

Play with *Emuls*

TP-Mobile 4组 李文祥

# Emacs 是什么，不是什么？

Compile -> 编译器 -> gcc/clang/cl/tcc

Editor -> 编辑器 -> Vim/Notepad++/Textmate/Sublime

IDE -> 集成开发环境 -> VS/Eclipse/Xcode

**Emacs = Editor MACroS**

*Since 1975*

Current Release: 24.3 (released March 11, 2013)

Author: Richard Matthew Stallman (R.M.S)



# GNU = GNU's Not Unix

GNU [(g)nu:; (g)nju:] / [g'noo]

GNU/FSF/GPL

<http://www.gnu.org/>

GNU/Linux

GNU Compiler Collections (gcc)

GNU Debugger (gdb)

GNU Emacs



# 历史 —— Emacs VS Vi

- 世界上有三种程序员,一种用Emacs,一种用Vi,剩下的是用其它编辑器的



# Who use Emacs?



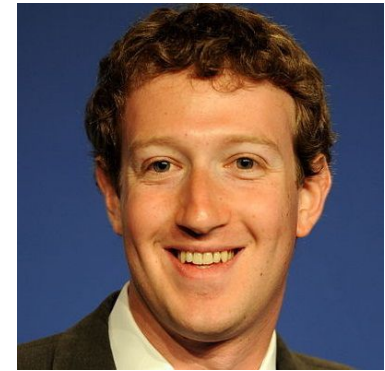
**Jame Gosling**



**Guido van Rossum**



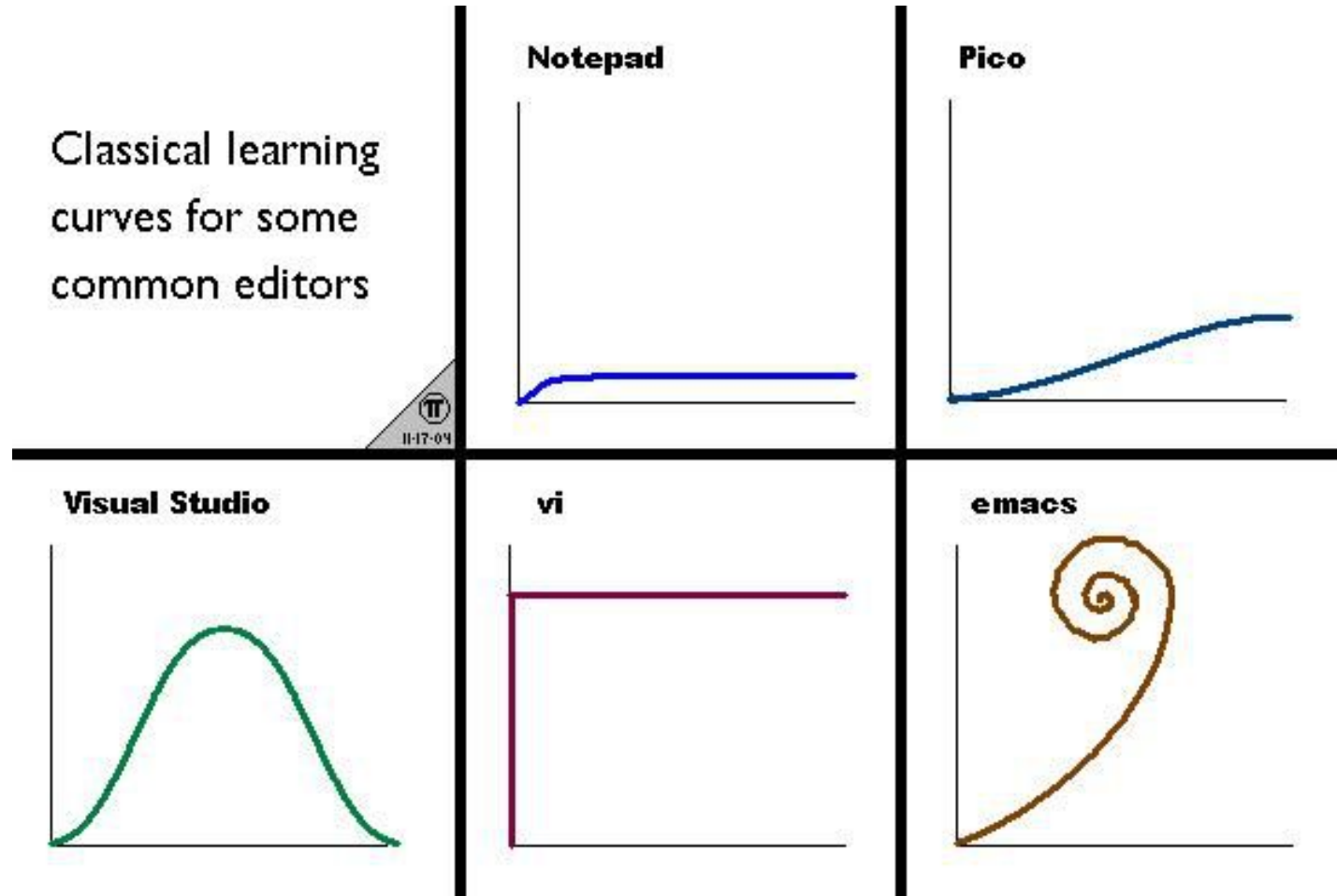
**Matsumoto Yukihiro**



**Mark Zurkerberg**

- [著名 Emacs 用户列表](#)

# 编辑器学习曲线

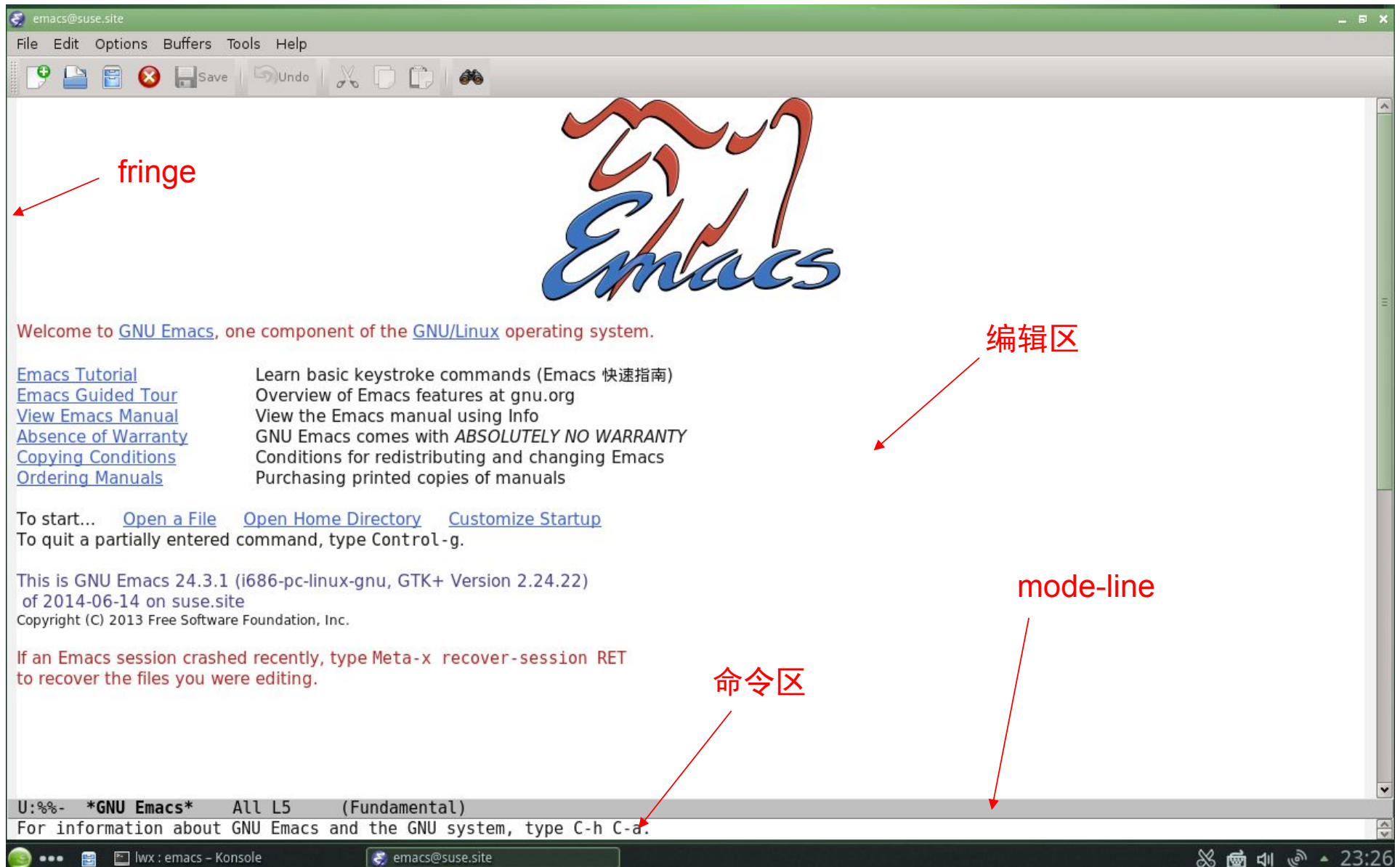


# 工具论 —— 我为何使用 Emacs?

- 强大?
- 无穷无尽的可定制性
- 统一的工作环境
- 好玩
- 习惯

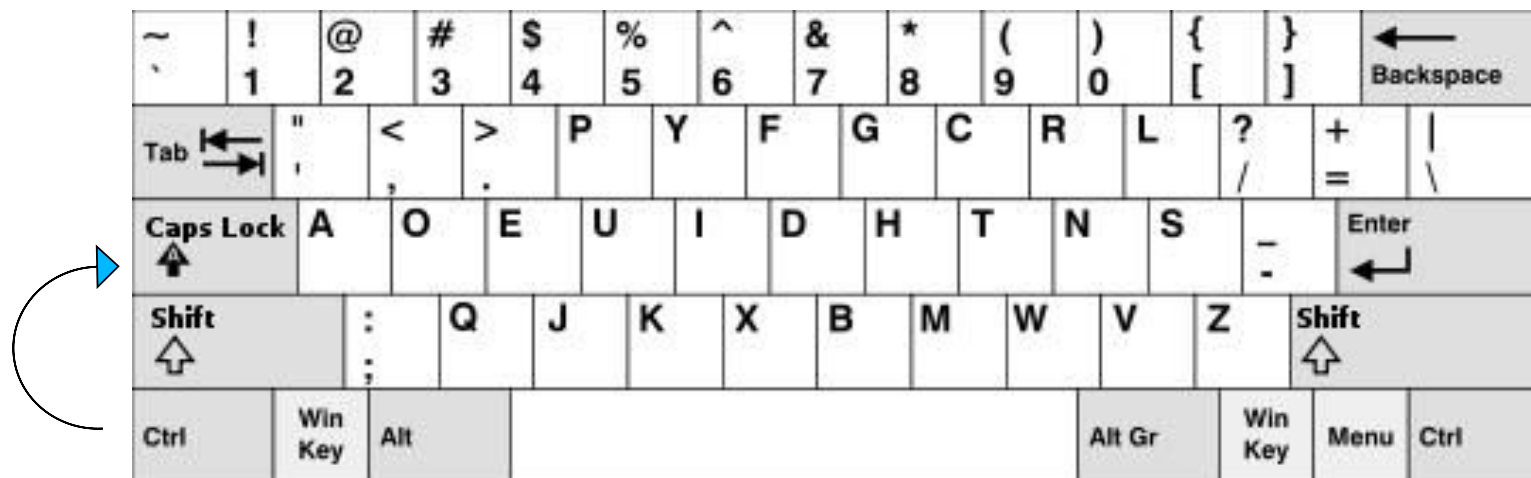


# Emacs 入门——界面



# Emacs入门——快捷键

Emacs = **E**scape **M**eta **A**lt **C**trl **S**hift



**C-x C-c** : Ctrl + x, Ctrl + c

**M-x** : Alt + x

**S-Tab**: Shift + Tab

# Emacs 入门 —— 内置文档

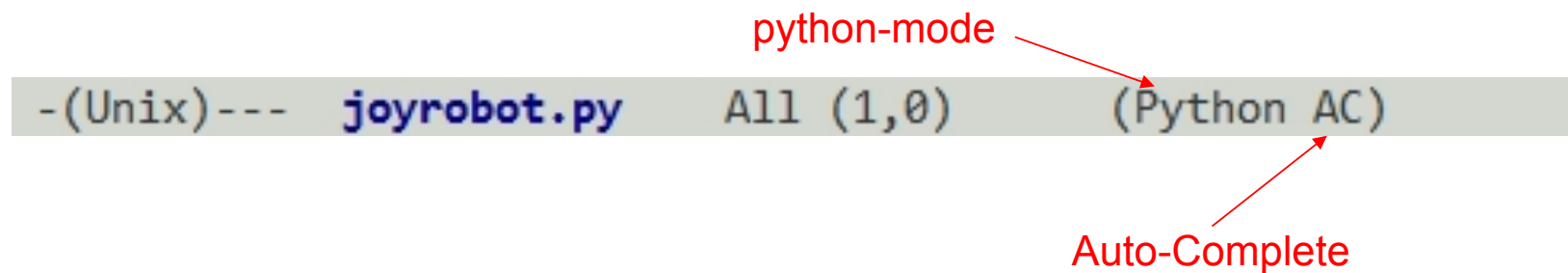
**Emacs = Emacs Manual Are Clear, Simple**

- M-x help-with-tutorial (C-h t)
- M-x info

# 基本概念 —— 模式

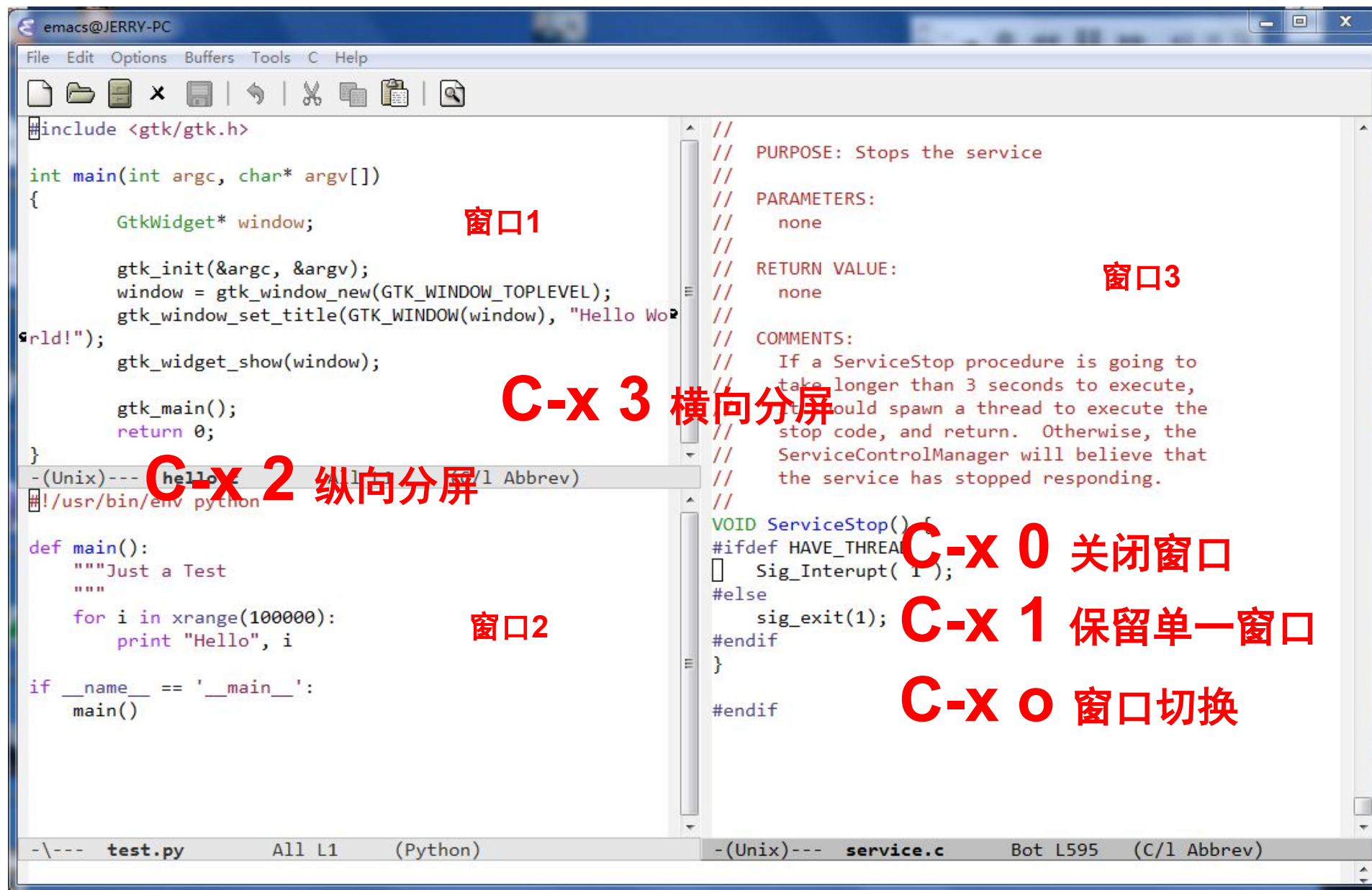
Major Mode: c-mode python-mode

Minor Mode: linum-mode autocomplete-mode

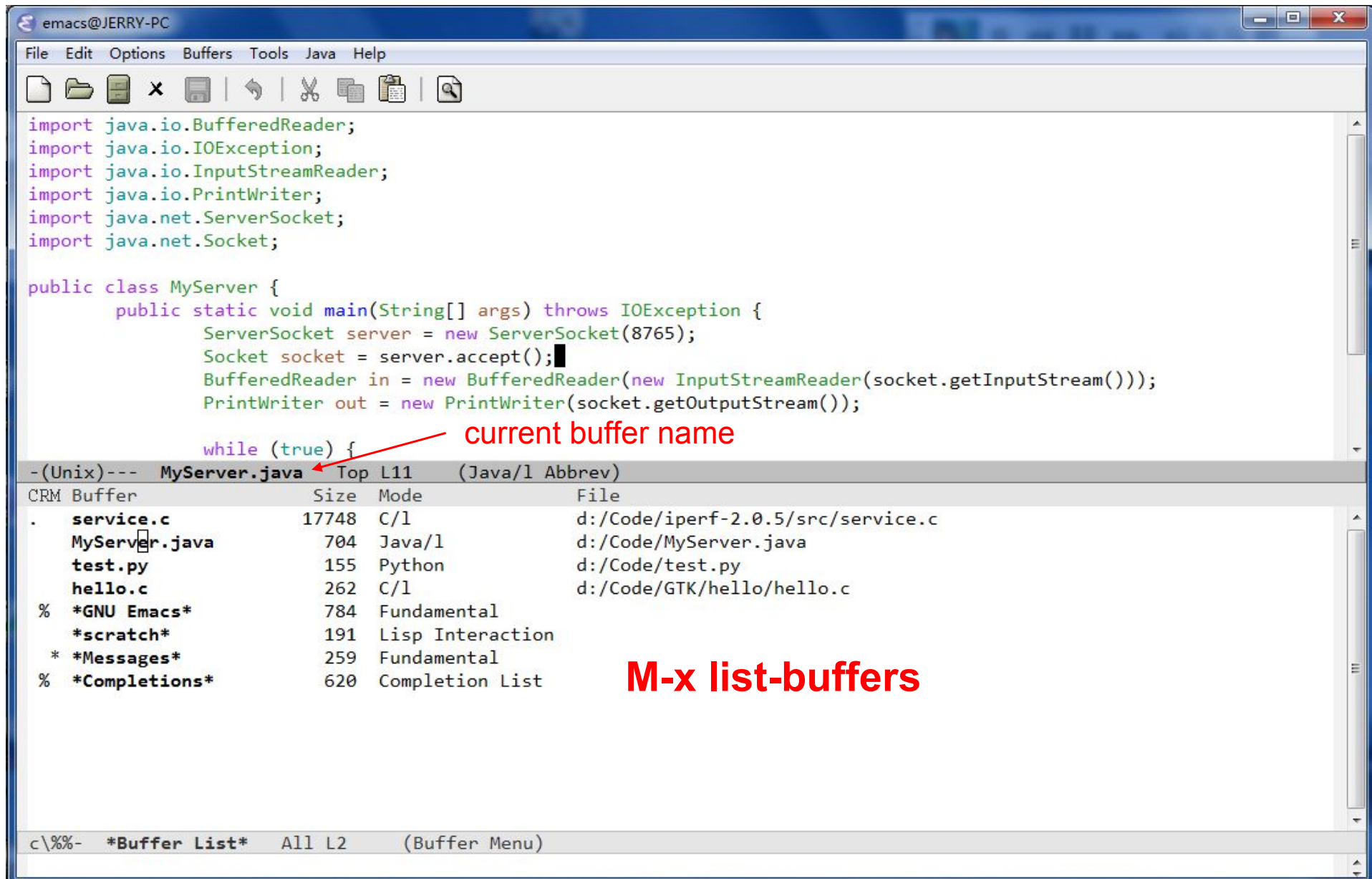


- 主模式根据打开的文件类型来决定
- 主模式只有一个，次模式可以有多个

# 基本概念 —— 窗口



# 基本概念 —— 缓冲区



The screenshot shows the Emacs editor interface. The main window displays a Java file named `MyServer.java` with the following code:

```
import java.io.BufferedReader;
import java.io.IOException;
import java.io.InputStreamReader;
import java.io.PrintWriter;
import java.net.ServerSocket;
import java.net.Socket;

public class MyServer {
    public static void main(String[] args) throws IOException {
        ServerSocket server = new ServerSocket(8765);
        Socket socket = server.accept();
        BufferedReader in = new BufferedReader(new InputStreamReader(socket.getInputStream()));
        PrintWriter out = new PrintWriter(socket.getOutputStream());

        while (true) {
```

A red arrow points from the text "current buffer name" to the `MyServer.java` buffer name in the buffer list.

The buffer list is displayed at the bottom of the window, showing the following buffers:

| Buffer          | Size  | Mode             | File                              |
|-----------------|-------|------------------|-----------------------------------|
| CRM Buffer      |       |                  |                                   |
| service.c       | 17748 | C/l              | d:/Code/iperf-2.0.5/src/service.c |
| MyServer.java   | 704   | Java/l           | d:/Code/MyServer.java             |
| test.py         | 155   | Python           | d:/Code/test.py                   |
| hello.c         | 262   | C/l              | d:/Code/GTK/hello/hello.c         |
| % *GNU Emacs*   | 784   | Fundamental      |                                   |
| *scratch*       | 191   | Lisp Interaction |                                   |
| *Messages*      | 259   | Fundamental      |                                   |
| % *Completions* | 620   | Completion List  |                                   |

The status bar at the bottom shows: `c\%%- *Buffer List* All L2 (Buffer Menu)`.

**M-x list-buffers**

# 基本操作 —— 编辑文件

- 打开文件：C-x C-f
- 保存文件：C-x C-s
- 关闭缓冲区：C-x k
- 光标移动：C/M - n/p/f/b
- 复制：M-w
- 剪切：C-w
- 粘贴：C-y
- 撤销：C-/

# 进阶 —— 配置/拓展/DIY

~/.emacs

~/.emacs.d/

基础概念：

- load-path
- setq
- defun
- provide
- require

Emacs Lisp Scripts

Interpreter (C)

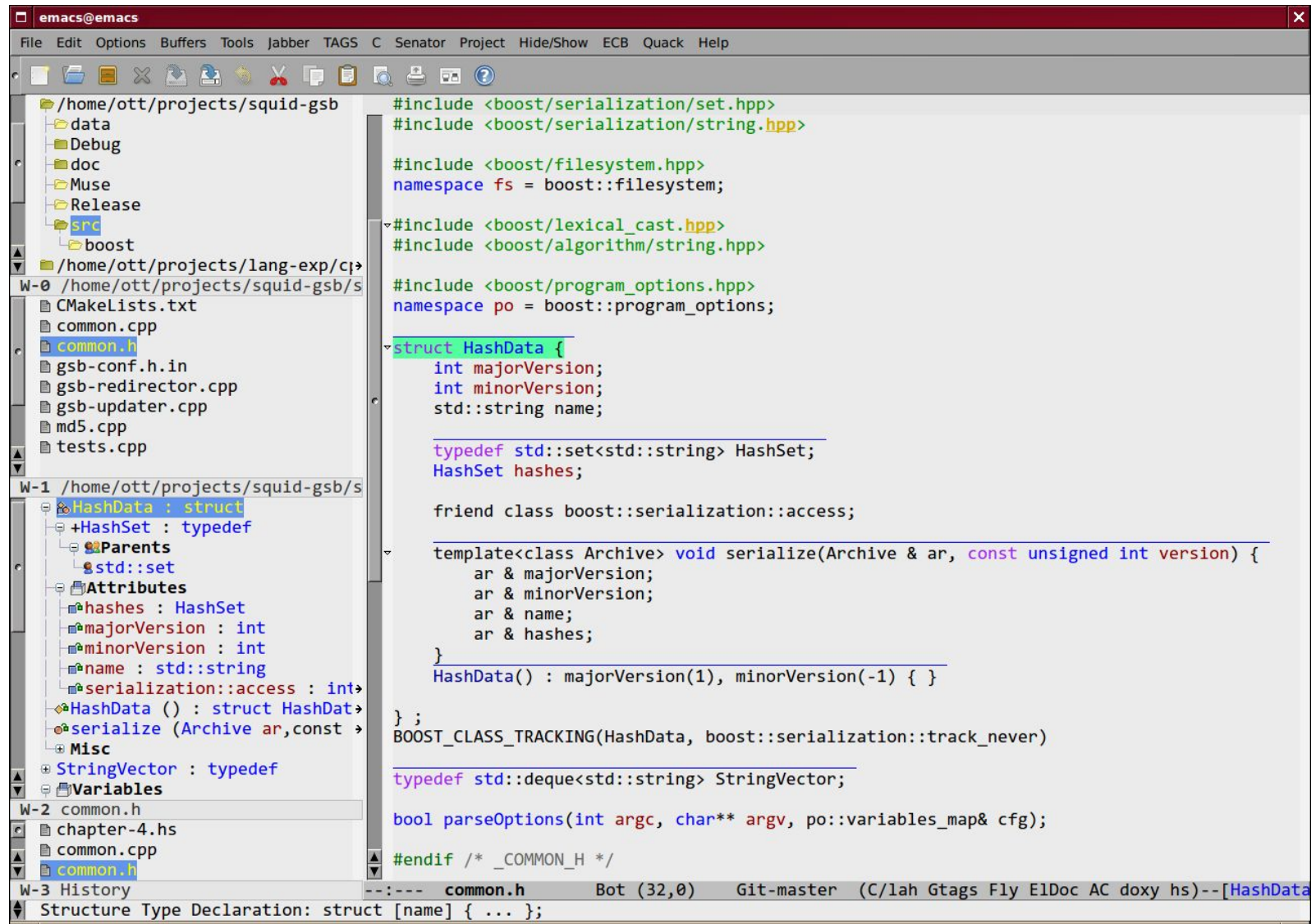
Emacs 架构



# Emacs 能干什么？

- 作为编辑器
- 作为其他程序的前端
- 作为操作系统。 。 。 。
- 煮咖啡。 。 。 。 。 。

# 开发：CEDET + ECB



The screenshot shows the Emacs editor interface with the following components:

- Menu Bar:** File, Edit, Options, Buffers, Tools, Jabber, TAGS, C, Senator, Project, Hide/Show, ECB, Quack, Help.
- Left Sidebar:**
  - Project Tree:** /home/ott/projects/squid-gsb (expanded) showing subdirectories: data, Debug, doc, Muse, Release, src, boost. Other projects listed are /home/ott/projects/lang-exp/cj and /home/ott/projects/squid-gsb/s.
  - Symbol Table (W-0):** CMakeLists.txt, common.cpp, common.h (selected), gsb-conf.h.in, gsb-redirector.cpp, gsb-updater.cpp, md5.cpp, tests.cpp.
  - Symbol Table (W-1):** HashData: struct, HashSet: typedef, Parents (std::set), Attributes (hashes: HashSet, majorVersion: int, minorVersion: int, name: std::string, serialization::access: int), HashData(): struct HashDat, serialize(Archive ar, const), Misc, StringVector: typedef, Variables.
  - Symbol Table (W-2):** common.h, chapter-4.hs, common.cpp, common.h.
  - History (W-3):** Structure Type Declaration: struct [name] { ... };
- Main Editor Window:** Displays the content of common.h with syntax highlighting and structural annotations from CEDET and ECB.

```
#include <boost/serialization/set.hpp>
#include <boost/serialization/string.hpp>

#include <boost/filesystem.hpp>
namespace fs = boost::filesystem;

#include <boost/lexical_cast.hpp>
#include <boost/algorithm/string.hpp>

#include <boost/program_options.hpp>
namespace po = boost::program_options;

struct HashData {
    int majorVersion;
    int minorVersion;
    std::string name;

    typedef std::set<std::string> HashSet;
    HashSet hashes;

    friend class boost::serialization::access;

    template<class Archive> void serialize(Archive & ar, const unsigned int version) {
        ar & majorVersion;
        ar & minorVersion;
        ar & name;
        ar & hashes;
    }
    HashData() : majorVersion(1), minorVersion(-1) { }
};

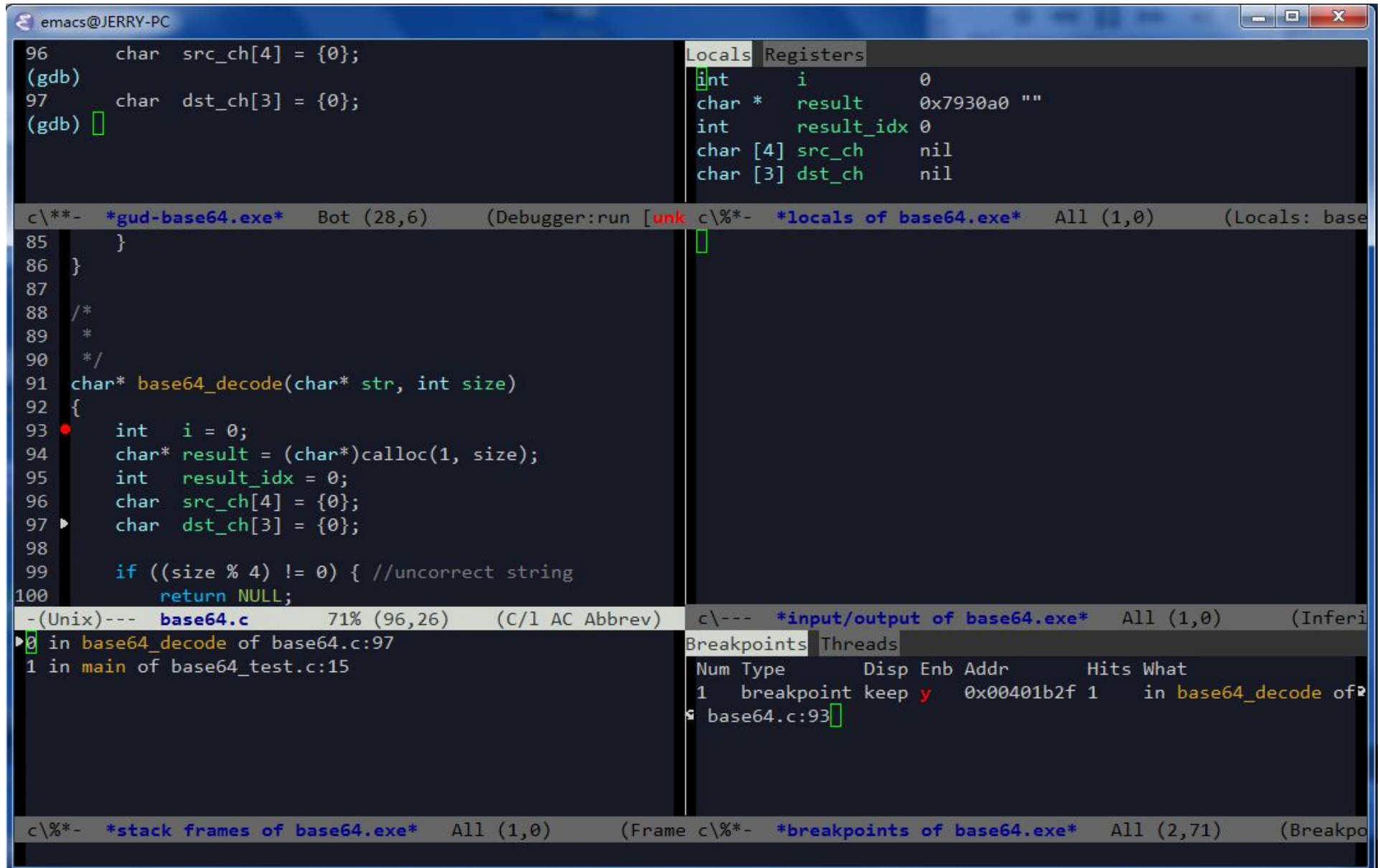
BOOST_CLASS_TRACKING(HashData, boost::serialization::track_never)

typedef std::deque<std::string> StringVector;

bool parseOptions(int argc, char** argv, po::variables_map& cfg);

#endif /* _COMMON_H */
```

# 调试——GDB（内置）



```
emacs@JERRY-PC
96 char src_ch[4] = {0};
(gdb)
97 char dst_ch[3] = {0};
(gdb)

c\**- *gud-base64.exe* Bot (28,6) (Debugger:run [unk c\%- *locals of base64.exe* All (1,0) (Locals: base
85 }
86 }
87
88 /*
89 *
90 */
91 char* base64_decode(char* str, int size)
92 {
93     int i = 0;
94     char* result = (char*)calloc(1, size);
95     int result_idx = 0;
96     char src_ch[4] = {0};
97     char dst_ch[3] = {0};
98
99     if ((size % 4) != 0) { //uncorrect string
100         return NULL;
101     }
102 }

-(Unix)--- base64.c 71% (96,26) (C/l AC Abbrev) c\--- *input/output of base64.exe* All (1,0) (Inferi
0 in base64_decode of base64.c:97
1 in main of base64_test.c:15

Breakpoints Threads
Num Type Disp Enb Addr Hits What
1 breakpoint keep y 0x00401b2f 1 in base64_decode of
base64.c:93

c\%- *stack frames of base64.exe* All (1,0) (Frame c\%- *breakpoints of base64.exe* All (2,71) (Breakpo
```

# 文本对比 —— ediff (内置)

```
emacs@JERRY-PC
103   for (i = 0; i < size; i+=4) {
104       src_ch[0] = get_normal_ch(*(str + i));
105       src_ch[1] = get_normal_ch(*(str + i + 1));
106       src_ch[2] = get_normal_ch(*(str + i + 2));
107       src_ch[3] = get_normal_ch(*(str + i + 3));
108
109       dst_ch[0] = (src_ch[0] << 2) + (src_ch[1] >> 4);
110       result[result_idx++] = dst_ch[0];
111
112       if (src_ch[3] != 0) {
113           dst_ch[1] = (src_ch[1] << 4) - (src_ch[2] >> 2);
114           result[result_idx++] = dst_ch[1];
115       } else {
116           result[result_idx] = 0;
117           return result;
118       }
119
120       if (dst_ch[4] != 0) {
121           dst_ch[2] = (src_ch[2] >> 6) + src_ch[3];
122           result[result_idx++] = dst_ch[2];
123       } else {
124           result[result_idx] = 0;
125           return result;
126       }
127   }
128
129   result[result_idx] = 0;
130   return result;
131 }
```

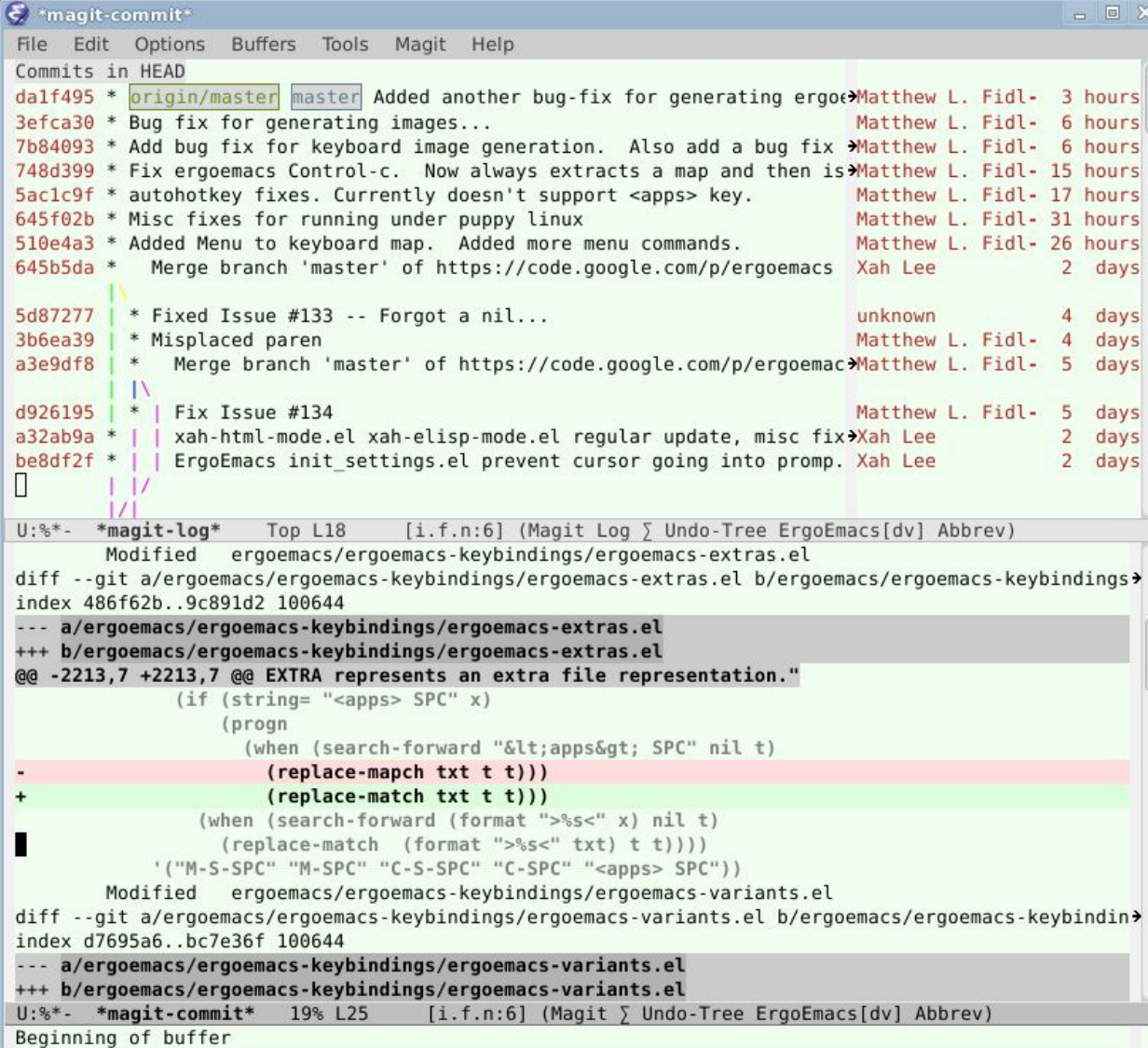
```
103   for (i = 0; i < size; i+=4) {
104       src_ch[0] = get_normal_ch(*(str + i));
105       src_ch[1] = get_normal_ch(*(str + i + 1));
106       src_ch[2] = get_normal_ch(*(str + i + 2));
107       src_ch[3] = get_normal_ch(*(str + i + 3));
108
109       dst_ch[0] = (src_ch[0] << 2) + (src_ch[1] >> 4);
110       result[result_idx++] = dst_ch[0];
111
112       if (src_ch[3] != 0) {
113           dst_ch[1] = (src_ch[1] << 4) + (src_ch[2] >> 2);
114           result[result_idx++] = dst_ch[1];
115       } else {
116           result[result_idx] = 0;
117           return result;
118       }
119
120       if (dst_ch[4] != 0) {
121           dst_ch[2] = (src_ch[2] << 6) + src_ch[3];
122           result[result_idx++] = dst_ch[2];
123       } else {
124           result[result_idx] = 0;
125           return result;
126       }
127   }
128
129   result[result_idx] = 0;
130   return result;
131 }
```

A: -(Unix)--- base64\_2.c Bot (121,0) (C/l AC Abbrev) B: -(Unix)--- base64.c Bot (121,0) (C/l AC Abbrev)

-- \*Ediff Control Panel\* diff 2 of 2 Quick Help



# 版本控制 —— git-emacs/magit/egg



```
*magit-commit*
File Edit Options Buffers Tools Magit Help

Commits in HEAD
da1f495 * origin/master master Added another bug-fix for generating ergoMatthew L. Fidl- 3 hours
3efca30 * Bug fix for generating images... Matthew L. Fidl- 6 hours
7b84093 * Add bug fix for keyboard image generation. Also add a bug fixMatthew L. Fidl- 6 hours
748d399 * Fix ergoemacs Control-c. Now always extracts a map and then isMatthew L. Fidl- 15 hours
5ac1c9f * autohotkey fixes. Currently doesn't support <apps> key. Matthew L. Fidl- 17 hours
645f02b * Misc fixes for running under puppy linux Matthew L. Fidl- 31 hours
510e4a3 * Added Menu to keyboard map. Added more menu commands. Matthew L. Fidl- 26 hours
645b5da * Merge branch 'master' of https://code.google.com/p/ergoemacs Xah Lee 2 days

5d87277 * Fixed Issue #133 -- Forgot a nil... unknown 4 days
3b6ea39 * Misplaced paren Matthew L. Fidl- 4 days
a3e9df8 * Merge branch 'master' of https://code.google.com/p/ergoemacsMatthew L. Fidl- 5 days

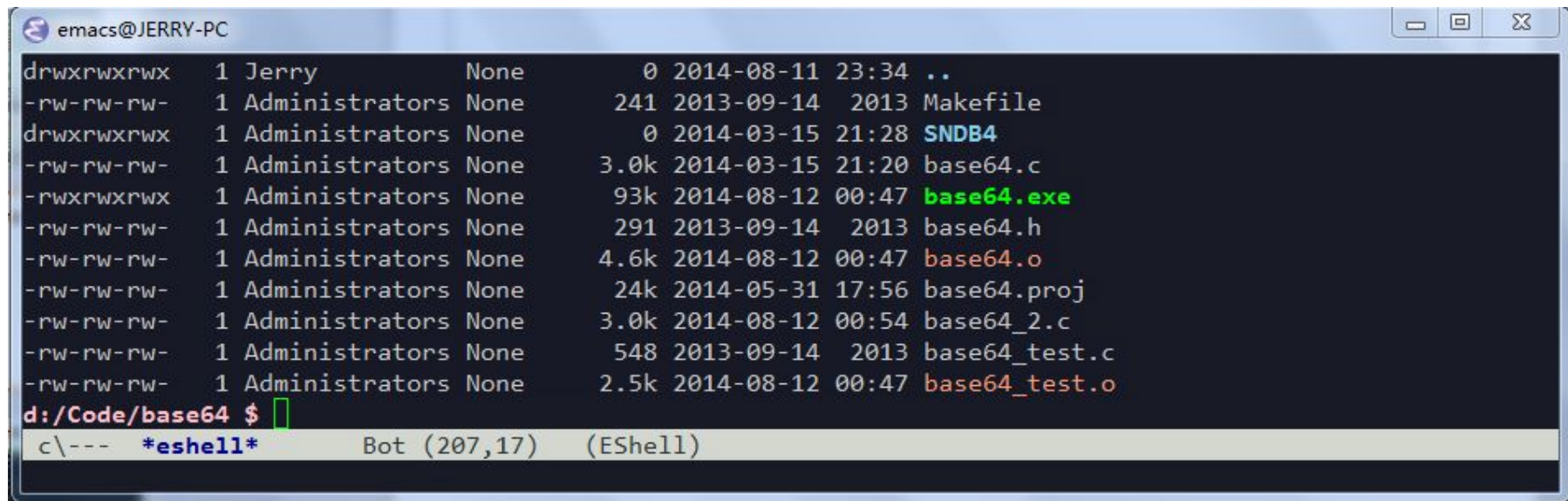
d926195 * | Fix Issue #134 Matthew L. Fidl- 5 days
a32ab9a * | | xah-html-mode.el xah-elisp-mode.el regular update, misc fixXah Lee 2 days
be8df2f * | | ErgoEmacs init_settings.el prevent cursor going into promp. Xah Lee 2 days
[]

U:%- *magit-log* Top L18 [i.f.n:6] (Magit Log Undo-Tree ErgoEmacs[dv] Abbrev)
Modified ergoemacs/ergoemacs-keybindings/ergoemacs-extras.el
diff --git a/ergoemacs/ergoemacs-keybindings/ergoemacs-extras.el b/ergoemacs/ergoemacs-keybindings
index 486f62b..9c891d2 100644
--- a/ergoemacs/ergoemacs-keybindings/ergoemacs-extras.el
+++ b/ergoemacs/ergoemacs-keybindings/ergoemacs-extras.el
@@ -2213,7 +2213,7 @@ EXTRA represents an extra file representation."
      (if (string= "<apps> SPC" x)
          (progn
            (when (search-forward "<apps> SPC" nil t)
              (replace-mapch txt t t)))
          (replace-match txt t t)))
      (when (search-forward (format ">%s<" x) nil t)
        (replace-match (format ">%s<" txt) t t)))
      ("M-S-SPC" "M-SPC" "C-S-SPC" "C-SPC" "<apps> SPC"))
Modified ergoemacs/ergoemacs-keybindings/ergoemacs-variants.el
diff --git a/ergoemacs/ergoemacs-keybindings/ergoemacs-variants.el b/ergoemacs/ergoemacs-keybindin
index d7695a6..bc7e36f 100644
--- a/ergoemacs/ergoemacs-keybindings/ergoemacs-variants.el
+++ b/ergoemacs/ergoemacs-keybindings/ergoemacs-variants.el
U:%- *magit-commit* 19% L25 [i.f.n:6] (Magit Undo-Tree ErgoEmacs[dv] Abbrev)
Beginning of buffer
```

# 终端 —— ansi-term/shell/eshell

Vimer 在 终端中使用 Vim

Emacser 则在 Emacs 中使用终端。。。。



The screenshot shows an Emacs terminal window titled "emacs@JERRY-PC". The terminal displays a directory listing for the path "d:/Code/base64". The listing includes permissions, file counts, owners, sizes, dates, times, and filenames. The filename "base64.exe" is highlighted in green. The prompt "d:/Code/base64 \$" is visible, followed by a cursor. The status bar at the bottom shows "c\--- \*eshell\* Bot (207,17) (EShell)".

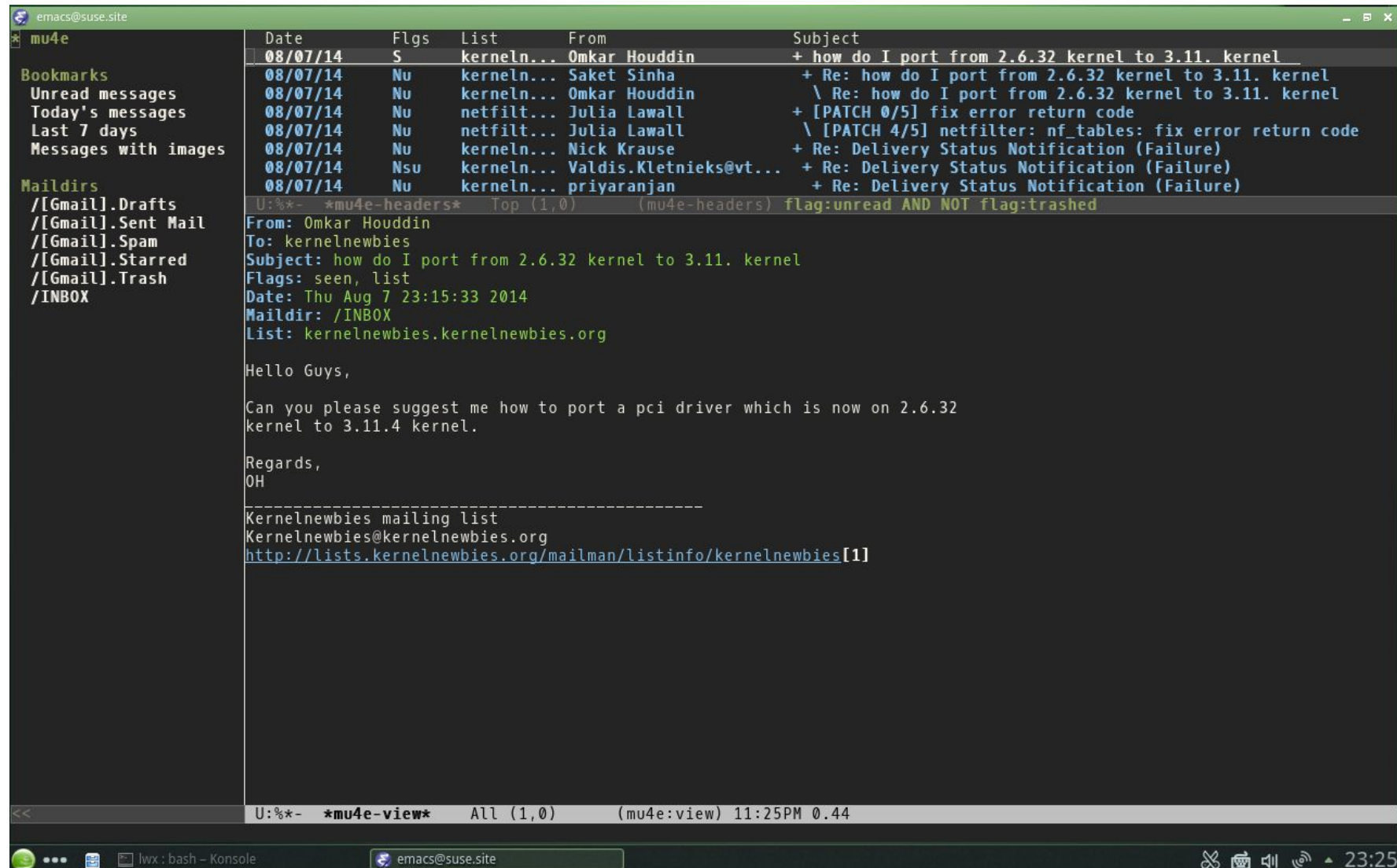
```
emacs@JERRY-PC
drwxrwxrwx  1 Jerry          None           0 2014-08-11 23:34 ..
-rw-rw-rw-  1 Administrators None          241 2013-09-14 2013 Makefile
drwxrwxrwx  1 Administrators None           0 2014-03-15 21:28 SNDB4
-rw-rw-rw-  1 Administrators None         3.0k 2014-03-15 21:20 base64.c
-rwxrwxrwx  1 Administrators None         93k 2014-08-12 00:47 base64.exe
-rw-rw-rw-  1 Administrators None         291 2013-09-14 2013 base64.h
-rw-rw-rw-  1 Administrators None         4.6k 2014-08-12 00:47 base64.o
-rw-rw-rw-  1 Administrators None        24k 2014-05-31 17:56 base64.proj
-rw-rw-rw-  1 Administrators None         3.0k 2014-08-12 00:54 base64_2.c
-rw-rw-rw-  1 Administrators None         548 2013-09-14 2013 base64_test.c
-rw-rw-rw-  1 Administrators None        2.5k 2014-08-12 00:47 base64_test.o
d:/Code/base64 $ 
c\--- *eshell* Bot (207,17) (EShell)
```

# 文档/笔记/日程 —— org-mode

```
Day-agenda (w08):
Friday 24 February 2012
    2:25..... now - - - - -
    8:00..... - - - - -
Remind: 10:00-11:40 TODO Course of Tao Yang(208) :ACADEMIC:
    10:00..... - - - - -
    12:00..... - - - - -
    14:00..... - - - - -
    16:00..... - - - - -
    18:00..... - - - - -
    20:00..... - - - - -
Projects: Sched. 5x: TODO [#A] Modify the content of the paper :ACADEMIC::
Projects: Sched. 5x: TODO [#A] GRE and TOEFL Sign up :ENGLISH::
Routines: Scheduled: TODO [#A] Read "The mathematics you missed" and "Linear
Projects: Scheduled: TODO [#A] Spoken English for TOEFL :ENGLISH::
Projects: Scheduled: TODO [#A] Grammar and writing :ENGLISH::
Projects: Scheduled: TODO [#A] Vocabulary building :ENGLISH::
Projects: In -3 d.: TODO [#A] GRE and TOEFL Sign up :ENGLISH::
Routines: Sched. 6x: TODO [#C] Check vps.org :OTHER:
Routines: Sched. 5x: TODO [#C] Write weekly journal :OTHER:
Routines: Scheduled: TODO [#C] Write daily journal :OTHER:
```



# compose-mail + offline-imap + mu4e



The screenshot shows the Emacs MU4E interface. The left sidebar contains navigation options: mu4e, Bookmarks, Unread messages, Today's messages, Last 7 days, Messages with images, Maildirs, and a list of folders including [Gmail].Drafts, [Gmail].Sent Mail, [Gmail].Spam, [Gmail].Starred, [Gmail].Trash, and /INBOX.

The main pane displays a list of emails with columns for Date, Flgs, List, From, and Subject. The selected email is from Omkar Houddin, dated 08/07/14, with the subject '+ how do I port from 2.6.32 kernel to 3.11. kernel'. The email body contains a request for help porting a PCI driver from kernel 2.6.32 to 3.11.4, signed by Omkar Houddin, and includes the Kernelnewbies mailing list information.

| Date     | Flgs | List       | From                   | Subject   |
|----------|------|------------|------------------------|---|
| 08/07/14 | S    | kerneln... | Omkar Houddin          | + how do I port from 2.6.32 kernel to 3.11. kernel        |
| 08/07/14 | Nu   | kerneln... | Saket Sinha            | + Re: how do I port from 2.6.32 kernel to 3.11. kernel    |
| 08/07/14 | Nu   | kerneln... | Omkar Houddin          | \ Re: how do I port from 2.6.32 kernel to 3.11. kernel    |
| 08/07/14 | Nu   | netfilt... | Julia Lawall           | + [PATCH 0/5] fix error return code                       |
| 08/07/14 | Nu   | netfilt... | Julia Lawall           | \ [PATCH 4/5] netfilter: nf_tables: fix error return code |
| 08/07/14 | Nu   | kerneln... | Nick Krause            | + Re: Delivery Status Notification (Failure)              |
| 08/07/14 | Nsu  | kerneln... | Valdis.Kletnieks@vt... | + Re: Delivery Status Notification (Failure)              |
| 08/07/14 | Nu   | kerneln... | priyaranjan            | + Re: Delivery Status Notification (Failure)              |

U:%\*- \*mu4e-headers\* Top (1,0) (mu4e-headers) flag:unread AND NOT flag:trashed

From: Omkar Houddin  
To: kernelnewbies  
Subject: how do I port from 2.6.32 kernel to 3.11. kernel  
Flags: seen, list  
Date: Thu Aug 7 23:15:33 2014  
Maildir: /INBOX  
List: kernelnewbies.kernelnewbies.org

Hello Guys,

Can you please suggest me how to port a pci driver which is now on 2.6.32 kernel to 3.11.4 kernel.

Regards,  
OH

-----  
Kernelnewbies mailing list  
Kernelnewbies@kernelnewbies.org  
<http://lists.kernelnewbies.org/mailman/listinfo/kernelnewbies>[1]

U:%\*- \*mu4e-view\* All (1,0) (mu4e:view) 11:25PM 0.44



# 看地图 —— google-maps-el



# 聊天——ERC（内置）

```
<LaoL..l> id 补全。。。
22:33 <wd> 500 块钱买个键盘
      <sfyz> 好多乱码。
      <xwl> ahei`: any client 都可以
      <wd> id 补全是个 client 都支持。。。
      <ahei`> xwl: 好的
      <ahei`> xwl: 果然如此, ....
22:34 <xwl> 我当初是怎么发现的。。
      <xwl> 好像很 natural..
      <ssss...> wd: 难得奢侈一下。我没有 psp, 也没有 wii, 也没有 ndsl
      <LaoL..l> irc 用惯后, QQ 很不习惯
      <wd> sssslang_: .....
      <xwl> sssslang_: 下次聚会就奔你的 hhkb 去了。
22:35 <LaoL..l> 又没高亮, 又没补齐
      <ssss...> sfyz: set ur decode settings to utf8
      <ahei`> 高亮还是有点的, qq
      <wd> xwl: 支持
      <LaoL..l> sssslang_: 什么时候买的?
      <wd> 一起围观
      <LaoL..l> 贴个图看看啥样
-U:%*- #emacs-cn 56% (164,0) 六(11) 03/20/23:58 1.02 [m:1,#o:43,#s:4,#ch:14,#emacs:77] (E
```

# 玩游戏——tetris（内置）



# 发微博 —— weibo.emacs

```
emacs@austin-ThinkPad-X61
File Edit Options Buffers Tools Help
微博: 我的关注(a) 我的微博(i) 提到我的(@) 谁在说(w) 我的评论(o) 收到评论(c)
命令: 发表微博(P) 评论(C) 回复(R)
操作: 新消息(g) 刷新(r) 下一条(空格) 帮助(h) 退出(q)
=====
南都周刊 (男, 广东 广州) 说道:
【比萨饼自动贩卖机】美国纽约街头将出现一种比萨饼自动贩卖机, 顾客只需要
按几个按钮, 就可以在90秒后拿到热腾腾的现做比萨饼。不仅如此, 顾客还能观
看机器自动制作比萨的过程。《每日邮报》引述比萨饼自动贩卖机公司的消息说,
目前展示的只是一个样本, 公司正在筹划生产5个自动贩卖机投入市场检测。

来自: 新浪微博专业版 发表于: Sat Oct 08 15:15:39 +0800 2011
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青岛广播电视报娱乐版 (男, 山东 青岛) 评论道:
看起来很好吃的样子~
来自: 新浪微博 发表于: Sat Oct 08 15:19:36 +0800 2011
-U: @%*- *weibo-timeline* Top of 2.3k (10,0) (微博时间线-察看微博)--3:20AM--
这里是评论窗口
-拼音U: @**- *weibo-update* All of 7 (1,14) (评论微博)--3:20AM-----
chuang kou[1/2]: 1.窗口 2.床 3.创 4.窗 5.闯 6.枪 7.幢
```

# 插件推荐

- cscope/gnu global/ETags/imenu      【代码浏览】
- ido/anything/helm/icicle
- projectile      【工程管理】
- auto-complete/company-mode      【补全前端】
- sentamantic/gccsence/clang      【补全后端】
- yasnippet      【代码片段】
- flymake      【语法检查】
- el-get      【插件管理】
- org-mode



# 学习建议

1. 学完内置教程，掌握基本操作，在实践中熟悉。
2. 学习安装插件，自定义快捷键
3. 结合实际需求，从网上寻求解决方案，加入自己的配置，不断迭代。
4. 重构自己的配置，划分模块，按需加载。
5. 学习 elisp，实现新的插件。

# 相关资料

- Emacs Info
- 《Learning GNU Emacs》
- <http://www.emacswiki.org/emacs/>
- <http://orgmode.org/>
- <http://emacsser.com/>