2)

2.42 Matlab

I (C.H.?) took the keywords from <http://www.utexas.edu/math/Matlab/Manual>, but I removed the keywords i, j and tmp—the change was proposed by Kai Below.

2382 (*lang1)

From the revision history one can conclude that “Matlab’’ means “Matlab 5.1’’ which was released in 1997

```

2383 \lst@definelanguage[5.1]{Matlab}[] {Matlab}{-}
2384 \lst@definelanguage{Matlab}%
2385 {morekeywords={gt,lt,gt,lt,amp,abs,acos,acosh,acot,acoth,acsc,acsch,%
2386     all,angle,ans,any,asec,asech,asin,asinh,atan,atan2,atanh,auread,%
2387     auwrite,axes,axis,balance,bar,bessel,besselk,bessely,beta,%
2388     betainc,betaln,blanks,bone,break,brighten,capture,cart2pol,%
2389     cart2sph,caxis,cd,cdf2rdf,cedit,ceil,chol,cla,clabel,clc,clear,%
2390     clf,clock,close,colmmd,Colon,colorbar,colormap,ColorSpec,colperm,%
2391     comet,comet3,compan,compass,computer,cond,condest,conj,contour,%
2392     contour3,contourc,contrast,conv,conv2,cool,copper,corrcoef,cos,%
2393     cosh,cot,coth,cov,cplxpair,cputime,cross,csc,csch,csvread,%
2394     csvwrite,cumprod,cumsum,cylinder,date,dbclear,dbcont,dbdown,%
2395     dbquit,dbstack,dbstatus,dbstep,dbstop,dbtype,dbup,ddeadv,ddeexec,%
2396     ddeinit,ddepoke,ddereq,ddeterm,ddeunadv,deblank,dec2hex,deconv,%
2397     del2,delete,demo,det,diag,diary,diff,diffuse,dir,disp,dlmread,%
2398     dlmwrite,dmperm,dot,drawnow,echo,eig,ellipj,ellipke,else,elseif,%
2399     end,engClose,engEvalString,engGetFull,engGetMatrix,engOpen,%
2400     engOutputBuffer,engPutFull,engPutMatrix,engSetEvalCallback,%
2401     engSetEvalTimeout,engWinInit,eps,erf,erfc,erfcx,erfinv,error,%
2402     errorbar,etime,etree,eval,exist,exp,expint,expm,expo,eye,fclose,%
2403     feather,feof,ferror,feval,fft,fft2,fftshift,fgetl,fgets,figure,%
2404     fill,fill3,filter,filter2,find,findstr,finite,fix,flag,fliplr,%

```



```

2405 flipud,floor,flops,fmin,fmins,fopen,for,format,fplot,fprintf,%
2406 fread,frewind,fscanf,fseek,ftell,full,function,funm,fwrite,fzero,%
2407 gallery,gamma,gammainc,gammaln,gca,gcd,gcf,gco,get,getenv,%
2408 getframe,ginput,global,gplot,gradient,gray,graymon,grid,griddata,%
2409 gtext,hadamard,hankel,help,hess,hex2dec,hex2num,hidden,hilb,hist,%
2410 hold,home,hostid,hot,hsv,hsv2rgb,if,ifft,ifft2,imag,image,%
2411 imagesc,Inf,info,input,int2str,interp1,interp2,interpft,inv,%
2412 invhilb,isempty,isglobal,ishold,isieee,isinfinity,isletter,isnan,%
2413 isreal,isspace,issparse,isstr,jet,keyboard,kron,lasterr,lcm,%
2414 legend,legendre,length,lin2mu,line,linspace,load,log,log10,log2,%
2415 loglog,logm,logspace,lookfor,lower,ls,lscov,lu,magic,matClose,%
2416 matDeleteMatrix,matGetDir,matGetFp,matGetFull,matGetMatrix,%
2417 matGetNextMatrix,matGetString,matlabrc,matlabroot,matOpen,%
2418 matPutFull,matPutMatrix,matPutString,max,mean,median,menu,mesh,%
2419 meshc,meshgrid,meshz,mexAtExit,mexCallMATLAB,mexdebug,%
2420 mexErrMsgTxt,mexEvalString,mexFunction,mexGetFull,mexGetMatrix,%
2421 mexGetMatrixPtr,mexPrintf,mexPutFull,mexPutMatrix,mexSetTrapFlag,%
2422 min,more,movie,moviein,mu2lin,mxMalloc,mxCopyCharacterToPtr,%
2423 mxCopyComplex16ToPtr,mxCopyInteger4ToPtr,mxCopyPtrToCharacter,%
2424 mxCopyPtrToComplex16,mxCopyPtrToInteger4,mxCopyPtrToReal8,%
2425 mxCopyReal8ToPtr,mxCreateFull,mxCreateSparse,mxCreateString,%
2426 mxFree,mxFreeMatrix,mxGetIr,mxGetJc,mxGetM,mxGetN,mxGetName,%
2427 mxGetNzmax,mxGetPi,mxGetPr,mxGetScalar,mxGetString,mxIsComplex,%
2428 mxIsFull,mxIsNumeric,mxIsSparse,mxIsString,mxIsTypeDouble,%
2429 mxSetIr,mxSetJc,mxSetM,mxSetN,mxSetName,mxSetNzmax,mxSetPi,%
2430 mxSetPr,NaN,nargchk,nargin,nargout,newplot,nextpow2,nnls,nnz,%
2431 nonzeros,norm,normest,null,num2str,nzmax,ode23,ode45,orient,orth,%
2432 pack,pascal,patch,path,pause,pcolor,pi,pink,pinv,plot,plot3,%
2433 pol2cart,polar,poly,polyder,polyeig,polyfit,polyval,polyvalm,%
2434 pow2,print,printopt,prism,prod,pwd,qr,qrdelete,qrinsert,quad,%
2435 quad8,quit,quiver,qz,rand,randn,randperm,rank,rat,rats,rbbox,%
2436 rcond,real,realmax,realmin,refresh,rem,reset,reshape,residue,%
2437 return,rgb2hsv,rgbplot,rootobject,roots,rose,rosser,rot90,rotate,%
2438 round,rref,rrefmovie,rsf2csf,save,saxis,schur,sec,sech,semilogx,%
2439 semilogy,set,setstr,shading,sign,sin,sinh,size,slice,sort,sound,%
2440 spalloc,sparse,spaugment,sconvert,spdiags,specular,speye,spfun,%
2441 sph2cart,sphere,spinmap,spline,spones,spparms,sprandn,sprandsym,%
2442 sprank,sprintf,spy,sqrt,sqrtm,sscanf,stairs,startup,std,stem,%
2443 str2mat,str2num,strcmp,strings,strcmp,strtok,subplot,subscribe,%
2444 subspace,sum,surf,surface,surfc,surfl,surfnorm,svd,symbfact,%
2445 symmmd,symrcm,tan,tanh,tempdir,tempname,terminal,text,tic,title,%
2446 toc,toeplitz,trace,trapz,tril,triu,type,uicontrol,uigetfile,%
2447 uimenu,uiputfile,unix,unwrap,upper,vander,ver,version,view,%
2448 viewmtx,waitforbuttonpress,waterfall,wavread,wavwrite,what,%
2449 whatsnew,which,while,white,whitebg,who,whos,wilkinson,wk1read,%
2450 wk1write,xlabel,xor,ylabel,zeros,zlabel,zoom},%
2451 sensitive,%
2452 morecomment=[1]\%,%
2453 morestring=[m]’%
2454 }[keywords,comments,strings]

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2455 </lang1>

2.43 Mathematica

Michael Wiese typed in all the keywords for the 1.0 and 3.0 versions. Oliver Ruebenkoenig wrote a script to generate the lists for the 5.2 version. Simon Pearce provided the list of keywords for Mathematica 11.0.

2456 <*lang1>

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2460     "AbortProtect", "AbortScheduledTask", "Above", "Abs", "AbsArg",%
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2463     "AbsoluteOptions", "AbsolutePointSize", "AbsoluteThickness",%
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2465     "Accuracy", "AccuracyGoal", "ActionDelay", "ActionMenu",%
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2467     "ActiveItem", "ActiveStyle", "AcyclicGraphQ", "AddOnHelpPath",%
2468     "AddTo", "AddUsers", "AdjacencyGraph", "AdjacencyList",%
2469     "AdjacencyMatrix", "AdjustmentBox", "AdjustmentBoxOptions",%
2470     "AdjustTimeSeriesForecast", "AdministrativeDivisionData",%
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2472     "AffineTransform", "After", "AircraftData", "AirportData",%
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2477     "AlgebraicNumberTrace", "AlgebraicRules", "AlgebraicRulesData",%
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2479     "AlignmentPoint", "All", "AllowedDimensions", "AllowedHeads",%
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2481     "AllowKernelInitialization", "AllowLooseGrammar",%
2482     "AllowReverseGroupClose", "AllowScriptLevelChange", "AllTrue",%
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2485     "AlternativeHypothesis", "Alternatives", "AltitudeMethod",%
2486     "AmbientLight", "AmbiguityFunction", "AmbiguityList", "Analytic",%
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2496     "AntisymmetricMatrixQ", "AnyOrder", "AnySubset", "AnyTrue", "Apart",%
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4159 ButtonFunction, ButtonMargins, ButtonMinHeight, ButtonNote,%
4160 ButtonNotebook, ButtonSource, ButtonStyle, ButtonStyleMenuListing,%
4161 ByteOrdering, CallPacket, CarmichaelLambda, Cell, CellAutoOverwrite,%
4162 CellBaseline, CellBoundingBox, CellBracketOptions, CellContents,%
4163 CellDingbat, CellEditDuplicate, CellElementsBoundingBox,%
4164 CellElementSpacings, CellEvaluationDuplicate, CellFrame,%
4165 CellFrameColor, CellFrameLabelMargins, CellFrameLabels,%
4166 CellFrameMargins, CellGroup, CellGroupData, CellGrouping,%
4167 CellGroupingRules, CellHorizontalScrolling, CellLabel,%
4168 CellLabelAutoDelete, CellLabelMargins, CellLabelPositioning,%
4169 CellMargins, CellObject, CellOpen, CellPasswords, CellPrint, CellSize,%
4170 CellStyle, CellTags, CellularAutomaton, Center, CharacterEncoding,%
4171 CharacterEncodingsPath, CharacteristicPolynomial, CharacterRange,%
4172 CheckAll, CholeskyDecomposition, Clip, ClipboardNotebook, Closed,%
4173 ClosingAutoSave, CoefficientArrays, CoefficientDomain,%
4174 CofactorExpansion, ColonForm, ColorFunctionScaling, ColorRules,%
4175 ColorSelectorSettings, Column, ColumnAlignments, ColumnLines,%
4176 ColumnsEqual, ColumnSpacings, ColumnWidths, CommonDefaultFormatTypes,%
4177 CompileOptimizations, CompletionsListPacket, Complexes,%
4178 ComplexityFunction, Compose, ComposeSeries, ConfigurationPath,%
4179 ConjugateTranspose, Connect, ConsoleMessage, ConsoleMessagePacket,%
4180 ConsolePrint, ContentsBoundingBox, ContextToFileName,%
4181 ContinuedFraction, ConversionOptions, ConversionRules,%
4182 ConvertToBitmapPacket, ConvertToPostScript, ConvertToPostScriptPacket,%
4183 Copyable, CoshIntegral, CounterAssignments, CounterBox,%
4184 CounterBoxOptions, CounterEvaluator, CounterFunction,%
4185 CounterIncrements, CounterStyle, CounterStyleMenuListing,%
4186 CreatePalettePacket, Cross, CurrentlySpeakingPacket, Cyan,%
4187 CylindricalDecomposition, DampingFactor, DataRange, Debug, DebugTag,%
4188 Decimal, DedekindEta, DefaultDuplicateCellStyle, DefaultFontProperties,%
4189 DefaultFormatType, DefaultFormatTypeForStyle, DefaultInlineFormatType,%
4190 DefaultInputFormatType, DefaultNaturalLanguage, DefaultNewCellStyle,%
4191 DefaultNewInlineCellStyle, DefaultNotebook, DefaultOutputFormatType,%
4192 DefaultStyleDefinitions, DefaultTextFormatType,%
4193 DefaultTextInlineFormatType, DefaultValues, DefineExternal,%
4194 DegreeLexicographic, DegreeReverseLexicographic, Deletable,%
4195 DeleteContents, DeletionWarning, DelimiterFlashTime, DelimiterMatching,%
4196 Delimiters, DependentVariables, DiacriticalPositioning, DialogLevel,%

4197 DifferenceOrder, DigitCharacter, DigitCount, DiracDelta, Direction,%
4198 DirectoryName, DisableConsolePrintPacket, DiscreteDelta,%
4199 DisplayAnimation, DisplayEndPacket, DisplayFlushImagePacket,%
4200 DisplayForm, DisplayPacket, DisplayRules, DisplaySetSizePacket,%
4201 DisplayString, DivisionFreeRowReduction, DOSTextFormat,%
4202 DoubleExponential, DoublyInfinite, Down, DragAndDrop, DrawHighlighted,%
4203 DualLinearProgramming, DumpGet, DumpSave, Edit, Editable,%
4204 EditButtonSettings, EditCellTagsSettings, EditDefinition, EditIn,%
4205 Element, EliminationOrder, EllipticExpPrime, EllipticNomeQ,%
4206 EllipticReducedHalfPeriods, EllipticThetaPrime, Empty,%
4207 EnableConsolePrintPacket, Encoding, EndAdd, EndDialogPacket,%
4208 EndFrontEndInteractionPacket, EndOfLine, EndOfString, Enter,%
4209 EnterExpressionPacket, EnterTextPacket, EqualColumns, EqualRows,%
4210 EquatedTo, Erfi, ErrorBox, ErrorBoxOptions, ErrorNorm, ErrorPacket,%
4211 ErrorsDialogSettings, Evaluatable, EvaluatePacket, EvaluationCell,%
4212 EvaluationCompletionAction, EvaluationMonitor, EvaluationNotebook,%
4213 Evaluator, EvaluatorNames, EventEvaluator, ExactNumberQ,%
4214 ExactRootIsolation, Except, ExcludedForms, Exists, ExitDialog,%
4215 ExponentPosition, ExponentStep, Export, ExportAutoReplacements,%
4216 ExportPacket, ExportString, ExpressionPacket, ExpToTrig, Extension,%
4217 ExternalCall, ExternalDataCharacterEncoding, Extract, Fail,%
4218 FEDisableConsolePrintPacket, FEEnableConsolePrintPacket, Fibonacci,%
4219 File, FileFormat, FileInformation, FileName, FileNameDialogSettings,%
4220 FindFit, FindInstance, FindMaximum, FindSettings, FitAll,%
4221 FlushPrintOutputPacket, Font, FontColor, FontFamily, FontName,%
4222 FontPostScriptName, FontProperties, FontReencoding, FontSize,%
4223 FontSlant, FontSubstitutions, FontTracking, FontVariations, FontWeight,%
4224 ForAll, FormatRules, FormatTypeAutoConvert, FormatValues, FormBox,%
4225 FormBoxOptions, Forward, ForwardBackward, FourierCosTransform,%
4226 FourierParameters, FourierSinTransform, FourierTransform,%
4227 FractionalPart, FractionBox, FractionBoxOptions, FractionLine,%
4228 FrameBox, FrameBoxOptions, FresnelC, FresnelS, FromContinuedFraction,%
4229 FromDigits, FrontEndExecute, FrontEndObject, FrontEndStackSize,%
4230 FrontEndToken, FrontEndTokenExecute, FrontEndVersion, Full, FullAxes,%
4231 FullSimplify, FunctionExpand, FunctionInterpolation, GaussKronrod,%
4232 GaussPoints, GenerateBitmapCaches, GenerateConditions, GeneratedCell,%
4233 GeneratedParameters, Generic, GetBoundingBoxSizePacket, GetContext,%
4234 GetFileName, GetFrontEndOptionsDataPacket,%
4235 GetLinebreakInformationPacket, GetMenusPacket,%
4236 GetPageBreakInformationPacket, Glaisher, GlobalPreferences,%
4237 GlobalSession, Gradient, GraphicsData, GraphicsGrouping, Gray, Green,%
4238 Grid, GridBaseline, GridBox, GridBoxOptions, GridCreationSettings,%
4239 GridDefaultElement, GridFrame, GridFrameMargins, GroupPageBreakWithin,%
4240 HarmonicNumber, Hash, HashTable, HeadCompose, HelpBrowserLookup,%
4241 HelpBrowserNotebook, HelpBrowserSettings, HessenbergDecomposition,%
4242 Hessian, HoldAllComplete, HoldComplete, HoldPattern, Horizontal,%
4243 HorizontalForm, HorizontalScrollPosition, HTMLSave,%
4244 HypergeometricOF1Regularized, HypergeometricF1Regularized,%
4245 Hypergeometric2F1Regularized, HypergeometricPFQ,%
4246 HypergeometricPFQRegularized, HyperlinkCreationSettings, Hyphenation,%

4247 HyphenationOptions, IgnoreCase, ImageCache, ImageCacheValid,%
4248 ImageMargins, ImageOffset, ImageRangeCache, ImageRegion,%
4249 ImageResolution, ImageRotated, ImageSize, Import,%
4250 ImportAutoReplacements, ImportString, IncludeFileExtension,%
4251 IncludeSingularTerm, IndentingNewlineSpacings, IndentMaxFraction,%
4252 IndexCreationOptions, Inequality, InexactNumberQ, InexactNumbers,%
4253 Inherited, InitializationCell, InitializationCellEvaluation,%
4254 InitializationCellWarning, InlineCounterAssignments,%
4255 InlineCounterIncrements, InlineRules, InputAliases, InputAutoFormat,%
4256 InputAutoReplacements, InputGrouping, InputNamePacket, InputNotebook,%
4257 InputPacket, InputSettings, InputStringPacket, InputToBoxFormPacket,%
4258 InputToInputForm, InputToStandardForm, InsertionPointObject,%
4259 IntegerExponent, IntegerPart, Integers, Interactive, Interlaced,%
4260 InterpolationOrder, InterpolationPoints, InterpolationPrecision,%
4261 InterpretationBox, InterpretationBoxOptions, InterpretTemplate,%
4262 InterruptSettings, Interval, IntervalIntersection, IntervalMemberQ,%
4263 IntervalUnion, InverseBetaRegularized, InverseEllipticNomeQ,%
4264 InverseErf, InverseErfc, InverseFourierCosTransform,%
4265 InverseFourierSinTransform, InverseFourierTransform,%
4266 InverseGammaRegularized, InverseJacobiCD, InverseJacobiCN,%
4267 InverseJacobiCS, InverseJacobiDC, InverseJacobiDN, InverseJacobiDS,%
4268 InverseJacobiNC, InverseJacobiND, InverseJacobiNS, InverseJacobiSC,%
4269 InverseJacobiSD, InverseLaplaceTransform, InverseWeierstrassP,%
4270 InverseZTransform, Jacobian, JacobiCD, JacobiCN, JacobiCS, JacobiDC,%
4271 JacobiDN, JacobiDS, JacobiNC, JacobiND, JacobiNS, JacobiSC, JacobiSD,%
4272 JordanDecomposition, K, Khinchin, KleinInvariantJ, KroneckerDelta,%
4273 Language, LanguageCategory, LaplaceTransform, Larger, Launch,%
4274 LayoutInformation, Left, LetterCharacter, Lexicographic, LicenseID,%
4275 LimitsPositioning, LimitsPositioningTokens, LinearSolveFunction,%
4276 LinebreakAdjustments, LineBreakWithin, LineForm, LineIndent,%
4277 LineSpacing, LineWrapParts, LinkActivate, LinkClose, LinkConnect,%
4278 LinkConnectedQ, LinkCreate, LinkError, LinkFlush, LinkHost,%
4279 LinkInterrupt, LinkLaunch, LinkMode, LinkObject, LinkOpen, LinkOptions,%
4280 LinkPatterns, LinkProtocol, LinkRead, LinkReadHeld, LinkReadyQ, Links,%
4281 LinkWrite, LinkWriteHeld, ListConvolve, ListCorrelate, Listen,%
4282 ListInterpolation, ListQ, LiteralSearch, LongestMatch, LongForm,%
4283 Loopback, LUBackSubstitution, LUdecomposition, MachineID, MachineName,%
4284 MachinePrecision, MacintoshSystemPageSetup, Magenta, Magnification,%
4285 MakeBoxes, MakeExpression, MakeRules, Manual, MatchLocalNameQ,%
4286 MathematicaNotation, MathieuC, MathieuCharacteristicA,%
4287 MathieuCharacteristicB, MathieuCharacteristicExponent, MathieuCPrime,%
4288 MathieuS, MathieuSPrime, MathMLForm, MathMLText, MatrixRank, Maximize,%
4289 MaxIterations, MaxPlotPoints, MaxPoints, MaxRecursion, MaxStepFraction,%
4290 MaxSteps, MaxStepSize, Mean, Median, MeijerG, MenuPacket,%
4291 MessageOptions, MessagePacket, MessagesNotebook, MetaCharacters,%
4292 Method, MethodOptions, Minimize, MinRecursion, MinSize, Mode,%
4293 ModularLambda, MonomialOrder, MonteCarlo, Most, MousePointerNote,%
4294 MultiDimensional, MultilaunchWarning, MultilineFunction,%
4295 MultiplicativeOrder, Multiplicity, Nand,%
4296 NeedCurrentFrontEndPackagePacket, NeedCurrentFrontEndSymbolsPacket,%

4297 NestedScriptRules, NestWhile, NestWhileList, NevilleThetaC,%
4298 NevilleThetaD, NevilleThetaN, NevilleThetaS, Newton, Next, NHoldAll,%
4299 NHoldFirst, NHoldRest, NMaximize, NMinimize, NonAssociative,%
4300 NonPositive, Nor, Norm, NormalGrouping, NormalSelection, NormFunction,%
4301 Notebook, NotebookApply, NotebookAutoSave, NotebookClose,%
4302 NotebookConvert, NotebookConvertSettings, NotebookCreate,%
4303 NotebookCreateReturnObject, NotebookDefault, NotebookDelete,%
4304 NotebookDirectory, NotebookFind, NotebookFindReturnObject, NotebookGet,%
4305 NotebookGetLayoutInformationPacket, NotebookGetMisspellingsPacket,%
4306 NotebookInformation, NotebookLocate, NotebookObject, NotebookOpen,%
4307 NotebookOpenReturnObject, NotebookPath, NotebookPrint, NotebookPut,%
4308 NotebookPutReturnObject, NotebookRead, NotebookResetGeneratedCells,%
4309 Notebooks, NotebookSave, NotebookSaveAs, NotebookSelection,%
4310 NotebookSetupLayoutInformationPacket, NotebooksMenu, NotebookWrite,%
4311 NotElement, NProductExtraFactors, NProductFactors, NRoots,%
4312 NSumExtraTerms, NSumTerms, NumberMarks, NumberMultiplier, NumberString,%
4313 NumericFunction, NumericQ, NValues, Offset, OLEData,%
4314 OneStepRowReduction, Open, OpenFunctionInspectorPacket,%
4315 OpenSpecialOptions, OptimizationLevel, OptionInspectorSettings,%
4316 OptionQ, OptionsPacket, OptionValueBox, OptionValueBoxOptions, Orange,%
4317 Ordering, Oscillatory, OutputAutoOverwrite, OutputFormData,%
4318 OutputGrouping, OutputMathEditExpression, OutputNamePacket,%
4319 OutputToOutputForm, OutputToStandardForm, Over, Overflow, Overlaps,%
4320 Overscript, OverscriptBox, OverscriptBoxOptions, OwnValues, PadLeft,%
4321 PadRight, PageBreakAbove, PageBreakBelow, PageBreakWithin,%
4322 PageFooterLines, PageFooters, PageHeaderLines, PageHeaders,%
4323 PalettePath, PaperWidth, ParagraphIndent, ParagraphSpacing,%
4324 ParameterVariables, ParentConnect, ParentForm, Parenthesize,%
4325 PasteBoxFormInlineCells, Path, PatternTest, PeriodicInterpolation,%
4326 Pick, Piecewise, PiecewiseExpand, Pink, Pivoting, PixelConstrained,%
4327 Placeholder, Plain, Plot3Matrix, PointForm, PolynomialForm,%
4328 PolynomialReduce, Polynomials, PowerModList, Precedence,%
4329 PreferencesPath, PreserveStyleSheet, Previous, PrimaryPlaceholder,%
4330 Primes, PrincipalValue, PrintAction, PrintingCopies, PrintingOptions,%
4331 PrintingPageRange, PrintingStartingPageNumber,%
4332 PrintingStyleEnvironment, PrintPrecision, PrivateCellOptions,%
4333 PrivateEvaluationOptions, PrivateFontOptions, PrivateNotebookOptions,%
4334 PrivatePaths, ProductLog, PromptForm, Purple, Quantile,%
4335 QuasiMonteCarlo, QuasiNewton, RadicalBox, RadicalBoxOptions,%
4336 RandomSeed, RationalFunctions, Rationals, RawData, RawMedium,%
4337 RealBlockForm, Reals, Reap, Red, Refine, Refresh, RegularExpression,%
4338 Reinstall, Release, Removed, RenderingOptions, RepeatedString,%
4339 ReplaceList, Rescale, ResetMenusPacket, Resolve, ResumePacket,%
4340 ReturnExpressionPacket, ReturnInputFormPacket, ReturnPacket,%
4341 ReturnTextPacket, Right, Root, RootReduce, RootSum, Row, RowAlignments,%
4342 RowBox, RowLines, RowMinHeight, RowsEqual, RowSpacings, RSolve,%
4343 RuleCondition, RuleForm, RulerUnits, Saveable, SaveAutoDelete,%
4344 ScreenRectangle, ScreenStyleEnvironment, ScriptBaselineShifts,%
4345 ScriptLevel, ScriptMinSize, ScriptRules, ScriptSizeMultipliers,%
4346 ScrollingOptions, ScrollPosition, Second, SectionGrouping, Selectable,%

4347 SelectedNotebook, Selection, SelectionAnimate, SelectionCell,%
4348 SelectionCellCreateCell, SelectionCellDefaultStyle,%
4349 SelectionCellParentStyle, SelectionCreateCell, SelectionDuplicateCell,%
4350 SelectionEvaluate, SelectionEvaluateCreateCell, SelectionMove,%
4351 SelectionSetStyle, SelectionStrategy, SendFontInformationToKernel,%
4352 SequenceHold, SequenceLimit, SeriesCoefficient, SetBoxFormNamesPacket,%
4353 SetEvaluationNotebook, SetFileLoadingContext, SetNotebookStatusLine,%
4354 SetOptionsPacket, SetSelectedNotebook, SetSpeechParametersPacket,%
4355 SetValue, ShortestMatch, ShowAutoStyles, ShowCellBracket,%
4356 ShowCellLabel, ShowCellTags, ShowClosedCellArea, ShowContents,%
4357 ShowCursorTracker, ShowGroupOpenCloseIcon, ShowPageBreaks,%
4358 ShowSelection, ShowShortBoxForm, ShowSpecialCharacters,%
4359 ShowStringCharacters, ShrinkWrapBoundingBox, SingleLetterItalics,%
4360 SingularityDepth, SingularValueDecomposition, SingularValueList,%
4361 SinhIntegral, Smaller, Socket, SolveDelayed, SoundAndGraphics, Sow,%
4362 Space, SpaceForm, SpanAdjustments, SpanCharacterRounding,%
4363 SpanLineThickness, SpanMaxSize, SpanMinSize, SpanningCharacters,%
4364 SpanSymmetric, Sparse, SparseArray, SpeakTextPacket,%
4365 SpellingDictionaries, SpellingDictionariesPath, SpellingOptions,%
4366 SpellingSuggestionsPacket, Spherical, Split, SqrtBox, SqrtBoxOptions,%
4367 StandardDeviation, StandardForm, StartingStepSize, StartOffline,%
4368 StartOfString, StartupSound, StepMonitor, StieltjesGamma, StoppingTest,%
4369 StringCases, StringCount, StringExpression, StringFreeQ, StringQ,%
4370 StringReplaceList, StringReplacePart, StringSplit, StripBoxes,%
4371 StripWrapperBoxes, StructuredSelection, StruveH, StruveL, StyleBox,%
4372 StyleBoxAutoDelete, StyleBoxOptions, StyleData, StyleDefinitions,%
4373 StyleForm, StyleMenuListing, StyleNameDialogSettings, StylePrint,%
4374 StyleSheetPath, Subresultants, SubscriptBox, SubscriptBoxOptions,%
4375 Subsets, Subsuperscript, SubsuperscriptBox, SubsuperscriptBoxOptions,%
4376 SubtractFrom, SubValues, SugarCube, SuperscriptBox,%
4377 SuperscriptBoxOptions, SuspendPacket, SylvesterMatrix, SymbolName,%
4378 Syntax, SyntaxForm, SyntaxPacket, SystemException, SystemHelpPath,%
4379 SystemStub, Tab, TabFilling, TabSpacings, TagBox, TagBoxOptions,%
4380 TaggingRules, TagStyle, TargetFunctions, TemporaryVariable, TensorQ,%
4381 TeXSave, TextAlignment, TextBoundingBox, TextData, TextJustification,%
4382 TextLine, TextPacket, TextParagraph, TextRendering, TextStyle,%
4383 ThisLink, TimeConstraint, TimeVariable, TitleGrouping, ToBoxes,%
4384 ToColor, ToFileName, Toggle, ToggleFalse, Tolerance, TooBig, Top,%
4385 ToRadicals, Total, Tr, TraceAction, TraceInternal, TraceLevel,%
4386 TraditionalForm, TraditionalFunctionNotation, TraditionalNotation,%
4387 TraditionalOrder, TransformationFunctions, TransparentColor,%
4388 Trapezoidal, TrigExpand, TrigFactor, TrigFactorList, TrigReduce,%
4389 TrigToExp, Tuples, UnAlias, Underflow, Underoverscript,%
4390 UnderoverscriptBox, UnderoverscriptBoxOptions, Underscript,%
4391 UnderscriptBox, UnderscriptBoxOptions, UndocumentedTestFEParsePacket,%
4392 UndocumentedTestGetSelectionPacket, UnitStep, Up, URL, Using, V2Get,%
4393 Value, ValueBox, ValueBoxOptions, ValueForm, Variance, Verbatim,%
4394 Verbose, VerboseConvertToPostScriptPacket, VerifyConvergence,%
4395 VerifySolutions, Version, VersionNumber, Vertical, VerticalForm,%
4396 ViewPointSelectorSettings, Visible, VisibleCell,%


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4397 WeierstrassHalfPeriods, WeierstrassInvariants, WeierstrassSigma,%
4398 WeierstrassZeta, White, Whitespace, WhitespaceCharacter,%
4399 WindowClickSelect, WindowElements, WindowFloating, WindowFrame,%
4400 WindowFrameElements, WindowMargins, WindowMovable, WindowSize,%
4401 WindowTitle, WindowToolbars, WindowWidth, WordBoundary, WordCharacter,%
4402 WynnDegree, XMLElement},%
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4404 $AnimationFunction,%
4405 $Assumptions, $BaseDirectory, $BoxForms, $ByteOrdering,%
4406 $CharacterEncoding, $ConditionHold, $CurrentLink, $DefaultPath,%
4407 $ExportEncodings, $ExportFormats, $FormatType, $FrontEnd,%
4408 $HistoryLength, $HomeDirectory, $ImportEncodings, $ImportFormats,%
4409 $InitialDirectory, $InstallationDate, $InstallationDirectory,%
4410 $InterfaceEnvironment,%
4411 $LaunchDirectory, $LicenseExpirationDate, $LicenseID, $LicenseProcesses,%
4412 $LicenseServer, $MachineDomain, $MaxExtraPrecision, $MaxLicenseProcesses,%
4413 $MaxNumber, $MaxPiecewiseCases, $MaxPrecision, $MaxRootDegree,%
4414 $MinNumber, $MinPrecision, $NetworkLicense, $NumberMarks,%
4415 $Off, $OutputForms, $ParentLink, $ParentProcessID,%
4416 $PasswordFile, $PathnameSeparator, $PreferencesDirectory, $PrintForms,%
4417 $PrintLiteral, $ProcessID, $ProcessorType, $ProductInformation,%
4418 $ProgramName, $PSDirectDisplay, $RandomState, $RasterFunction,%
4419 $RootDirectory, $SetParentLink, $SoundDisplay, $SuppressInputFormHeads,%
4420 $SystemCharacterEncoding, $SystemID, $TemporaryPrefix, $TextStyle,%
4421 $TopDirectory, $TraceOff, $TraceOn, $TracePattern,%
4422 $TracePostAction, $TracePreAction, $UserAddOnsDirectory, $UserBaseDirectory,%
4423 $UserName, Constant, Flat, HoldAll,%
4424 HoldAllComplete, HoldFirst, HoldRest, Listable,%
4425 Locked, NHoldAll, NHoldFirst, NHoldRest,%
4426 NumericFunction, OneIdentity, Orderless, Protected,%
4427 ReadProtected, SequenceHold},%
4428 }%

4429 %%
4430 %% Mathematica definitions (c) 1999 Michael Wiese
4431 %%
4432 \lst@definlanguage[3.0]{Mathematica}[1.0]{Mathematica}%
4433 {morekeywords={Abort, AbortProtect, AbsoluteDashing, AbsolutePointSize,%
4434 AbsoluteThickness, AbsoluteTime, AccountingFormAiry, AiPrime, AiryBi,%
4435 AiryBiPrime, Alternatives, AnchoredSearch, AxesEdge, AxesOrigin,%
4436 AxesStyle, Background, BetaRegularized, BoxStyle, C, CheckAbort,%
4437 Circle, ClebschGordan, CMYKColor, ColorFunction, ColorOutput, Compile,%
4438 Compiled, CompiledFunction, ComplexExpand, ComposeList, Composition,%
4439 ConstrainedMax, ConstrainedMin, Contexts, ContextToFilename,%
4440 ContourLines, Contours, ContourShading, ContourSmoothing,%
4441 ContourStyle, CopyDirectory, CopyFile, CosIntegral, CreateDirectory,%
4442 Cuboid, Date, DeclarePackage, DefaultColor, DefaultFont, Delete,%
4443 DeleteCases, DeleteDirectory, DeleteFile, Dialog, DialogIndent,%
4444 DialogProlog, DialogSymbols, DigitQ, Directory, DirectoryStack, Disk,%
4445 Dispatch, DownValues, DSolve, Encode, Epilog, Erfc, Evaluate,%

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4446 ExponentFunction,FaceGrids,FileByteCount,FileDate,FileNames,%
4447 FileType,Find,FindList,FixedPointList,FlattenAt,Fold,FoldList,%
4448 Frame,FrameLabel,FrameStyle,FrameTicks,FromCharCode,%
4449 FromDate,FullGraphics,FullOptions,GammaRegularized,%
4450 GaussianIntegers,GraphicsArray,GraphicsSpacing,GridLines,%
4451 GroebnerBasis,Heads,HeldPart,HomeDirectory,Hue,IgnoreCases,%
4452 InputStream,Install,InString,IntegerDigits,InterpolatingFunction,%
4453 InterpolatingPolynomial,Interpolation,Interrupt,InverseFunction,%
4454 InverseFunctions,JacobiZeta,LetterQ,LinearProgramming,ListPlay,%
4455 LogGamma,LowerCaseQ,MachineNumberQ,MantissaExponent,MapIndexed,%
4456 MapThread,MatchLocalNames,MatrixExp,MatrixPower,MeshRange,%
4457 MeshStyle,MessageList,Module,NDSolve,NSolve,NullRecords,%
4458 NullWords,NumberFormat,NumberPadding,NumberSigns,OutputStream,%
4459 PaddedForm,ParentDirectory,Pause,Play,PlayRange,PlotRegion,%
4460 PolygonIntersections,PolynomialGCD,PolynomialLCM,PolynomialMod,%
4461 PostScript,PowerExpand,PrecisionGoal,PrimePi,Prolog,%
4462 QRDecomposition,Raster,RasterArray,RealDigits,Record,RecordLists,%
4463 RecordSeparators,ReleaseHold,RenameDirectory,RenameFile,%
4464 ReplaceHeldPart,ReplacePart,ResetDirectory,Residue,%
4465 RiemannSiegelTheta,RiemannSiegelZ,RotateLabel,SameTest,%
4466 SampleDepth,SampledSoundFunction,SampledSoundList,SampleRate,%
4467 SchurDecomposition,SessionTime,SetAccuracy,SetDirectory,%
4468 SetFileDate,SetPrecision,SetStreamPosition,Shallow,SignPadding,%
4469 SinIntegral,SixJSymbol,Skip,Sound,SpellingCorrection,%
4470 SphericalRegion,Stack,StackBegin,StackComplete,StackInhibit,%
4471 StreamPosition,Streams,StringByteCount,StringConversion,%
4472 StringDrop,StringInsert,StringPosition,StringReplace,%
4473 StringReverse,StringTake,StringToStream,SurfaceColor,%
4474 SyntaxLength,SyntaxQ,TableAlignments,TableDepth,%
4475 TableDirections,TableHeadings,TableSpacing,ThreeJSymbol,TimeUsed,%
4476 TimeZone,ToCharCode,ToDate,ToHeldExpression,TokenWords,%
4477 ToLowerCase,ToUpperCase,Trace,TraceAbove,TraceBackward,%
4478 TraceDepth,TraceDialog,TraceForward,TraceOff,TraceOn,%
4479 TraceOriginal,TracePrint,TraceScan,Trig,Unevaluated,Uninstall,%
4480 UnsameQ,UpperCaseQ,UpValues,ViewCenter,ViewVertical,With,Word,%
4481 WordSearch,WordSeparators},%
4482 morendkeywords={Stub,Temporary,$Aborted,$BatchInput,$BatchOutput,%
4483 $CreationDate,$DefaultFont,$DumpDates,$DumpSupported,$Failed,%
4484 $Input,$Inspector,$IterationLimit,$Language,$Letters,$Linked,%
4485 $LinkSupported,$MachineEpsilon,$MachineID,$MachineName,%
4486 $MachinePrecision,$MachineType,$MaxMachineNumber,$MessageList,%
4487 $MessagePrePrint,$MinMachineNumber,$ModuleNumber,$NewMessage,%
4488 $NewSymbol,$Notebooks,$OperatingSystem,$Packages,$PipeSupported,%
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4490 $StringConversion,$StringOrder,$SyntaxHandler,$TimeUnit,%
4491 $VersionNumber}%
4492 }%
4493 \lst@definlanguage[1.0]{Mathematica}%
4494 {morekeywords={Abs,Accuracy,AccuracyGoal,AddTo,AiryAi,AlgebraicRules,%

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4495 AmbientLight, And, Apart, Append, AppendTo, Apply, ArcCos, ArcCosh, %
4496 ArcCot, ArcCoth, ArcCsc, ArcCsch, ArcSec, ArcSech, ArcSin, ArcSinh, %
4497 ArcTan, ArcTanh, Arg, ArithmeticGeometricMean, Array, AspectRatio, %
4498 AtomQ, Attributes, Axes, AxesLabel, BaseForm, Begin, BeginPackage, %
4499 BernoulliB, BesselI, BesselJ, BesselK, BesselY, Beta, Binomial, Blank, %
4500 BlankNullSequence, BlankSequence, Block, Boxed, BoxRatios, Break, Byte, %
4501 ByteCount, Cancel, Cases, Catch, Ceiling, CForm, Character, Characters, %
4502 ChebyshevT, ChebyshevU, Check, Chop, Clear, ClearAll, ClearAttributes, %
4503 ClipFill, Close, Coefficient, CoefficientList, Collect, ColumnForm, %
4504 Complement, Complex, CompoundExpression, Condition, Conjugate, %
4505 Constants, Context, Continuation, Continue, ContourGraphics, %
4506 ContourPlot, Cos, Cosh, Cot, Coth, Count, Csc, Csch, Cubics, Cyclotomic, %
4507 D, Dashing, Decompose, Decrement, Default, Definition, Denominator, %
4508 DensityGraphics, DensityPlot, Depth, Derivative, Det, DiagonalMatrix, %
4509 DigitBlock, Dimensions, DirectedInfinity, Display, DisplayFunction, %
4510 Distribute, Divide, DivideBy, Divisors, DivisorSigma, Do, Dot, Drop, Dt, %
4511 Dump, EdgeForm, Eigensystem, Eigenvalues, Eigenvectors, Eliminate, %
4512 EllipticE, EllipticExp, EllipticF, EllipticK, EllipticLog, EllipticPi, %
4513 EllipticTheta, End, EndPackage, EngineeringForm, Environment, Equal, %
4514 Erf, EulerE, EulerPhi, EvenQ, Exit, Exp, Expand, ExpandAll, %
4515 ExpandDenominator, ExpandNumerator, ExpIntegralE, ExpIntegralEi, %
4516 Exponent, Expression, ExtendedGCD, FaceForm, Factor, FactorComplete, %
4517 Factorial, Factorial2, FactorInteger, FactorList, FactorSquareFree, %
4518 FactorSquareFreeList, FactorTerms, FactorTermsList, FindMinimum, %
4519 FindRoot, First, Fit, FixedPoint, Flatten, Floor, FontForm, For, Format, %
4520 FormatType, FortranForm, Fourier, FreeQ, FullDefinition, FullForm, %
4521 Function, Gamma, GCD, GegenbauerC, General, Get, Goto, Graphics, %
4522 Graphics3D, GrayLevel, Greater, GreaterEqual, Head, HermiteH, %
4523 HiddenSurface, Hold, HoldForm, Hypergeometric0F1, Hypergeometric1F1, %
4524 Hypergeometric2F1, HypergeometricU, Identity, IdentityMatrix, If, Im, %
4525 Implies, In, Increment, Indent, Infix, Information, Inner, Input, %
4526 InputForm, InputString, Insert, Integer, IntegerQ, Integrate, %
4527 Intersection, Inverse, InverseFourier, InverseJacobiSN, %
4528 InverseSeries, JacobiAmplitude, JacobiP, JacobiSN, JacobiSymbol, Join, %
4529 Label, LaguerreL, Last, LatticeReduce, LCM, LeafCount, LegendreP, %
4530 LegendreQ, LegendreType, Length, LerchPhi, Less, LessEqual, Level, %
4531 Lighting, LightSources, Limit, Line, LinearSolve, LineBreak, List, %
4532 ListContourPlot, ListDensityPlot, ListPlot, ListPlot3D, Literal, Log, %
4533 LogicalExpand, LogIntegral, MainSolve, Map, MapAll, MapAt, MatchQ, %
4534 MatrixForm, MatrixQ, Max, MaxBend, MaxMemoryUsed, MemberQ, %
4535 MemoryConstrained, MemoryInUse, Mesh, Message, MessageName, Messages, %
4536 Min, Minors, Minus, Mod, Modulus, MoebiusMu, Multinomial, N, NameQ, Names, %
4537 NBernoulliB, Needs, Negative, Nest, NestList, NIntegrate, %
4538 NonCommutativeMultiply, NonConstants, NonNegative, Normal, Not, %
4539 NProduct, NSum, NullSpace, Number, NumberForm, NumberPoint, NumberQ, %
4540 NumberSeparator, Numerator, O, OddQ, Off, On, OpenAppend, OpenRead, %
4541 OpenTemporary, OpenWrite, Operate, Optional, Options, Or, Order, %
4542 OrderedQ, Out, Outer, OutputForm, PageHeight, PageWidth, %
4543 ParametricPlot, ParametricPlot3D, Part, Partition, PartitionsP, %
4544 PartitionsQ, Pattern, Permutations, Plot, Plot3D, PlotDivision, %

```

4545 PlotJoined,PlotLabel,PlotPoints,PlotRange,PlotStyle,Pochhammer,%
4546 Plus,Point,PointSize,PolyGamma,Polygon,PolyLog,PolynomialQ,%
4547 PolynomialQuotient,PolynomialRemainder,Position,Positive,Postfix,%
4548 Power,PowerMod,PrecedenceForm,Precision,PreDecrement,Prefix,%
4549 PreIncrement,Prepend,PrependTo,Prime,PrimeQ,Print,PrintForm,%
4550 Product,Protect,PseudoInverse,Put,PutAppend,Quartics,Quit,%
4551 Quotient,Random,Range,Rational,Rationalize,Raw,Re,Read,ReadList,%
4552 Real,Rectangle,Reduce,Remove,RenderAll,Repeated,RepeatedNull,%
4553 Replace,ReplaceAll,ReplaceRepeated,Rest,Resultant,Return,Reverse,%
4554 RGBColor,Roots,RotateLeft,RotateRight,Round,RowReduce,Rule,%
4555 RuleDelayed,Run,RunThrough,SameQ,Save,Scaled,Scan,ScientificForm,%
4556 Sec,Sech,SeedRandom,Select,Sequence,SequenceForm,Series,%
4557 SeriesData,Set,SetAttributes,SetDelayed,SetOptions,Shading,Share,%
4558 Short,Show,Sign,Signature,Simplify,Sin,SingularValues,Sinh,%
4559 Skeleton,Slot,SlotSequence,Solve,SolveAlways,Sort,%
4560 SphericalHarmonicY,Splice,Sqrt,StirlingS1,StirlingS2,String,%
4561 StringBreak,StringForm,StringJoin,StringLength,StringMatchQ,%
4562 StringSkeleton,Subscript,Subscripted,Subtract,SubtractForm,Sum,%
4563 Superscript,SurfaceGraphics,Switch,Symbol,Table,TableForm,TagSet,%
4564 TagSetDelayed,TagUnset,Take,Tan,Tanh,ToString,TensorRank,TeXForm,%
4565 Text,TextForm,Thickness,Thread,Through,Throw,Ticks,%
4566 TimeConstrained,Times,TimesBy,Timing,ToExpression,Together,%
4567 ToRules,ToString,TotalHeight,TotalWidth,Transpose,TreeForm,TrueQ,%
4568 Unequal,Union,Unique,Unprotect,Unset,Update,UpSet,UpSetDelayed,%
4569 ValueQ,Variables,VectorQ,ViewPoint,WeierstrassP,%
4570 WeierstrassPPrime,Which,While,WorkingPrecision,Write,WriteString,%
4571 Xor,ZeroTest,Zeta},%
4572 morendkeywords={All, Automatic, Catalan, ComplexInfinity, Constant,%
4573 Degree, E, EndOfFile, EulerGamma, False, Flat, GoldenRatio, HoldAll,%
4574 HoldFirst, HoldRest, I, Indeterminate, Infinity, Listable, Locked,%
4575 Modular, None, Null, OneIdentity, Orderless, Pi, Protected,%
4576 ReadProtected, True, $CommandLine, $Context, $ContextPath, $Display,%
4577 $DisplayFunction, $Echo, $Epilog, $IgnoreEOF, $Line, $Messages,%
4578 $Output, $Path, $Post, $Pre, $PrePrint, $RecursionLimit, $System,%
4579 $Urgent, $Version},%
4580 sensitive,%
4581 morecomment=[s]{(*)}{(*)},%
4582 morestring=[d]"%
4583 }[keywords,comments,strings]
4584 </lang1>

```

2.44 Mercury

Dominique de Waleffe mailed me the data and Ralph Becket extended the definition.

```

4585 (*lang2)
4586 %%
4587 %% Mercury definition (c) 1997 Dominique de Waleffe

```

```

4588 %% Extended (c) 2001 Ralph Becket
4589 %%
4590 \lst@definelanguage{Mercury}%
4591  {otherkeywords={::,->,->>,->>>,:-==,=>,<=,<=>},%
4592   morekeywords={module,include_module,import_module,interface,%
4593     end_module,implementation,mode,is,failure,semidet,nondet,det,%
4594     multi,erroneous,inst,in,out,di,uo,ui,type,typeclass,instance,%
4595     where,with_type,pred,func,lambda,impure,semipure,if,then,else,%
4596     some,all,not,true,fail,pragma,memo,no_inline,inline,loop_check,%
4597     minimal_model,fact_table,type_spec,terminates,does_not_terminate,%
4598     check_termination,promise_only_solution,unsafe_promise_unique,%
4599     source_file,obsolete,import,export,c_header_code,c_code,%
4600     foreign_code,foreign_proc,may_call_mercury,will_not_call_mercury,%
4601     thread_safe,not_thread_safe},%
4602   sensitive=t,%
4603   morecomment=[1]\%,%
4604   morecomment=[s]{/*}{*/},%
4605   morestring=[bd]" ,%
4606   morestring=[bd]'%
4607 }[keywords,comments,strings]
4608 </lang2>

```

2.45 MetaPost

Uwe Siart provided the keywords for a previous version. The current language definition comes from Brooks Moses.

```

4609 (*lang3)
4610 %%
4611 %% MetaPost definition (c) 2004 Brooks Moses
4612 %% This definition is based on the language specifications
4613 %% contained in the _User's Manual for Metapost_, with the core
4614 %% language enhancements that are described in the _Drawing
4615 %% Graphs with MetaPost_ documentation.
4616 %%
4617 \lst@definelanguage{MetaPost}%
4618  {% keywords[1] = MetaPost primitives (not found in following tables)
4619   morekeywords={end,begingroup,endgroup,beginfig,endfig,def,vardef,%
4620     primary,secondary,tertiary,primarydef,secondarydef,tertiarydef,%
4621     expr,suffix,text,endif,if,fi,else,elseif,for,forsuffixes,%
4622     forever,endfor,upto,downto,stop,until,tension,controls,on,off,%
4623     btex,etex,within,input},
4624   % keywords[2] = Operators (Tables 6-9 in MetaPost User's manual)
4625   morekeywords=[2]{abs,and,angle,arclength,arctime,ASCII,bbox,bluepart,%
4626     boolean,bot,ceiling,center,char,color,cosd,cutafter,cutbefore,%
4627     cycle,decimal,dir,direction,directionpoint,directiontime,div,%
4628     dotprod,floor,fontsize,greenpart,hex,infont,intersectionpoint,%
4629     intersectiontimes,inverse,known,length,lft,llcorner,lrcorner,%
4630     makepath,makepen,mexp,mlog,mod,normaldeviate,not,numeric,oct,%

```

```

4631     odd,or,pair,path,pen,penoffset,picture,point,postcontrol,%
4632     precontrol,redpart,reverse,rotated,round,rt,scaled,shifted,%
4633     sind,slanted,sqrt,str,string,subpath,substring,top,transform,%
4634     transformed,ulcorner,uniformdeviate,unitvector,unknown,%
4635     urcorner,whatever,xpart,xscaled,xxpart,ypart,yscaled,%
4636     yxpart,ypart,zscaled,of,reflectedabout,rotatedaround,ulft,urt,%
4637     llft,lrt,readfrom,write,stroked,filled,textual,clipped,bounded,%
4638     pathpart,penpart,dashpart,textpart,fontpart},%
4639 % keywords[3] = Commands (Table 10)
4640 morekeywords=[3]{addto,clip,cutdraw,draw,drawarrow,drawdblarrow,%
4641     fill,filldraw,interim,let,loggingall,newinternal,pickup,%
4642     save,setbounds,shipout,show,showdependencies,showtoken,%
4643     showvariable,special,tracingall,tracingnone,undraw,unfill,%
4644     unfilldraw,to,also,contour,doublepath,withcolor,withpen,%
4645     dashed,randomseed},%
4646 % keywords[4] = Function-Like Macros (Table 11)
4647 morekeywords=[4]{boxit,boxjoin,bpath,buildcycle,circleit,dashpattern,%
4648     decr,dotlabel,dotlabels,drawboxed,drawboxes,drawoptions,%
4649     drawunboxed,fixpos,fixsize,incr,interpath,label,labels,max,min,pic,%
4650     thelabel,z,image},%
4651 % keywords[5] = Internal and Predefined Variables (Tables 3, 4)
4652 morekeywords=[5]{ahangle,ahlength,bbboxmargin,charcode,circmargin,%
4653     day,defaultdx,defaultdy,defaultpen,defaultscale,labeloffset,%
4654     linecap,linejoin,miterlimit,month,pausing,prologues,showstopping,%
4655     time,tracingcapsules,tracingchoices,tracingcommands,%
4656     tracingequations,tracinglostchars,tracingmacros,tracingonline,%
4657     tracingoutput,tracingrestores,tracingspecs,tracingstats,%
4658     tracingtitles,truecorners,warningcheck,year},
4659 morekeywords=[5]{background,currentpen,currentpicture,cuttings,%
4660     defaultfont},%
4661 % keywords[6] = Predefined Constants (Table 5)
4662 morekeywords=[6]{beveled,black,blue,bp,butt,cc,cm,dd,ditto,down,%
4663     epsilon,evenly,false,fullcircle,green,halfcircle,identity,%
4664     in,infinity,left,mitered,mm,nullpicture,origin,pc,pencircle,%
4665     pt,quartercircle,red,right,rounded,squared,true,unitsquare,%
4666     up,white,withdots},
4667 sensitive=false,%
4668 alsoother={0123456789$},%
4669 morecomment=[1]\%,%
4670 morestring=[mf]{input\ },%
4671 morestring=[b]"%
4672 }[keywords,comments,strings,mf]%
4673  $\end{code}$ 

```

2.46 Miranda

Thanks to Peter Bartke for providing the definition.

```
4674  $\end{code}$ 
```

```

4675 %%
4676 %% Miranda definition (c) 1998 Peter Bartke
4677 %%
4678 %% Miranda: pure lazy functional language with polymorphic type system,
4679 %%         garbage collection and functions as first class citizens
4680 %%
4681 \lst@definelanguage{Miranda}%
4682 {morekeywords={abstype,div,if,mod,otherwise,readvals,show,type,where,%
4683   with,bool,char,num,sys_message,False,True,Appendfile,Closefile,%
4684   Exit,Stderr,Stdout,System,Tofile,\%include,\%export,\%free,%
4685   \%insert,abs,and,arctan,cjustify,code,concat,const,converse,cos,%
4686   decode,digit,drop,dropwhile,entier,error,exp,filemode,filter,%
4687   foldl,foldl1,foldr,foldr1,force,fst,getenv,hd,hugenum,id,index,%
4688   init,integer,iterate,last,lay,layn,letter,limit,lines,ljustify,%
4689   log,log10,map,map2,max,max2,member,merge,min,min2,mkset,neg,%
4690   numval,or,pi,postfix,product,read,rep,repeat,reverse,rjustify,%
4691   scan,seq,showfloat,shownum,showscald,sin,snd,sort,spaces,sqrt,%
4692   subtract,sum,system,take,takewhile,tinynum,tl,transpose,undef,%
4693   until,zip2,zip3,zip4,zip5,zip6,zip},%
4694   sensitive,%
4695   morecomment=[l]||,%
4696   morestring=[b]"%
4697 }[keywords,comments,strings]
4698 </lang2>

```

2.47 Mizar

As you can read below, Adam Grabowski provided this language definition.

```

4699 (*lang3)
4700 %%
4701 %% Mizar definition (c) 2003 Adam Grabowski
4702 %%
4703 %% Mizar is freely available at URL www.mizar.org for the Linux x86,
4704 %% Solaris x86, and Windows operating systems.
4705 %%
4706 \lst@definelanguage{Mizar}%
4707 {otherkeywords={->,(\\#,\\#),.=),\\&},%
4708   morekeywords={vocabulary,constructors,$1,$1,$2,$3,$4,$5,$6,$7,$8,%
4709   @proof,according,aggregate,and,antonym,as,associativity,assume,%
4710   asymmetry,attr,be,begin,being,by,canceled,case,cases,cluster,%
4711   clusters,coherence,commutativity,compatibility,connectedness,%
4712   consider,consistency,constructors,contradiction,correctness,def,%
4713   deffunc,define,definition,definitions,defpred,end,environ,equals,%
4714   ex,exactly,existence,for,from,func,given,hence,hereby,holds,%
4715   idempotence,if,iff,implies,involutiveness,irreflexivity,is,it,%
4716   let,means,mode,non,not,notation,now,of,or,otherwise,over,per,%
4717   pred,prefix,projectivity,proof,provided,qua,reconsider,redefine,%
4718   reflexivity,requirements,reserve,scheme,schemes,section,selector,%

```

```

4719     set, st, struct, such, suppose, symmetry, synonym, take, that, the, then, %
4720     theorem, theorems, thesis, thus, to, transitivity, uniqueness, %
4721     vocabulary, where}, %
4722     sensitive=t, %
4723     morecomment=[1]::%
4724 }[keywords, comments]%
4725 </lang3>

```

2.48 ML

Thanks to Torben Hoffmann for providing the definition.

```

4726 <*lang2>
4727 %%
4728 %% ML definition (c) 1999 Torben Hoffmann
4729 %%
4730 \lstdefinlanguage{ML}%
4731 {morekeywords={abstype, and, andalso, as, case, do, datatype, else, end, %
4732     eqtype, exception, fn, fun, functor, handle, if, in, include, infix, %
4733     infixr, let, local, nonfix, of, op, open, orelse, raise, rec, sharing, sig, %
4734     signature, struct, structure, then, type, val, with, withtype, while}, %
4735     sensitive, %
4736     morecomment=[n]{(*){(*)}}, %
4737     morestring=[d]"%
4738 }[keywords, comments, strings]
4739 </lang2>

```

2.49 Modula-2

Took data from

- NIKLAUS WIRTH: **Programmieren in Modula-2**, Übers. Guido Pfeiffer; 2. Auflage – Berlin; Heidelberg; New York; London; Paris; Tokyo; Hong Kong: Springer, 1991; ISBN 3-540-51689-1.

```

4740 <*lang3>
4741 \lstdefinlanguage{Modula-2}%
4742 {morekeywords={AND, ARRAY, BEGIN, BY, CASE, CONST, DIV, DO, ELSE, ELSIF, END, %
4743     EXIT, EXPORT, FOR, FROM, IF, IMPLEMENTATION, IMPORT, IN, MOD, MODULE, NOT, %
4744     OF, OR, POINTER, PROCEDURE, QUALIFIED, RECORD, REPEAT, RETURN, SET, THEN, %
4745     TYPE, UNTIL, VAR, WHILE, WITH, ABS, BITSET, BOOLEAN, CAP, CARDINAL, CHAR, %
4746     CHR, DEC, EXCL, FALSE, FLOAT, HALT, HIGH, INC, INCL, INTEGER, LONGCARD, %
4747     LONGINT, LONGREAL, MAX, MIN, NIL, ODD, ORD, PROC, REAL, SIZE, TRUE, TRUNC, %
4748     VAL, DEFINITION, LOOP}, % added keywords due to Peter Bartke 99/07/22
4749     sensitive, %
4750     morecomment=[n]{(*){(*)}}, %
4751     morestring=[d]' , %
4752     morestring=[d]"%
4753 }[keywords, comments, strings]
4754 </lang3>

```


2.50 MuPAD

This definition was provided by Christopher Creutzig. Again thanks to Ulrike Fischer for pointing to a missing @ in `\lstdefineline`.

```
4755 (*lang3)
4756 \lst@defineline{MuPAD}{%
4757   morekeywords={end,next,break,if,then,elif,else,end_if,case,end_case,%
4758     otherwise,for,from,to,step,downto,in,end_for,while,end_while,%
4759     repeat,until,end_repeat,or,and,not,xor,div,mod,union,minus,%
4760     intersect,subset,proc,begin,end_proc,domain,end_domain,category,%
4761     end_category,axiom,end_axiom,quit,delete,frame},%
4762   morekeywords=[2]{NIL,FAIL,TRUE,FALSE,UNKNOWN,I,RD_INF,RD_NINF,%
4763     RD_NAN,name,local,option,save,inherits,of,do},%
4764   otherkeywords={\%if,?,!,:=,<,>,<=>,>=>,<=>,:,.,.,.,-,%
4765     @,@@,\$},%
4766   sensitive=true,%
4767   morecomment=[1]{//},%
4768   morecomment=[n]{/*}{*/},%
4769   morestring=[b]" ,%
4770   morestring=[d]{ '%
4771 }[keywords,comments,strings]
4772 </lang3>
```

2.51 NASTRAN

```
4773 (*lang3)
4774 The definition is from Jeffrey Ratcliffe—except the MoreSelectCharTable part
4775 which simulates the keyword BEGIN BULK.
4776 \lst@defineline{NASTRAN}
4777   {morekeywords={ENDDATA},%
4778   morecomment=[1]$,%
4779   MoreSelectCharTable=%
4780     \lst@CArgX BEGIN\ BULK\relax\lst@CDef{}%
4781     {\lst@ifmode\else \ifnum\lst@length=\z@
4782       \lst@EnterMode{\lst@GPmode}{\lst@modetrue
4783         \let\lst@currstyle\lst@gkeywords@sty}%
4784       \fi \fi}%
4785     {\ifnum\lst@mode=\lst@GPmode
4786       \lst@XPrintToken \lst@LeaveMode
4787       \fi}%
4788   }[keywords,comments]%
4789 </lang3>
```

2.52 Oberon-2

```
4788 (*lang3)
4789 \lst@defineline{Oberon-2}%
4790   {morekeywords={ARRAY,BEGIN,BOOLEAN,BY,CASE,CHAR,CONST,DIV,DO,ELSE,%
```

```

4791     ELSIF, END, EXIT, FALSE, FOR, IF, IMPORT, IN, INTEGER, IS, LONGINT, %
4792     LONGREAL, LOOP, MOD, MODULE, NIL, OF, OR, POINTER, PROCEDURE, REAL, RECORD, %
4793     REPEAT, RETURN, SET, SHORTINT, THEN, TO, TRUE, TYPE, UNTIL, VAR, WHILE, %
4794     WITH, ABS, ASH, CAP, CHR, COPY, DEC, ENTIER, EXCL, HALT, INC, INCL, LEN, LONG, %
4795     MAX, MIN, NEW, ODD, ORD, SHORT, SIZE}, %
4796     sensitive, %
4797     morecomment=[n]{(*){(*)}}, %
4798     morestring=[d]', %
4799     morestring=[d]"%
4800 }[keywords, comments, strings]
4801 </lang3>

```

2.53 OCL

This definition is based on chapter 7 of the OMG UML standard version 1.3:

- **OMG: OMG Unified Modeling Language Specification;** © 1999 OMG;
Available at <ftp://ftp.omg.org/pub/docs/ad/99-06-08.pdf>.

This language is due to Achim D. Brucker.

```

4802 (*lang3)
4803 %%
4804 %% OCL definition (c) 2000 Achim D. Brucker
4805 %%
4806 %% You are allowed to use, modify and distribute this code either under
4807 %% the terms of the LPPL (version 1.0 or later) or the GPL (version 2.0
4808 %% or later).
4809 %%

```

First we define a very decorative style. In the OMG standard only the boolean (infix (?)) operations are highlighted, but I think all OCL-defined operations should be highlighted, because they are *guaranteed* to be side-effect-free (in OCL only side effect free evaluations or path expressions are allowed).

```

4810 \lst@definlanguage[decorative]{OCL}[OMG]{OCL}
4811 {otherkeywords={@pre}, %
4812   moreendkeywords={name, attributes, associatoinEnds, operations, %
4813     supertypes, allSupertypes, allInstances, oclIsKindOf, oclIsTypeOf, %
4814     oclAsType, oclInState, oclIsNew, evaluationType, abs, floor, round, max, %
4815     min, div, mod, size, concat, toUpper, toLower, substring, includes, %
4816     excludes, count, includesAll, exludesAll, isEmpty, notEmpty, sum, %
4817     exists, forAll, isUnique, sortedBy, iterate, union, intersection, %
4818     including, excluding, symmetricDifference, select, reject, collect, %
4819     asSequence, asBag, asSequence, asSet, append, prepend, subSequence, at, %
4820     first, last, true, false, isQuery}%
4821 }%

```

Remark: "isQuery" is not real OCL, but an important attribute of the underlying UML model.

The dialect called **OMG** is a very spare version. If you use this variant with bold style for first and second order keywords you get the look and feel of the **OMG**

standard. First order keywords are the OCL context declarations (see section 7.3 of the OMG standard):

```
4822 \lst@definelanguage[OMG]{OCL}%
4823     {morekeywords={context,pre,inv,post},%
```

Second order keywords are the operation which are defined for type Boolean (see pages 7-34/35 of the OMG standard) and the let-operation (in principle these are the infix operations):

```
4824     ndkeywords={or,xor,and,not,implies,if,then,else,endif},%
```

Third order keywords are the basic data types as declared in section 7.4 of the OMG standard:

```
4825     morekeywords=[3]{Boolean,Integer,Real,String,Set,Sequence,Bag,%
4826         OclType,OclAny,OclExpression,Enumeration,Collection,},%
4827     sensitive=t,%
4828     morecomment=[1]--,%
4829     morestring=[d]’%
4830 }[keywords,comments,strings]
```

After a bug report by Martin Süßkraut `morerdkeywords` has been changed to the correct optional argument [3].

```
4831 </lang3>
```

2.54 Octave

```
4832 <*lang1>
```

As you can read below the definition is due to Ulrich G. Wortmann. Additions due to Sebastian Schubert.

```
4833 %%
4834 %% Octave definition (c) 2001,2002 Ulrich G. Wortmann
4835 %%
4836 \lst@definelanguage{Octave}%
4837     {morekeywords={gt,lt,amp,abs,acos,acosh,acot,acoth,acsc,acsch,%
4838         all,angle,ans,any,asec,asech,asin,asinh,atan,atan2,atanh,auread,%
4839         auwrite,axes,axis,balance,bar,bessel,besselk,bessely,beta,%
4840         betainc,betaln,blanks,bone,break,brighten,capture,cart2pol,%
4841         cart2sph,caxis,cd,cdf2rdf,cedit,ceil,chol,cla,clabel,clc,clear,%
4842         clf,clock,close,colmmd,Colon,colorbar,colormap,ColorSpec,colperm,%
4843         comet,comet3,compan,compass,computer,cond,condest,conj,contour,%
4844         contour3,contourc,contrast,conv,conv2,cool,copper,corrcoef,cos,%
4845         cosh,cot,coth,cov,cplxpair,cputime,cross,csc,csch,csvread,%
4846         csvwrite,cumprod,cumsum,cylinder,date,dbclean,dbcont,dbdown,%
4847         dbquit,dbstack,dbstatus,dbstep,dbstop,dbtype,dbup,ddeadv,ddeexec,%
4848         ddeinit,ddepoke,ddereq,ddeterm,ddeunadv,deblank,dec2hex,deconv,%
4849         del2,delete,demo,det,diag,diary,diff,diffuse,dir,disp,dlmread,%
4850         dlmwrite,dmperm,dot,drawnow,echo,eig,ellipj,ellipke,else,elseif,%
4851         end,engClose,engEvalString,engGetFull,engGetMatrix,engOpen,%
4852         engOutputBuffer,engPutFull,engPutMatrix,engSetEvalCallback,%
4853         engSetEvalTimeout,engWinInit,eps,erf,erfc,erfcx,erfinv,%
```

```

4854 errorbar,etime,etree,eval,exist,exp,expint,expm,expo,eye,fclose,%
4855 feather,feof,ferror,feval,fft,fft2,fftshift,fgetl,fgets,figure,%
4856 fill,fill3,filter,filter2,find,findstr,finite,fix,flag,fliplr,%
4857 flipud,floor,flops,fmin,fmins,fopen,for,format,fplot,fprintf,%
4858 fread,frewind,fscanf,fseek,ftell,full,function,funm,fwrite,fzero,%
4859 gallery,gamma,gammainc,gammaln,gca,gcd,gcf,gco,get,getenv,%
4860 getframe,ginput,global,gplot,gradient,gray,graymon,grid,griddata,%
4861 gtext,hadamard,hankel,help,hess,hex2dec,hex2num,hidden,hilb,hist,%
4862 hold,home,hostid,hot,hsv,hsv2rgb,if,ifft,ifft2,imag,image,%
4863 imagesc,Inf,info,input,int2str,interp1,interp2,interpft,inv,%
4864 invhilb,isempty,isglobal,ishold,isieee,isinf,isletter,isnan,%
4865 isreal,isspace,issparse,isstr,jet,keyboard,kron,lasterr,lcm,%
4866 legend,legendre,length,lin2mu,line,linspace,load,log,log10,log2,%
4867 loglog,logm,logspace,lookfor,lower,ls,lscov,lu,magic,matClose,%
4868 matDeleteMatrix,matGetDir,matGetFp,matGetFull,matGetMatrix,%
4869 matGetNextMatrix,matGetString,matlabrc,matlabroot,matOpen,%
4870 matPutFull,matPutMatrix,matPutString,max,mean,median,menu,mesh,%
4871 meshc,meshgrid,meshz,mexAtExit,mexCallMATLAB,mexdebug,%
4872 mexErrMsgTxt,mexEvalString,mexFunction,mexGetFull,mexGetMatrix,%
4873 mexGetMatrixPtr,mexPrintf,mexPutFull,mexPutMatrix,mexSetTrapFlag,%
4874 min,more,movie,moviein,mu2lin,mxMalloc,mxCopyCharacterToPtr,%
4875 mxCopyComplex16ToPtr,mxCopyInteger4ToPtr,mxCopyPtrToCharacter,%
4876 mxCopyPtrToComplex16,mxCopyPtrToInteger4,mxCopyPtrToReal8,%
4877 mxCopyReal8ToPtr,mxCreateFull,mxCreateSparse,mxCreateString,%
4878 mxFree,mxFreeMatrix,mxGetIr,mxGetJc,mxGetM,mxGetN,mxGetName,%
4879 mxGetNzmax,mxGetPi,mxGetPr,mxGetScalar,mxGetString,mxIsComplex,%
4880 mxIsFull,mxIsNumeric,mxIsSparse,mxIsString,mxIsTypeDouble,%
4881 mxSetIr,mxSetJc,mxSetM,mxSetN,mxSetName,mxSetNzmax,mxSetPi,%
4882 mxSetPr,NaN,nargchk,nargin,nargout,newplot,nextpow2,nnls,nnz,%
4883 nonzeros,norm,normest,null,num2str,nzmax,ode23,ode45,orient,orth,%
4884 pack,pascal,patch,path,pause,pcolor,pi,pink,pinv,plot,plot3,%
4885 pol2cart,polar,poly,polyder,polyeig,polyfit,polyval,polyvalm,%
4886 pow2,print,printopt,prism,prod,pwd,qr,qrdelete,qrinsert,quad,%
4887 quad8,quit,quiver,qz,rand,randn,randperm,rank,rat,rats,rbbox,%
4888 rcond,real,realmax,realmin,refresh,rem,reset,reshape,residue,%
4889 return,rgb2hsv,rgbplot,rootobject,roots,rose,rosser,rot90,rotate,%
4890 round,rref,rrefmovie,rsf2csf,save,saxis,schur,sec,sech,semilogx,%
4891 semilogy,set,setstr,shading,sign,sin,sinh,size,slice,sort,sound,%
4892 spalloc,sparse,spaugment,sconvert,spdiags,specular,speye,spfun,%
4893 sph2cart,sphere,spinmap,spline,spones,spparms,sprandn,sprandsym,%
4894 sprank,sprintf,spy,sqrt,sqrtm,sscanf,stair,stairs,startup,std,stem,%
4895 str2mat,str2num,strcmp,strings,strrep,strtok,subplot,subscribe,%
4896 subspace,sum,surf,surface,surfc,surfl,surfnorm,svd,symbfact,%
4897 symmmd,symrcm,tan,tanh,tempdir,tempname,terminal,text,tic,title,%
4898 toc,toeplitz,trace,trapez,tril,triu,type,uicontrol,uigetfile,%
4899 uimenu,uiputfile,unix,unwrap,upper,vander,ver,version,view,%
4900 viewmtx,waitforbuttonpress,waterfall,wavread,wavwrite,what,%
4901 whatsnew,which,while,white,whitebg,who,whos,wilkinson,wk1read,%
4902 stderr,stdout,plot,set,endif,wk1write,xlabel,xor,ylabel,zeros,%
4903 xlabel,zoom,endwhile,endfunction,printf,case,switch,otherwise,%

```

```

4904     system,lsode,endfor,error,ones,oneplot,__gnuplot_set__,do,until},%
4905     sensitive=t,%
4906     morecomment=[l]\#,%
4907     morecomment=[l]\#\#,%
4908     morecomment=[l]\%,%
4909     morestring=[m]',%
4910     morestring=[m]"%
4911 }[keywords,comments,strings]
4912 </lang1>

```

2.55 Oz

```
4913 (*lang2)
```

Thanks to Andres Becerra Sandoval for providing this language definition.

```

4914 %%
4915 %% Oz definition (c) Andres Becerra Sandoval
4916 %%
4917 \lst@definlanguage{Oz}%
4918 {morekeywords={andthen,at,attr,case,catch,choice,class,%
4919     cond,declare,define,dis,div,else,elsecase,%
4920     elseif,end,export,fail,false,feat,finally,%
4921     from,fun,functor,if,import,in,local,%
4922     lock,meth,mod,not,of,or,orelse,%
4923     prepare,proc,prop,raise,require,self,skip,%
4924     then,thread,true,try,unit},%
4925     sensitive=true,%
4926     morecomment=[l]{\%,%
4927     morecomment=[s]{/*}{*/},%
4928     morestring=[b]",%
4929     morestring=[d]}'%
4930 }[keywords,comments,strings]
4931 </lang2>

```

2.56 Pascal

```
4932 (*lang1)
```

Thanks to Andreas Stephan for reporting non-keywords alpha, byte, pack and unpack.

```

4933 \lst@definlanguage[XSC]{Pascal}[Standard]{Pascal}
4934 {deletekeywords={alfa,byte,pack,unpack},% 1998 Andreas Stephan
4935     morekeywords={dynamic,external,forward,global,module,nil,operator,%
4936     priority,sum,type,use,dispose,mark,page,release,cimatrix,%
4937     cinterval,civector,cmatrix,complex,cvector,dotprecision,imatrix,%
4938     interval,ivector,rmatrix,rvector,string,im,inf,re,sup,chr,comp,%
4939     eof,eoln,expo,image,ival,lb,lbound,length,loc,mant,maxlength,odd,%
4940     ord,pos,pred,round,rval,sign,substring,succ,trunc,ub,ubound}%
4941 }%
4942 \lst@definlanguage[Borland6]{Pascal}[Standard]{Pascal}
4943 {morekeywords={asm,constructor,destructor,implementation,inline,%

```

```

4944     interface, nil, object, shl, shr, string, unit, uses, xor}, %
4945   morendkeywords={Abs, Addr, ArcTan, Chr, Concat, Copy, Cos, CSeg, DiskFree, %
4946     DiskSize, DosExitCode, DosVersion, DSeg, EnvCount, EnvStr, Eof, Eoln, %
4947     Exp, FExpand, FilePos, FileSize, Frac, FSearch, GetBkColor, GetColor, %
4948     GetDefaultPalette, GetDriverName, GetEnv, GetGraphMode, GetMaxMode, %
4949     GetMaxX, GetMaxY, GetModeName, GetPaletteSize, GetPixel, GetX, GetY, %
4950     GraphErrorMsg, GraphResult, Hi, ImageSize, InstallUserDriver, %
4951     InstallUserFont, Int, IOResult, KeyPressed, Length, Lo, MaxAvail, %
4952     MemAvail, MsDos, Odd, Ofs, Ord, OvrGetBuf, OvrGetRetry, ParamCount, %
4953     ParamStr, Pi, Pos, Pred, Ptr, Random, ReadKey, Round, SeekEof, SeekEoln, %
4954     Seg, SetAspectRatio, Sin, SizeOf, Sound, SPtr, Sqr, Sqrt, SSeg, Succ, %
4955     Swap, TextHeight, TextWidth, Trunc, TypeOf, UpCase, WhereX, WhereY, %
4956     Append, Arc, Assign, AssignCrt, Bar, Bar3D, BlockRead, BlockWrite, ChDir, %
4957     Circle, ClearDevice, ClearViewPort, Close, CloseGraph, ClrEol, ClrScr, %
4958     Dec, Delay, Delete, DelLine, DetectGraph, Dispose, DrawPoly, Ellipse, %
4959     Erase, Exec, Exit, FillChar, FillEllipse, FillPoly, FindFirst, FindNext, %
4960     FloodFill, Flush, FreeMem, FSplit, GetArcCoords, GetAspectRatio, %
4961     GetDate, GetDefaultPalette, GetDir, GetCBreak, GetFAttr, %
4962     GetFillSettings, GetFTime, GetImage, GetIntVec, GetLineSettings, %
4963     GetMem, GetPalette, GetTextSettings, GetTime, GetVerify, %
4964     GetViewSettings, GoToXY, Halt, HighVideo, Inc, InitGraph, Insert, %
4965     InsLine, Intr, Keep, Line, LineRel, LineTo, LowVideo, Mark, Mkdir, Move, %
4966     MoveRel, MoveTo, MsDos, New, NormVideo, NoSound, OutText, OutTextXY, %
4967     OvrClearBuf, OvrInit, OvrInitEMS, OvrSetBuf, PackTime, PieSlice, %
4968     PutImage, PutPixel, Randomize, Rectangle, Release, Rename, %
4969     RestoreCrtMode, Rmdir, RunError, Sector, Seek, SetActivePage, %
4970     SetAllPalette, SetBkColor, SetCBreak, SetColor, SetDate, SetFAttr, %
4971     SetFillPattern, SetFillStyle, SetFTime, SetGraphBufSize, %
4972     SetGraphMode, SetIntVec, SetLineStyle, SetPalette, SetRGBPalette, %
4973     SetTextBuf, SetTextJustify, SetTextStyle, SetTime, SetUserCharSize, %
4974     SetVerify, SetViewPort, SetVisualPage, SetWriteMode, Sound, Str, %
4975     SwapVectors, TextBackground, TextColor, TextMode, Truncate, %
4976     UnpackTime, Val, Window}%
4977   }%
4978 \lst@definlanguage[Standard]{Pascal}%
4979   {morekeywords={alfa, and, array, begin, boolean, byte, case, char, const, div, %
4980     do, downto, else, end, false, file, for, function, get, goto, if, in, %
4981     integer, label, maxint, mod, new, not, of, or, pack, packed, page, program, %
4982     put, procedure, read, readln, real, record, repeat, reset, rewrite, set, %
4983     text, then, to, true, type, unpack, until, var, while, with, write, %
4984     writeln}, %
4985     sensitive=f, %
4986     morecomment=[s]{(*){(*)}}, %
4987     morecomment=[s]{\{\}\{\}}, %
4988     morestring=[d]'%
4989   }[keywords, comments, strings]
4990 \langl

```

2.57 Perl

I got the data from <http://www.perl.com>. But I wish to thank Herbert Weinhandl for the book 'Learning Perl'.

```
4991 (*lang1)
4992 \lst@definelanguage{Perl}%
4993   {morekeywords={abs,accept,alarm,atan2,bind,binmode,bless,caller,%
4994     chdir,chmod,chomp,chop,chown,chr,chroot,close,closedir,connect,%
4995     continue,cos,crypt,dbmclose,dbmopen,defined,delete,die,do,dump,%
4996     each,else,elsif,endgrent,endhostent,endnetent,endprotoent,%
4997     endpwent,endservent,eof,eval,exec,exists,exit,exp,fcntl,fileno,%
4998     flock,for,foreach,fork,format,formline,getc,getgrent,getgrgid,%
4999     getgrnam,gethostbyaddr,gethostbyname,gethostent,getlogin,%
5000     getnetbyaddr,getnetbyname,getnetent,getpeername,getpgrp,%
5001     getppid,getpriority,getprotobyname,getprotobynumber,getprotoent,%
5002     getpwent,getpwnam,getpwuid,getservbyname,getservbyport,%
5003     getservent,getsockname,getsockopt,glob,gmtime,goto,grep,hex,if,%
5004     import,index,int,iocntl,join,keys,kill,last,lc,lcfirst,length,%
5005     link,listen,local,localtime,log,lstat,m,map,mkdir,msgctl,msgget,%
5006     msgrcv,msgsnd,my,next,no,oct,open,opendir,ord,pack,package,pipe,%
5007     pop,pos,print,printf,prototype,push,q,qq,quotemeta,qw,qx,rand,%
5008     read,readdir,readlink,recv,redo,ref,rename,require,reset,return,%
5009     reverse,rewinddir,rindex,rmdir,s,scalar,seek,seekdir,select,%
5010     semctl,semget,semop,send,setgrent,sethostent,setnetent,setpgrp,%
5011     setpriority,setprotoent,setpwent,setservent,setsockopt,shift,%
5012     shmctl,shmget,shmread,shmwrite,shutdown,sin,sleep,socket,%
5013     socketpair,sort,splICE,split,sprintf,sqrt,srand,stat,study,sub,%
5014     substr,symlink,syscall,sysopen,sysread,system,syswrite,tell,%
5015     telldir,tie,tied,time,times,tr,truncate,uc,ucfirst,umask,undef,%
5016     unless,unlink,unpack,unshift,untie,until,use,utime,values,vec,%
5017     wait,waitpid,wantarray,warn,while,write,y},%
5018   sensitive,%
5019   morecomment=[l]\#,%
5020   morestring=[b]" ,%
5021   morestring=[b]' ,%
5022   MoreSelectCharTable=%
5023   \lst@ReplaceInput{\$}\#}{\lst@ProcessOther\$}\lst@ProcessOther\#}%
5024 }[keywords,comments,strings]
5025 </lang1>
```

2.58 PHP

Luca Balzerani sent me this language definition.

```
5026 (*lang2)
5027 %%
5028 %% PHP definition by Luca Balzerani
5029 %%
5030 \lst@definelanguage{PHP}%
```

```

5031 {morekeywords={%
5032 %--- core language
5033 <?,?>,::,break,case,continue,default,do,else,%
5034 elseif,for,foreach,if,include,require,phpinfo,%
5035 switch,while,false,FALSE,true,TRUE,%
5036 %--- apache functions
5037 apache_lookup_uri,apache_note,ascii2ebcdic,ebcdic2ascii,%
5038 virtual,apache_child_terminate,apache_setenv,%
5039 %--- array functions
5040 array,array_change_key_case,array_chunk,array_count_values,%
5041 array_filter,array_flip,array_fill,array_intersect,%
5042 array_keys,array_map,array_merge,array_merge_recursive,%
5043 array_pad,array_pop,array_push,array_rand,array_reverse,%
5044 array_shift,array_slice,array_splice,array_sum,array_unique,%
5045 array_values,array_walk,arsort,asort,compact,count,current,each,%
5046 extract,in_array,array_search,key,krsort,ksort,list,natsort,%
5047 next,pos,prev,range,reset,rsort,shuffle,sizeof,sort,uasort,%
5048 usort,%
5049 %--- aspell functions
5050 aspell_new,aspell_check,aspell_check_raw,aspell_suggest,%
5051 %--- bc functions
5052 bcadd,bccomp,bcdiv,bcmod,bcmul,bcpow,bcscale,bcsqrt,bcsub,%
5053 %--- bzip2 functions
5054 bzclosе,bzcompress,bzdecompress,bzerrno,bzerror,bzerrstr,%
5055 bzopen,bzread,bzwrite,%
5056 %--- calendar functions
5057 JDToGregorian,GregorianToJD,JDToJulian,JulianToJD,JDToJewish,%
5058 JDToFrench,FrenchToJD,JDMonthName,JDDayOfWeek,easter_date,%
5059 unixtojd,jdtounix,cal_days_in_month,cal_to_jd,cal_from_jd,%
5060 %--- ccvs functions
5061 ccvs_init,ccvs_done,ccvs_new,ccvs_add,ccvs_delete,ccvs_auth,%
5062 ccvs_reverse,ccvs_sale,ccvs_void,ccvs_status,ccvs_count,%
5063 ccvs_report,ccvs_command,ccvs_textvalue,%
5064 %--- classobj functions
5065 call_user_method,call_user_method_array,class_exists,get_class,%
5066 get_class_vars,get_declared_classes,get_object_vars,%
5067 is_a,is_subclass_of,method_exists,%
5068 %--- com functions
5069 COM,VARIANT,com_load,com_invoke,com_propget,com_get,com_propput,%
5070 com_set,com_addrеf,com_release,com_isenum,com_load_typelib,%
5071 %--- cpdf functions
5072 cpdf_add_annotation,cpdf_add_outline,cpdf_arc,cpdf_begin_text,%
5073 cpdf_clip,cpdf_close,cpdf_closepath,cpdf_closepath_fill_stroke,%
5074 cpdf_continue_text,cpdf_curveto,cpdf_end_text,cpdf_fill,%
5075 cpdf_finalize,cpdf_finalize_page,%
5076 cpdf_import_jpeg,cpdf_lineto,cpdf_moveto,cpdf_newpath,cpdf_open,%
5077 cpdf_page_init,cpdf_place_inline_image,cpdf_rect,cpdf_restore,%
5078 cpdf_rmoveto,cpdf_rotate,cpdf_rotate_text,cpdf_save,%
5079 cpdf_scale,cpdf_set_char_spacing,cpdf_set_creator,%
5080 cpdf_set_font,cpdf_set_horiz_scaling,cpdf_set_keywords,%

```



```

5081     cpdf_set_page_animation, cpdf_set_subject, cpdf_set_text_matrix, %
5082     cpdf_set_text_rendering, cpdf_set_text_rise, cpdf_set_title, %
5083     cpdf_setdash, cpdf_setflat, cpdf_setgray, cpdf_setgray_fill, %
5084     cpdf_setlinecap, cpdf_setlinejoin, cpdf_setlinewidth, %
5085     cpdf_setrgbcolor, cpdf_setrgbcolor_fill, cpdf_setrgbcolor_stroke, %
5086     cpdf_show_xy, cpdf_stringwidth, cpdf_set_font_directories, %
5087     cpdf_set_viewer_preferences, cpdf_stroke, cpdf_text, %
5088     cpdf_set_action_url, %
5089 %--- crack functions
5090     crack_opendict, crack_closedict, crack_check, crack_getlastmessage, %
5091 %--- ctype functions
5092     ctype_alnum, ctype_alpha, ctype_cntrl, ctype_digit, ctype_lower, %
5093     ctype_print, ctype_punct, ctype_space, ctype_upper, ctype_xdigit, %
5094 %--- curl functions
5095     curl_init, curl_setopt, curl_exec, curl_close, curl_version, %
5096     curl_error, curl_getinfo, %
5097 %--- cybercash functions
5098     cybercash_encrypt, cybercash_decrypt, cybercash_base64_encode, %
5099 %--- cybermut functions
5100     cybermut_creeformulairecm, cybermut_testmac, %
5101 %--- cyrus functions
5102     cyrus_connect, cyrus_authenticate, cyrus_bind, cyrus_unbind, %
5103     cyrus_close, %
5104 %--- datetime functions
5105     checkdate, date, getdate, gettimeofday, gmdate, gmmktime, gmstrftime, %
5106     microtime, mktime, strftime, time, strtotime, %
5107 %--- dbase functions
5108     dbase_create, dbase_open, dbase_close, dbase_pack, dbase_add_record, %
5109     dbase_delete_record, dbase_get_record, %
5110     dbase_numfields, dbase_numrecords, %
5111 %--- dba functions
5112     dba_close, dba_delete, dba_exists, dba_fetch, dba_firstkey, %
5113     dba_nextkey, dba_popen, dba_open, dba_optimize, dba_replace, %
5114 %--- dbm functions
5115     dbmopen, dbmclose, dbmexists, dbmfetch, dbminsert, dbmreplace, %
5116     dbmfirstkey, dbmnextkey, dblist, %
5117 %--- dbx functions
5118     dbx_close, dbx_connect, dbx_error, dbx_query, dbx_sort, dbx_compare, %
5119 %--- dio functions
5120     dio_open, dio_read, dio_write, dio_truncate, dio_stat, dio_seek, %
5121     dio_close, %
5122 %--- dir functions
5123     chroot, chdir, dir, closedir, getcwd, opendir, readdir, rewinddir, %
5124 %--- dotnet functions
5125     dotnet_load, %
5126 %--- errorfunc functions
5127     error_log, error_reporting, restore_error_handler, %
5128     trigger_error, user_error, %
5129 %--- exec functions
5130     escapeshellarg, escapeshellcmd, exec, passthru, system, shell_exec, %

```

```

5131 %--- fbsql functions
5132     fbsql_affected_rows,fbsql_autocommit,fbsql_change_user,%
5133     fbsql_commit,fbsql_connect,fbsql_create_db,fbsql_create_blob,%
5134     fbsql_database_password,fbsql_data_seek,fbsql_db_query,%
5135     fbsql_drop_db,fbsql_errno,fbsql_error,fbsql_fetch_array,%
5136     fbsql_fetch_field,fbsql_fetch_lengths,fbsql_fetch_object,%
5137     fbsql_field_flags,fbsql_field_name,fbsql_field_len,%
5138     fbsql_field_table,fbsql_field_type,fbsql_free_result,%
5139     fbsql_list_dbs,fbsql_list_fields,fbsql_list_tables,%
5140     fbsql_num_fields,fbsql_num_rows,fbsql_pconnect,fbsql_query,%
5141     fbsql_read_clob,fbsql_result,fbsql_rollback,fbsql_set_lob_mode,%
5142     fbsql_start_db,fbsql_stop_db,fbsql_tablename,fbsql_warnings,%
5143     fbsql_get_autostart_info,fbsql_hostname,fbsql_password,%
5144     fbsql_username,%
5145 %--- fdf functions
5146     fdf_open,fdclose,fdcreate,fdsave,fd_get_value,%
5147     fdf_next_field_name,fd_set_ap,fd_set_status,fd_get_status,%
5148     fdf_get_file,fd_set_flags,fd_set_opt,%
5149     fdf_set_javascript_action,fd_set_encoding,fd_add_template,%
5150 %--- filepro functions
5151     filepro,filepro_fieldname,filepro_fieldtype,filepro_fieldwidth,%
5152     filepro_fieldcount,filepro_rowcount,%
5153 %--- filesystem functions
5154     basename,chgrp,chmod,chown,clearstatcache,copy,delete,dirname,%
5155     diskfreespace,disk_total_space,fclose,feof,fflush,fgetc,fgetcsv,%
5156     fgetss,file_get_contents,file,file_exists,fileatime,filectime,%
5157     fileinode,filemtime,fileowner,fileperms,filesize,filetype,flock,%
5158     fopen,fpassthru,fputs,fread,fscanf,fseek,fstat,ftell,ftruncate,%
5159     set_file_buffer,is_dir,is_executable,is_file,is_link,%
5160     is_writable,is_writeable,is_uploaded_file,link,linkinfo,mkdir,%
5161     parse_ini_file,pathinfo,pclose,popen,readfile,readlink,rename,%
5162     rmdir,stat,lstat,realpath,symlink,tempnam,tmpfile,touch,umask,%
5163 %--- fribidi functions
5164     fribidi_log2vis,%
5165 %--- ftp functions
5166     ftp_connect,ftp_login,ftp_pwd,ftp_cdup,ftp_chdir,ftp_mkdir,%
5167     ftp_nlist,ftp_rawlist,ftp_systype,ftp_pasv,ftp_get,ftp_fget,%
5168     ftp_fput,ftp_size,ftp_mdtm,ftp_rename,ftp_delete,ftp_site,%
5169     ftp_quit,ftp_exec,ftp_set_option,ftp_get_option,%
5170 %--- funchand functions
5171     call_user_func_array,call_user_func,create_function,%
5172     func_get_args,func_num_args,function_exists,%
5173     register_shutdown_function,register_tick_function,%
5174 %--- gettext functions
5175     bindtextdomain,bind_textdomain_codeset,dcgettext,dcngettext,%
5176     dngettext,gettext,ngettext,textdomain,%
5177 %--- gmp functions
5178     gmp_init,gmp_intval,gmp_strval,gmp_add,gmp_sub,gmp_mul,%
5179     gmp_div_r,gmp_div_qr,gmp_div,gmp_mod,gmp_divexact,gmp_cmp,%
5180     gmp_com,gmp_abs,gmp_sign,gmp_fact,gmp_sqrt,gmp_sqrtrm,%

```

```

5181     gmp_pow,gmp_powm,gmp_prob_prime,gmp_gcd,gmp_gcdext,gmp_invert,%
5182     gmp_jacobi,gmp_random,gmp_and,gmp_or,gmp_xor,gmp_setbit,%
5183     gmp_scan0,gmp_scan1,gmp_popcount,gmp_hamdist,%
5184 %--- http functions
5185     header,headers_sent,setcookie,%
5186 %--- hw functions
5187     hw_Array2Objrec,hw_Children,hw_ChildrenObj,hw_Close,hw_Connect,%
5188     hw_Deleteobject,hw_DocByAnchor,hw_DocByAnchorObj,%
5189     hw_Document_BodyTag,hw_Document_Content,hw_Document_SetContent,%
5190     hw_ErrorMsg,hw_EditText,hw_Error,hw_Free_Document,hw_GetParents,%
5191     hw_GetChildColl,hw_GetChildCollObj,hw_GetRemote,%
5192     hw_GetSrcByDestObj,hw_GetObject,hw_GetAndLock,hw_GetText,%
5193     hw_GetObjectByQueryObj,hw_GetObjectByQueryColl,%
5194     hw_GetChildDocColl,hw_GetChildDocCollObj,hw_GetAnchors,%
5195     hw_Mv,hw_Identify,hw_InCollections,hw_Info,hw_InsColl,hw_InsDoc,%
5196     hw_InsertObject,hw_mapid,hw_Modifyobject,hw_New_Document,%
5197     hw_Output_Document,hw_pConnect,hw_PipeDocument,hw_Root,%
5198     hw_Who,hw_getusername,hw_stat,hw_setlinkroot,hw_connection_info,%
5199     hw_insertanchors,hw_getrellink,hw_changeobject,%
5200 %--- ibase functions
5201     ibase_connect,ibase_pconnect,ibase_close,ibase_query,%
5202     ibase_fetch_row,ibase_fetch_object,ibase_field_info,%
5203     ibase_free_result,ibase_prepare,ibase_execute,ibase_trans,%
5204     ibase_rollback,ibase_timefmt,ibase_num_fields,ibase_blob_add,%
5205     ibase_blob_close,ibase_blob_create,ibase_blob_echo,%
5206     ibase_blob_import,ibase_blob_info,ibase_blob_open,%
5207 %--- icap functions
5208     icap_open,icap_close,icap_fetch_event,icap_list_events,%
5209     icap_delete_event,icap_snooze,icap_list_alarms,%
5210     icap_rename_calendar,icap_delete_calendar,icap_reopen,%
5211 %--- iconv functions
5212     iconv,iconv_get_encoding,iconv_set_encoding,ob_iconv_handler,%
5213 %--- ifx functions
5214     ifx_connect,ifx_pconnect,ifx_close,ifx_query,ifx_prepare,ifx_do,%
5215     ifx_errormsg,ifx_affected_rows,ifx_getsqlca,ifx_fetch_row,%
5216     ifx_fielddtypes,ifx_fieldproperties,ifx_num_fields,ifx_num_rows,%
5217     ifx_create_char,ifx_free_char,ifx_update_char,ifx_get_char,%
5218     ifx_copy_blob,ifx_free_blob,ifx_get_blob,ifx_update_blob,%
5219     ifx_textasvarchar,ifx_byteasvarchar,ifx_nullformat,%
5220     ifxus_free_slob,ifxus_close_slob,ifxus_open_slob,%
5221     ifxus_seek_slob,ifxus_read_slob,ifxus_write_slob,%
5222 %--- iisfunc functions
5223     iis_get_server_by_path,iis_get_server_by_comment,iis_add_server,%
5224     iis_set_dir_security,iis_get_dir_security,iis_set_server_rights,%
5225     iis_set_script_map,iis_get_script_map,iis_set_app_settings,%
5226     iis_stop_server,iis_stop_service,iis_start_service,%
5227 %--- image functions
5228     exif_imagetype,exif_read_data,exif_thumbnail,getimagesize,%
5229     imagealphablending,imagearc,imagefilledarc,imageellipse,%
5230     imagechar,imagecharup,imagecolorallocate,imagecolordeallocate,%

```

```

5231 imagecolorclosest,imagecolorclosestalpha,imagecolorclosestthwb,%
5232 imagecolorexactalpha,imagecolorresolve,imagecolorresolvealpha,%
5233 imagecolorset,imagecolorsforindex,imagecolorstotal,%
5234 imagecopy,imagecopymerge,imagecopymergegray,imagecopyresized,%
5235 imagecreate,imagecreatetruecolor,imagetruecolorpalette,%
5236 imagecreatefromgd2,imagecreatefromgd2part,imagecreatefromgif,%
5237 imagecreatefrompng,imagecreatefromwbmp,imagecreatefromstring,%
5238 imagecreatefromxpm,imagedashedline,imagedestroy,imagefill,%
5239 imagefilledrectangle,imagefilltoborder,imagefontheight,%
5240 imagegd,imagegd2,imagegif,imagepng,imagejpeg,imagewbmp,%
5241 imageline,imageloadfont,imagepalettecopy,imagepolygon,%
5242 imagepsencodefont,imagepsfreefont,imagepsloadfont,%
5243 imagepsslantfont,imagepstext,imagerectangle,imagesetpixel,%
5244 imagesetstyle,imagesettile,imagesetthickness,imagestring,%
5245 imagesx,imagesy,imagettfbbox,imageftbbox,imagettftext,%
5246 imagetypes,jpeg2wbmp,png2wbmp,iptcembed,read_exif_data,%
5247 %--- imap functions
5248 imap_8bit,imap_alerts,imap_append,imap_base64,imap_binary,%
5249 imap_bodystruct,imap_check,imap_clearflag_full,imap_close,%
5250 imap_delete,imap_deletemailbox,imap_errors,imap_expunge,%
5251 imap_fetchbody,imap_fetchheader,imap_fetchstructure,%
5252 imap_getmailboxes,imap_getsubscribed,imap_header,%
5253 imap_headers,imap_last_error,imap_listmailbox,%
5254 imap_mail,imap_mail_compose,imap_mail_copy,imap_mail_move,%
5255 imap_mime_header_decode,imap_msgno,imap_num_msg,imap_num_recent,%
5256 imap_ping,imap_popen,imap_qprint,imap_renamemailbox,imap_reopen,%
5257 imap_rfc822_parse_headers,imap_rfc822_write_address,%
5258 imap_search,imap_setacl,imap_set_quota,imap_setflag_full,%
5259 imap_status,imap_subscribe,imap_uid,imap_undelete,%
5260 imap_utf7_decode,imap_utf7_encode,imap_utf8,imap_thread,%
5261 %--- info functions
5262 assert,assert_options,extension_loaded,dlopen,getenv,get_cfg_var,%
5263 get_defined_constants,get_extension_funcs,getmygid,%
5264 get_loaded_extensions,get_magic_quotes_gpc,%
5265 getlastmod,getmyinode,getmypid,getmyuid,get_required_files,%
5266 ini_alter,ini_get,ini_get_all,ini_restore,ini_set,phpcredits,%
5267 phpversion,php_logo_guid,php_sapi_name,php_uname,putenv,%
5268 set_time_limit,version_compare,zend_logo_guid,zend_version,%
5269 %--- ircg functions
5270 ircg_pconnect,ircg_fetch_error_msg,ircg_set_current,ircg_join,%
5271 ircg_msg,ircg_notice,ircg_nick,ircg_topic,ircg_channel_mode,%
5272 ircg_whois,ircg_kick,ircg_ignore_add,ircg_ignore_del,%
5273 ircg_is_conn_alive,ircg_lookup_format_messages,%
5274 ircg_set_on_die,ircg_set_file,ircg_get_username,%
5275 ircg_nickname_unescape,%
5276 %--- java functions
5277 java_last_exception_clear,java_last_exception_get,%
5278 %--- ldap functions
5279 ldap_add,ldap_bind,ldap_close,ldap_compare,ldap_connect,%
5280 ldap_delete,ldap_dn2ufn,ldap_err2str,ldap_errno,ldap_error,%

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5281 ldap_first_attribute,ldap_first_entry,ldap_free_result,%
5282 ldap_get_dn,ldap_get_entries,ldap_get_option,ldap_get_values,%
5283 ldap_list,ldap_modify,ldap_mod_add,ldap_mod_del,%
5284 ldap_next_attribute,ldap_next_entry,ldap_read,ldap_rename,%
5285 ldap_set_option,ldap_unbind,ldap_8859_to_t61,%
5286 ldap_next_reference,ldap_parse_reference,ldap_parse_result,%
5287 ldap_sort,ldap_start_tls,ldap_t61_to_8859,%
5288 %--- mail functions
5289 mail,ezmlm_hash,%
5290 %--- math functions
5291 abs,acos,acosh,asin,asinh,atan,atanh,atan2,base_convert,bindec,%
5292 cos,cosh,decbin,dechex,decoct,deg2rad,exp,expm1,floor,%
5293 hexdec,hypot,is_finite,is_infinite,is_nan,lcg_value,log,log10,%
5294 max,min,mt_rand,mt_srand,mt_getrandmax,number_format,octdec,pi,%
5295 rad2deg,rand,round,sin,sinh,sqrt,srand,tan,tanh,%
5296 %--- mbstring functions
5297 mb_language,mb_parse_str,mb_internal_encoding,mb_http_input,%
5298 mb_detect_order,mb_substitute_character,mb_output_handler,%
5299 mb_strlen,mb_strpos,mb_strrpos,mb_substr,mb_strcut,mb_strwidth,%
5300 mb_convert_encoding,mb_detect_encoding,mb_convert_kana,%
5301 mb_decode_mimeheader,mb_convert_variables,%
5302 mb_decode_numericentity,mb_send_mail,mb_get_info,%
5303 mb_ereg,mb_eregi,mb_ereg_replace,mb_eregi_replace,mb_split,%
5304 mb_ereg_search,mb_ereg_search_pos,mb_ereg_search_regs,%
5305 mb_ereg_search_getregs,mb_ereg_search_getpos,%
5306 %--- mcal functions
5307 mcal_open,mcal_popen,mcal_reopen,mcal_close,%
5308 mcal_rename_calendar,mcal_delete_calendar,mcal_fetch_event,%
5309 mcal_append_event,mcal_store_event,mcal_delete_event,%
5310 mcal_list_alarms,mcal_event_init,mcal_event_set_category,%
5311 mcal_event_set_description,mcal_event_set_start,%
5312 mcal_event_set_alarm,mcal_event_set_class,mcal_is_leap_year,%
5313 mcal_date_valid,mcal_time_valid,mcal_day_of_week,%
5314 mcal_date_compare,mcal_next_recurrence,%
5315 mcal_event_set_recur_daily,mcal_event_set_recur_weekly,%
5316 mcal_event_set_recur_monthly_wday,mcal_event_set_recur_yearly,%
5317 mcal_event_add_attribute,mcal_expunge,mcal_week_of_year,%
5318 %--- mcrypt functions
5319 mcrypt_get_cipher_name,mcrypt_get_block_size,%
5320 mcrypt_create_iv,mcrypt_cbc,mcrypt_cfb,mcrypt_ecb,mcrypt_ofb,%
5321 mcrypt_list_modes,mcrypt_get_iv_size,mcrypt_encrypt,%
5322 mcrypt_module_open,mcrypt_module_close,mcrypt_generic_deinit,%
5323 mcrypt_generic,mdecrypt_generic,mcrypt_generic_end,%
5324 mcrypt_enc_is_block_algorithm_mode,%
5325 mcrypt_enc_is_block_mode,mcrypt_enc_get_block_size,%
5326 mcrypt_enc_get_supported_key_sizes,mcrypt_enc_get_iv_size,%
5327 mcrypt_enc_get_modes_name,mcrypt_module_self_test,%
5328 mcrypt_module_is_block_algorithm,mcrypt_module_is_block_mode,%
5329 mcrypt_module_get_algo_key_size,%
5330 %--- mhash functions

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5331     mhash_get_hash_name,mhash_get_block_size,mhash_count,mhash,%
5332 %--- misc functions
5333     connection_aborted,connection_status,connection_timeout,%
5334     define,defined,die,eval,exit,get_browser,highlight_file,%
5335     ignore_user_abort,iptcparse,leak,pack,show_source,sleep,uniqid,%
5336     usleep,%
5337 %--- mnogosearch functions
5338     udm_add_search_limit,udm_alloc_agent,udm_api_version,%
5339     udm_cat_list,udm_clear_search_limits,udm_errno,udm_error,%
5340     udm_free_agent,udm_free_ispell_data,udm_free_res,%
5341     udm_get_res_field,udm_get_res_param,udm_load_ispell_data,%
5342     udm_check_charset,udm_check_stored,udm_close_stored,udm_crc32,%
5343 %--- msession functions
5344     msession_connect,msession_disconnect,msession_count,%
5345     msession_destroy,msession_lock,msession_unlock,msession_set,%
5346     msession_uniq,msession_randstr,msession_find,msession_list,%
5347     msession_set_array,msession_listvar,msession_timeout,%
5348     msession_getdata,msession_setdata,msession_plugin,%
5349 %--- msql functions
5350     msql,msql_affected_rows,msql_close,msql_connect,msql_create_db,%
5351     msql_data_seek,msql_dbname,msql_drop_db,msql_dropdb,msql_error,%
5352     msql_fetch_field,msql_fetch_object,msql_fetch_row,%
5353     msql_field_seek,msql_fielddata,msql_fieldtype,msql_fieldflags,%
5354     msql_free_result,msql_freeresult,msql_list_fields,%
5355     msql_list_dbs,msql_listdbs,msql_list_tables,msql_listtables,%
5356     msql_num_rows,msql_numfields,msql_numrows,msql_pconnect,%
5357     msql_regcase,msql_result,msql_select_db,msql_selectdb,%
5358 %--- mssql functions
5359     mssql_close,mssql_connect,mssql_data_seek,mssql_fetch_array,%
5360     mssql_fetch_object,mssql_fetch_row,mssql_field_length,%
5361     mssql_field_seek,mssql_field_type,mssql_free_result,%
5362     mssql_min_error_severity,mssql_min_message_severity,%
5363     mssql_num_fields,mssql_num_rows,mssql_pconnect,mssql_query,%
5364     mssql_select_db,mssql_bind,mssql_execute,mssql_fetch_assoc,%
5365     mssql_guid_string,mssql_init,mssql_rows_affected,%
5366 %--- muscat functions
5367     muscat_setup,muscat_setup_net,muscat_give,muscat_get,%
5368 %--- mysql functions
5369     mysql_affected_rows,mysql_change_user,mysql_character_set_name,%
5370     mysql_connect,mysql_create_db,mysql_data_seek,mysql_db_name,%
5371     mysql_drop_db,mysql_errno,mysql_error,mysql_escape_string,%
5372     mysql_fetch_assoc,mysql_fetch_field,mysql_fetch_lengths,%
5373     mysql_fetch_row,mysql_field_flags,mysql_field_name,%
5374     mysql_field_seek,mysql_field_table,mysql_field_type,%
5375     mysql_info,mysql_insert_id,mysql_list_dbs,mysql_list_fields,%
5376     mysql_list_tables,mysql_num_fields,mysql_num_rows,%
5377     mysql_ping,mysql_query,mysql_unbuffered_query,%
5378     mysql_result,mysql_select_db,mysql_tablename,mysql_thread_id,%
5379     mysql_get_host_info,mysql_get_proto_info,mysql_get_server_info,%
5380 %--- network functions

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5381     checkdnsrr,closelog,debugger_off,debugger_on,%
5382     fsockopen,gethostbyaddr,gethostbyname,gethostbyname1,getmxrr,%
5383     getprotobynumber,getservbyname,getservbyport,ip2long,long2ip,%
5384     pfsockopen,socket_get_status,socket_set_blocking,%
5385     syslog,%
5386 %--- nis functions
5387     yp_get_default_domain,yp_order,yp_master,yp_match,yp_first,%
5388     yp_errno,yp_err_string,yp_all,yp_cat,%
5389 %--- oci8 functions
5390     OCIDefineByName,OCIBindByName,OCILogon,OCIPLogon,OCINLogon,%
5391     OCIExecute,OCICommit,OCIRollback,OCINewDescriptor,OCIRowCount,%
5392     OCIResult,OCIFetch,OCIFetchInto,OCIFetchStatement,%
5393     OCIColumnName,OCIColumnSize,OCIColumnType,OCIServerVersion,%
5394     OCINewCursor,OCIFreeStatement,OCIFreeCursor,OCIFreeDesc,%
5395     OCIError,OCIInternalDebug,OCICancel,OCISetPrefetch,%
5396     OCISaveLobFile,OCISaveLob,OCILoadLob,OCIColumnScale,%
5397     OCIColumnTypeRaw,OCINewCollection,OCIFreeCollection,%
5398     OCICollAppend,OCICollAssignElem,OCICollGetElem,OCICollMax,%
5399     OCICollTrim,%
5400 %--- oracle functions
5401     Ora_Bind,Ora_Close,Ora_ColumnName,Ora_ColumnSize,Ora_ColumnType,%
5402     Ora_CommitOff,Ora_CommitOn,Ora_Do,Ora_Error,Ora_ErrorCode,%
5403     Ora_Fetch,Ora_Fetch_Into,Ora_GetColumn,Ora_Logoff,Ora_Logon,%
5404     Ora_Numcols,Ora_Numrows,Ora_Open,Ora_Parse,Ora_Rollback,%
5405 %--- outcontrol functions
5406     flush,ob_start,ob_get_contents,ob_get_length,ob_get_level,%
5407     ob_flush,ob_clean,ob_end_flush,ob_end_clean,ob_implicit_flush,%
5408 %--- ovrimos functions
5409     ovrimos_connect,ovrimos_close,ovrimos_longreadlen,%
5410     ovrimos_execute,ovrimos_cursor,ovrimos_exec,ovrimos_fetch_into,%
5411     ovrimos_result,ovrimos_result_all,ovrimos_num_rows,%
5412     ovrimos_field_name,ovrimos_field_type,ovrimos_field_len,%
5413     ovrimos_free_result,ovrimos_commit,ovrimos_rollback,%
5414 %--- pcntl functions
5415     pcntl_fork,pcntl_signal,pcntl_waitpid,pcntl_wexitstatus,%
5416     pcntl_wifsignaled,pcntl_wifstopped,pcntl_wstopsig,%
5417     pcntl_exec,%
5418 %--- pcre functions
5419     preg_match,preg_match_all,preg_replace,preg_replace_callback,%
5420     preg_quote,preg_grep,Pattern Modifiers,Pattern Syntax,%
5421 %--- pdf functions
5422     pdf_add_annotation,pdf_add_bookmark,pdf_add_launchlink,%
5423     pdf_add_note,pdf_add_outline,pdf_add_pdflink,pdf_add_thumbnail,%
5424     pdf_arc,pdf_arcn,pdf_attach_file,pdf_begin_page,%
5425     pdf_begin_template,pdf_circle,pdf_clip,pdf_close,pdf_closepath,%
5426     pdf_closepath_stroke,pdf_close_image,pdf_close_pdi,%
5427     pdf_concat,pdf_continue_text,pdf_curveto,pdf_delete,%
5428     pdf_endpath,pdf_end_pattern,pdf_end_template,pdf_fill,%
5429     pdf_findfont,pdf_get_buffer,pdf_get_font,pdf_get_fontname,%
5430     pdf_get_image_height,pdf_get_image_width,pdf_get_parameter,%

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5431 pdf_get_pdi_value, pdf_get_majorversion, pdf_get_minorversion, %
5432 pdf_initgraphics, pdf_lineto, pdf_makespotcolor, pdf_moveto, %
5433 pdf_open, pdf_open_CCITT, pdf_open_file, pdf_open_gif, %
5434 pdf_open_image_file, pdf_open_jpeg, pdf_open_memory_image, %
5435 pdf_open_pdi_page, pdf_open_png, pdf_open_tiff, pdf_place_image, %
5436 pdf_rect, pdf_restore, pdf_rotate, pdf_save, pdf_scale, pdf_setcolor, %
5437 pdf_setflat, pdf_setfont, pdf_setgray, pdf_setgray_fill, %
5438 pdf_setlinecap, pdf_setlinejoin, pdf_setlinewidth, pdf_setmatrix, %
5439 pdf_setpolydash, pdf_setrgbcolor, pdf_setrgbcolor_fill, %
5440 pdf_set_border_color, pdf_set_border_dash, pdf_set_border_style, %
5441 pdf_set_duration, pdf_set_font, pdf_set_horiz_scaling, %
5442 pdf_set_info_author, pdf_set_info_creator, pdf_set_info_keywords, %
5443 pdf_set_info_title, pdf_set_leading, pdf_set_parameter, %
5444 pdf_set_text_rendering, pdf_set_text_rise, pdf_set_text_matrix, %
5445 pdf_set_word_spacing, pdf_show, pdf_show_boxed, pdf_show_xy, %
5446 pdf_stringwidth, pdf_stroke, pdf_translate, %
5447 %--- pfp functions
5448 pfp_init, pfp_cleanup, pfp_process, pfp_process_raw, %
5449 %--- pgs functions
5450 pg_close, pg_affected_rows, pg_connect, pg_dbname, pg_end_copy, %
5451 pg_query, pg_fetch_array, pg_fetch_object, pg_fetch_row, %
5452 pg_field_name, pg_field_num, pg_field_prtlen, pg_field_size, %
5453 pg_free_result, pg_last_oid, pg_host, pg_last_notice, pg_lo_close, %
5454 pg_lo_export, pg_lo_import, pg_lo_open, pg_lo_read, pg_lo_seek, %
5455 pg_lo_read_all, pg_lo_unlink, pg_lo_write, pg_num_fields, %
5456 pg_options, pg_pconnect, pg_port, pg_put_line, pg_fetch_result, %
5457 pg_client_encoding, pg_trace, pg_tty, pg_untrace, pg_get_result, %
5458 pg_send_query, pg_cancel_query, pg_connection_busy, %
5459 pg_connection_status, pg_copy_from, pg_copy_to, pg_escape_bytea, %
5460 pg_result_error, %
5461 %--- posix functions
5462 posix_kill, posix_getpid, posix_getppid, posix_getuid, %
5463 posix_getgid, posix_getegid, posix_setuid, posix_seteuid, %
5464 posix_setegid, posix_getgroups, posix_getlogin, posix_getpgrp, %
5465 posix_setpgid, posix_getpgid, posix_getsid, posix_uname, %
5466 posix_ctermid, posix_ttyname, posix_isatty, posix_getcwd, %
5467 posix_getgrnam, posix_getgrgid, posix_getpwnam, posix_getpwuid, %
5468 %--- printer functions
5469 printer_open, printer_abort, printer_close, printer_write, %
5470 printer_set_option, printer_get_option, printer_create_dc, %
5471 printer_start_doc, printer_end_doc, printer_start_page, %
5472 printer_create_pen, printer_delete_pen, printer_select_pen, %
5473 printer_delete_brush, printer_select_brush, printer_create_font, %
5474 printer_select_font, printer_logical_fontheight, %
5475 printer_draw_rectangle, printer_draw_ellipse, printer_draw_text, %
5476 printer_draw_chord, printer_draw_pie, printer_draw_bmp, %
5477 %--- pspell functions
5478 pspell_add_to_personal, pspell_add_to_session, pspell_check, %
5479 pspell_config_create, pspell_config_ignore, pspell_config_mode, %
5480 pspell_config_repl, pspell_config_runtogether, %

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5481     pspell_new,pspell_new_config,pspell_new_personal,%
5482     pspell_store_replacement,pspell_suggest,%
5483 %--- qtdom functions
5484     qdom_tree,qdom_error,%
5485 %--- readline functions
5486     readline,readline_add_history,readline_clear_history,%
5487     readline_info,readline_list_history,readline_read_history,%
5488 %--- recode functions
5489     recode_string,recode,recode_file,%
5490 %--- regex functions
5491     ereg,ereg_replace,eregi,eregi_replace,split,spliti,sql_regcase,%
5492 %--- sem functions
5493     sem_get,sem_acquire,sem_release,sem_remove,shm_attach,%
5494     shm_remove,shm_put_var,shm_get_var,shm_remove_var,ftok,%
5495 %--- sesam functions
5496     sesam_connect,sesam_disconnect,sesam_settransaction,%
5497     sesam_rollback,sesam_execimm,sesam_query,sesam_num_fields,%
5498     sesam_diagnostic,sesam_fetch_result,sesam_affected_rows,%
5499     sesam_field_array,sesam_fetch_row,sesam_fetch_array,%
5500     sesam_free_result,%
5501 %--- session functions
5502     session_start,session_destroy,session_name,session_module_name,%
5503     session_id,session_register,session_unregister,session_unset,%
5504     session_get_cookie_params,session_set_cookie_params,%
5505     session_encode,session_set_save_handler,session_cache_limiter,%
5506     session_write_close,%
5507 %--- shmop functions
5508     shmop_open,shmop_read,shmop_write,shmop_size,shmop_delete,%
5509 %--- snmp functions
5510     snmpget,snmpset,snmpwalk,snmpwalkoid,snmp_get_quick_print,%
5511     snmprealwalk,%
5512 %--- strings functions
5513     addcslashes,addslashes,bin2hex,chop,chr,chunk_split,%
5514     count_chars,crc32,crypt,echo,explode,get_html_translation_table,%
5515     hebrew,hebrevc,htmlentities,htmlspecialchars,implode,join,%
5516     localeconv,ltrim,md5,md5_file,metaphone,nl_langinfo,nl2br,ord,%
5517     print,printf,quoted_printable_decode,quotemeta,str_rot13,rtrim,%
5518     setlocale,similar_text,soundex,sprintf,strcasecmp,strcmp,%
5519     strcmp,strcmp,strcmp,strip_tags,stripslashes,stripslashes,%
5520     strlen,strnatcmp,strnatcasecmp,strcmp,str_pad,strpos, strchr,%
5521     strrev, strrpos, strspn, strstr, strtok, strtolower, strtoupper,%
5522     substr,substr_count,substr_replace,trim,ucfirst,ucwords,%
5523     vsprintf,wordwrap,%
5524 %--- swf functions
5525     swf_openfile,swf_closefile,swf_labelframe,swf_showframe,%
5526     swf_getframe,swf_mulcolor,swf_addcolor,swf_placeobject,%
5527     swf_removeobject,swf_nextid,swf_startdoaction,%
5528     swf_actiongeturl,swf_actionnextframe,swf_actionprevframe,%
5529     swf_actionstop,swf_actiontogglequality,swf_actionwaitforframe,%
5530     swf_actiongotolabel,swf_enddoaction,swf_defineline,%

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5531     swf_definepoly,swf_startshape,swf_shapelinesolid,%
5532     swf_shapefillsolid,swf_shapefillbitmapclip,%
5533     swf_shapemoveto,swf_shapelineto,swf_shapecurveto,%
5534     swf_shapearc,swf_endshape,swf_definefont,swf_setfont,%
5535     swf_fontslant,swf_fonttracking,swf_getfontinfo,swf_definetext,%
5536     swf_definebitmap,swf_getbitmapinfo,swf_startsymbol,%
5537     swf_startbutton,swf_addbuttonrecord,swf_oncondition,%
5538     swf_viewport,swf_ortho,swf_ortho2,swf_perspective,swf_polarview,%
5539     swf_pushmatrix,swf_popmatrix,swf_scale,swf_translate,swf_rotate,%
5540 %--- sybase functions
5541     sybase_affected_rows,sybase_close,sybase_connect,%
5542     sybase_fetch_array,sybase_fetch_field,sybase_fetch_object,%
5543     sybase_field_seek,sybase_free_result,sybase_get_last_message,%
5544     sybase_min_error_severity,sybase_min_message_severity,%
5545     sybase_num_fields,sybase_num_rows,sybase_pconnect,sybase_query,%
5546     sybase_select_db,%
5547 %--- uodbc functions
5548     odbc_autocommit,odbc_binmode,odbc_close,odbc_close_all,%
5549     odbc_connect,odbc_cursor,odbc_do,odbc_error,odbc_errormsg,%
5550     odbc_execute,odbc_fetch_into,odbc_fetch_row,odbc_fetch_array,%
5551     odbc_fetch_object,odbc_field_name,odbc_field_num,%
5552     odbc_field_len,odbc_field_precision,odbc_field_scale,%
5553     odbc_longreadlen,odbc_num_fields,odbc_pconnect,odbc_prepare,%
5554     odbc_result,odbc_result_all,odbc_rollback,odbc_setoption,%
5555     odbc_tableprivileges,odbc_columns,odbc_columnprivileges,%
5556     odbc_primarykeys,odbc_foreignkeys,odbc_procedures,%
5557     odbc_specialcolumns,odbc_statistics,%
5558 %--- url functions
5559     base64_decode,base64_encode,parse_url,rawurldecode,rawurlencode,%
5560     urlencode,%
5561 %--- var functions
5562     doubleval,empty,floatval,gettype,get_defined_vars,%
5563     import_request_variables,intval,is_array,is_bool,is_double,%
5564     is_int,is_integer,is_long,is_null,is_numeric,is_object,is_real,%
5565     is_scalar,is_string,isset,print_r,serialize,unset,%
5566     unset,var_dump,var_export,is_callable,%
5567 %--- vpopmail functions
5568     vpopmail_add_domain,vpopmail_del_domain,%
5569     vpopmail_add_domain_ex,vpopmail_del_domain_ex,%
5570     vpopmail_add_user,vpopmail_del_user,vpopmail_passwd,%
5571     vpopmail_auth_user,vpopmail_alias_add,vpopmail_alias_del,%
5572     vpopmail_alias_get,vpopmail_alias_get_all,vpopmail_error,%
5573 %--- w32api functions
5574     w32api_set_call_method,w32api_register_function,%
5575     w32api_deftype,w32api_init_dtype,%
5576 %--- wddx functions
5577     wddx_serialize_value,wddx_serialize_vars,wddx_packet_start,%
5578     wddx_add_vars,wddx_deserialize,%
5579 %--- xml functions
5580     xml_parser_create,xml_set_object,xml_set_element_handler,%

```

```

5581     xml_set_processing_instruction_handler,xml_set_default_handler,%
5582     xml_set_notation_decl_handler,%
5583     xml_parse,xml_get_error_code,xml_error_string,%
5584     xml_get_current_column_number,xml_get_current_byte_index,%
5585     xml_parser_free,xml_parser_set_option,xml_parser_get_option,%
5586     utf8_encode,xml_parser_create_ns,%
5587     xml_set_start_namespace_decl_handler,%
5588 %--- xslt functions
5589     xslt_set_log,xslt_create,xslt_errno,xslt_error,xslt_free,%
5590     xslt_set_sax_handler,xslt_set_scheme_handler,%
5591     xslt_set_base,xslt_set_encoding,xslt_set_sax_handlers,%
5592 %--- yaz functions
5593     yaz_addinfo,yaz_close,yaz_connect,yaz_errno,yaz_error,yaz_hits,%
5594     yaz_database,yaz_range,yaz_record,yaz_search,yaz_present,%
5595     yaz_scan,yaz_scan_result,yaz_ccl_conf,yaz_ccl_parse,%
5596     yaz_wait,yaz_sort,%
5597 %--- zip functions
5598     zip_close,zip_entry_close,zip_entry_compressedsize,%
5599     zip_entry_filesize,zip_entry_name,zip_entry_open,zip_entry_read,%
5600     zip_read,%
5601 %--- zlib functions
5602     gzclose,gzEOF,gzfile,gzgetc,gzgets,gzgetss,gzopen,gzpassthru,%
5603     gzread,gzrewind,gzseek,gztell,gzwrite,readgzfile,gzcompress,%
5604     gzdeflate,gzinflate,gzencode,},%
5605     sensitive,%
5606     morecomment=[l]\#,%
5607     morecomment=[l]//,%
5608     morecomment=[s]{/*}{*/},%
5609     morestring=[b]" ,%
5610     morestring=[b]' %
5611 } [keywords,comments,strings]
5612 (/lang2)

```

2.59 Plasm

Alessio Pace provided the following definition.

```

5613 (*lang3)
5614 \lst@definlanguage{Plasm}%
5615 {sensitive=false,%
5616     morekeywords={aa,abs,ac,acolor,acos,actor,al,alias,align,and,%
5617         animation,animation,appearance,apply,ar,arc,as,asin,assoc,atan,%
5618         axialcamera,axialcameras,basehermite,bbox,bbox,bernstein,%
5619         bernsteinbasis,bezier,beziercurve,beziermanifold,bezierstripe,%
5620         beziersurface,bigger,biggest,bilinearsurface,binormal,%
5621         biquadraticsurface,black,blend,blue,bottom,box,brown,bspize,%
5622         bspline,bsplinebasis,c,cabinet,camera,card,cart,case,catch,ceil,%
5623         centeredcameras,centralcavalier,char,charset,choose,circle,%
5624         circumference,class,cmap,color,comp,computecoords,cone,%

```

5625 conicalsurface, cons, control, convexcoords, convexhull, coonspatch, %
5626 copy, cos, cosh, crease, crosspolytope, cube, cubiccardinal, %
5627 cubiccardinalbasis, cubichermite, cubiccubspline, cubiccubsplinebasis, %
5628 cuboid, curl, curvature, curve2cspath, curve2mapvect, cyan, cylinder, %
5629 cylindricalsurface, d, deboor, def, depol, depth_sort, depth_test, %
5630 derbernstein, derbernsteinbase, derbezier, determinant, difference, %
5631 differenceopr, dim, dimetric, dirproject, displaygraph, displaynubspline, %
5632 displaynurbspline, distl, distr, div, divergence, dodecahedron, dot, down, %
5633 dp, drawedges, drawforks, drawtree, ds, dsphere, dump, dumpprep, ellipse, %
5634 embed, end, eq, ex, exp, explode, export, extract_bodies, extract_polygons, %
5635 extract_wires, extrude, extrusion, fact, false, feature, ff, fillcolor, %
5636 filter, finitecone, first, flash, flashani, floor, fontcolor, fontheight, %
5637 fontspacing, fontwidth, fractalsimplex, frame, frame, frameflash, fromto, %
5638 gausscurvature, ge, grad, gradient, gradmap, gray, green, gt, help, hermite, %
5639 hermitebasis, hermitesurface, hexahedron, icosahedron, id, idnt, if, in, %
5640 inarcs, innerprod, inset, insl, insr, intersection, intersectionpr, %
5641 intervals, intmax, intmin, intsto, inv, isa, isanimpol, isbool, ischar, %
5642 isclosedshape, iscloseto, isempty, iseven, isfun, isfunvect, isge, isgt, %
5643 isint, isintneg, isinto, isintpos, isle, islt, ismat, ismatof, isnat, %
5644 isnull, isnum, isnumneg, isnumpos, isodd, isometric, isorthoshape, ispair, %
5645 ispoint, ispointseq, ispol, ispolldim, ispolytope, ispurepol, isreal, %
5646 isrealneg, isrealpos, isrealvect, isseq, isseqof, isshape, issimplex, %
5647 issqrmat, isstring, isvect, iszero, jacobian, join, joints, k, last, le, %
5648 left, leftcavalier, len, less, lesseq, lex, lift, light, linecolor, %
5649 linesize, list, ln, load, loadlib, loop, lt, lxmy, magenta, map, mapshapes, %
5650 markersize, mat, matdotprod, material, mathom, max, mean, meanpoint, med, %
5651 merge, mesh, min, minkowski, mirror, mixedprod, mk, mkframe, mkpol, %
5652 mkvector, mkversork, mod, model, move, mul, multextrude, mxby, mxmy, mxty, %
5653 myfont, n, nat2string, neq, ngon, norm2, normalmap, not, nu_grid, nubspline, %
5654 nubsplineknots, nurbspline, nurbsplineknots, octahedron, offset, %
5655 onepoint, open, optimize, or, orange, ord, ortho, orthoproject, orthox, %
5656 orthoy, orthoz, outarcs, outerloop, outerwarp, pairdiff, parallel, %
5657 pascaltriangle, pdiff, pdifference, permutahedron, permutations, %
5658 perspective, perspective, pi, pivotop, plane, planemapping, pmap, %
5659 points2shape, polar, polyline, polymarker, polypoint, power, powerset, %
5660 presort, principalnormal, print, prism, profileprodsurface, %
5661 progressivesum, project, projection, purple, pyramid, q, quadarray, %
5662 quadmesh, quote, r, raise, range, rationalbezier, rationalblend, %
5663 rationalbspline, rationalize, red, rev, reverse, rgbacolor, right, %
5664 rightcavalier, ring, rn, rotatedtext, rotationalsurface, rotn, rtail, %
5665 ruledsurface, rxmy, s, save, scalarmatprod, scalarvectprod, schlegel2d, %
5666 schlegel3d, sdifference, sdifferenceopr, segment, sel, setand, setdiff, %
5667 setfontcolor, setor, setxor, sex, shape_0, shape_1, shape2points, %
5668 shape2pol, shapeclosed, shapecomb, shapediff, shapedist, %
5669 shapeinbetweening, shapeinf, shapejoin, shapelen, shapenorm, %
5670 shapenormal, shapeprod, shaperot, shapesum, shapesup, shapezero, shift, %
5671 showprop, sign, signal, simplex, simplexpole, sin, sinh, size, skeleton, %
5672 skew, smaller, smallest, solidifier, solidify, sort, sphere, spline, %
5673 splinesampling, splitcells, splitpols, sqr, sqrt, star, string, %
5674 stringtokens, struct, sub, svg, sweep, t, tail, tan, tangent, tanh, %

```

5675     tensorprodsurface,tetrahedron,text,texture,textwithattributes,%
5676     thinsolid,threepoints,time,tmax,tmin,top,torus,torusmap,trace,%
5677     trans,tree,trianglefan,trianglestripe,trimetric,true,truncone,tt,%
5678     tube,twopoints,uk,ukpol,ukpolf,union,unionpr,unitvect,unprune,up,%
5679     vect2dtoangle,vect2mat,vectdiff,vectnorm,vectprod,vectsum,view,%
5680     viewmodel,viewmodel,vrml,warp,warp,where,white,with,xcavalier,xor,%
5681     xquadarray,xx,ycavalier,yellow},%
5682     moredirectives={loadlib},%
5683     otherkeywords={-,+,*,**,/,~,|,...,^,\&,\&\&,\#,\#\#},%
5684     morecomment=[s]{\%}{\%},%
5685     morestring=[b]',%
5686     literate={~}{\sim$}{1} {^}{\wedge$}{1},%
5687   }[keywords,directives,comments,strings]
5688 /</lang3>

```

2.60 PL/I

Found the data in

- BERNHARD FISCHER, HERMAN FISCHER: **Structured Programming in PL/I and PL/C**; Copyright © 1976 by Marcel Dekker, Inc.; ISBN 0-8247-6394-7

```

5689 (*lang3)
5690 \lstdefinlanguage{PL/I}{%
5691     morekeywords={ABS, ATAN, AUTOMATIC, AUTO, ATAND, BEGIN, BINARY, BIN, BIT,%
5692     BUILTIN, BY, CALL, CHARACTER, CHAR, CHECK, COLUMN, COL, COMPLEX, CPLX,%
5693     COPY, COS, COSD, COSH, DATA, DATE, DECIMAL, DEC, DECLARE, DCL, DO,%
5694     EDIT, ELSE, END, ENDFILE, ENDPAGE, ENTRY, EXP, EXTERNAL, EXT, FINISH,%
5695     FIXED, FIXEDOVERFLOW, FOFL, FLOAT, FORMAT, GET, GO, GOTO, IF, IMAG,%
5696     INDEX, INITIAL, INIT, INTERNAL, INT, LABEL, LENGTH, LIKE, LINE, LIST,%
5697     LOG, LOG2, LOG10, MAIN, MAX, MIN, MOD, NOCHECK, NOFIXEDOVERFLOW,%
5698     NOFOFL, NOOVERFLOW, NOOFL, NOSIZE, NOUNDERFLOW, NOUFL, NOZERODIVIDE,%
5699     NOZDIV, ON, OPTIONS, OVERFLOW, OFL, PAGE, PICTURE, PROCEDURE, PROC,%
5700     PUT, READ, REPEAT, RETURN, RETURNS, ROUND, SIN, SIND, SINH, SIZE, SKIP,%
5701     SQRT, STATIC, STOP, STRING, SUBSTR, SUM, SYSIN, SYSPRINT, TAN, TAND,%
5702     TANH, THEN, TO, UNDERFLOW, UFL, VARYING, WHILE, WRITE, ZERODIVIDE,%
5703     ZDIV},%
5704     sensitive=f,%
5705     morecomment=[s]{/*}{*/},%
5706     morestring=[d]'%
5707 }[keywords,comments,strings]
5708 /</lang3>

```

2.61 PostScript

Herbert Voss provided the following definition, written by Christophe Jorssen provided the following definition.

```

5709 (*lang3)

```

```

5710 %%
5711 %% PostScript language definition (c) 2005 Christophe Jorssen.
5712 %%
5713 \lst@definelanguage{PostScript}{%
5714   morekeywords={abs, add, aload, anchorsearch, and, arc, arcn, arct, arcto,%
5715     array, ashow, astore, atan, awidthshow, begin, bind, bitshift,%
5716     bytesavailable, cachestatus, ceiling, charpath, clear, cleartomark,%
5717     cleardictstack, clip, clippath, closefile, closepath, colorimage,%
5718     concat, concatmatrix, condition, copy, cypage, cos, count,%
5719     countdictstack, countexecstack, counttomark, cshow,%
5720     currentblackgeneration, currentcacheparams, currentcmykcolor,%
5721     currentcolor, currentcolorrendering, currentcolorscreen,%
5722     currentcolorspace, currentcolortransfer, currentcontext, currentdash,%
5723     currentdevparams, currentdict, currentfile, currentflat, currentfont,%
5724     currentglobal, currentgray, currentgstate, currenthalftone,%
5725     currenthalftonephase, currenthsbcolor, currentlinecap, currentlinejoin,%
5726     currentlinewidth, currentmatrix, currentmiterlimit,%
5727     currentobjectformat, currentpacking, currentpagedevice, currentpoint,%
5728     currentrgbcolor, currentscreen, currentshared, currentstrokeadjust,%
5729     currentsystemparams, currenttransfer, currentundercolorremoval,%
5730     currentuserparams, curveto, cvi, cvlit, cvn, cvr, cvrs, cvs, cvx, def,%
5731     defaultmatrix, definefont, defineresource, defineusername,%
5732     defineuserobject, deletefile, detach, deviceinfo, dict, dictstack, div,%
5733     dtransform, dup, echo, eexec, end, eoclip, eofill, eoviewclip, eq,%
5734     erasepage, errordict, exch, exec, execform, execstack, execuserobject,%
5735     executeonly, executive, exit, exp, false, file, filenameforall,%
5736     fileposition, fill, filter, findencoding, findfont, findresource,%
5737     flattenpath, floor, flush, flushfile, FontDirectory, for, forall, fork,%
5738     ge, get, getinterval, globaldict, GlobalFontDirectory, glyphshow,%
5739     grestore, grestoreall, gsave, gstate, gt, identmatrix, idiv,%
5740     idtransform, if, ifelse, image, imagemask, index, ineofill, infill,%
5741     initclip, initgraphics, initmatrix, initviewclip, instroke,%
5742     internaldict, inueofill, inufill, inustroke, invertmatrix,%
5743     ISOLatin1Encoding, itransform, join, kshow, known, languagelevel, le,%
5744     length, lineto, ln, load, lock, log, loop, lt, makefont, makepattern,%
5745     mark, matrix, maxlength, mod, monitor, moveto, mul, ne, neg, newpath,%
5746     noaccess, not, notify, null, nulldevice, or, packedarray, pathbbox,%
5747     pathforall, pop, print, printobject, product, prompt, pstack, put,%
5748     putinterval, quit, rand, rcurveto, read, readhexstring, readline,%
5749     readonly, readstring, realtime, rectclip, rectfill, rectstroke,%
5750     rectviewclip, renamefile, repeat, resetfile, resourceforall,%
5751     resourcestatus, restore, reversepath, revision, rlineto, rmoveto, roll,%
5752     rootfont, rotate, round, rrand, run, save, scale, scalefont, scheck,%
5753     search, selectfont, serialnumber, setbbox, setblackgeneration,%
5754     setcachedevice, setcachedevice2, setcachelimit, setcacheparams,%
5755     setcharwidth, setcmykcolor, setcolor, setcolorrendering,%
5756     setcolorscreen, setcolorspace, setcolortransfer, setdash, setdevparams,%
5757     setfileposition, setflat, setfont, setglobal, setgray, setgstate,%
5758     sethalftone, sethalftonephase, sethsbcolor, setlinecap, setlinejoin,%
5759     setlinewidth, setmatrix, setmiterlimit, setobjectformat, setoverprint,%

```

```

5760   setpacking, setpagedevice, setpattern, setrgbcolor, setscreen,%
5761   setshared, setstrokeadjust, setsystemparams, settransfer,%
5762   setucacheparams, setundercolorremoval, setuserparams, setvmthreshold,%
5763   sharedict, show, showpage, sin, sqrt, srand, stack, StandardEncoding,%
5764   start, startjob, status, statusdict, stop, stopped, store, string,%
5765   stringwidth, stroke, strokepath, sub, systemdict, transform, translate,%
5766   true, truncate, type, token, uappend, ucache, ucachestatus, ueofill,%
5767   ufill, undef, upath, userdict, UserObjects, usertime, ustroke,%
5768   ustrokepath, version, viewclip, viewclippath, vmreclaim, vmstatus,%
5769   wait, wcheck, where, widthshow, write, writehexstring, writeobject,%
5770   writestring, wtranslation, xcheck, xor, xshow, xyshow, yield, yshow},%
5771   sensitive,%
5772   morecomment=[1]\%}[keywords,comments]
5773 /lang3

```

2.62 POV-Ray

Berthold Höllmann sent me the definition. But I removed `blankstring=false` and `flexiblecolumns=true` from the driver since they have nothing to do with a language definition.

```

5774 (*lang1)
5775 %%
5776 %% POV definition (c) 1999 Berthold H"ollmann
5777 %%
5778 \lst@definlanguage{POV}%
5779 {morekeywords={abs,absorption,acos,acosh,adaptive,adc_bailout,agate,%
5780   agate_turb,all,alpha,ambient,ambient_light,angle,aperture,append,%
5781   arc_angle,area_light,array,asc,asin,asinh,assumed_gamma,atan,%
5782   atan2,atanh,average,background,bezier_spline,bicubic_patch,%
5783   black_hole,blob,blue,blur_samples,bounded_by,box,boxed,bozo,%
5784   break,brick,brick_size,brightness,brilliance,bumps,bump_map,%
5785   bump_size,camera,case,caustics,ceil,checker,chr,clipped_by,clock,%
5786   clock_delta,color,color_map,colour,colour_map,component,%
5787   composite,concat,cone,confidence,conic_sweep,control0,control1,%
5788   cos,cosh,count,crackle,crand,cube,cubic,cubic_spline,cubic_wave,%
5789   cylinder,cylindrical,debug,declare,default,defined,degrees,%
5790   density,density_file,density_map,dents,difference,diffuse,%
5791   dimensions,dimension_size,direction,disc,distance,%
5792   distance_maximum,div,eccentricity,else,emission,end,error,%
5793   error_bound,exp,extinction,fade_distance,fade_power,falloff,%
5794   falloff_angle,false,fclose,file_exists,filter,finish,fisheye,%
5795   flatness,flip,floor,focal_point,fog,fog_alt,fog_offset,fog_type,%
5796   fopen,frequency,gif,global_settings,gradient,granite,%
5797   gray_threshold,green,height_field,hexagon,hf_gray_16,hierarchy,%
5798   hollow,hypercomplex,if,ifdef,iff,ifndef,image_map,include,int,%
5799   interior,interpolate,intersection,intervals,inverse,ior,irid,%
5800   irid_wavelength,jitter,julia_fractal,lambda,lathe,leopard,%
5801   light_source,linear_spline,linear_sweep,local,location,log,%

```

```

5802     looks_like,look_at,low_error_factor,macro,mandel,map_type,marble,%
5803     material,material_map,matrix,max,max_intersections,max_iteration,%
5804     max_trace_level,media,media_attenuation,media_interaction,merge,%
5805     mesh,metallic,min,minimum_reuse,mod,mortar,nearest_count,no,%
5806     normal,normal_map,no_shadow,number_of_waves,object,octaves,off,%
5807     offset,omega,omnimax,on,once,onion,open,orthographic,panoramic,%
5808     perspective,pgm,phase,phong,phong_size,pi,pigment,pigment_map,%
5809     planar,plane,png,point_at,poly,polygon,poly_wave,pot,pow,ppm,%
5810     precision,prism,pwr,quadratic_spline,quadric,quartic,quaternion,%
5811     quick_color,quick_colour,quilted,radial,radians,radiosity,radius,%
5812     rainbow,ramp_wave,rand,range,ratio,read,reciprocal,%
5813     recursion_limit,red,reflection,reflection_exponent,refraction,%
5814     render,repeat,rgb,rgbf,rgbft,rgbt,right,ripples,rotate,roughness,%
5815     samples,scallop_wave,scattering,seed,shadowless,sin,%
5816     sine_wave,sinh,sky,sky_sphere,slice,slope_map,smooth,%
5817     smooth_triangle,sor,specular,sphere,spherical,spiral1,spiral2,%
5818     spotlight,spotted,sqr,sqrt,statistics,str,strcmp,strength,strlen,%
5819     strlwr,strupr, Sturm,substr,superellipsoid,switch,sys,t,tan,tanh,%
5820     text,texture,texture_map,tga,thickness,threshold,tightness,tile2,%
5821     tiles,torus,track,transform,translate,transmit,triangle,%
5822     triangle_wave,true,ttf,turbulence,turb_depth,type,u,%
5823     ultra_wide_angle,undef,union,up,use_color,use_colour,use_index,%
5824     u_steps,v,val,variance,vaxis_rotate,vcross,vdot,version,vlength,%
5825     vnormalize,vrotate,v_steps,warning,warp,water_level,waves,while,%
5826     width,wood,wrinkles,write,x,y,yes,z},%
5827     moredirectives={break,case,debug,declare,default,else,end,fclose,%
5828     fopen,local,macro,read,render,statistics,switch,undef,version,%
5829     warning,write},%
5830     moredelim=[directive]\#,%
5831     sensitive,%
5832     morecomment=[l]//,%
5833     morecomment=[s]{/*}{*/},%
5834     morestring=[d]" ,%
5835     }[keywords,directives,comments,strings]
5836 </lang1>

```

2.63 Prolog

Dominique de Waleffe mailed me the data for Prolog. He took the keywords from the LGrind language definition file.

```

5837 <*lang2>
5838 %%
5839 %% Prolog definition (c) 1997 Dominique de Waleffe
5840 %%
5841 \lst@definlanguage{Prolog}%
5842     {morekeywords={op,mod,abort,ancestors,arg,ascii,ask,assert,asserta,%
5843     assertz,atom,atomic,char,clause,close,concat,consult,ed,ef,em,%
5844     eof,fail,file,findall,write,functor,getc,integer,is,length,%

```



```

5845     listing,load,name,nl,nonvar,not,numbervars,op,or,pp,prin,print,%
5846     private,prompt,putc,ratom,read,read_from_this_file,rename,repeat,%
5847     retract,retractall,save,see,seeing,seen,sh,skip,statistics,%
5848     subgoal_of,system,tab,tell,telling,time,told,trace,true,unload,%
5849     untrace,var,write},%
5850     sensitive=f,%
5851     morecomment=[l]\%,%
5852     morecomment=[s]{/*}{*/},%
5853     morestring=[bd]" ,%
5854     morestring=[bd]'%
5855 }[keywords,comments,strings]
5856 </lang2>

```

2.64 Promela

Thanks to William ThimblebyPromela for this language definition.

```

5857 (*lang3)
5858 %%
5859 %% Promela definition (c) 2004 William Thimbleby
5860 %%
5861 \lst@definlanguage{Promela}
5862 {morekeywords={active,assert,atomic,bit,bool,break,byte,chan,d_step,%
5863     Dproctype,do,else,empty,enabled,fi,full,goto,hidden,if,init,int,%
5864     len,mtype,nempty,never,nfull,od,of,pcvalue,printf,priority,%
5865     proctype,provided,run,short,skip,timeout,typedef,unless,unsigned,%
5866     xr,xs,true,false,inline,eval},%
5867     moredirectives={define,ifdef,ifndef,if,if,else,endif,undef,include},%
5868     moredelim=[s]{/*}{*/}\#,%
5869     morecomment=[s]{/*}{*/},%
5870     morestring=[b]"%
5871 }[keywords,comments,strings,directives]%
5872 </lang3>

```

2.65 PSTricks

PSTricks is a \TeX macro package bundle. Herbert Voss provided the following definition.

```

5873 (*lang3)
5874 %%
5875 %% PSTricks definition (c) 2006 Herbert Voss
5876 %%
5877 \lst@definlanguage{PSTricks}%
5878 {morekeywords={%
5879     begin,end,definecolor,multido,%
5880     KillGlue,DontKillGlue,pslbrace,bsrbrace,psscabox,psset,pstVerb,pstverb,%
5881     pst@def,psframebox,psclip,endclip,endpspicture,psframe,%
5882     pspicture,%

```

```

5883   multirput,multips,Rput,rput,uput,cput,lput,%
5884   newrgbcolor,newgray,newcmkcolor,%
5885 %%
5886 %% pstricks-add
5887   psStep,psgraph,psbrace,psPrintValue,%
5888 %%
5889 %% pst-plot
5890   psvlabel,pslabel,psplot,psline,pscustom,pscurve,psccurve,%
5891   readdata,savedata,fileplot,dataplot,listplot,%
5892   psecurve,psgraph,parametricplot,%
5893   psellipse,psaxes,ncline,nccurve,psbezier,parabola,%
5894   qdisk,qline,clipbox,endpsclip,%
5895   psgrid,pscircle,pscirclebox,psdiabox,pstribox,%
5896   newpsfontdot,psdot,psdots,%
5897   pspolygon,psdiamond,psoval,pstriangle,%
5898   psarc,psarcn,psellipticarc,psellipticarcn,pswedge,psellipticwedge,%
5899   pcline,pcdiag,pcdiagg,pccurve,pccurve,pccurve,%
5900   scalebox,scaleboxto,psmathboxtrue,everypsbox,psverbboxtrue,overlaybox,%
5901   psoverlay,putoverlaybox,%
5902   newpsstyle,newpsobject,%
5903   moveto,newpath,closepath,stroke,fill,gsave,grestore,msave,mrestore,%
5904   translate,scale,swapaxes,rotate,openshadow,closedshadow,movepath,%
5905   lineto,rlineto,curveto,rcurveto,code,dim,coor,rcoor,file,arrows,%
5906   setcolor,rotateleft,rotateright,rotatedown,%
5907 %%
5908 %% pst-node
5909   nput,naput,nbput,ncput,%
5910   ncarc,ncbox,ncangle,ncangles,ncloop,ncdiag,ncdiagg,ncarcbox,nctbar,%
5911   cnodeput,nccircle,%
5912   pnode,rnode,Rnode,Cnode,cnode,fnode,%
5913   circlenode,ovalnode,trinode,dianode,%
5914   psmatrix,endpsmatrix,psspan,%
5915 %%
5916 %% pst-tree
5917   pstree,Tcircle,TCircle,Ttri,Tn,TC,Tc,Tfan,TR,Tr,Tdia,Toval,Tdot,Tp,Tf,%
5918   skiplevel,skipleveles,endskiplevels,tspace,tlput,%
5919 %%
5920 %% pst-text
5921   pscharpath,pstextpath,%
5922 %%
5923 %% pst-barcode
5924   psbarcode,%
5925 %%
5926 %% pst-coil
5927   psboxfill,pscoil,psCoil,pszigzag,nccoil,%
5928   psshadow,pstilt,psTilt,ThreeDput,%
5929 %%
5930 %% pst-gr3d
5931   PstGridThreeDNodeProcessor,%
5932 %%

```

```

5933 %% pst-vue3d
5934     PstGridThreeD,%
5935     AxesThreeD,LineThreeD,DieThreeD,FrameThreeD,SphereCircleThreeD,%
5936     SphereMeridienThreeD,QuadrillageThreeD,TetraedreThreeD,%
5937     PyramideThreeD,ConeThreeD,CylindreThreeD,DodecahedronThreeD,%
5938     ConeThreeD,SphereThreeD,SphereInverseThreeD,DemiSphereThreeD,%
5939     SphereCreuseThreeD,SphereCircledThreeD,PortionSphereThreeD,%
5940     pNodeThreeD,CubeThreeD,%
5941 %%
5942 %% pst-3dplot
5943     pstThreeDCoor, pstThreeDDot, pstThreeDTriangle, pstThreeDCircle,%
5944     pstPlanePut, pstThreeDBox, pstThreeDEllipse, pstThreeDLine,%
5945     pstThreeDPut, pstThreeDNode, pstThreeDSquare, psplotThreeD,%
5946     parametricplotThreeD, fileplotThreeD, dataplotThreeD,%
5947     pstScalePoints,%
5948 %%
5949 %% pst-circ
5950     resistor,battery,Ucc,Icc,capacitor,coil,diode,Zener,LED,lamp,switch,%
5951     wire,tension,circledipole,multidipole,OA,transistor,Tswitch,%
5952     potentiometer,transformer,optoCoupler,logic,%
5953 %%
5954 %% pst-eucl
5955     pstTriangle,pstMediatorAB,pstInterLL,pstMiddleAB,pstProjection,%
5956     pstCircleOA,pstLineAB,%
5957 %%
5958 %% pst-func
5959     psBessel,psPolynomial,psFourier,psGaussI,psGauss,psSi,psSi,psCi,psCi,%
5960 %%
5961 %% pst-infixplot
5962     psPlot,%
5963 %%
5964 %% pst-ob3d
5965     PstDie,PstCube,%
5966 %%
5967 %% pst-poly
5968     PstPolygon,pspolygonbox,%
5969 %%
5970 %% pst-bar
5971     psbarchart,readpsbardata,psbarscale,newpsbarstyle,%
5972 %%
5973 %% pst-lens
5974     PstLens,%
5975 %%
5976 %% pst-geo
5977     WorldMap,WorldMapII,WorldMapThreeD,WorldMapThreeDII,pnodeMap,MapPut,%
5978 %%
5979 %% pst-autoseg
5980     asr,firstnode,merge,assoc,labelmerge,%
5981 %%
5982 %% gastex

```

```

5983     node,imark,fmark,rmark,drawqbpedge,drawedge,drawloop,%
5984 %%
5985 %% pst-labo
5986     Distillation,Ballon,%
5987 %%
5988 %% pst-optic
5989     lens,Transform,%
5990 %%
5991 %% pst-light3d
5992     PstLightThreeDText,%
5993 %%
5994 %% calendrier
5995     Calendrier,%
5996 %%
5997 %% pst-osci
5998     Oscillo%
5999     },%
6000     sensitive,%
6001     alsoother={0123456789$_},%
6002     morecomment=[1]\% %
6003     ][keywords,comments]%
6004 </lang3>

```

2.66 Python

Michael Weber sent me the definition. He got data from MARK LUTZ: **Programming Python**; O'Reilly 1996; ISBN 1-56592-197-6. Stephen Kelly reported some problems that indicated that the comment definitions needed to be moved after the string definitions to work correctly.

In August 2013 Alexis Dimitriadis reworked the definition by supplying the builtins. The current version is based on https://docs.python.org/2/reference/lexical_analysis.html#identifiers.

```

6005 <*lang1>
6006 %%
6007 %% Python definition (c) 1998 Michael Weber
6008 %% Additional definitions (2013) Alexis Dimitriadis
6009 %% small corrections based on
6010 %% https://docs.python.org/2/reference/lexical_analysis.html#identifiers
6011 %%
6012 \lst@definlanguage[2]{Python}{%
6013     morekeywords={and, as, assert, break, class, continue, def, del, elif,%
6014         else, except, exec, finally, for, from, global, if, import, in, is,%
6015         lambda, not, or, pass, print, raise, return, try, while, with, yield},%
Python has a long list of builtin-in functions (altogether 76 entries plus 5 special ones) (http://docs.python.org/2/library/functions.html) and it is a good idea to make them visible in printed code.
6016 % Built-ins according to

```

```

6017 % http://docs.python.org/2/library/functions.html,
6018 % the last five entries are known as advanced or not essential
6019 morekeywords=[2]{abs, all, any, basestring, bin, bool, bytearray,%
6020 callable, chr, classmethod, cmp, compile, complex, delattr, dict, dir,%
6021 divmod, enumerate, eval, execfile, file, filter, float, format,%
6022 frozenset, getattr, globals, hasattr, hash, help, hex, id, input, int,%
6023 isinstance, issubclass, iter, len, list, locals, long, map, max,%
6024 memoryview, min, next, object, oct, open, ord, pow, property, range,%
6025 raw_input, reduce, reload, repr, reversed, round, set, setattr, slice,%
6026 sorted, staticmethod, str, sum, super, tuple, type, unichr, unicode,%
6027 vars, xrange, zip, __import__, apply, buffer, coerce, intern},%
6028 sensitive=true,%
6029 morecomment=[l]\#,%
6030 morestring=[s]{'''}{'''},% used for documentation text
6031                                     % (multiline strings)
6032 morestring=[s]{"""}{"""},% added by Philipp Matthias Hahn
6033 morestring=[b]',,%
6034 morestring=[b]"%
6035 }

```

Philipp Matthias Hahn added the third comment above. eRreuR found a bug using Python and Nicolas Markey informed me about the corresponding thread on `fr.comp.text.tex` and provided the fix—adding `[b]` to both `morestring` declarations.

Jürgen Dietel provided an example with a wrong representation of documentation strings, so the two lines added by Philipp Matthias Hahn got changed from `morestring` → `morecomment`.³

Python 3.0 was released in December 2008 and brought with it a number of new features. Naoki Sean Pross provided the lists of new keywords and built-in functions as well as the support for special strings.

```

6036 \lst@definelanguage[3]{Python}[2]{Python}{%
6037 % keywords
6038 deletekeywords={exec, print},
6039 morekeywords={False, None, True, async, await, nonlocal,

```

Python knows so called soft keywords:

```

6040             match, case},

```

The list of built-in functions has changed considerably (only 71 entries, no special ones):

```

6041 % built-in functions
6042 deletekeywords=[2]{apply, basestring, buffer, cmp, coerce, execfile, %
6043 file, intern, long, raw_input, reduce, reload, unichr, unicode, xrange},
6044 morekeywords=[2]{aiter, anext, ascii, breakpoint, bytes, exec},

```

Python now supports special strings like *raw strings*, Unicode strings, and some more. Here is the definition of these strings:

```

6045 % 'raw' strings

```

³According to PEP (Python Enhancement Proposals—<https://peps.python.org/pep-0257/>) comment should be distinguished from documentation strings.

```

6046 morestring=[s]{r'}{'},
6047 morestring=[s]{r"}{"},
6048 morestring=[s]{r'''}{'''},
6049 morestring=[s]{r''''}{''''},
6050 morestring=[s]{R'}{'},
6051 morestring=[s]{R"}{"},
6052 morestring=[s]{R'''}{'''},
6053 morestring=[s]{R''''}{''''},
6054 % Unicode strings
6055 morestring=[s]{u'}{'},
6056 morestring=[s]{u"}{"},
6057 morestring=[s]{u'''}{'''},
6058 morestring=[s]{u''''}{''''},
6059 morestring=[s]{U'}{'},
6060 morestring=[s]{U"}{"},
6061 morestring=[s]{U'''}{'''},
6062 morestring=[s]{U''''}{''''},
6063 % Format strings
6064 morestring=[s]{f'}{'},
6065 morestring=[s]{f"}{"},
6066 morestring=[s]{f'''}{'''},
6067 morestring=[s]{f''''}{''''},
6068 morestring=[s]{F'}{'},
6069 morestring=[s]{F"}{"},
6070 morestring=[s]{F'''}{'''},
6071 morestring=[s]{F''''}{''''},
6072 % Byte literals
6073 morestring=[s]{b'}{'},
6074 morestring=[s]{b"}{"},
6075 morestring=[s]{b'''}{'''},
6076 morestring=[s]{b''''}{''''},
6077 morestring=[s]{B'}{'},
6078 morestring=[s]{B"}{"},
6079 morestring=[s]{B'''}{'''},
6080 morestring=[s]{B''''}{''''},
6081 }%
6082 </lang1>

```

Alexis Dimitriadis also proposes the following configuration for printing Python code which simulates colorizing the code as it's done by the IDLE GUI:

```

6083 (*python-prf)
6084 \usepackage{xcolor}
6085 \usepackage{textcomp}
6086
6087 %% Actual colors from idlelib/config-highlight.def
6088 %% --> corrected to 'web-safe'
6089 %% Unimplemented IDLE syntax: function/class names being
6090 %% defined should be blue
6091 %% strings = #00aa00 / 0,170,0 (a darker green)

```

```

6092 %% builtins = #900090 / 144,0,144      (purple-ish)
6093 %% keywords = #FF7700 / 255,119,0      (quite close to plain 'orange')
6094 \definecolor{IDLEorange}{RGB}{255,119,0} % pretty close to real orange
6095 \definecolor{IDLEpurple}{RGB}{144,0,144}
6096 \definecolor{IDLEgreen}{RGB}{0,170,0}
6097 \definecolor{IDLERed}{RGB}{221,0,0}
6098 %% Corrected to 'web-safe'
6099 \definecolor{orange2}{RGB}{255,102,0}
6100 \definecolor{purple2}{RGB}{153,0,153} % there's actually no standard purple
6101 \definecolor{green2}{RGB}{0,153,0} % a darker green
6102 \definecolor{red2}{RGB}{221,0,0}
6103
6104 % Except for green and purple, the other colors are pretty good in standard
6105 % hue
6106 \lstdefinestyle{python-idle-code}{%
6107   language=Python, % the language
6108   basicstyle=\normalsize\ttfamily, % size of the fonts for the code
6109   % Color settings to match IDLE style
6110   keywordstyle=\color{orange}, % core keywords
6111   keywordstyle={[2]\color{purple2}}, % built-ins
6112   stringstyle=\color{green2},%
6113   commentstyle=\color{red},%
6114   upquote=true, % requires textcomp
6115 }
6116 % Unimplemented IDLE syntax: function/class names being defined should be
6117 % blue

```

This code is provided in the file `listings-python.prf`, see section 2.4.1 (Preferences) of the listings documentation.

```

6118 </python-prf>

```

2.67 Rexx

Patrick TJ McPhee provided this definition.

```

6119 <*lang2>
6120 %%
6121 %% classic rexx listings definition
6122 %% by Patrick TJ McPhee <ptjm@interlog.com>
6123 %%
6124 \lst@definelanguage{Rexx}{%
6125   morekeywords={address,arg,call,do,drop,else,end,exit,if,interpret,%
6126               iterate,leave,nop,numeric,options,otherwise,parse,%
6127               procedure,pull,push,queue,return,say,select,signal,then,%
6128               to,trace,when},%
6129   sensitive=false,%
6130   morecomment=[1]{--},%
6131   morecomment=[n]{/*}{*/},%
6132   morestring=[d]{'},%
6133   morestring=[d]{"},%

```

```

6134 }[keywords,comments,strings]
6135 </lang2>

```

There are two dialects of Rexx: the one from System Product Interpreter Reference, VM/XA SP Release 1 and Release 2 and the modern version ooRexx (see <http://www.oorexx.org/>).

2.67.1 Rexx—VM/XA

```

6136 (*lang2)
6137 %%
6138 %% REXX keywords from System Product Interpreter Reference, VM/XA SP Release 1
6139 %% and Release 2
6140 \lstdefinlanguage[VM/XA]{Rexx}[] {Rexx}{%
6141   morekeywords={all,by,digits,commands,end,engineering,error,errors,expose,%
6142     external,for,form,fuzz,halt,labels,intermediates,negative,normal,novalue,%
6143     on,off,results,scan,scientific,select,source,stream,syntax,until,upper,%
6144     value,var,version,while,with},%
6145   morekeywords=[2]{abbrev,abs,address,bitand,bitor,bitxor,center,centre,%
6146     compare,copies,c2d,c2x,datatype,date,delstr,delword,diag,diagrc,%
6147     d2c,d2x,errortext,externals,find,format,index,insert,justify,%
6148     lastpos,left,length,linein,lineout,lines,linesize,max,min,overlay,%
6149     pos,queued,random,reverse,righth,sign,sourceline,space,storage,%
6150     strip,substr,subword,symbol,time,translate,trunc,userid,value,verify,%
6151     word,wordindex,wordlength,words,xrange,x2c,x2d},%
6152   morekeywords=[3]{result,rc,self,sig1,super},%
6153   sensitive=false,%
6154   morestring=[d]" ,%
6155   morestring=[d]' ,%
6156 }[keywords,comments,strings]
6157 </lang2>

```

Shmuel (Seymour J.) Metz pointed out the previously unsupported special variables `result` etc.. He also gave the advice to complete the definitions for OORexx in the following section.

2.67.2 ooRexx

```

6158 (*lang2)
6159 %%
6160 %% ooREXX keywords (http://www.oorexx.org/)
6161 \lstdefinlanguage[] {OORexx}[VM/XA]{Rexx}{%
6162   morekeywords={::annotate, ::attribute, ::class, ::constant, ::method,%
6163     ::options, ::requires, ::resource, ::routine,%
6164     forward, guard, local, loop, raise, strict,%
6165   },%
6166   alsoletter={:}
6167 }[keywords,comments,strings]
6168 </lang2>

```


Jobst Hoffmann added the following configuration for printing Rexx code which is similar to the colors used by the Fortran preferences file.

```

6169 (*rexx-prf)
6170 \usepackage{xcolor}           % needed for colors like yellow!10
6171 \usepackage{textcomp}        % needed for upquote
6172
6173 \lstdefinestyle{rexx-colored}{%
6174   language=oorexx,           % the language
6175   backgroundcolor=\color{yellow!10},
6176   basicstyle=\normalsize\ttfamily, % size of the fonts for
6177                                   % the code
6178   % Color settings to match JHf's preferred style
6179   keywordstyle=\color{blue},   % core keywords
6180   keywordstyle={[2]\color{cyan}}, % built-ins
6181   keywordstyle={[3]\color{olive}}, % special keywords
6182   stringstyle=\color{teal},%
6183   commentstyle=\color{orange},%
6184   upquote=true,              % requires textcomp
6185 }

```

This code is provided in the file `listings-rexx.prf`, see section 2.4.1 (Preferences) of the listings documentation.

```
6186 (/rexx-prf)
```

2.68 Reduce

was provided by Geraint Paul Bevan.

```

6187 (*lang3)
6188 %%
6189 %% Reduce definition (c) 2002 Geraint Paul Bevan
6190 %%
6191 \lst@definelanguage{Reduce}%
6192 {morekeywords={%
6193 %% reserved identifiers
6194 abs,acos,acosh,acot,acoth,acsc,acsch,%
6195 adjprec,algebraic,algint,allbranch,allfac,and,%
6196 antisymmetric,append,arglength,array,asec,asech,%
6197 asin,asinh,atan,atan2,atanh,begin,bfspace,bye,%
6198 card_no,ceiling,clear,clearrules,coeff,coeffn,%
6199 cofactor,combineexpt,combinelogs,comment,comp,%
6200 complex,conj,cons,cont,cos,cosh,cot,coth,cramer,%
6201 cref,csc,csch,decompose,define,defn,deg,demo,den,%
6202 depend,det,df,difference,dilog,display,div,do,e,%
6203 echo,ed,editdef,ei,end,eps,eq,equal,erf,errcont,%
6204 evallhseqp,eval_mode,even,evenp,exp,expandlogs,%
6205 expr,expt,ezgcd,factor,factorial,factorize,fexpr,%
6206 first,fix,fixp,floor,for,forall,foreach,fort,%
6207 fort_width,freeof,fullroots,g,gcd,geq,go,goto,%

```

```

6208 greaterp,high_pow,hypot,i,if,ifactor,impart,in,%
6209 index,infinity,infix,input,int,integer,interpol,%
6210 intstr,k,korder,lambda,lcm,lcof,length,leq,lessp,%
6211 let,lhs,linear,linelength,lisp,list,listargp,%
6212 listargs,ln,load,load_package,log,log10,logb,%
6213 low_pow,lterm,macro,mainvar,mass,mat,match,%
6214 mateigen,matrix,max,mcd,member,memq,min,minus,mkid,%
6215 modular,msg,mshell,multiplicities,nat,neq,nero,%
6216 nextprime,nil,nodepend,noncom,nonzero,nosplit,%
6217 nospur,nullspace,num,numberp,odd,off,on,operator,%
6218 or,order,ordp,out,output,part,pause,period,pf,pi,%
6219 plus,precedence,precise,precision,pret,pri,primep,%
6220 print_precision,procedure,product,quit,quotient,%
6221 random,new_seed,rank,rat,ratarg,rational,%
6222 rationalize,ratpri,real,rederr,reduct,remainder,%
6223 remfac,remind,repert,repeat,rest,resultant,retry,%
6224 return,reverse,revpri,rhs,rlist88,%
6225 root_multiplicity,round,roundall,roundbf,rounded,%
6226 saveas,savestructr,scalar,sec,sech,second,set,%
6227 setmod,setq,share,showrules,showtime,shut,sign,sin,%
6228 sinh,smacro,solve,solvesingular,spur,sqrt,structr,%
6229 sub,sum,symbolic,symmetric,t,tan,tanh,third,time,%
6230 times,tp,tra,trace,trfac,trigform,trint,until,%
6231 varname,vecdim,vector,weight,when,where,while,%
6232 write,ws,wlevel,%
6233 %% identifiers with spaces
6234 %% for all,for each,go to,such that,%
6235 },%
6236 sensitive=false,%
6237 morecomment=[l]\%,%
6238 morecomment=[s]{COMMENT}{;},%
6239 morecomment=[s]{COMMENT}{$},%
6240 morestring=""
6241 }[keywords,comments,strings]
6242 </lang3>

```

2.69 RSL

Thanks go to Brian Christensen.

```

6243 <*lang3>
6244 %%
6245 %% RSL definition (c) 2004 Brian Christensen
6246 %%
6247 \lst@definlanguage{RSL}%
6248 {morekeywords={Bool,Char,devt_relation,Int,Nat,Real,Text,Unit,abs,any,%
6249 as,axiom,card,case,channel,chaos,class,do,dom,elems,else,elsif,end,%
6250 extend,false,for,hd,hide,if,in,inds,initialise,int,len,let,local,%
6251 object,of,out,post,pre,read,real,rng,scheme,skip,stop,swap,%

```

6252 test_case,theory,then,tl,true,type,until,use,value,variable,while,%
6253 with,write},%
6254 literate=%
6255 {<}{<\$}{1}%
6256 {>}{>\$}{1}%
6257 {[]}{[\$]{1}%
6258 {[]}{[]\$}{1}%
6259 {^}{{\mbox{\$\widehat{\;}}}{1}}%
6260 {'}{{\raisebox{1ex}[1ex][0ex]{\protect\scriptsize\$\prime\$}}}{1}}%
6261 {||}{{\mbox{\$\parallel\$}}}{2}}%
6262 {|-}{{\vdash\$}}{1}}%
6263 {|=|}{{\mbox{\$\lceil\!\! \rceil\!\! \!\! \!\! \!\! \!\! \!\! \lfloor\!\! \rfloor\$}}}{1}}%
6264 {**}{{\uparrow\$}}{1}}%
6265 {/\}{{\wedge\$}}{1}}%
6266 {inter}{{\cap\$}}{1}}%
6267 {-\}{{\lambda\$}}{1}}%
6268 {->}{{\rightarrow\$}}{1}}%
6269 {-m->}{{\mbox{\$\rightarrow \hspace{-2.5\lst@width} _m\;,\$}}}{1}}%
6270 {-~m->}{{\mbox{\$\stackrel{\sim}{\rightarrow}\$}}}{1}}%
6271 \hspace{-2.5\lst@width} _m\;,\$}}{1}}%
6272 {-~->}{{\mbox{\$\stackrel{\sim}{\rightarrow}\$}}}{1}}%
6273 {-set}{{\bf{-set}}}{4}}%
6274 {-list}{{\ast\$}}{1}}%
6275 {-inflist}{{\omega\$}}{1}}%
6276 {-infset}{{\mbox{{\bf -infset}}}}{7}}%
6277 {\#}{{\circ\$}}{1}}%
6278 {:-}{{\raisebox{.4ex}{\tiny \$\bullet\$}}}{1}}%
6279 {=}{{=\$\$}}{1}}%
6280 {==}{{==\$}}{2}}%
6281 {=>}{{\Rightarrow\$}}{1}}%
6282 {\ is\protect\^M}{{\;\$\;\equiv\$}}{2}}%
6283 {\ is\ }{{\;\$\equiv\$}}{3}}%
6284 {\ isin\protect\^M}{{\;\$\;\in\$}}{2}}%
6285 {~}{{\sim\$}}{1}}%
6286 {~=}{{\neq\$}}{1}}%
6287 {~isin}{{\notin\$}}{1}}%
6288 {+>}{{\mapsto\$}}{1}}%
6289 {++}{{}}{1}}%
6290 {|^}{{\mbox{\$\lceil\!\! \rceil\$}}}{1}}%
6291 {\//}{{\vee\$}}{1}}%
6292 {exists}{{\exists\$}}{1}}%
6293 {union}{{\cup\$}}{1}}%
6294 {>=}{{\geq\$}}{1}}%
6295 {><}{{\times\$}}{1}}%
6296 {>>}{{\supset\$}}{1}}%
6297 {>>=}{{\supseteq\$}}{1}}%
6298 {<=}{{\leq\$}}{1}}%
6299 {<<}{{\subset\$}}{1}}%
6300 {<.>}{{\langle\$}}{1}}%
6301 {<<=}{{\subseq\$}}{1}}%

```

6302 {<->}{\leftrightharrow$}{1}%
6303 {[=]{\sqsubseteq$}{1}%
6304 {\{=}{\preceq$}{1}%
6305 {\ all\protect\^M}{\forall$}{2}%
6306 {\ all\ }{\forall$}{3}%
6307 {!!}{\dagger$}{1}%
6308 {always}{\Box$}{1}%
6309 {.>}{\rangle$}{1}%
6310 {'alpha}{\alpha$}{1}%
6311 {'beta}{\beta$}{1}%
6312 {'gamma}{\gamma$}{1}%
6313 {'delta}{\delta$}{1}%
6314 {'epsilon}{\epsilon$}{1}%
6315 {'zeta}{\zeta$}{1}%
6316 {'eta}{\eta$}{1}%
6317 {'theta}{\theta$}{1}%
6318 {'iota}{\iota$}{1}%
6319 {'kappa}{\kappa$}{1}%
6320 {'mu}{\mu$}{1}%
6321 {'nu}{\nu$}{1}%
6322 {'xi}{\xi$}{1}%
6323 {'pi}{\pi$}{1}%
6324 {'rho}{\rho$}{1}%
6325 {'sigma}{\sigma$}{1}%
6326 {'tau}{\tau$}{1}%
6327 {'upsilon}{\upsilon$}{1}%
6328 {'phi}{\phi$}{1}%
6329 {'chi}{\chi$}{1}%
6330 {'psi}{\psi$}{1}%
6331 {'omega}{\omega$}{1}%
6332 {'Gamma}{\Gamma$}{1}%
6333 {'Delta}{\Delta$}{1}%
6334 {'Theta}{\Theta$}{1}%
6335 {'Lambda}{\Lambda$}{1}%
6336 {'Xi}{\Xi$}{1}%
6337 {'Pi}{\Pi$}{1}%
6338 {'Sigma}{\Sigma$}{1}%
6339 {'Upsilon}{\Upsilon$}{1}%
6340 {'Phi}{\Phi$}{1}%
6341 {'Psi}{\Psi$}{1}%
6342 {'Omega}{\Omega$}{1},%
6343   sensitive=true,%
6344   morecomment=[1]{--},%
6345   morecomment=[s]{/*}{*/}%
6346 }[keywords,comments]%
6347 </lang3>

```

2.70 Ruby

Christian Kaiser provided the initial definition. Xavier Noria replaced the keywords with the keywords from the at the time of writing current stable Ruby version. An erroneous string delimiter was removed following a bug reported on comp.text.tex on 2006/09/01.

Ruby supports string delimiters of the form %q!...!, where ! can be any character, or can be matched braces or parentheses or brackets. The included string definitions include most of the common variants, but are of course not comprehensive.

```
6348 (*lang2)
6349 \lst@definlanguage{Ruby}%
6350 {morekeywords={__FILE__,__LINE__,BEGIN,END,alias,and,begin,break,%
6351     case,class,def,defined?,do,else,elsif,end,ensure,false,for,%
6352     if,in,module,next,nil,not,or,redo,rescue,retry,return,self,%
6353     super,then,true,undef,unless,until,when,while,yield},%
6354     sensitive=true,%
6355     morecomment=[1]\#,%
6356     morecomment=[1]\#\#,%
6357     morecomment=[s]{=BEGIN}{=END},%
6358     morestring=[b]',%
6359     morestring=[b]" ,%
6360     morestring=[s]{\%q/}{/},%
6361     morestring=[s]{\%q!}{!},%
6362     morestring=[s]{\%q\}{\},%
6363     morestring=[s]{\%q()}{},%
6364     morestring=[s]{\%q[]}{[]},%
6365     morestring=[s]{\%q-}{-},%
6366     morestring=[s]{\%Q/}{/},%
6367     morestring=[s]{\%Q!}{!},%
6368     morestring=[s]{\%Q\}{\},%
6369     morestring=[s]{\%Q()}{},%
6370     morestring=[s]{\%Q[]}{[]},%
6371     morestring=[s]{\%Q-}{-}%
6372 }[keywords,comments,strings]
6373 % \begin{macrocode}
6374 </lang2>
```

2.71 Scilab

Thanks go to Jean-Philippe Grivet.

```
6375 (*lang1)
6376 %%
6377 %% Scilab definition (c) 2002,2003 Jean-Philippe Grivet
6378 %%
6379 \lst@definlanguage{Scilab}%
6380 {morekeywords={abcd,abinv,abort,abs,acoshm,acosh,acosm,acos,addcolor,%
6381     addf,addinter,addmenu,add_edge,add_node,adj2sp,adj_lists,aff2ab,%
```

```

6382    amell, analpf, analyze, ans, apropos, arc_graph, arc_number, argn, arhnk, %
6383    arl2, arma2p, armac, armax1, armax, arma, arsimul, artest, articul, ascii, %
6384    asinhm, asinh, asinm, asin, atanhm, atanh, atanm, atan, augment, auread, %
6385    auwrite, balanc, balreal, bandwr, basename, bdiag, besseli, besselj, %
6386    besselk, bessely, best_match, bezout, bifish, bilin, binomial, black, %
6387    bloc2exp, bloc2ss, bode, bool2s, boolean, boucle, break, bstap, buttmag, %
6388    bvode, cainv, calerf, calfrq, call, canon, casc, case, ccontrg, cdfbet, %
6389    cdfbin, cdfchi, cdfchn, cdffnc, cdff, cdffgam, cdfnbn, cdfnor, cdfpoi, %
6390    cdft, ceil, center, cepstrum, chaintest, chain_struct, champ1, champ, %
6391    chart, chdir, cheb1mag, cheb2mag, check_graph, check_io, chepol, chfact, %
6392    chol, chsolve, circuit, classmarkov, clean, clearfun, clearglobal, %
6393    clear, close, cls2dls, cmb_lin, cmdred, cmoment, code2str, coeff, coffg, %
6394    coff, colcompr, colcomp, colinout, colormap, colregul, companion, comp, %
6395    cond, conj, connex, contour2di, contour2d, contourf, contour, %
6396    contract_edge, contrss, contr, cont_frm, cont_mat, convex_hull, convol, %
6397    convstr, con_nodes, copfac, copy, correl, corr, coshm, cosh, cosm, cos, %
6398    cotg, cothm, coth, covar, csim, cspect, ctr_gram, cumprod, cumsum, %
6399    curbblock, cycle_basis, czt, c_link, dasrt, dassl, datafit, date, dbphi, %
6400    dcf, ddp, debug, dec2hex, deff, definedfields, degree, delbpt, %
6401    delete_arcs, delete_nodes, delete, delip, delmenu, demos, denom, %
6402    derivative, derivat, des2ss, des2tf, determ, detr, det, dft, dhinf, %
6403    dhnorm, diag, diary, diff, diophant, dirname, dispbpt, dispfiles, disp, %
6404    dlgamma, double, dragrect, drawaxis, drawlater, drawnow, draw, driver, %
6405    dscr, dsearch, dsimul, dtsi, dt_ility, duplicate, edge_number, %
6406    edit_curv, edit_graph_menus, edit_graph, edit, eigenmarkov, ell1mag, %
6407    elseif, else, emptystr, endfunction, end, eqfir, eqiir, equil1, equil, %
6408    ereduc, erfcx, erfc, erf, errbar, errcatch, errclear, error, eval3dp, %
6409    eval3d, eval, evans, evstr, excel2sci, execstr, exec, exists, exit, expm, %
6410    exp, external, eye, fac3d, factors, faurre, fchamp, fcontour2d, fcontour, %
6411    fec, feedback, feval, ffilt, fftshift, fft, fgrayplot, figure, fileinfo, %
6412    file, filter, findm, findobj, findxOBD, find_freq, find_path, find, %
6413    findABCD, findAC, findBD, findBDK, findR, fit_dat, fix, floor, flts, foo, %
6414    formatman, format, fort, for, fourplan, fplot2d, fplot3d1, fplot3d, %
6415    fprintf, fprintfMat, frep2tf, freq, freson, frexp, frfit, frmag, fscanf, %
6416    fscanfMat, fsfirlin, fsolve, fspecg, fstabst, fstair, ftest, ftuneq, %
6417    fullrfrk, fullrf, full, fun2string, funcprot, functions, function, %
6418    funptr, fusee, gainplot, gamitg, gammaln, gamma, gcare, gcd, gcf, %
6419    genfac3d, genlib, genmarkov, gen_net, geom3d, geomean, getblocklabel, %
6420    getcolor, getcurblock, getcwd, getdate, getd, getenv, getfield, getfont, %
6421    getf, getio, getlinestyle, getmark, getpid, getsccosvars, getsymbol, %
6422    getvalue, getversion, get_function_path, get, gfare, gfrancis, girth, %
6423    givens, glever, glist, global, glue, gpeche, graduate, grand, %
6424    graphics_entities, graph_2_mat, graph_center, graph_complement, %
6425    graph_diameter, graph_power, graph_simp, graph_sum, graph_union, %
6426    graph-list, graycolormap, grayplot, graypolarplot, grep, group, %
6427    gr_menu, gschur, gsort, gspec, gstacksize, gtild, g_margin, h2norm, halt, %
6428    hamilton, hankelsv, hank, harmean, havewindow, help, hermit, hess, %
6429    hex2dec, hilb, hinf, hist3d, histplot, horner, host, hotcolormap, %
6430    householder, hrmt, htrianr, hypermat, h_cl, h_inf_st, h_inf, h_norm, %
6431    iconvert, icon_edit, ieee, if, iirgroup, iirlp, iir, ilib_build, %

```

```

6432      ilib_compile,ilib_for_link,ilib_gen_gateway,ilib_gen_loader,%
6433      ilib_gen_Make,imag,impl,imrep2ss,imult,im_inv,inistate,input,%
6434      int16,int2d,int32,int3d,int8,intc,intdec,integrate,interp,%
6435      interp,intersci,intersect,intg,intl,intppty,intsplin,intrrap,%
6436      inttype,int,invr,invsyslin,inv_coeff,inv,iqr,isdef,isdir,isequal,%
6437      iserror,isglobal,isinfinity,isnan,isoview,isreal,is_connex,jmat,%
6438      justify,kalm,karmarkar,kernel,keyboard,knapsack,kpure,krac2,%
6439      kroneck,kron,lasterror,lattn,lattp,lcf,lcmdiag,lcm,ldivf,ldiv,%
6440      leastsq,legends,length,leqr,levin,lev,lex_sort,lft,lgfft,library,%
6441      lib,lin2mu,lincos,lindquist,lines,line_graph,linfn,linf,link,%
6442      linmeq,linpro,linsolve,linspace,lin,listfiles,list,lmisolver,%
6443      lmitool,loadmatfile,loadplots,loadwave,load_graph,load,locate,%
6444      log10,log1p,log2,logm,logspace,log,lotest,lqe,lqg2stan,lqg_ltr,%
6445      lqg,lqr,lsq,lsslist,lstcat,lstsize,ltitr,ludel,lufat,luget,%
6446      lusolve,lu,lyap,macglov,macr2lst,macrovar,macro,mad,make_graph,%
6447      make_index,manedit,man,mapsound,markp2ss,matfile2sci,matrix,%
6448      mat_2_graph,maxi,max_cap_path,max_clique,max_flow,max,mclearerr,%
6449      mclose,meanf,mean,median,meof,mese,mesh2d,mfft,mfile2sci,mgeti,%
6450      mgetl,mgetstr,mget,milk_drop,mine,mini,minreal,minss,%
6451      min_lcost_cflow,min_lcost_flow1,min_lcost_flow2,min_qcost_flow,%
6452      min_weight_tree,min,mlist,mode,modulo,moment,mopen,move,%
6453      mps2linpro,mputl,mputstr,mput,mrfit,msd,mseek,mtell,mtlb_load,%
6454      mtlb_mode,mtlb_save,mtlb_sparse,mu2lin,mulf,mvvacov,m_circle,%
6455      names,nand2mean,nanmax,nanmeanf,nanmean,nanmedian,nanmin,%
6456      nanstdev,nansum,narsimul,ndims,nearfloat,nehari,neighbors,%
6457      netclose,netwindows,netwindow,newest,newfun,nextpow2,nf3d,nfreq,%
6458      nlev,nnz,nodes_2_path,nodes_degrees,node_number,noisegen,norm,%
6459      null,numdiff,numer,nyquist,obscont1,obscont,observer,obsvss,%
6460      obsv_mat,obs_gram,odedc,odedi,odeoptions,ode_discrete,ode_root,%
6461      ode,oldload,oldsave,ones,optim,orth,param3d1,param3d,%
6462      paramfplot2d,parrot,part,pathconvert,path_2_nodes,pause,pbig,%
6463      pdiv,pen2ea,pencan,penlaur,perctl,perfect_match,pertrans,pfss,%
6464      phasemag,phc,pinv,pipe_network,playsnd,plot2d1,plot2d2,plot2d3,%
6465      plot2d4,plot2d,plot3d1,plot3d2,plot3d3,plot3d,plotframe,%
6466      plotprofile,plot_graph,plot,plzr,pmodulo,pol2des,pol2str,pol2tex,%
6467      polarplot,polar,polfact,poly,portr3d,portrait,power,ppol,prbs_a,%
6468      predecessors,predef,printf,printing,print,prod,profile,projsl,%
6469      projspec,proj,psmall,pspect,pvm_addhosts,pvm_barrier,pvm_bcast,%
6470      pvm_bufinfo,pvm_config,pvm_delhosts,pvm_error,pvm_exit,%
6471      pvm_f772sci,pvm_getinst,pvm_gettid,pvm_get_timer,pvm_gsize,%
6472      pvm_halt,pvm_joygroup,pvm_kill,pvm_lvgroup,pvm_mytid,pvm_parent,%
6473      pvm_probe,pvm_recv,pvm_reduce,pvm_sci2f77,pvm_send,pvm_set_timer,%
6474      pvm_spawn_independent,pvm_spawn,pvm_start,pvm_tasks,%
6475      pvm_tidtohost,pvm,pwd,p_margin,qassign,qr,quapro,quart,quaskro,%
6476      quit,randpencil,rand,range,rankqr,rank,rat,rcond,rdivf,read4b,%
6477      readb,readc_,readmps,read,real,recur,reglin,regress,remezb,remez,%
6478      repfreq,replot,residu,resume,return,riccati,riccs1,ricc,ric_desc,%
6479      rlist,roots,rotate,round,routh_t,rowcompr,rowcomp,rowinout,%
6480      rowregul,rowshuff,rpem,rref,rtitr,rubberbox,salesman,savewave,%
6481      save_graph,save,scaling,scanf,schur,sci2exp,sci2for,sci2map,%

```

```

6482     sciargs,scicosim,scicos,scifunc_block,sd2sci,secto3d,select,%
6483     semidef,sensi,setbpt,seteventhandler,setfield,setmenu,%
6484     setscicosvars,set,sfact,sgrid,shortest_path,showprofile,%
6485     show_arcs,show_graph,show_nodes,sident,signm,sign,simp_mode,simp,%
6486     sincd,sinc,sinc,sinhm,sinh,sinm,sin,size,sm2des,sm2ss,smooth,%
6487     solve,sorder,sort,sound,sp2adj,spaninter,spanplus,spantwo,sparse,%
6488     spchol,spcompact,specfact,spec,speye,spget,splin,split_edge,%
6489     spones,sprand,sprintf,spzeros,sqroot,sqrtm,sqrt,squarewave,%
6490     square,srfaur,srkf,ss2des,ss2ss,ss2tf,sscanf,sskf,ssprint,ssrand,%
6491     stabil,stacksize,standard_define,standard_draw,standard_input,%
6492     standard_origin,standard_output,startup,stdevf,stdev,steadycos,%
6493     str2code,strange,strcat,strindex,strings,string,stripblanks,%
6494     strong_connex,strong_con_nodes,strsubst,st_deviation,st_ility,%
6495     subf,subgraph,subplot,successors,sum,supernode,sva,svd,svplot,%
6496     sylv,sysconv,sysdiag,sysfact,syslin,sysssize,systems,system,%
6497     systemat,tabul,tangent,tanhm,tanh,tanm,tan,tdinit,testmatrix,%
6498     texprint,tf2des,tf2ss,then,thrownan,timer,time_id,titlepage,%
6499     tk_getdir,tk_getfile,tlist,toeplitz,tokenpos,tokens,trace,%
6500     translatepaths,trans_closure,trans,trfmod,trianfml,tril,trimmean,%
6501     trisolve,triu,trzeros,typename,typeof,type,uicontrol,uimenu,%
6502     uint16,uint32,uint8,ui_observer,ulink,unglue,union,unique,unix_g,%
6503     unix_s,unix_w,unix_x,unix,unobs,unsetmenu,user,varargin,%
6504     varargout,variancef,variance,varn,warning,wavread,wavwrite,%
6505     wcenter,wfir,what,whereami,whereis,where,while,whos,who_user,who,%
6506     wiener,wigner>window,winsid,with_gtk,with_pvm,with_texmacs,%
6507     with_tk,writb,write4b,write,xarcs,xarc,xarrows,xaxis,xbasc,%
6508     xbasimp,xbasr,xchange,xclear,xclea,xclick,xclip,xdel,xend,xfarcs,%
6509     xfarc,xfpolys,xfpoly,xfreect,xgetech,xgetfile,xgetmouse,xget,%
6510     xgraduate,xgrid,xinfo,xinit,xlfont,xload,xname,xnumb,xpause,%
6511     xpolys,xpoly,xrects,xrect,xrpoly,xs2fig,xs2gif,xs2ppm,xs2ps,%
6512     xsave,xsegs,select,xsetech,xsetm,xset,xstringb,xstringl,xstring,%
6513     xtape,xtitle,x_choices,x_choose,x_dialog,x_matrix,x_mdialog,%
6514     x_message_modeless,x_message,yulewalk,zeropen,zeros,zgrid,zpbutt,%
6515     zpch1,zpch2,zpell,mfprintf,mfscanf,mprintf,mscanf,msprintf,%
6516     msscanf,mucomp,%
6517     ABSBLK_f,AFFICH_f,ANDLOG_f,ANIMXY_f,BIGSOM_f,CLINDUMMY_f,CLKIN_f,%
6518     CLKINV_f,CLKOUT_f,CLKOUTV_f,CLKSOM_f,CLKSOMV_f,CLKSPLIT_f,%
6519     CLOCK_f,CLR_f,CLSS_f,CONST_f,COSBLK_f,CURV_f,DELAY_f,DELAYV_f,%
6520     DEMUX_f,DLR_f,DLRADAPT_f,DLSS_f,EVENTSCOPE_f,EVTDLY_f,EVTGEN_f,%
6521     EXPBLK_f,G_make,GAIN_f,GAINBLK_f,GENERAL_f,GENERIC_f,GENSIN_f,%
6522     GENSQR_f,HALT_f,IFTHEL_f,IN_f,INTEGRAL_f,INTRP2BLK_f,INTRPLBLK_f,%
6523     INVBLK_f,LOGBLK_f,LOOKUP_f,Matplot1,Matplot,MAX_f,MCLOCK_f,%
6524     MFCLCK_f,MIN_f,MUX_f,NDcost,NEGTOPOS_f,OUT_f,POSTONEG_f,POWBLK_f,%
6525     PROD_f,QUANT_f,RAND_f,READC_f,REGISTER_f,RELAY_f,RFILE_f,%
6526     ScilabEval,Sfgrayplot,Sgrayplot,SAMPLEHOLD_f,SAT_f,SAWTOOTH_f,%
6527     SCOPE_f,SCOPY_f,SELECT_f,SINBLK_f,SOM_f,SPLIT_f,STOP_f,SUPER_f,%
6528     TANBLK_f,TCLSS_f,TEXT_f,TIME_f,TK_EvalFile,TK_EvalStr,TK_GetVar,%
6529     TK_SetVar,TRASH_f,WFILE_f,WRITEC_f,ZCROSS_f,%
6530     \%asn,\%helps,\%k,\%sn},%
6531     alsoletter=\\%,% chmod

```



```

6532 sensitive,%
6533 morecomment=[l]//,%
6534 morestring=[b]" ,%
6535 morestring=[m]'%
6536 }[keywords,comments,strings]
6537 </lang1>

```

2.72 SHELXL

Thanks to Aidan Philip Heerdegen for mailing this definition.

```

6538 <*lang2>
6539 %%
6540 %% SHELXL definition (c) 1999 Aidan Philip Heerdegen
6541 %%
6542 \lst@definlanguage{SHELXL}%
6543 {morekeywords={TITL,CELL,ZERR,LATT,SYMM,SFAC,DISP,UNIT,LAUE,%
6544 REM,MORE,TIME,END,HKLF,OMIT,SHEL,BASF,TWIN,EXTI,SWAT,%
6545 MERG,SPEC,RESI,MOVE,ANIS,AFIX,HFIX,FRAG,FEND,XYZ,EADP,%
6546 EQIV,OMIT,CONN,PART,BIND,FREE,DFIX,BUMP,SAME,SADI,CHIV,%
6547 FLAT,DELU,SIMU,DEFS,ISOR,SUMP,L.S.,CGLS,SLIM,BLOC,DAMP,%
6548 WGHT,FVAR,BOND,CONF,MPLA,RTAB,LIST,ACTA,SIZE,TEMP,WPDB,%
6549 FMAP,GRID,PLAN,MOLE},%
6550 sensitive=false,%
6551 alsoother=_,% Makes the syntax highlighting ignore the underscores
6552 morecomment=[l]{! } ,%
6553 }%
6554 </lang2>

```

2.73 Simula

Took data from

- GÜNTHER LAMPRECHT: **Introduction to SIMULA 67**; Braunschweig; Wiesbaden: Vieweg, 1981

```

6555 <*lang3>
6556 \lst@definlanguage[IBM]{Simula}[DEC]{Simula}{}%
6557 \lst@definlanguage[DEC]{Simula}[67]{Simula}%
6558 {morekeywords={and,eq,eqv,ge,gt,hidden,imp,le,long,lt,ne,not,%
6559 options,or,protected,short}%
6560 }%
6561 \lst@definlanguage[CII]{Simula}[67]{Simula}%
6562 {morekeywords={and,equiv,exit,impl,not,or,stop}}%
6563 \lst@definlanguage[67]{Simula}%
6564 {morekeywords={activate,after,array,at,before,begin,boolean,%
6565 character,class,comment,delay,detach,do,else,end,external,false,%
6566 for,go,goto,if,in,inner,inspect,integer,is,label,name,new,none,%

```

```

6567     notext,otherwise,prior,procedure,qua,reactivate,real,ref,resume,%
6568     simset,simulation,step,switch,text,then,this,to,true,until,value,%
6569     virtual,when,while},%
6570     sensitive=f,%
6571     keywordcommentsemicolon={end}-{else,end,otherwise,when}{comment},%
6572     morestring=[d]" ,%
6573     morestring=[d]' %
6574   }[keywords,keywordcomments,strings]
6575 </lang3>

```

2.74 SPARQL

This definition for the SPARQL query language (SPARQL Protocol and RDF Query Language, <http://www.w3.org/TR/rdf-sparql-query/>) was provided by Christoph Kiefer.

```

6576 (*lang3)
6577 %%
6578 %% SPARQL definition (c) 2006 Christoph Kiefer
6579 %%
6580 \lst@definelanguage{SPARQL}%
6581 {morekeywords={BASE,PREFIX,SELECT,DISTINCT,CONSTRUCT,DESCRIBE,ASK,%
6582     FROM,NAMED,WHERE,ORDER,BY,ASC,DESC,LIMIT,OFFSET,OPTIONAL,%
6583     GRAPH,UNION,FILTER,a,STR,LANG,LANGMATCHES,DATATYPE,BOUND,%
6584     isIRI,isURI,isBLANK,isLITERAL,REGEX,true,false},%
6585     sensitive=false,%
6586     morecomment=[l]\#,%
6587     morestring=[d]' ,%
6588     morestring=[d]"%
6589   }[keywords,comments,strings]
6590 </lang3>

```

2.75 SQL

Data come from Christian Haul. Neil Conway added some keywords, ditto Torsten Flatter, Robert Frank and Dirk Jesko. Hilmar Preuße informed about an issue mentioned at <https://bugs.debian.org/626521>, the issue got corrected.

```

6591 (*lang1)
6592 %%
6593 %% SQL definition (c) 1998 Christian Haul
6594 %%           (c) 2002 Neil Conway
6595 %%           (c) 2002 Robert Frank
6596 %%           (c) 2003 Dirk Jesko
6597 %%
6598 \lst@definelanguage{SQL}%
6599 {morekeywords={ABSOLUTE,ACTION,ADD,ALLOCATE,ALTER,ARE,AS,ASSERTION,%
6600     AT,BEGIN,BETWEEN,BIT_LENGTH,BOTH,BY,CASCADE,CASCADED,CASE,CAST,%
6601     CATALOG,CHAR_LENGTH,CHARACTER_LENGTH,CLUSTER,COALESCE,%

```

```

6602     COLLATE, COLLATION, COLUMN, CONNECT, CONNECTION, CONSTRAINT, %
6603     CONSTRAINTS, CONVERT, CORRESPONDING, CREATE, CROSS, CURRENT_DATE, %
6604     CURRENT_TIME, CURRENT_TIMESTAMP, CURRENT_USER, DAY, DEALLOCATE, %
6605     DEC, DEFERRABLE, DEFERED, DESCRIBE, DESCRIPTOR, DIAGNOSTICS, %
6606     DISCONNECT, DOMAIN, DROP, ELSE, END, EXEC, EXCEPT, EXCEPTION, EXECUTE, %
6607     EXTERNAL, EXTRACT, FALSE, FIRST, FOREIGN, FROM, FULL, GET, GLOBAL, %
6608     GRAPHIC, HAVING, HOUR, IDENTITY, IMMEDIATE, INDEX, INITIALLY, INNER, %
6609     INPUT, INSENSITIVE, INSERT, INTO, INTERSECT, INTERVAL, %
6610     ISOLATION, JOIN, KEY, LAST, LEADING, LEFT, LEVEL, LIMIT, LOCAL, LOWER, %
6611     MATCH, MINUTE, MONTH, NAMES, NATIONAL, NATURAL, NCHAR, NEXT, NO, NOT, NULL, %
6612     NULLIF, OCTET_LENGTH, ON, ONLY, ORDER, ORDERED, OUTER, OUTPUT, OVERLAPS, %
6613     PAD, PARTIAL, POSITION, PREPARE, PRESERVE, PRIMARY, PRIOR, READ, %
6614     RELATIVE, RESTRICT, REVOKE, RIGHT, ROWS, SCROLL, SECOND, SELECT, SESSION, %
6615     SESSION_USER, SIZE, SPACE, SQLSTATE, SUBSTRING, SYSTEM_USER, %
6616     TABLE, TEMPORARY, THEN, TIMEZONE_HOUR, %
6617     TIMEZONE_MINUTE, TRAILING, TRANSACTION, TRANSLATE, TRANSLATION, TRIM, %
6618     TRUE, UNIQUE, UNKNOWN, UPPER, USAGE, USING, VALUE, VALUES, %
6619     VARGRAPHIC, VARYING, WHEN, WHERE, WRITE, YEAR, ZONE, %
6620     AND, ASC, avg, CHECK, COMMIT, count, DECODE, DESC, DISTINCT, GROUP, IN, % FF
6621     LIKE, NUMBER, ROLLBACK, SUBSTR, sum, VARCHAR2, % FF
6622     MIN, MAX, UNION, UPDATE, % RF
6623     ALL, ANY, CUBE, CUBE, DEFAULT, DELETE, EXISTS, GRANT, OR, RECURSIVE, % DJ
6624     ROLE, ROLLUP, SET, SOME, TRIGGER, VIEW}, % DJ
6625     morekeywords={BIT, BLOB, CHAR, CHARACTER, CLOB, DATE, DECIMAL, FLOAT, % DJ
6626     INT, INTEGER, NUMERIC, SMALLINT, TIME, TIMESTAMP, VARCHAR}, % moved here
6627     sensitive=false, % DJ
6628     morecomment=[l]--, %
6629     morecomment=[s]{/*}{*/}, %
6630     morestring=[d]', %
6631     morestring=[d]"%
6632 } [keywords, comments, strings]
6633 (/lang1)

```

2.76 Swift

The definition for Swift was provided by Stefan Jager.

```

6634 (*lang3)
6635 \lst@definlanguage{Swift}{%
6636     morekeywords={associatedtype, class, deinit, enum, extension, fileprivate, %
6637     func, import, init, inout, internal, let, open, operator, private, protocol, %
6638     public, static, struct, subscript, typealias, var, break, case, continue, %
6639     default, defer, do, else, fallthrough, for, guard, if, in, repeat, return, %
6640     switch, where, while, as, Any, catch, false, is, nil, rethrows, super, self, %
6641     Self, throw, throws, true, try, _, associativity, convenience, dynamic, %
6642     didSet, final, get, infix, indirect, lazy, left, mutating, none, %
6643     nonmutating, optional, override, postfix, precedence, prefix, Protocol, %
6644     required, right, set, Type, unowned, weak, willSet}, %
6645     sensitive,%

```

```

6646 morecomment=[s]{/*}{*/},%
6647 morecomment=[s]{/**}{*/},%
6648 morecomment=[l]//,%
6649 morecomment=[l]///,%
6650 morestring=[b]" ,%
6651 morestring=[b]"" ,%
6652 moredelim=[directive]\#,%
6653 moredirectives={available,colorLiteral,column,else,elseif,endif,file,%
6654     fileLiteral,function,if,imageLiteral,line,selector,sourceLocation}%
6655 }[keywords,comments,strings,directives]%
6656 </lang3>

```

2.77 Tcl/Tk

Tcl/Tk is a very dynamic language. A statical analysis might not be adequate. Nevertheless the following definitions produce the desired result for my programs with a minimum of “misses”.

Data come from

- WELCH, BRENT B.: **Practical Programming in Tcl and Tk**; © 1997 Prentice Hall, Inc.; ISBN 0-13-616830-2.
- OUSTERHOUT, JOHN K.: **Tcl and the Tk Toolkit**; © 1997 Addison-Wesley Publishing Company; ISBN 0-201-6337-X.

Gerd Neugebauer added support for Tcl/Tk.

```

6657 <lang2>
6658 %%
6659 %% Tcl/Tk definition (c) Gerd Neugebauer
6660 %%
6661 \lstdefinlanguage[tcl]{tcl}[]{}%
6662 {morekeywords={activate,add,separator,radiobutton,checkboxbutton,%
6663     command,cascade,all,bell,bind,bindtags,button,canvas,canvasx,%
6664     canvasy,cascade,cget,checkboxbutton,config,configu,configur,%
6665     configure,clipboard,create,arc,bitmap,image,line,oval,polygon,%
6666     rectangle,text,textwindow,curselection,delete,destroy,end,entry,%
6667     entrycget,event,focus,font,actual,families,measure,metrics,names,%
6668     frame,get,grab,current,release,status,grid,columnconfigure,%
6669     rowconfigure,image,image,create,bitmap,photo,delete,height,types,%
6670     widt,names,index,insert,invoke,itemconfigure,label,listbox,lower,%
6671     menu,menubutton,message,move,option,add,clear,get,readfile,pack,%
6672     photo,place,radiobutton,raise,scroll,scrollbar,search,see,%
6673     selection,send,stdin,stdout,stderr,tag,bind,text,tk,tkerror,%
6674     tkwait>window,variable,visibility,toplevel,unknown,update,winfo,%
6675     class,exists,ismapped,parent,reqwidth,reqheight,rootx,rooty,%
6676     width,height,wm,aspect,client,command,deiconify,focusmodel,frame,%
6677     geometry,group,iconbitmap,iconify,iconmask,iconname,iconposition,%
6678     iconwindow,maxsize,minsize,overrideredirect,positionfrom,%
6679     protocol,sizefrom,state,title,transient,withdraw,xview,yview,%
6680     yposition,%

```

```

6681     -accelerator,-activebackground,-activeborderwidth,%
6682     -activeforeground,-after,-anchor,-arrow,-arrowshape,-aspect,%
6683     -async,-background,-before,-bg,-begincrement,-bitmap,-bordermode,%
6684     -borderwidth,-button,-capstyle,-channel,-class,-closeenough,%
6685     -colormap,-column,-columnspan,-command,-confine,-container,%
6686     -count,-cursor,-data,-default,-detail,-digits,-direction,%
6687     -displayof,-disableforeground,-elementborderwidth,-expand,%
6688     -exportselection,-extend,-family,-fg,-file,-fill,-focus,-font,%
6689     -fontmap,-foreground,-format,-from,-gamma,-global,-height,%
6690     -highlightbackground,-highlightcolor,-highlightthickness,-icon,%
6691     -image,-in,-insertbackground,-insertborderwidth,-insertofftime,%
6692     -insertontime,-insertwidth,-ipadx,-ipady,-joinstyle,-jump,%
6693     -justify,-keycode,-keysym,-label,-lastfor,-length,-maskdata,%
6694     -maskfile,-menu,-message,-mode,-offvalue,-onvalue,-orient,%
6695     -outlien,-outlinestipple,-overstrike,-override,-padx,-pady,%
6696     -pageanchor,-pageheight,-pagewidth,-pagey,-pagey,-palette,%
6697     -parent,-place,-postcommand,-relheight,-relief,-relwidth,-relx,%
6698     -rely,-repeatdelay,-repeatinterval,-resolution,-root,-rootx,%
6699     -rooty,-rotate,-row,-rowspan,-screen,-selectcolor,-selectimage,%
6700     -sendevent,-serial,-setgrid,-showvalue,-shrink,-side,-size,%
6701     -slant,-sliderlength,-sliderrelief,-smooth,-splinesteps,-state,%
6702     -sticky,-stipple,-style,-subsample,-subwindow,-tags,-takefocus,%
6703     -tearoff,-tearoffcommand,-text,-textvariable,-tickinterval,-time,%
6704     -title,-to,-troughcolor,-type,-underline,-use,-value,-variable,%
6705     -visual,-width,-wrap,-wraplength,-x,-xscrollcommand,-y,%
6706     -bgstipple,-fgstipple,-lmargin1,-lmargin2,-rmargin,-spacing1,%
6707     -spacing2,-spacing3,-tabs,-yscrollcommand,-zoom,%
6708     activate,add,addtag,bbox,cget,clone,configure,coords,%
6709     curselection,debug,delete,delta,deselect,dlineinfo,dtag,dump,%
6710     entrycget,entryconfigure,find,flash,fraction,get,gettext,handle,%
6711     icursor,identify,index,insert,invoke,itemcget,itemconfigure,mark,%
6712     moveto,own,post,postcascade,postscript,put,redither,ranges,%
6713     scale,select,show,tag,type,unpost,xscrollcommand,xview,%
6714     yscrollcommand,yview,yposition}%
6715 }%

6716 \lst@definelanguage[] {tcl}%
6717 {alsoletter={.:,*=&-},%
6718   morekeywords={after,append,array,exists,anymore,donesearch,%
6719     get,nextelement,set,size,startsearch,auto_mkindex,binary,break,%
6720     case,catch,cd,clock,close,concat,console,continue,default,else,%
6721     elseif,eof,error,eval,exec,-keepnewline,exit,expr,fblocked,%
6722     fconfigure,fcopy,file,atime,dirname,executable,exists,extension,%
6723     isdirectory,isfile,join,lstat,mtime,owned,readable,readlink,%
6724     rootname,size,stat,tail,type,writable,-permissions,-group,-owner,%
6725     -archive,-hidden,-readonly,-system,-creator,-type,-force,%
6726     fileevent,flush,for,foreach,format,gets,glob,global,history,if,%
6727     incr,info,argsbody,cmdcount,commands,complete,default,exists,%
6728     globals,level,library,locals,patchlevel,procs,script,tclversion,%
6729     vars,interp,join,lappend,lindex,linsert,list,llength,lrange,%

```

```

6730     lreplace,lsearch,-exact,-regexp,-glob,lsort,-ascii,-integer,%
6731     -real,-dictionary,-increasing,-decreasing,-index,-command,load,%
6732     namespace,open,package,forget,ifneeded,provide,require,unknown,%
6733     vcompare,versions,vsatisfies,pid,proc,puts,-nonewline,pwd,read,%
6734     regexp,-indices,regsub,-all,-nocasereaname,return,scan,seek,set,%
6735     socket,source,split,string,compare,first,index,last,length,match,%
6736     range,tolower,toupper,trim,trimleft,trimright,subst,switch,tell,%
6737     time,trace,variable,vdelete,vinfo,unknown,unset,uplevel,upvar,%
6738     vwait,while,acos,asin,atan,atan2,ceil,cos,cosh,exp,floor,fmod,%
6739     hypot,log,log10,pow,sin,sinh,sqrt,tan,tanh,abs,double,int,round%
6740     },%
6741     morestring=[d]" ,%
6742     morecomment=[f]\#,%
6743     morecomment=[l]{;\#},%
6744     morecomment=[l]{\#},%
6745     morecomment=[l]{\{\#}%
6746     }[keywords,comments,strings]

```

And after receiving a bug report from Vitaly A. Repin I converted the version 0.21 contents of MoreSelectCharTable to version 1.0.

```
6747 </lang2>
```

2.78 Statistical languages

These languages have been added by Winfried Theis. Robert Denham contributed the additional string delimiter '.

```
6748 <*lang3>
```

```

6749 \lst@definelanguage{S}[] {R}{-}
6750 \lst@definelanguage[PLUS]{S}[] {R}{-}
6751 \lst@definelanguage{R}%
6752   {keywords={abbreviate,abline,abs,acos,acosh,action,add1,add,%
6753     aggregate,alias,Alias,alist,all,anova,any,aov,aperm,append,apply,%
6754     approx,approxfun,apropos,Arg,args,array,arrows,as,asin,asinh,%
6755     atan,atan2,atanh,attach,attr,attributes,autoload,autoloader,ave,%
6756     axis,backsolve,barplot,basename,besselI,besselJ,besselK,besselY,%
6757     beta,binomial,body,box,boxplot,break,browser,bug,builtins,bxp,by,%
6758     c,C,call,Call,case,cat,category,cbind,ceiling,character,char,%
6759     charmatch,check,chol,chol2inv,choose,chull,class,close,cm,codes,%
6760     coef,coefficients,co,col,colnames,colors,colours,commandArgs,%
6761     comment,complete,complex,conflicts,Conj,contents,contour,%
6762     contrasts,contr,control,helmert,contrib,convolve,cooks,coords,%
6763     distance,coplot,cor,cos,cosh,count,fields,cov,covratio,wt,CRAN,%
6764     create,crossprod,cummax,cummin,cumprod,cumsum,curve,cut,cycle,D,%
6765     data,dataentry,date,dbeta,dbinom,dcauchy,dchisq,de,debug,%
6766     debugger,Defunct,default,delay,delete,deltat,demo,de,density,%
6767     deparse,dependencies,Deprecated,deriv,description,detach,%
6768     dev2bitmap,dev,cur,deviance,off,prev,,dexp,df,dfbetas,dfits,%
6769     dgamma,dgeom,dget,dhyper,diag,diff,digamma,dim,dimnames,dir,%
6770     dirname,dlnorm,dlogis,dnbinom,dnchisq,dnorm,do,dotplot,double,%

```

6771 download, dpois, dput, drop, drop1, dsignrank, dt, dummy, dump, dunif, %
6772 duplicated, dweibull, dwilcox, dyn, edit, eff, effects, eigen, else, %
6773 emacs, end, environment, env, erase, eval, equal, evalq, example, exists, %
6774 exit, exp, expand, expression, External, extract, extractAIC, factor, %
6775 fail, family, fft, file, filled, find, fitted, fivenum, fix, floor, for, %
6776 For, formals, format, formatC, formula, Fortran, forwardsolve, frame, %
6777 frequency, ftable, ftable2table, function, gamma, Gamma, gammaCody, %
6778 gaussian, gc, gcinfo, gctorture, get, getenv, geterrmessage, getOption, %
6779 getwd, gl, glm, globalenv, gnome, GNOME, graphics, gray, grep, grey, grid, %
6780 gsub, hasTsp, hat, heat, help, hist, home, hsv, httpclient, I, identify, if, %
6781 ifelse, Im, image, \%in\%, index, influence, measures, inherits, install, %
6782 installed, integer, interaction, interactive, Internal, intersect, %
6783 inverse, invisible, IQR, is, jitter, kappa, kronecker, labels, lapply, %
6784 layout, lbeta, lchoose, lcm, legend, length, levels, lgamma, library, %
6785 licence, license, lines, list, lm, load, local, locator, log, log10, log1p, %
6786 log2, logical, loglin, lower, lowess, ls, lsfit, lsf, ls, machine, Machine, %
6787 mad, mahalanobis, make, link, margin, match, Math, matlines, mat, matplot, %
6788 matpoints, matrix, max, mean, median, memory, menu, merge, methods, min, %
6789 missing, Mod, mode, model, response, mosaicplot, mtext, mvfft, na, nan, %
6790 names, omit, nargs, nchar, ncol, NCOL, new, next, NextMethod, nextn, %
6791 nlevels, nlm, noquote, NotYetImplemented, NotYetUsed, nrow, NROW, null, %
6792 numeric, \%o\%, objects, offset, old, on, Ops, optim, optimise, optimize, %
6793 options, or, order, ordered, outer, package, packages, page, pairlist, %
6794 pairs, palette, panel, par, parent, parse, paste, path, pbeta, pbinom, %
6795 pcauchy, pchisq, pentagamma, persp, pexp, pf, pgamma, pgeom, phyper, pico, %
6796 pictex, piechart, Platform, plnorm, plogis, plot, pmatch, pmax, pmin, %
6797 pnbinom, pnchisq, pnorm, points, poisson, poly, polygon, polyroot, pos, %
6798 postscript, power, ppoints, ppois, predict, preplot, pretty, Primitive, %
6799 print, prmatrix, proc, prod, profile, proj, prompt, prop, provide, %
6800 psignrank, ps, pt, ptukey, punif, pweibull, pwilcox, q, qbeta, qbinom, %
6801 qcauchy, qchisq, qexp, qf, qgamma, qgeom, qhyper, qlnorm, qlogis, qnbinom, %
6802 qnchisq, qnorm, qpois, qqline, qqnorm, qqplot, qr, Q, qty, qy, qsignrank, %
6803 qt, qtkey, quantile, quasi, quit, qunif, quote, qweibull, qwilcox, %
6804 rainbow, range, rank, rbeta, rbind, rbinom, rcauchy, rchisq, Re, read, csv, %
6805 csv2, fwf, readline, socket, real, Recall, rect, reformulate, regexpr, %
6806 relevel, remove, rep, repeat, replace, replications, report, require, %
6807 resid, residuals, restart, return, rev, rexp, rf, rgamma, rgb, rgeom, R, %
6808 rhyper, rle, rlnorm, rlogis, rm, rnbinom, RNGkind, rnorm, round, row, %
6809 rownames, rowsum, rpois, rsignrank, rstandard, rstudent, rt, rug, runif, %
6810 rweibull, rwilcox, sample, sapply, save, scale, scan, scan, screen, sd, se, %
6811 search, searchpaths, segments, seq, sequence, setdiff, setequal, set, %
6812 setwd, show, sign, signif, sin, single, sinh, sink, solve, sort, source, %
6813 spline, splinefun, split, sqrt, stars, start, stat, stem, step, stop, %
6814 storage, strsrheight, stripplot, strsplit, structure, strwidth, sub, %
6815 subset, substitute, substr, substring, sum, summary, sunflowerplot, svd, %
6816 sweep, switch, symbol, symbols, symnum, sys, status, system, t, table, %
6817 tabulate, tan, tanh, tapply, tempfile, terms, terrain, tetragamma, text, %
6818 time, title, topo, trace, traceback, transform, tri, trigamma, trunc, try, %
6819 ts, tsp, typeof, unclass, undebug, undoc, union, unique, uniroot, unix, %
6820 unlink, unlist, unname, untrace, update, upper, url, UseMethod, var, %

```

6821     variable,vector,Version,vi,warning,warnings,weighted,weights,%
6822     which,while>window,write,\%x\%,x11,X11,xedit,xemacs,xinch,xor,%
6823     xpdrows,xy,xyinch,yinch,zapsmall,zip},%
6824 otherkeywords={!,!=,~, $,*, \&, \%/\%, \%*\%, \%\/%, <-, <<-, _/,}%
6825 alsoother={._$},%
6826 sensitive,%
6827 morecomment=[1]\#,%
6828 morestring=[d]",%
6829 morestring=[d]'% 2001 Robert Denham
6830 }%

```

Benjamin Janson got a `prockeywords` undefined error, which was removed by Heiko Oberdiek.

```

6831 \lst@definelanguage{SAS}{%
6832   procnamekeys={proc},%
6833   morekeywords={DATA, AND, OR, NOT, EQ, GT, LT, GE, LE, NE, INFILE, INPUT,%
6834     DO, BY, TO, SIN, COS, OUTPUT, END, PLOT, RUN, LIBNAME, VAR, TITLE,%
6835     FIRSTOBS, OBS, DELIMITER, DLM, EOF, ABS, DIM, HBOUND, LBOUND, MAX, MIN,%
6836     MOD, SIGN, SQRT, CEIL, FLOOR, FUZZ, INT, ROUND, TRUNC, DIGAMMA, ERF,%
6837     ERFC, EXP, GAMMA, LGAMMA, LOG, LOG2, LOG10, ARCCOS, ARSIN, ATAN, COSH,%
6838     SINH, TANH, TAN, POISSON, PROBBETA, PROBBNML, PROBCHI, PROBF, PROBGAM,%
6839     PROBHYP, PROBNEGB, PROBNORM, PROBT, BETAINV, CINV, FINV, GAMINV,%
6840     PROBIT, TINV, CSS, CV, KURTOSIS, MEAN, NMISS, RANGE, SKEWNESS, STD,%
6841     STDERR, SUM, USS, NORMAL, RANBIN, RANCAU, RANEXP, RANGAM, RANNOR,%
6842     RANPOI, RANTBL, RANTRI, RANUNI, UNIFORM, IF, THEN, ELSE, WHILE, UNTIL,%
6843     DROP, KEEP, LABEL, DEFAULT, ARRAY, MERGE, CARDS, CARDS4, PUT, SET,%
6844     UPDATE, ABORT, DELETE, DISPLAY, LIST, LOSTCARD, MISSING, STOP, WHERE,%
6845     ARRAY, DROP, KEEP, WINDOW, LENGTH, RENAME, RETAIN, MEANS, UNIVARIATE,%
6846     SUMMARY, TABULATE, CORR, FREQ, FOOTNOTE, NOTE, SHOW},%
6847   otherkeywords={!,!=,~, $,*, \&, _/, <, >=, <=, >},%
6848   morestring=[d]'%
6849 }[keywords,comments,strings,procnames]%
6850 </lang3>

```

2.79 TeX

I extracted the data from `plain.tex`, `latex.ltx`, and `size10.clo`. Dr. Peter Leibner reported that some keywords are missing and also added a couple.

```

6851 (*lang3)
6852 \lst@definelanguage[AllaTeX]{TeX}[LaTeX]{TeX}%
6853 {moretexcs={AtBeginDocument,AtBeginDvi,AtEndDocument,AtEndOfClass,%
6854   AtEndOfPackage,ClassError,ClassInfo,ClassWarning,%
6855   ClassWarningNoLine,CurrentOption,DeclareErrorFont,%
6856   DeclareFixedFont,DeclareFontEncoding,DeclareFontEncodingDefaults,%
6857   DeclareFontFamily,DeclareFontShape,DeclareFontSubstitution,%
6858   DeclareMathAccent,DeclareMathAlphabet,DeclareMathAlphabet,%
6859   DeclareMathDelimiter,DeclareMathRadical,DeclareMathSizes,%
6860   DeclareMathSymbol,DeclareMathVersion,DeclareOldFontCommand,%

```



```

6861 DeclareOption,DeclarePreloadSizes,DeclareRobustCommand,%
6862 DeclareSizeFunction,DeclareSymbolFont,DeclareSymbolFontAlphabet,%
6863 DeclareTextAccent,DeclareTextAccentDefault,DeclareTextCommand,%
6864 DeclareTextCommandDefault,DeclareTextComposite,%
6865 DeclareTextCompositeCommand,DeclareTextFontCommand,%
6866 DeclareTextSymbol,DeclareTextSymbolDefault,ExecuteOptions,%
6867 GenericError,GenericInfo,GenericWarning,IfFileExists,%
6868 InputIfFileExists,LoadClass,LoadClassWithOptions,MessageBreak,%
6869 OptionNotUsed,PackageError,PackageInfo,PackageWarning,%
6870 PackageWarningNoLine,PassOptionsToClass,PassOptionsToPackage,%
6871 ProcessOptionsProvidesClass,ProvidesFile,ProvidesFile,%
6872 ProvidesPackage,ProvideTextCommand,RequirePackage,%
6873 RequirePackageWithOptions,SetMathAlphabet,SetSymbolFont,%
6874 TextSymbolUnavailable,UseTextAccent,UseTextSymbol},%
6875 morekeywords={array,center,displaymath,document,enumerate,eqnarray,%
6876 equation,flushleft,flushright,itemize,list,lrbox,math,minipage,%
6877 picture,sloppypar,tabbing,tabular,trivlist,verbatim}%
6878 }%

6879 \lst@definelanguage[LaTeX]{TeX}[common]{TeX}%
6880 {moretexcs={a,AA,aa,addcontentsline,addpenalty,addtocontents,%
6881 addtocounter,addtolength,addtoversion,addvspace,alpha,Alpha,and,%
6882 arabic,array,arraycolsep,arrayrulewidth,arraystretch,author,%
6883 baselinestretch,begin,bezier,bfseries,bibcite,bibdata,bibitem,%
6884 bibliography,bibliographystyle,bibstyle,bigskip,boldmath,%
6885 botfigrule,bottomfraction,Box,caption,center,CheckCommand,circle,%
6886 citation,cite,cleardoublepage,clearpage,cline,columnsep,%
6887 columnseprule,columnwidth,contentsline,dashbox,date,dblfigrule,%
6888 dblfloatpagefraction,dblfloatsep,dbltextfloatsep,dbltopfraction,%
6889 defaultscritratio,defaultscriptscritratio,depth,Diamond,%
6890 displaymath,document,documentclass,documentstyle,doublerulesep,%
6891 em,emph,endarray,endcenter,endisdisplaymath,enddocument,%
6892 endenumerate,endeqnarray,endequation,endflushleft,endflushright,%
6893 enditemize,endlist,endlrbox,endmath,endminipage,endpicture,%
6894 endsloppypar,endtabbing,endtabular,endtrivlist,endverbatim,%
6895 enlargethispage,ensuremath,enumerate,eqnarray,equation,%
6896 evensidemargin,extracolsep,fbox,fboxrule,fboxsep,filecontents,%
6897 fill,floatpagefraction,floatsep,flushbottom,flushleft,flushright,%
6898 fnsymbol,fontencoding,fontfamily,fontseries,fontshape,fontsize,%
6899 fontsubfuzz,footnotemark,footnotesep,footnotetext,footskip,frac,%
6900 frame,framebox,fussy,glossary,headheight,headsep,height,hline,%
6901 hspace,I,include,includeonly,index,inputlineno,intextsep,%
6902 itemindent,itemize,itemsep,iterate,itshape,Join,kill,label,%
6903 labelsep,labelwidth,LaTeX,LaTeXe,leadsto,lefteqn,leftmargin,%
6904 leftmargini,leftmarginii,leftmarginiii,leftmarginiv,leftmarginv,%
6905 leftmarginvi,leftmark,lhd,lim,linebreak,linespread,linethickness,%
6906 linewidth,list,listfiles,listfiles,listparindent,lrbox,%
6907 makeatletter,makeatother,makebox,makeglossary,makeindex,%
6908 makelabel,MakeLowercase,MakeUppercase,marginpar,marginparpush,%
6909 marginparsep,marginparwidth,markboth,markright,math,mathbf,%

```

```

6910 mathellipsis,mathgroup,mathit,mathrm,mathsf,mathsterling,mathtt,%
6911 mathunderscore,mathversion,mbox,mdseries,mho,minipage,%
6912 multicolumn,multiput,NeedsTeXFormat,newcommand,newcounter,%
6913 newenvironment,newfont,newhelp,newlabel,newlength,newline,%
6914 newmathalphabet,newpage,newsavebox,newtheorem,nobreakspace,%
6915 nobreakspace,nocite,nocorr,nocorrlist,nofiles,nolinebreak,%
6916 nonumber,nopagebreak,normalcolor,normalfont,normalmarginpar,%
6917 numberline,obeycr,oddsidemargin,oldstylenums,onecolumn,oval,%
6918 pagebreak,pagenumbering,pageref,pagestyle,paperheight,paperwidth,%
6919 paragraphmark,parbox,parsep,partopsep,picture,poptabs,pounds,%
6920 protect,pushtabs,put,qbezier,qbeziermax,r,raggedleft,raisebox,%
6921 ref,refstepcounter,renewcommand,renewenvironment,restorecr,%
6922 reversemarginpar,rhd,rightmargin,rightmark,rmfamily,roman,Roman,%
6923 rootbox,rule,samepage,sbox,scshape,secdef,section,sectionmark,%
6924 selectfont,setcounter,settodepth,settoheight,settowidth,sffamily,%
6925 shortstack,showoutput,showoverfull,sloppy,sloppypar,slshape,%
6926 smallskip,sqsubset,sqsupset,SS,stackrel,stepcounter,stop,stretch,%
6927 subparagraphmark,subsectionmark,subsubsectionmark,sum,%
6928 suppressfloats,symbol,tabbing,tabbingsep,tabcolsep,tabular,%
6929 tabularnewline,textasciicircum,textasciitilde,textbackslash,%
6930 textbar,textbf,textbraceleft,textbraceright,textbullet,%
6931 textcircled,textcompwordmark,texdagger,texdaggerdbl,texdollar,%
6932 textellipsis,textemdash,textendash,teTeXclamdown,teXfloatsep,%
6933 textfraction,textgreater,teXheight,teXit,teXless,teXmd,%
6934 textnormal,teXparagraph,teXperiodcentered,teXquestiondown,%
6935 teXquotedblleft,teXquotedblright,teXquoteleft,teXquoteright,%
6936 teXregistered,teXrm,teXsc,teXsection,teXsf,teXsl,%
6937 teXsterling,teXsuperscript,teXtrademark,teXtt,teXunderscore,%
6938 teXup,teXvisiblespace,teXwidth,thanks,thefootnote,thempfn,%
6939 thempfn,thempfootnote,thePage,thePage,thicklines,thinlines,%
6940 thispagestyle,title,today,topfigrule,topfraction,topmargin,%
6941 topsep,totalheight,tracingfonts,trivlist,ttfamily,twocolumn,%
6942 typein,typeout,unboldmath,unitlength,unlhd,unrhd,upshape,usebox,%
6943 usecounter,usefont,usepackage,value,vector,verb,verbatim,vline,%
6944 vspace,width,%
6945 normalsize,small,footnotesize,scriptsize,tiny,large,Large,LARGE,%
6946 huge,Huge}%
6947 }%

6948 \lst@definlanguage[plain]{TeX}[common]{TeX}%
6949 {moretexcs={advancepageno,beginsection,bf,bffam,bye,cal,cleartabs,%
6950 columns,dosupereject,endinsert,equalign,equalignno,fiverm,fivebf,%
6951 fivei,fivesy,folio,footline,hang,headline,it,itemitem,itfam,%
6952 leqalignno,magnification,makefootline,makeheadline,midinsert,mit,%
6953 mscount,nopagenumbers,normalbottom,of,oldstyle,pagebody,%
6954 pagecontents,pageinsert,pageno,plainoutput,preloaded,proclaim,rm,%
6955 settabs,sevenbf,seveni,sevency,sevenrm,sl,slfam,supereject,%
6956 tabalign,tabs,tabsdone,tabsyet,tenbf,tenex,teni,tenit,tenrm,%
6957 tensl,tensy,tentt,textindent,topglue,topins,topinsert,tt,ttfam,%
6958 ttraggedright,vfootnote}%

```

6959 }%

The following language is only a helper.

```
6960 \lst@definelanguage[common]{TeX}[primitive]{TeX}
6961   {moretexcs={active,acute,ae,AE,aleph,allocationnumber,allowbreak,%
6962     alpha,amalg,angle,approx,arccos,arcsin,arctan,arg,arrowvert,%
6963     Arrowvert,ast,asymp,b,backslash,bar,beta,bgroup,big,Big,bigbreak,%
6964     bigcap,bigcirc,bigcup,bigg,Bigg,biggl,Biggl,biggm,Biggm,bigr,%
6965     Biggr,bigl,Bigl,bigm,Bigm,bigodot,bigoplus,bigotimes,bigr,Bigr,%
6966     bigskip,bigskipamount,bigsqcup,bigtriangledown,bigtriangleup,%
6967     biguplus,bigvee,bigwedge,bmod,bordermatrix,bot,bowtie,brace,%
6968     bracedl,bracelu,bracerd,braceru,bracevert,brack,break,breve,%
6969     buildrel,bullet,c,cap,cases,cdot,cdotp,cdots,centering,%
6970     centerline,check,chi,choose,circ,clubsuit,colon,cong,coprod,%
6971     copyright,cos,cosh,cot,coth,csc,cup,d,dag,dagger,dashv,ddag,%
6972     ddagger,ddot,ddots,deg,delta,Delta,det,diamond,diamondsuit,dim,%
6973     displaylines,div,do,dospecials,dot,doteq,dotfill,dots,downarrow,%
6974     Downarrow,downbracefill,egroup,eject,ell,empty,emptyset,endgraf,%
6975     endl,enskip,enspace,epsilon,equiv,eta,exists,exp,filbreak,%
6976     flat,fmtname,fmtversion,footins,footnote,footnoterule,forall,%
6977     frenchspacing,frown,gamma,Gamma,gcd,ge,geq,gets,gg,goodbreak,%
6978     grave,H,hat,hbar,heartsuit,hglue,hideskip,hidewidth,hom,%
6979     hookleftarrow,hookrightarrow,hphantom,hrulefill,i,ialign,iff,Im,%
6980     imath,in,inf,infty,int,interdisplaylinepenalty,%
6981     interfootnotelinepenalty,intop,iota,item,j,jmath,joinrel,jot,%
6982     kappa,ker,l,L,lambda,Lambda,land,langl,lbrace,lbrack,lceil,%
6983     ldotp,ldots,le,leavevmode,leftarrow,Leftarrow,leftarrowfill,%
6984     leftharpoon,leftharpoonup,leftline,leftrightarrow,%
6985     Leftrightarrow,leq,lfloor,lg,lgroup,lhook,lim,liminf,limsup,line,%
6986     ll,llap,lmoustache,ln,lnot,log,longleftarrow,Longleftarrow,%
6987     longleftrightarrow,Longleftrightarrow,longmapsto,longrightarrow,%
6988     Longrightarrow,loop,lor,lq,magstep,magstep,magstephalf,mapsto,%
6989     mapstochar,mathhexbox,mathpalette,mathstrut,matrix,max,maxdimen,%
6990     medbreak,medskip,medskipamount,mid,min,models,mp,mu,multispan,%
6991     nabla,narrower,natural,ne,nearrow,neg,negthinspace,neq,newbox,%
6992     newcount,newdimen,newfam,newif,newinsert,newlanguage,newmuskip,%
6993     newread,newskip,newtoks,newwrite,next,ni,nobreak,nointerlineskip,%
6994     nonfrenchspacing,normalbaselines,normalbaselineskip,%
6995     normallineskip,normallineskiplimit,not,notin,nu,null,nwarrow,o,O,%
6996     oalign,obeylines,obeyspaces,odot,oe,OE,offinterlineskip,oint,%
6997     ointop,omega,Omega,ominus,oalign,openup,oplus,oslash,otimes,%
6998     overbrace,overleftarrow,overrightarrow,owns,P,parallel,partial,%
6999     perp,phantom,phi,Phi,pi,Pi,pm,pmatrix,pmod,Pr,prec,preceq,prime,%
7000     prod,propto,psi,Psi,quad,quad,raggedbottom,raggedright,rangle,%
7001     rbrace,rbrack,rceil,Re,relbar,Relbar,removelastskip,repeat,%
7002     rfloor,rgroup,rho,rhook,rightarrow,Rightarrow,rightarrowfill,%
7003     rightharpoon,down,rightharpoonup,rightharpoons,rightrightarrows,rline,rlap,%
7004     rmoustache,root,rq,S,sb,searrow,sec,setminus,sharp,showhyphens,%
7005     sigma,Sigma,sim,simeq,sin,sinh,skew,slash,smallbreak,smallint,%
7006     smallskip,smallskipamount,smash,smile,sp,space,spadesuit,sqcap,%
```

```

7007 sqcup,sqrt,sqsubseteq,sqsupseteq,ss,star,strut, strutbox,subset,%
7008 subseteq,succ,succeq,sum,sup,supset,supseteq,surd,swarrow,t,tan,%
7009 tanh,tau,TeX,theta,Theta,thinspace,tilde,times,to,top,tracingall,%
7010 triangle,triangleleft,triangleright,u,underbar,underbrace,%
7011 uparrow,Uparrow,upbracefill,updownarrow,Updownarrow,uplus,%
7012 upsilon,Upsilon,v,varepsilon,varphi,varpi,varrho,varsigma,%
7013 vartheta,vdash,vdots,vec,vee,vert,Vert,vglue,vphantom,wedge,%
7014 widehat,widetilde,wlog,wp,wr,xi,Xi,zeta}%
7015 }%

```

Herbert Voss pointed to a typo: the \TeX primitive is `lineskiplimit` instead of `lineskiplimits`.

```

7016 \lst@definelanguage[primitive]{TeX}%
7017 {moretexcs={above,abovedisplayshortskip,abovedisplayskip,aftergroup,%
7018 abovewithdelims,accent,adjdemerits,advance,afterassignment,atop,%
7019 atopwithdelims,badness,baselineskip,batchmode,begingroup,%
7020 belowdisplayshortskip,belowdisplayskip,binoppenalty,botmark,box,%
7021 boxmaxdepth,brokenpenalty,catcode,char,chardef,cleaders,closein,%
7022 closeout,clubpenalty,copy,count,countdef,cr,crcr,cname,day,%
7023 deadcycles,def,defaultshyphenchar,defaultskewchar,delcode,%
7024 delimiter,delimiterfactor,delimitershortfall,dimen,dimendef,%
7025 discretionary,displayindent,displaylimits,displaystyle,%
7026 displaywidowpenalty,displaywidth,divide,doublehyphendemerits,dp,%
7027 edef,else,emergencystretch,end,endcurname,endgroup,endinginput,%
7028 endlinedchar,eqno,errhelp,errmessage,errorcontextlines,%
7029 errorstopmode,escapechar,everycr,everydisplay,everyhbox,everyjob,%
7030 everymath,everypar,everyvbox,exhyphenpenalty,expandafter,fam,fi,%
7031 finalhyphendemerits,firstmark,floatingpenalty,font,fontdimen,%
7032 fontname,futurelet,gdef,global,globaldefs,halign,hangafter,%
7033 hangindent,hbadness,hbox,hfil,hfill,hfilneg,hfuzz,hoffset,%
7034 holdinginserts,hrule,hsize,hskip,hss,ht,hyphenation,hyphenchar,%
7035 hyphenpenalty,if,ifcase,ifcat,ifdim,ifeof,iffalse,ifhbox,ifhmode,%
7036 ifinner,ifmmode,ifnum,ifodd,iftrue,ifvbox,ifvmode,ifvoid,ifx,%
7037 ignorespaces,immediate,indent,input,insert,insertpenalties,%
7038 interlinepenalty,jobname,kern,language,lastbox,lastkern,%
7039 lastpenalty,lastskip,lcode,leaders,left,leftthyphenmin,leftskip,%
7040 leqno,let,limits,linepenalty,lineskip,lineskiplimit,long,%
7041 looseness,lower,lowercase,mag,mark,mathaccent,mathbin,mathchar,%
7042 mathchardef,mathchoice,mathclose,mathcode,mathinner,mathop,%
7043 mathopen,mathord,mathpunct,mathrel,mathsurround,maxdeadcycles,%
7044 maxdepth,meaning,medmuskip,message,mkern,month,movelft,%
7045 moveright,mskip,multiply,muskip,muskipdef,newlinechar,noalign,%
7046 noboundary,noexpand,noindent,nolimits,nonscript,nonstopmode,%
7047 nulldelimiterspace,nullfont,number,omit,openin,openout,or,outer,%
7048 output,outputpenalty,over,overfullrule,overline,overwithdelims,%
7049 pagedeath,pagewidth,pagefillstretch,pagefillstretch,pagefillstretch,%
7050 pagegoal,pageshrink,pagewidth,pagefillstretch,pagefillstretch,%
7051 parindent,parshape,parskip,patterns,pausing,penalty,%
7052 postdisplaypenalty,predisplaypenalty,predisplaysize,pretolerance,%
7053 prevdepth,prevgraf,radical,raise,read,relax,relpenalty,right,%

```

```

7054     righthyphenmin, rightskip, romannumeral, scriptfont, %
7055     scriptscriptfont, scriptscriptstyle, scriptspace, scriptstyle, %
7056     scrollmode, setbox, setlanguage, sfcodes, shipout, show, showbox, %
7057     showboxbreadth, showboxdepth, showlists, showthe, skewchar, skip, %
7058     skipdef, spacefactor, spaceskip, span, special, splitbotmark, %
7059     splitfirstmark, splitmaxdepth, splittopskip, string, tabskip, %
7060     textfont, textstyle, the, thickmuskip, thinmuskip, time, toks, toksdef, %
7061     tolerance, topmark, topskip, tracingcommands, tracinglostchars, %
7062     tracingmacros, tracingonline, tracingoutput, tracingpages, %
7063     tracingparagraphs, tracingrestores, tracingstats, uccode, uchyp, %
7064     underline, unhbox, unhcopy, unkern, unpenalty, unskip, unvbox, unvcopy, %
7065     uppercase, vadjust, valign, vbadness, vbox, vcenter, vfil, vfill, %
7066     vfilneg, vfuzz, voffset, vrule, vsize, vskip, vsplit, vss, vtop, wd, %
7067     widowpenalty, write, xdef, xleaders, xspaceskip, year}, %
7068     sensitive, %
7069     alsoother={0123456789$_}, % $ to make Emacs fontlocking happy
7070     morecomment=[1]\%%
7071 } [keywords, tex, comments] %
7072 
```

2.80 VBScript

Sonja Weidmann VBScript sent me this language definition.

```

7073 (*lang2)
7074 %%
7075 %% VBScript definition (c) 2000 Sonja Weidmann
7076 %%
7077 \lst@definlanguage{VBScript}%
7078 {morekeywords={Call, Case, Const, Dim, Do, Each, Else, End, Erase, Error, Exit, %
7079     Explicit, For, Function, If, Loop, Next, On, Option, Private, Public, %
7080     Randomize, ReDim, Rem, Select, Set, Sub, Then, Wend, While, Abs, Array, Asc, %
7081     Atn, CBool, CByte, CCur, CDate, CDb1, Chr, CInt, CLng, Cos, CreateObject, %
7082     CSng, CStr, Date, DateAdd, DateDiff, DatePart, DateSerial, DateValue, %
7083     Day, Exp, Filter, Fix, FormatCurrency, FormatDateTime, FormatNumber, %
7084     FormatPercent, GetObject, Hex, Hour, InputBox, InStr, InStrRev, Int, %
7085     IsArray, IsDate, IsEmpty, IsNull, IsNumeric, IsObject, Join, LBound, %
7086     LCase, Left, Len, LoadPicture, Log, LTrim, Mid, Minute, Month, MonthName, %
7087     MsgBox, Now, Oct, Replace, RGB, Right, Rnd, Round, RTrim, ScriptEngine, %
7088     ScriptEngineBuildVersion, ScriptEngineMajorVersion, %
7089     ScriptEngineMinorVersion, Second, Sgn, Sin, Space, Split, Sqr, StrComp, %
7090     StrReverse, String, Tan, Time, TimeSerial, TimeValue, Trim, TypeName, %
7091     UBound, UCase, VarType, Weekday, WeekdayName, Year, And, Eqv, Imp, Is, %
7092     Mod, Not, Or, Xor, Add, BuildPath, Clear, Close, Copy, CopyFile, %
7093     CopyFolder, CreateFolder, CreateTextFile, Delete, DeleteFile, %
7094     DeleteFolder, Dictionary, Drive, DriveExists, Drives, Err, Exists, File, %
7095     FileExists, FileSystemObject, Files, Folder, FolderExists, Folders, %
7096     GetAbsolutePathName, GetBaseName, GetDrive, GetDriveName, %
7097     GetExtensionName, GetFile, GetFileName, GetFolder, %

```

```

7098     GetParentFolderName,GetSpecialFolder,GetTempName,Items,Keys,Move,%
7099     MoveFile,MoveFolder,OpenAsTextStream,OpenTextFile,Raise,Read,%
7100     ReadAll,ReadLine,Remove,RemoveAll,Skip,SkipLine,TextStream,Write,%
7101     WriteBlankLines,WriteLine,Alias,Archive,CDROM,Compressed,%
7102     Directory,Fixed,ForAppending,ForReading,ForWriting,Hidden,Normal,%
7103     RAMDisk,ReadOnly,Remote,Removable,System,SystemFolder,%
7104     TemporaryFolder,TristateFalse,TristateTrue,TristateUseDefault,%
7105     Unknown,Volume,WindowsFolder,vbAbortRetryIgnore,%
7106     vbApplicationModal,vbArray,vbBinaryCompare,vbBlack,vbBlue,%
7107     vbBoolean,vbByte,vbCr,vbCrLf,vbCritical,vbCurrency,vbCyan,%
7108     vbDataObject,vbDate,vbDecimal,vbDefaultButton1,vbDefaultButton2,%
7109     vbDefaultButton3,vbDefaultButton4,vbDouble,vbEmpty,vbError,%
7110     vbExclamation,vbFirstFourDays,vbFirstFullWeek,vbFirstJan1,%
7111     vbFormFeed,vbFriday,vbGeneralDate,vbGreen,vbInformation,%
7112     vbInteger,vbLf,vbLong,vbLongDate,vbLongTime,vbMagenta,vbMonday,%
7113     vbNewLine,vbNull,vbNullChar,vbNullString,vbOKC,ancel,vbOKOnly,%
7114     vbObject,vbObjectError,vbQuestion,vbRed,vbRetryCancel,vbSaturday,%
7115     vbShortDate,vbShortTime,vbSingle,vbString,vbSunday,vbSystemModal,%
7116     vbTab,vbTextCompare,vbThursday,vbTuesday,vbUseSystem,%
7117     vbUseSystemDayOfWeek,vbVariant,vbVerticalTab,vbWednesday,vbWhite,%
7118     vbYellow,vbYesNo,vbYesNoCancel},%
7119     sensitive=f,%
7120     morecomment=[l]',%
7121     morestring=[d]"%
7122     }[keywords,comments,strings]
7123 (/lang2)

```

2.81 Verilog

Thanks to Cameron H. G. Wright for providing the definition. After a bug report by George M. Georgiou I changed the declaration of directives to use normal keywords.

```

7124 (*lang3)
7125 %%
7126 %% Verilog definition (c) 2003 Cameron H. G. Wright <c.h.g.wright@ieee.org>
7127 %% Based on the IEEE 1364-2001 Verilog HDL standard
7128 %% Ref: S. Palnitkar, "Verilog HDL: A Guide to Digital Design and Synthesis,"
7129 %%     Prentice Hall, 2003. ISBN: 0-13-044911-3
7130 %%
7131 \lst@definelanguage{Verilog}%
7132 {morekeywords={% reserved keywords
7133     always,and,assign,automatic,begin,buf,bufif0,bufif1,case,casex,%
7134     casez,cell,cmos,config,deassign,default,defparam,design,disable,%
7135     edge,else,end,endcase,endconfig,endfunction,endgenerate,%
7136     endmodule,endprimitive,endspecify,entable,entask,event,for,%
7137     force,forever,fork,function,generate,genvar,highz0,highz1,if,%
7138     ifnone,includ,include,initial,inout,input,instance,integer,join,%
7139     large,liblist,library,localparam,macromodule,medium,module,nand,%

```

```

7140     negedge,nmos,nor,noshowcancelled,not,notif0,notif1,or,output,%
7141     parameter,pmos,posedge,primitive,pull0,pull1,pulldown,pullup,%
7142     pulsestyle_onevent,pulsestyle_ondetect,rcmos,real,realtime,reg,%
7143     release,repeat,rnmos,rpmos,rtran,rtranif0,rtranif1,scalared,%
7144     showcancelled,signed,small,specify,specparam,strong0,strong1,%
7145     supply0,supply1,table,task,time,tran,tranif0,tranif1,tri,tri0,%
7146     tri1,triand,trior,triereg,unsigned,use,vectored,wait,wand,weak0,%
7147     weak1,while,wire,wor,xnor,xor},%
7148     morekeywords=[2]{% system tasks and functions
7149     $bitstoreal,$countdrivers,$display,$fclose,$fdisplay,$fmonitor,%
7150     $fopen,$fstrobe,$fwrite,$finish,$getpattern,$history,$incsave,%
7151     $input,$itor,$key,$list,$log,$monitor,$monitoroff,$monitoron,%
7152     $nokey},%
7153     morekeywords=[3]{% compiler directives
7154     'accelerate','autoexpand_vectornets','celldefine','default_nettype,%
7155     'define','else','elsif','endcelldefine','endif','endprotect,%
7156     'endprotected','expand_vectornets','ifdef','ifndef','include,%
7157     'no_accelerate','noexpand_vectornets','noremove_gatenames,%
7158     'nounconnected_drive','protect','protected','remove_gatenames,%
7159     'remove_netnames','resetall','timescale','unconnected_drive},%
7160     alsoletter='\',%
7161     sensitive,%
7162     morecomment=[s]{/*}{*/},%
7163     morecomment=[1]//,% nonstandard
7164     morestring=[b]"%
7165     }[keywords,comments,strings]
7166 </lang3>

```

2.82 VHDL

This language is due to Kai WollenweberVHDL. I've done conversion to version 0.19 only. Gaurav Aggarwal reported that VHDL is case insensitive and Arnaud Tisserand added three keywords.

```

7167 <lang1>
7168 %%
7169 %% VHDL definition (c) 1997 Kai Wollenweber
7170 %%
7171 \lst@definlanguage{VHDL}%
7172 {morekeywords={ALL,ARCHITECTURE,ABS,AND,ASSERT,ARRAY,AFTER,ALIAS,%
7173     ACCESS,ATTRIBUTE,BEGIN,BODY,BUS,BLOCK,BUFFER,CONSTANT,CASE,%
7174     COMPONENT,CONFIGURATION,DOWNTO,ELSE,ELSIF,END,ENTITY,EXIT,%
7175     FUNCTION,FOR,FILE,GENERIC,GENERATE,GUARDED,GROUP,IF,IN,INOUT,IS,%
7176     INERTIAL,IMPURE,LIBRARY,LOOP,LABEL,LITERAL,LINKAGE,MAP,MOD,NOT,%
7177     NOR,NAND,NULL,NEXT,NEW,OUT,OF,OR,OTHERS,ON,OPEN,PROCESS,PORT,%
7178     PACKAGE,PURE,PROCEDURE,POSTPONED,RANGE,REM,ROL,ROR,REPORT,RECORD,%
7179     RETURN,REGISTER,REJECT,SIGNAL,SUBTYPE,SLL,SRL,SLA,SRA,SEVERITY,%
7180     SELECT,THEN,TYPE,TRANSPORT,TO,USE,UNITS,UNTIL,VARIABLE,WHEN,WAIT,%
7181     WHILE,XOR,XNOR,%

```

```

7182     DISCONNECT,ELIF,WITH},% Arnaud Tisserand
7183     sensitive=f,% 1998 Gaurav Aggarwal
7184     morecomment=[1]--,%
7185     morestring=[d]{"}%
7186   }[keywords,comments,strings]

```

The VHDL-AMS dialect has been added by Steffen Klupsch.

```

7187 %%
7188 %% VHDL-AMS definition (c) Steffen Klupsch
7189 %%
7190 \lst@definlanguage[AMS]{VHDL}[] {VHDL}%
7191   {morekeywords={ACROSS,ARRAY,BREAK,DISCONNECT,NATURE,NOISE,PORT,%
7192     PROCEDURAL,QUANTITY,SHARED,SPECTRUM,SUBNATURE,TERMINAL,THROUGH,%
7193     TOLERANCE,UNAFFECTED,UNITS}}
7194 </lang1>

```

2.83 VRML

This language is due to Oliver BaumVRML.

```

7195 <*lang2>
7196 %%
7197 %% VRML definition (c) 2001 Oliver Baum
7198 %%
7199 \lst@definlanguage[97]{VRML}{%
7200   morekeywords={DEF, EXTERNPROTO, FALSE, IS, NULL, PROTO, ROUTE, TO, TRUE,%
7201     USE, eventIn, eventOut, exposedField, field, Introduction, Anchor,%
7202     Appearance, AudioClip, Background, Billboard, Box, Collision, Color,%
7203     ColorInterpolator, Cone, Coordinate, CoordinateInterpolator, Cylinder,%
7204     CylinderSensor, DirectionalLight, ElevationGrid, Extrusion, Fog,%
7205     FontStyle, Group, ImageTexture, IndexedFaceSet, IndexedLineSet, Inline,%
7206     LOD, Material, MovieTexture, NavigationInfo, Normal,%
7207     NormalInterpolator, OrientationInterpolator, PixelTexture, PlaneSensor,%
7208     PointLight, PointSet, PositionInterpolator, ProximitySensor,%
7209     ScalarInterpolator, Script, Shape, Sound, Sphere, SphereSensor,%
7210     SpotLight, Switch, Text, TextureCoordinate, TextureTransform,%
7211     TimeSensor, TouchSensor, Transform, Viewpoint, VisibilitySensor,%
7212     WorldInfo},%
7213   morecomment=[1]\#,% bug: starts comment in the first column
7214   morestring=[b]"%
7215 }[keywords,comments,strings]
7216 </lang2>

```

2.84 XML et al

Bernhard Walle provided the following two definitions.

```

7217 <*lang1>

```



```

7218 \lst@definelanguage{XSLT}[] {XML}%
7219   {morekeywords={%
7220     % main elements
7221     xsl:stylesheet, xsl:transform,%
7222     % childs of the main element
7223     xsl:apply-imports, xsl:attribute-set, xsl:decimal-format, xsl:import,%
7224     xsl:include, xsl:key, xsl:namespace-alias, xsl:output, xsl:param,%
7225     xsl:preserve-space, xsl:strip-space, xsl:template, xsl:variable,%
7226     % 21 directives
7227     xsl:apply-imports, xsl:apply-templates, xsl:attribute,%
7228     xsl:call-template, xsl:choose, xsl:comment, xsl:copy, xsl:copy-of,%
7229     xsl:element, xsl:fallback, xsl:for-each, xsl:if, xsl:message,%
7230     xsl:number, xsl:otherwise, xsl:processing-instruction, xsl:text,%
7231     xsl:value-of, xsl:variable, xsl:when, xsl:with-param},%
7232   alsodigit={-},%
7233 }%

7234 \lst@definelanguage{Ant}[] {XML}{%
7235   morekeywords={%
7236     project, target, patternset, include, exclude, excludesfile,%
7237     includesfile, filterset, filter, filtersfile, libfileset, custom,%
7238     classpath, fileset, none, depend, mapper, filename, not, date,%
7239     contains, selector, depth, or, and, present, majority, size, dirset,%
7240     filelist, pathelement, path, param, filterreader, extension,%
7241     filterchain, linecontainsregexp, regexp, classconstants, headfilter,%
7242     tabstospaces, striplinebreaks, tailfilter, stripjavacomments,%
7243     expandproperties, linecontains, replacetokens, token,%
7244     striplinecomments, comment, prefixlines, classfileset, rootfileset,%
7245     root, description, xmllcatalog, entity, dtd, substitution, extensionSet,%
7246     propertyfile, entry, vsscheckin, sql, transaction, cvspass, csc,%
7247     dirname, wlrn, wlclasspath, p4label, replaceregexp, get, jjtree,%
7248     sleep, jarlib, dependset, targetfileset, srcfileset, srcfilelist,%
7249     targetfilelist, zip, zipgroupfileset, zipfileset, patch, jspc, webapp,%
7250     style, test, arg, jvmarg, sysproperty, testlet, env, tstamp, format,%
7251     unwar, vsshhistory, icontract, cvschangelog, user, p4submit, ccmcheckin,%
7252     p4change, bzip2, vssadd, javadoc, bottom, source, doctitle, header,%
7253     excludepackage, bootclasspath, doclet, taglet, packageset, sourcepath,%
7254     link, footer, package, group, title, tag, translate, signjar, vajload,%
7255     vajproject, jarlib, extensionset, WsdLToDotnet, buildnumber,%
7256     jpcovmerge, tomcat, ejbjar, weblogictoplink, jboss, borland, weblogic,%
7257     iplanet, jonas, support, websphere, wasclasspath, war, manifest,%
7258     attribute, section, metaInf, lib, classes, webInf, rename, sequential,%
7259     serverdeploy, generic, property, move, copydir, cccheckin, wljspc,%
7260     fixCrLf, sosget, pathconvert, map, record, p4sync, exec, p4edit,%
7261     maudit, rulespath, searchpath, antlr, netrexxc, jpcovreport, reference,%
7262     filters, coveragepath, execon, targetfile, srcfile, ccmcheckout, ant,%
7263     xmlvalidate, xslt, iplanet, ccmcheckintask, gzip, native2ascii,%
7264     starteam, ear, archives, input, rmic, extdirs, compilerarg, checksum,%
7265     mail, bcc, message, cc, to, from, loadfile, vsscheckout, stylebook,%
7266     soscheckin, mimemail, stlabel, gunzip, concat, cab, touch, parallel,%

```

```

7267 splash, antcall, cccheckout, typedef, p4have, xmlproperty, copy,%
7268 tomcat, antstructure, ccmcreatetask, rpm, delete, replace,%
7269 replacefilter, replacetoken, replacevalue, mmetrics, waitfor, isfalse,%
7270 equals, available, filepath, os, filesmatch, istrue, isset, socket,%
7271 http, uptodate, srcfiles, untar, loadproperties, echoproperties,%
7272 vajexport, stcheckout, bunzip2, copyfile, vsscreate, ejbc, unjar,%
7273 tomcat, wsdltodotnet, mkdir, condition, cvs, commandline, marker,%
7274 argument, tempfile, junitreport, report, taskdef, echo, ccupdate, java,%
7275 renameext, vsslable, basename, javadoc2, vsscp, tar, tarfileset,%
7276 tomcat, vajimport, setproxy, wlstop, p4counter, ilasm, soscheckout,%
7277 apply, ccuncheckout, jarlib, location, url, cvstagdiff, jlink,%
7278 mergefiles, addfiles, javacc, pvcs, pvcsproject, jarlib, options,%
7279 depends, chmod, jar, sound, fail, success, mparse, blgenclient, genkey,%
7280 dname, javah, class, ccmreconfigure, unzip, javac, src, p4add,%
7281 soslabel, jpcoverage, triggers, method, vssget, deltree, ddcreator},%
7282 deletekeywords={default},%
7283 }
7284 </lang1>

```

This is my first attempt to support XML. It is from 2000/07/18.

```

7285 (*lang1)
7286 \lst@definelanguage{XML}%
7287 {keywords={,CDATA,DOCTYPE,ATTLIST,termdef,ELEMENT,EMPTY,ANY,ID,%
7288 IDREF,IDREFS,ENTITY,ENTITIES,NMTOKEN,NMTOKENS,NOTATION,%
7289 INCLUDE,IGNORE,SYSTEM,PUBLIC,NDATA,PUBLIC,%
7290 PCDATA,REQUIRED,IMPLIED,FIXED,%%% preceded by #
7291 xml,xml:space,xml:lang,version,standalone,default,preserve},%
7292 alsoother=$,%
7293 alsoletter=:,%
7294 tag=**[s]<>,%
7295 morestring=[d]" ,% ??? doubled
7296 morestring=[d]' ,% ??? doubled
7297 MoreSelectCharTable=%
7298 \lst@CArgX--\relax\lst@DefDelimB{}{}%
7299 {\ifnum\lst@mode=\lst@tagmode\else
7300 \expandafter\@gobblethree
7301 \fi}%
7302 \lst@BeginComment\lst@commentmode{{\lst@commentstyle}}%
7303 \lst@CArgX--\relax\lst@DefDelimE{}{}%
7304 \lst@EndComment\lst@commentmode
7305 \lst@CArgX[CDATA[\relax\lst@CDef{}%
7306 {\ifnum\lst@mode=\lst@tagmode
7307 \expandafter\lst@BeginCDATA
7308 \else \expandafter\lst@CArgEmpty
7309 \fi}%
7310 \@empty
7311 \lst@CArgX]\relax\lst@CDef{}%
7312 {\ifnum\lst@mode=\lst@GPmode
7313 \expandafter\lst@EndComment

```

```
7314         \else \expandafter\lst@CArgEmpty
7315         \fi}%
7316         \@empty
7317   }[keywords,comments,strings,html]%
```

And after receiving a bug report from Michael Niedermair I converted the version 0.21 contents of `MoreSelectCharTable` to version 1.0.

```
7318 </lang1>
```