

NAME

clisp – ANSI Common Lisp compiler, interpreter and debugger.

SYNOPSIS

```
clisp [[-h] | [--help]] [--version] [--license] [--help-image] [-B lisp-lib-dir] [-b]
      [-K linking-set] [-M mem-file] [-m memory-size] [-L language] [-N locale-dir]
      [-E domain encoding] [[-q] | [--quiet] | [--silent] | [-v] | [--verbose]]
      [-on-error action] [-repl] [-w] [-I] [[-ansi] | [-traditional]] [-modern] [-p package]
      [-C] [-norc] [-lp directory...] [-i init-file...] [-c [-l] lisp-file [-o output-file]...]
      [-x expressions...] [lisp-file [argument...]]
```

DESCRIPTION

Invokes the **Common Lisp**^[1] interpreter and compiler. When called without arguments, executes the **read-eval-print loop**^[2], in which expressions are in turn **READ**^[3] from the standard input, **EVAL**^[4]uated by the lisp interpreter, and their results are **PRINT**^[5]ed to the standard output. Invoked with **-c**, compiles the specified lisp files to a platform-independent bytecode which can be executed more efficiently.

OPTIONS

-h

--help

Displays a help message on how to invoke **CLISP**^[6].

--version

Displays the **CLISP**^[6] version number, as given by the function **LISP-IMPLEMENTATION-VERSION**^[7], the value of the variable **FEATURES**, as well some other information.

--license

Displays a summary of the licensing information, the **GNU**^[8] **GPL**^[9].

--help-image

Displays information about the memory image being invoked: whether is it suitable for scripting as well as the **:DOCUMENTATION** supplied to **EXT:SAVEINITMEM**.

-B *lisp-lib-dir*

Specifies the installation directory. This is the directory containing the linking sets and other data files. This option is normally not necessary, because the installation directory is already built-in into the **clisp** executable. Directory *lisp-lib-dir* can be changed dynamically using the **SYMBOL-MACRO**^[10] *CUSTOM:*LIB-DIRECTORY**.

-b

Print the installation directory and exit immediately. The namestring of *CUSTOM:*LIB-DIRECTORY** is printed without any quotes. This is mostly useful in module Makefiles, see, e.g., modules/syscalls/Makefile.in (file in the CLISP sources).

-K *linking-set*

Specifies the linking set to be run. This is a directory (relative to the *lisp-lib-dir*) containing at least a main executable (runtime) and an initial memory image. Possible values are

base

the core **CLISP**^[6]

full

core plus all the modules with which this installation was built, see Section 32.2, “External Modules”.

The default is **base**.

-M *mem-file*

Specifies the initial memory image. This must be a memory dump produced by the **EXT:SAVEINITMEM** function by this **clisp** runtime. It may have been compressed using

[GNU](#)^[8] [gzip](#)^[11].

—**m** *memory-size*

Sets the amount of memory [CLISP](#)^[6] tries to grab on startup. The amount may be given as

n

nB

measured in bytes

n

nW

measured in machine words ($4 \times n$ on 32-bit platforms, $8 \times n$ on 64-bit platforms)

nK

nKB

measured in kilobytes

nKW

measured in kilowords

nM

nMB

measured in megabytes

nMW

measured in megawords

The default is 3 megabytes. The argument is constrained above 100 KB.

This version of [CLISP](#)^[6] allocates memory dynamically. *memory-size* is essentially ignored (except that it determines the Lisp STACK size).

—**L** *language*

Specifies the language [CLISP](#)^[6] uses to communicate with the user. This may be one of **english**, **german**, **french**, **spanish**, **dutch**, **russian**, **danish**. Other languages may be specified through the [environment variable](#)^[12] **LANG**, provided the corresponding message catalog is installed. The language may be changed dynamically using the [SYMBOL-MACRO](#)^[10] *CUSTOM:*CURRENT-LANGUAGE**.

—**N** *locale-dir*

Specifies the base directory of locale files. [CLISP](#)^[6] will search its message catalogs in *locale-dir/language/LC_MESSAGES/clisp.mo*. This directory may be changed dynamically using the [SYMBOL-MACRO](#)^[10] *CUSTOM:*CURRENT-LANGUAGE**.

—**E** *domain encoding*

Specifies the encoding used for the given domain, overriding the default which depends on the [environment variable](#)^[12]s **LC_ALL**, **LC_CTYPE**, **LANG**. *domain* can be

file

affecting *CUSTOM:*DEFAULT-FILE-ENCODING**

pathname

affecting *CUSTOM:*PATHNAME-ENCODING**

terminal

affecting *CUSTOM:*TERMINAL-ENCODING**

foreign

affecting *CUSTOM:*FOREIGN-ENCODING**

misc

affecting *CUSTOM:*MISC-ENCODING**

blank

affecting all of the above.

Warning

Note that the values of these **SYMBOL-MACRO**^[10]s that have been saved in a memory image are ignored: these **SYMBOL-MACRO**^[10]s are reset based on the OS environment **after** the memory image is loaded. You have to use the RC file, *CUSTOM:*INIT-HOOKS** or init function to set them on startup, but it is best to set the aforementioned **environment variable**^[12]s appropriately for consistency with other programs. See Section 31.1, “Customizing CLISP Process Initialization and Termination”.

-q
--quiet
--silent

-v
--verbose

Change verbosity level: by default, **CLISP**^[6] displays a banner at startup and a good-bye message when quitting, and initializes **LOAD-VERBOSE**^[13] and **COMPILE-VERBOSE**^[14] to **T**^[15], and **LOAD-PRINT**^[13] and **COMPILE-PRINT**^[14] to **NIL**^[16], as per [ANSI CL standard]. The first **-q** removes the banner and the good-bye message, the second sets variables **LOAD-VERBOSE**^[13], **COMPILE-VERBOSE**^[14] and *CUSTOM:*SAVEINITMEM-VERBOSE** to **NIL**^[16]. The first **-v** sets variables *CUSTOM:*REPORT-ERROR-PRINT-BACKTRACE**, **LOAD-PRINT**^[13] and **COMPILE-PRINT**^[14] to **T**^[15], the second sets *CUSTOM:*LOAD-ECHO** to **T**^[15]. These settings affect the output produced by **-i** and **-c** options. Note that these settings persist into the **read-eval-print loop**^[2]. Repeated **-q** and **-v** cancel each other, e.g., **-q -q -v -v -v** is equivalent to **-v**.

-on-error action

Override (or force) the batch mode imposed by **-c**, **-x**, and *lisp-file*, depending on *action*. PP appease

continuable^[17] **ERROR**^[18]s are turned into **WARNING**^[19]s (with **EXT:APPEASE-CERRORS**) other **ERROR**^[18]s are handled in the default way

debug

ERROR^[18]s **INVOKE-DEBUGGER**^[20] (the normal **read-eval-print loop**^[2] behavior)

abort

continuable^[17] **ERROR**^[18]s are appeased, other **ERROR**^[18]s are **ABORT**^[21]ed with **EXT:ABORT-ON-ERROR**

exit

continuable^[17] **ERROR**^[18]s are appeased, other **ERROR**^[18]s terminate **CLISP**^[6] with **EXT:EXIT-ON-ERROR**

See also **EXT:SET-GLOBAL-HANDLER**.

-repl

Start an interactive **read-eval-print loop**^[2] after processing the **-c**, **-x**, and *lisp-file* options and on any **ERROR**^[18] **SIGNAL**^[22]ed during that processing.

-w

Wait for a keypress after program termination.

-I

Interact better with **Emacs**^[23] (useful when running **CLISP**^[6] under **Emacs**^[23] using **SLIME**^[24], **ILISP**^[25] et al). With this option, **CLISP**^[6] interacts in a way that **Emacs**^[23] can deal with:

- unnecessary prompts are not suppressed.
- The **GNU**^[8] **readline**^[26] library treats TAB (see TAB key) as a normal self-inserting character (see Q: A.4.6).

—ansi

Comply with the [ANSI CL standard] specification even where **CLISP**^[6] has been traditionally different by setting the **SYMBOL-MACRO**^[10] *CUSTOM:*ANSI** to **T**^[15].

—traditional

Traditional: reverses the residual effects of **—ansi** in the saved memory image.

—modern

Provides a modern view of symbols: at startup the **PACKAGE**^[27] variable will be set to the “CS-COMMON-LISP-USER” package, and the **PRINT-CASE**^[28] will be set to **:DOWNCASE**. This has the effect that symbol lookup is case-sensitive (except for keywords and old-style packages) and that keywords and uninterned symbols are printed with lower-case preference. See Section 11.5, “Package Case-Sensitivity”.

—p package

At startup the value of the variable **PACKAGE**^[27] will be set to the package named *package*. The default is the value of **PACKAGE**^[27] when the image was saved, normally **“COMMON-LISP-USER”**^[29].

—C

Compile when loading: at startup the value of the variable *CUSTOM:*LOAD-COMPILING** will be set to **T**^[15]. Code being **LOAD**^[30]ed will then be **COMPILE**^[31]d on the fly. This results in slower loading, but faster execution.

—norc

Normally **CLISP**^[6] loads the user **“run control” (RC)**^[32] file on startup (this happens **after** the **—C** option is processed). The file loaded is .clisprc.lisp or .clisprc.fas in the home directory **USER-HOMEDIR-PATHNAME**^[33], whichever is newer. This option, **—norc**, prevents loading of the RC file.

—lp directory

Specifies directories to be added to *CUSTOM:*LOAD-PATHS** at startup. This is done **after** loading the RC file (so that it does not override the command-line option) but **before** loading the init-files specified by the **—i** options (so that the init-files will be searched for in the specified directories). Several **—lp** options can be given; all the specified directories will be added.

—i init-file

Specifies initialization files to be **LOAD**^[30]ed at startup. These should be lisp files (source or compiled). Several **—i** options can be given; all the specified files will be loaded in order.

—c lisp-file

Compiles the specified *lisp-files* to bytecode (*.fas). The compiled files can then be **LOAD**^[30]ed instead of the sources to gain efficiency.

—o outputfile

Specifies the output file or directory for the compilation of the last specified *lisp-file*.

—l

Produce a bytecode **DISASSEMBLE**^[34] listing (*.lis) of the files being compiled. Useful only for debugging. See Section 24.1, “Function COMPILE-FILE” for details.

—x expressions

Executes a series of arbitrary expressions instead of a **read-eval-print loop**^[2]. The values of the expressions will be output to **STANDARD-OUTPUT**^[35]. Due to the argument processing done by the shell, the *expressions* must be enclosed in double quotes, and double quotes and backslashes must be escaped with backslashes.

lisp-file [*argument* ...]

Loads and executes a *lisp-file*, as described in Script execution. There will be no **read-eval-print loop**^[2]. Before *lisp-file* is loaded, the variable *EXT:*ARGS** will be bound to a list of strings, representing the *arguments*. The first line of *lisp-file* may start with **#!**, thus permitting **CLISP**^[6] to be used as a script interpreter. If *lisp-file* is **-**, the ***STANDARD-INPUT***^[35] is used instead of a file.

This option is *disabled* if the memory image was created by **EXT:SAVEINITMEM** with **NIL**^[16] **:SCRIPT** argument. In that case the **LIST**^[36] *EXT:*ARGS** starts with *lisp-file*.

This option must be the last one.

No RC file will be executed.

As usual, **--** stops option processing and places all remaining command line arguments into *EXT:*ARGS**.

LANGUAGE REFERENCE

The language implemented is **ANSI**^[38]^[37] **Common Lisp**^[1]. The implementation mostly conforms to the ANSI Common Lisp standard, see Section 31.10, “Maximum ANSI CL compliance”. [ANSI CL] ANSI CL standard 1994. ANSI INCITS 226-1994 (R1999)

[Information Technology – Programming Language – Common Lisp](#)^[39]

[formerly ANSI X3.226-1994 (R1999)].

COMMAND LINE USER ENVIRONMENT

help

get context-sensitive on-line help, see Chapter 25, Environment.

(APROPOS *name*)

list the **SYMBOL**^[40]s matching *name*.

(DESCRIBE *symbol*)

describe the *symbol*.

(exit)

(quit)

(bye)

quit **CLISP**^[6].

EOF (Control+D on **UNIX**^[41])

leave the current level of the **read-eval-print loop**^[2] (see also Section 1.1, “Special Symbols”).

arrow keys

for editing and viewing the input history, using the **GNU**^[8] **readline**^[26] library.

TAB key

Context sensitive:

- If you are in the “function position” (in the first symbol after an opening paren or in the first symbol after a **#**^[43]), the completion is limited to the symbols that name functions.
- If you are in the “filename position” (inside a string after **#P**^[44]), the completion is done across file names, **GNU**^[8] **bash**^[45]-style.
- If you have not typed anything yet, you will get a help message, as if by the **help** command.
- If you have not started typing the next symbol (i.e., you are at a whitespace), the current function or macro is **DESCRIBED**.

- Otherwise, the symbol you are currently typing is completed.

USING AND EXTENDING CLISP

Common Lisp^[1] is a *programmable* programming language. —**John**

Foderaro^[46].PP When **CLISP**^[6] is invoked, the runtime loads the initial memory image and outputs the prompt; at which one can start typing **DEFVAR**^[47]s, **DEFUN**^[48]s and **DEFMACRO**^[49]s.

To avoid having to re-enter the same definitions by hand in every session, one can create a lisp file with all the variables, functions, macros, etc.; (optionally) compile it with **COMPILE-FILE**^[50]; and **LOAD**^[30] it either by hand or from the RC file; or save a memory image to avoid the **LOAD**^[30] overhead.

However, sometimes one needs to use some functionality implemented in another language, e.g., call a **C**^[51] library function. For that one uses the Foreign Function Interface and/or the External Modules facility. Finally, the truly adventurous ones might delve into Extending the Core.

FILES

clisp

clisp.exe

startup driver (an executable or, rarely, a shell script) which remembers the location of the runtime and starts it with the appropriate arguments

lisp.run

lisp.exe

main executable (runtime) – the part of **CLISP**^[6] implemented in **C**^[51].

lispinit.mem

initial memory image (the part of **CLISP**^[6] implemented in lisp)

config.lisp

site-dependent configuration (should have been customized before **CLISP**^[6] was built); see Section 31.12, “Customizing CLISP behavior”

*.lisp

lisp source

*.fas

lisp code, compiled by **CLISP**^[6]

*.lib

lisp source library information, generated by **COMPILE-FILE**, see Section 24.3, “Function REQUIRE”.

*.c

C code, compiled from lisp source by **CLISP**^[6] (see Section 32.3, “The Foreign Function Call Facility”)

For the **CLISP**^[6] source files, see Chapter 34, The source files of CLISP.

ENVIRONMENT

All **environment variable**^[12]s that **CLISP**^[6] uses are read at most once.

CLISP_LANGUAGE

specifies the language **CLISP**^[6] uses to communicate with the user. The legal values are identical to those of the **-L** option which can be used to override this **environment variable**^[12].

LC_CTYPE

specifies the locale which determines the character set in use. The value can be of the form *language* or *language_country* or *language_country.charset*, where *language* is a two-letter ISO 639 language code (lower case), *country* is a two-letter ISO 3166 country code (upper case). *charset* is an optional character set specification, and needs normally not be given because the character set can be inferred from the language and country. This **environment**

variable^[12] can be overridden with the **-Edomain encoding** option.

LANG

specifies the language **CLISP**^[6] uses to communicate with the user, unless it is already specified through the **environment variable**^[12] **CLISP_LANGUAGE** or the **-L** option. It also specifies the locale determining the character set in use, unless already specified through the **environment variable**^[12] **LC_CTYPE**. The value may begin with a two-letter ISO 639 language code, for example **en**, **de**, **fr**.

HOME

USER

used for determining the value of the function **USER-HOMEDIR-PATHNAME**^[33].

SHELL

COMSPEC

is used to find the interactive command interpreter called by **EXT:SHELL**.

TERM

determines the screen size recognized by the pretty printer.

ORGANIZATION

for **SHORT-SITE-NAME**^[52] and **LONG-SITE-NAME**^[52] in **config.lisp**.

CLHSROOT

for **CUSTOM:CLHS-ROOT** in **config.lisp**.

IMPNOTES

for **CUSTOM:IMPNOTES-ROOT** in **config.lisp**.

EDITOR

for **editor-name** in **config.lisp**.

LOGICAL_HOST_host_FROM

LOGICAL_HOST_host_TO

LOGICAL_HOST_host

for **CUSTOM:*LOAD-LOGICAL-PATHNAME-TRANSLATIONS-DATABASE***

SEE ALSO

CLISP impnotes

CMU CL^[53] – **cmucl**(1)

Emacs^[23] – **emacs**(1)

XEmacs^[54] – **xemacs**(1)

BUGS

When you encounter a bug in **CLISP**^[6] or in its documentation (this manual page or CLISP impnotes), please report it to the **CLISP**^[6] **SourceForge bug tracker**^[55].

Before submitting a bug report, please take the following basic steps to make the report more useful:

1. Please do a clean build (remove your build directory and build **CLISP**^[6] with **./configure --cbc build** or at least do a **make distclean** before **make**).
2. If you are reporting a “hard crash” (segmentation fault, bus error, core dump etc), please do **./configure --with-debug --cbc build-g ; cd build-g; gdb lisp.run**, then load the appropriate linking set by either **base** or **full** **gdb**^[56] command, and report the backtrace (see also Q: A.1.1.10).
3. If you are using pre-built binaries and experience a hard crash, the problem is likely to be in the incompatibilities between the platform on which the binary was built and yours; please try compiling the sources and report the problem if it persists.

When submitting a bug report, please specify the following information:

1. What is your platform (**uname -a** on a **UNIX**^[41] system)? Compiler version? **GNU**^[8] **libc**^[57] version (on **GNU**^[8] / **Linux**^[58])?
2. Where did you get the sources or binaries? When? (Absolute dates, e.g., “2006–01–17”, are preferred over the relative ones, e.g., “2 days ago”).
3. How did you build **CLISP**^[6]? (What command, options &c.)
4. What is the output of **clisp --version**?
5. Please supply the full output (copy and paste) of all the error messages, as well as detailed instructions on how to reproduce them.

PROJECTS

- Enhance the compiler so that it can inline local functions.
- Embed **CLISP**^[6] in **VIM**^[59].

AUTHORS

Bruno Haible <<http://www.haible.de/bruno/>>

The original author and long-time maintainer.

Michael Stoll <<http://www.faculty.iu-bremen.de/mstoll/>>

The original author.

Sam Steingold <<http://sds.podval.org/>>

Co-maintainer since 1998.

Others

See *COPYRIGHT (file in the CLISP sources)* for the list of other contributors and the license.

COPYRIGHT

Copyright © 1992-2009 Bruno Haible

Copyright © 1998-2009 Sam Steingold

NOTES

1. **Common Lisp**
<http://www.lisp.org>
2. read-eval-print loop
[set \$man.base.url.for.relative.links]/sec_25-1-1
3. **READ**
http://www.ai.mit.edu/projects/iiip/doc/CommonLISP/HyperSpec/Body/fun_readcm_re_g-whitespace.html
4. **EVAL**
http://www.ai.mit.edu/projects/iiip/doc/CommonLISP/HyperSpec/Body/fun_eval.html
5. **PRINT**
http://www.ai.mit.edu/projects/iiip/doc/CommonLISP/HyperSpec/Body/fun_writcm_p_rintcm_princ.html
6. **CLISP**
<http://clisp.cons.org>
7. **LISP-IMPLEMENTATION-VERSION**
http://www.ai.mit.edu/projects/iiip/doc/CommonLISP/HyperSpec/Body/fun_lisp-impl_tion-version.html
8. GNU
<http://www.gnu.org>
9. GPL
<http://www.gnu.org/copyleft/gpl.html>
10. SYMBOL-MACRO
[set \$man.base.url.for.relative.links]/mac_define-symbol-macro

11. **gzip**
<http://www.gzip.org/>
12. environment variable
[\[set \\$man.base.url.for.relative.links\]/basedefs/xbd_chap08.html](#)
13. **LOAD-VERBOSE**
http://www.ai.mit.edu/projects/iip/doc/CommonLISP/HyperSpec/Body/var_stload-pr_ad-verbosest.html
14. **COMPILE-VERBOSE**
http://www.ai.mit.edu/projects/iip/doc/CommonLISP/HyperSpec/Body/var_stcompile_le-verbosest.html
15. **T**
http://www.ai.mit.edu/projects/iip/doc/CommonLISP/HyperSpec/Body/convar_t.html
16. **NIL**
http://www.ai.mit.edu/projects/iip/doc/CommonLISP/HyperSpec/Body/convar_nil.html
17. continuable
[\[set \\$man.base.url.for.relative.links\]/clhs/glo](#)
18. **ERROR**
http://www.ai.mit.edu/projects/iip/doc/CommonLISP/HyperSpec/Body/contyp_error.html
19. **WARNING**
http://www.ai.mit.edu/projects/iip/doc/CommonLISP/HyperSpec/Body/contyp_warning.html
20. **INVOKE-DEBUGGER**
http://www.ai.mit.edu/projects/iip/doc/CommonLISP/HyperSpec/Body/fun_invoke-debugger.html
21. **ABORT**
http://www.ai.mit.edu/projects/iip/doc/CommonLISP/HyperSpec/Body/fun_abortcm_c_cm-use-value.html
22. **SIGNAL**
http://www.ai.mit.edu/projects/iip/doc/CommonLISP/HyperSpec/Body/fun_signal.html
23. Emacs
<http://www.gnu.org/software/emacs/>
24. SLIME
<http://common-lisp.net/project/slime/>
25. ILISP
<http://sourceforge.net/projects/ilisp/>
26. readline
<http://tiswww.case.edu/php/chet/readline/readline.html>
27. **PACKAGE**
http://www.ai.mit.edu/projects/iip/doc/CommonLISP/HyperSpec/Body/var_stpackagest.html
28. **PRINT-CASE**
http://www.ai.mit.edu/projects/iip/doc/CommonLISP/HyperSpec/Body/var_stprint-casest.html
29. “COMMON-LISP-USER”
[\[set \\$man.base.url.for.relative.links\]/sec_11-1-2-2](#)
30. **LOAD**
http://www.ai.mit.edu/projects/iip/doc/CommonLISP/HyperSpec/Body/fun_load.html
31. **COMPILE**
http://www.ai.mit.edu/projects/iip/doc/CommonLISP/HyperSpec/Body/fun_compile.html
32. “run
control” (RC)
<http://www.faqs.org/docs/artu/ch10s03.html>

33. **USER-HOMEDIR-PATHNAME**
http://www.ai.mit.edu/projects/iiip/doc/CommonLISP/HyperSpec/Body/fun_user-homedir-pathname.html
34. **DISASSEMBLE**
http://www.ai.mit.edu/projects/iiip/doc/CommonLISP/HyperSpec/Body/fun_disassemble.html
35. **STANDARD-OUTPUT**
http://www.ai.mit.edu/projects/iiip/doc/CommonLISP/HyperSpec/Body/var_stdebug-i_ace-outputst.html
36. **LIST**
http://www.ai.mit.edu/projects/iiip/doc/CommonLISP/HyperSpec/Body/syscla_list.html
37. **ANSI**
<http://www.ansi.org/>
38. The American National Standards Institute
39. Information Technology - Programming Language - Common Lisp
[http://webstore.ansi.org/RecordDetail.aspx?sku=ANSI+INCITS+226-1994+\(R1999\)](http://webstore.ansi.org/RecordDetail.aspx?sku=ANSI+INCITS+226-1994+(R1999))
40. **SYMBOL**
http://www.ai.mit.edu/projects/iiip/doc/CommonLISP/HyperSpec/Body/syscla_symbol.html
41. **UNIX**
<http://www.unix.org/online.html>
42. *Win32*
<http://winehq.org/>
43. *#'*
[set \$man.base.url.for.relative.links]/sec_2-4-8-2
44. *#P*
[set \$man.base.url.for.relative.links]/sec_2-4-8-14
45. **bash**
<http://www.gnu.org/software/bash/>
46. John Foderaro
<http://www.franz.com/~jkf/>
47. **DEFVAR**
http://www.ai.mit.edu/projects/iiip/doc/CommonLISP/HyperSpec/Body/mac_defparametercm_defvar.html
48. **DEFUN**
http://www.ai.mit.edu/projects/iiip/doc/CommonLISP/HyperSpec/Body/mac_defun.html
49. **DEFMACRO**
http://www.ai.mit.edu/projects/iiip/doc/CommonLISP/HyperSpec/Body/mac_defmacro.html
50. **COMPILE-FILE**
http://www.ai.mit.edu/projects/iiip/doc/CommonLISP/HyperSpec/Body/fun_compile-file.html
51. **C**
<http://c-faq.com/>
52. **SHORT-SITE-NAME**
http://www.ai.mit.edu/projects/iiip/doc/CommonLISP/HyperSpec/Body/fun_short-sit_ng-site-name.html
53. **CMU CL**
<http://www.cons.org/cmucl/>
54. **XEmacs**
<http://www.xemacs.org>
55. SourceForge bug tracker
http://sourceforge.net/tracker/?func=add&group_id=1355&atid=101355

- 56. **gdb**
<http://sources.redhat.com/gdb/>
- 57. **libc**
<http://www.gnu.org/software/libc/>
- 58. *Linux*
<http://www.linux.org/>
- 59. **VIM**
<http://www.vim.org>