(algorithms)

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This issue's Algorithms article has two goals. On one hand, it presents a useful Lisp programming tool—a function `macroexpand-all` for expanding all the macro calls in an expression. This is useful when debugging macros and can be helpful as a subroutine when writing complex macros.

On the other hand, the article serves as an introduction to code walkers—the general class of programs of which `macroexpand-all` is an example. Code walkers are important because they are a vital part of the foundation of many Lisp programming tools and macro packages.

This issue's article reinforces Pavel Curtis's previous article on code walkers (*Lisp Pointers*, volume 3 number 1, March 1990) which discusses the PCL code walker and gives some examples of how it can be used. Reading both articles should lead to a deeper understanding of code walking than reading either one alone.

This issue's article differs from Curtis's earlier article in that it describes a simple stand-alone system rather than code that is part of a much larger system. In addition, the present article contains a discussion of how to make `macroexpand-all` run in current Common Lisp, as opposed to the proposed Common Lisp standard.

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