

# An Introduction to Programming in Emacs Lisp

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## GNU Emacs Is ... A Full Working Environment

GNU Emacs is not just a text editor, but a full working environment.

The history of Emacs is quite long. In the middle of 1970s, RMS created a bunch of macros for the TECO editor on PDP-10 machines. In the middle of the 1980s, when the GNU Project began, RMS wrote GNU Emacs for it as its first free software. At that time, RMS based his technical support business on GNU Emacs. In those tough days, he used the income he received to support the GNU Project. (Since he quit his job at the MIT AI Lab, he received no salary.)

In my experience, GNU Emacs is easy. Learn about 20 commands, and you can become a user. You can do most editing jobs. Also, unlike vi or vim, in GNU Emacs you need not switch back and forth between a command mode and an editing mode. You simply type. This means that many hackers find working with GNU Emacs is truly a joy.

You can also use GNU Emacs as an Internet box — sending and receiving email, ftping files over the Internet, browsing web sites, reading and posting USENET news, editing web pages, typesetting, working with GNU/Linux Bash and other shells, etc. GNU Emacs also offers major modes that help you write programs effectively and easily. In many different languages (C, C++, Lisp, Java ...), typesetting with TeX, working with GNU/Linux Bash or any Unix shells ... GNU Emacs is almost extensible

without a limit. (Can you do these jobs inside MS-Word?)

## The Power House of GNU Emacs Comes from Emacs Lisp

The power house of GNU Emacs comes from Emacs Lisp — a built-in programming language which is a dialect of Lisp. Lisp was invented in 1950s, and it is widely used in artificial intelligence research and other spheres. Actually, most part of GNU Emacs were written in Emacs Lisp. For reasons of efficiency, some commands were written in C, as were a few other parts of GNU Emacs, such as the modules that control a display. GNU Emacs is a successful example of hybrid programming.

## You Can Learn Emacs Lisp on the Fly

However, don't be frightened by these words on hybrid programming, Chassell's book, '**An Introduction to Programming in Emacs Lisp**' is, as he says, an introduction. The author does not discuss all the details of Emacs Lisp programming. Instead, he unleashes its power; he describes the secrets behind Emacs Lisp programming step by step. He shows you how to think in Emacs Lisp, and teaches how to solve practical problems. His introduction truly goes in heuristic way.

The author emphasizes the importance of style. For example, he talks about the template for a function

definition:

```
(defun function-name (arguments...)
  "optional-documentation..."
  (interactive argument-passing-info)
  body...)
```

The author repeats this template in several times throughout the book. Each time he repeats the template, however, he provides you with more knowledge about Emacs Lisp programming. As you read the later chapters, you will gradually understand all the tricks behind the various parts of the template.

One of the outstanding features of this book is that the author demonstrates how to split a big, complicated problem into a chain of small easy-to-solve problems. He then shows you how to work out the small problems one by one — quite like the way the mathematician David Hilbert solved the difficult mathematical problems.

The author does this in stages: in the early chapters, he focuses on the basic concepts of Emacs Lisp: what is an atom, what is a list, what is an S-expression? He discusses the fundamental functions, `car`, `textttcdr`, and `cons`, he describes procedural controls in Emacs Lisp, `if` and `cond`, and he illustrates loops, regular expressions, and how to customize your own GNU Emacs environment. Of course, he also covers the lovely  $\lambda$  function, too. (The `lambda` function is the cornerstone of functional computing theory.)

In later chapters, he treats more advanced topics, based on the knowledge introduced in earlier chapters. And finally, in the appendix, he provides the full source code used to solve the problems he introduces.

Overall, Lisp, especially Emacs Lisp, is a very simple, yet powerful programming language. After you stop getting headaches from its parenthesis, then you will learn Emacs Lisp on the fly.

Indeed, for me, it is true that I learned Emacs Lisp on

a flight: I learned it in the airplane on a trip from Beijing to Xi'An. Usually, the flight takes just 2 hours, but on that day, the airplane was late and stayed in the airport for another two hours. So I spent 4 hours in the airplane's cabin. Reading the book, I quickly learnt it all.

If you want to become a powerful Emacs user, you definitely need to know how to program in Emacs Lisp, and this book is really a nice guide book for your future hacking.

Electronic version of the Book Is Distributed with GNU Emacs

Another feature to note, this book's electronic version is distributed with GNU Emacs. You can read the Info version of the books using GNU Emacs Info mode. The author suggest that you try various example in the book by yourself by yourself inside GNU Emacs. This is like learning how to swim: you have to go into swimming pool to practice yourself after being guided by your teacher.

The new version of GNU Emacs, version 21, integrated with GTK+ theme on its user interface if you run it under X Window system. This book covered some topics related with X Window system, but if you want to learn more about Emacs Lisp and X Window, then you should read its sister books: *'GNU Emacs Manual'*, and *'Emacs Lisp Reference Manual'*, also published by FSF under GNU FDL, and also included electronically in every GNU Emacs distribution.

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The cover price of this book is just USD30.00, which I think it is a very low considering what you will learn from it. Also please remember that the money you pay supports the GNU Project.

(Chinese readers are lucky. The book's first

edition was translated by FSF-CHINA Academy, and it is available from RONSNET (<http://www.rons.net.cn>); please send your enquiry to [info@mail.rons.net.cn](mailto:info@mail.rons.net.cn))

If your language is other than English or Chinese, then you are encourage to translate it into your own language. The GNU Free Documentation License, which governs the book, gives you the freedom to do so.

### Reference Resources

Title: An Introduction to Programming in Emacs Lisp  
 Version: Second Edition  
 Author: Robert J. Chassell  
 Publisher: Free Software Foundation  
 URL: <http://www.gnu.org>  
 License: GNU Free Documentation License

**About the Reviewer** — Hong Feng is the publisher of **FREE SOFTWARE** magazine which you are reading, he started hacking on GNU/Linux in 1995 with 30 floppy discs. As a programmer, he develops device drivers for hardware, Sometimes he also joins his typesetting workshop in Wuhan to produce high quality papers and books with  $\text{\TeX}$ .

He launched M $\text{\N}$ M Project on March 05, 2001 for supporting the free software community in China. He often visits universities and gives speeches about free software to the students, discusses with professors on curriculum reform for computer science departments, and find programmers for M $\text{\N}$ M Project. He offers training courses for free software tools. Sometimes he acts as a “doctor in clinic” for free software companies and developers to help them to grow their business by giving practical consulting advice.

In the spare time, he likes reading (especially books about history), studying philosophy and mathematics theory. He can be reached by email [fred@mail.rons.net.cn](mailto:fred@mail.rons.net.cn).

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### Help Me to Create “RMS Biography”

Long time ago, I had an idea to write a biography about RMS, and I’ve interviewed him for several times already. But I need more information about him to write into the book.

The book about him will be in three parts in the structure — his stories in the life; his philosophy about free software and free software movement; and his contribution to free software projects like GNU Emacs, GCC and GDB.

If you ever met and talked with him, if you have comments to him, or if you have joined the development of the programs, and you know anything which you think it is worthy for me write into the book, please provide me the information [<fred@mail.rons.net.cn>](mailto:fred@mail.rons.net.cn). so that all of us could share the process of the writing. Thank you for your support.

— Hong Feng