

# Programming Environments

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I'd like to remind everyone to send me articles or letters with your thoughts on the important issues and developments in programming language environments. My address is printed at the beginning of this newsletter.

We continue our survey of Common Lisps with a report on a complete Common Lisp implementation for the Macintosh.

## **Background:**

**Company:** Coral Software Corp. and Franz Inc.

**Product name:** Allegro CL

**Version:** 1.1

**Availability:** October 1987

**Hardware:** Macintosh Plus and SE (68000) and Macintosh II (68020)

**Standard:** Common Lisp

**Influences:** Influenced by the Macintosh user-interface design and the Lisp Machine programming environment.

**Primarily residential or file-based editing:** The system uses primarily file-based editing. No defsystem is currently provided. Helpful editing tools include meta-point (edit-definition) for finding source code; search-files, for locating strings within a set of disk files; list-definitions, which shows a window containing buttons for all the definitions in a buffer; and logical pathnames, for specifying site-independent directories.

## **Components of the programming environment:**

**Editor:** Programmable Emacs-style editor which also supports Macintosh mouse-based editing; uses multiple windows, and is fully integrated with Lisp environment (forms can be evaluated from any window; text can be copied between buffers and the listener). Supports meta-point (edit-definition) and argument-list commands.

**Debugger:** Limited window-based stack-backtrace, shows pending stack-frames, and allows evaluation of forms in the dynamic environment of the error.

**Inspector:** The inspector uses multiple windows and is generally mouse-driven. All system data can be inspected, including objects and classes. The inspector includes hooks into meta-point for locating the source code of functions.

**Documentation:** The documentation includes *Common Lisp: The Language*, *Common Lisp: The Index* (an index to *Common Lisp: The Language*, produced for Coral Software) and a 200 page Allegro CL user guide. Limited on-line help is available as text files. A menu-command brings up a window of all editor commands, including any added by the user.

**Other features:** Allegro CL is fully integrated with the Macintosh environment. Under the new Apple operating system, it runs concurrently with other applications. The programming tools take full advantage of the Macintosh mouse and window-based interface.

Access to the Macintosh graphics interface--including windows, pull-down menus, dialogs (pop-up menus), and color graphics--is re-implemented at a Lisp-based, error-checked level. User-interface components are defined as customizable classes. The programming environment can be easily extended and customized. Low level access to all system calls is also provided.

Object-oriented programming includes Object Lisp (built in) and support for PCL; Flavors, currently in Beta release; and CLOS will be supported when specification is complete.

The incremental compiler is very fast, so that the evaluator is used only when stepping functions. The compiler supports constant folding and optimizes tail-recursive calls.

Products planned for the future include a foreign-function interface and stand-alone applications.

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