SIGPwny

SP2024 Week 01 ● 2024-01-28

Editors

George and Richard

Welcome!

Announcements

- eCTF
  - Semester-long embedded hacking competition
  - Design embedded systems and attack other teams' designs
  - Join SIGPwny as we represent UIUC in this nationwide competition

- DiceCTF 2024
 - Next weekend (Feb 3-4)

sigpwny{Using eMacs actually has nothing to do with productivity. In fact, I'm not even trying to optimize it. I simply think it's a good tool for keeping me organized. Why do some people live their life in a constant state of disarray, rushing from place to place, never knowing what they need to do besides their immediate task, constantly worrying about their deadlines when they can instead live in peace? Emacs is one of the many tools I use to organize my life, to take my mind off the things that don't matter and let a machine remember for me. I live knowing that, at the end of the day, everything will be ok. There's nothing urgent that needs to be on my mind because I have written it down for thought later. Emacs is not about productivity. Emacs is about organization, a system I can tune to my needs, so that I can live a stress-free, fulfilling life. – @rliu}

sigpwny{Type :qa! and press <Enter> to abandon all changes and exit Vim}
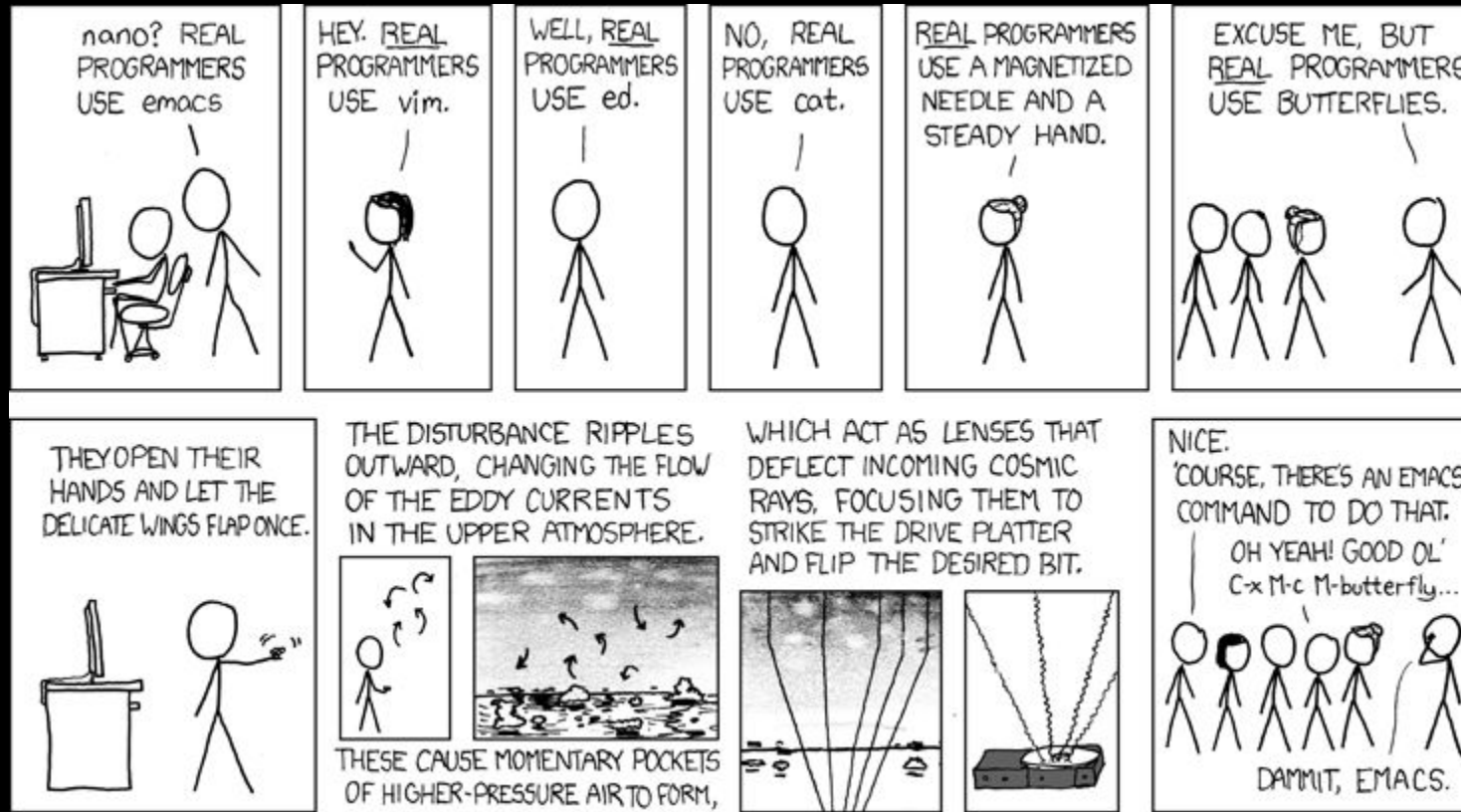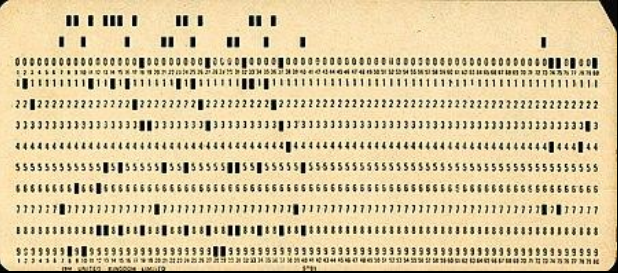
Overview

- History & motivation
- Modal editors
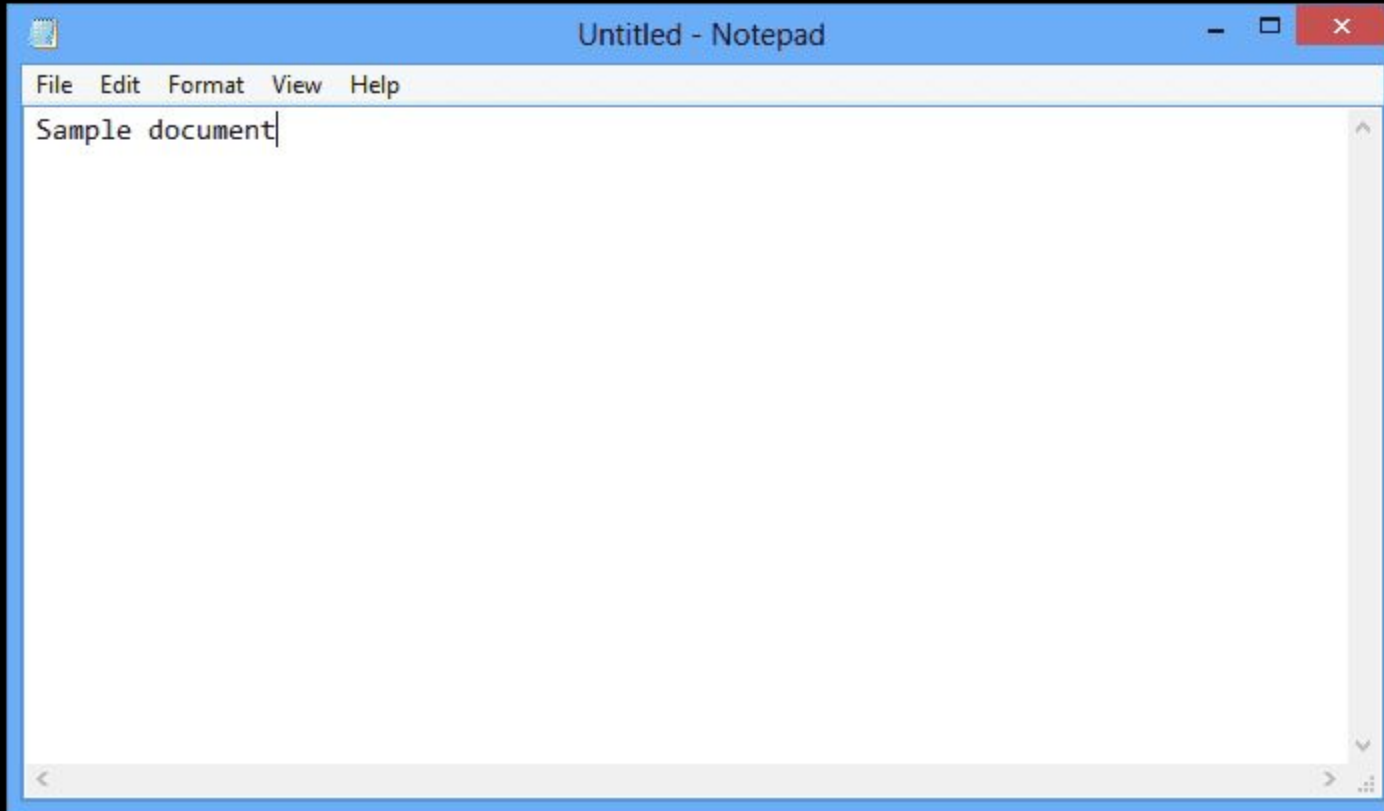- Other editors

History & motivation

Why editors?

Notepad

Actions

- add, modify, delete text
- cut, copy, paste
- find and replace
- undo and redo
- jump around in the file (scroll, point & click, etc.)
- **i**ntegrated **d**evelopment **e**nvironment

Modal editors

Notation (Vim)

- `x`: press the "x" key, located next to the "z" and "c" keys
- `gF`: press the "g" key, then press shift and the "f" key simultaneously
- `CTRL-X`: While holding down control, tap "x" key (shift <u>not</u> required)
- `<Esc>`: press the escape key (usually at the top left of the keyboard)
- `:abc<Enter>`: press the colon (":") key (by pressing shift with the semicolon (";") key), then press "a", "b", and "c", and finally hit enter

Notation (Emacs)

- `M-x`: press the "x" key while holding down the "Meta" key (usually "Alt" or "Command")
- `C-u`: universal argument
- `<esc>`: press the escape key (usually at the top left of the keyboard)
- `:abc<cr>`: press the colon (":") key (by pressing shift with the semicolon (";") key), then press "a", "b", and "c", and finally hit enter
- execute-extended-command

Basics of modal editors

- keyboard focused
  - mouse is entirely optional!
- each mode has its own keymap
- modes serve different purposes

Modes

- each mode has its own set of keys
- "normal mode"
    - start in this mode
    - movement, editor
- "insert mode"
    - add and delete text by typing
- "visual mode"
    - used to select and copy text
- "replace mode"
    - used to replace text in place
- "command line mode" / "ex mode"
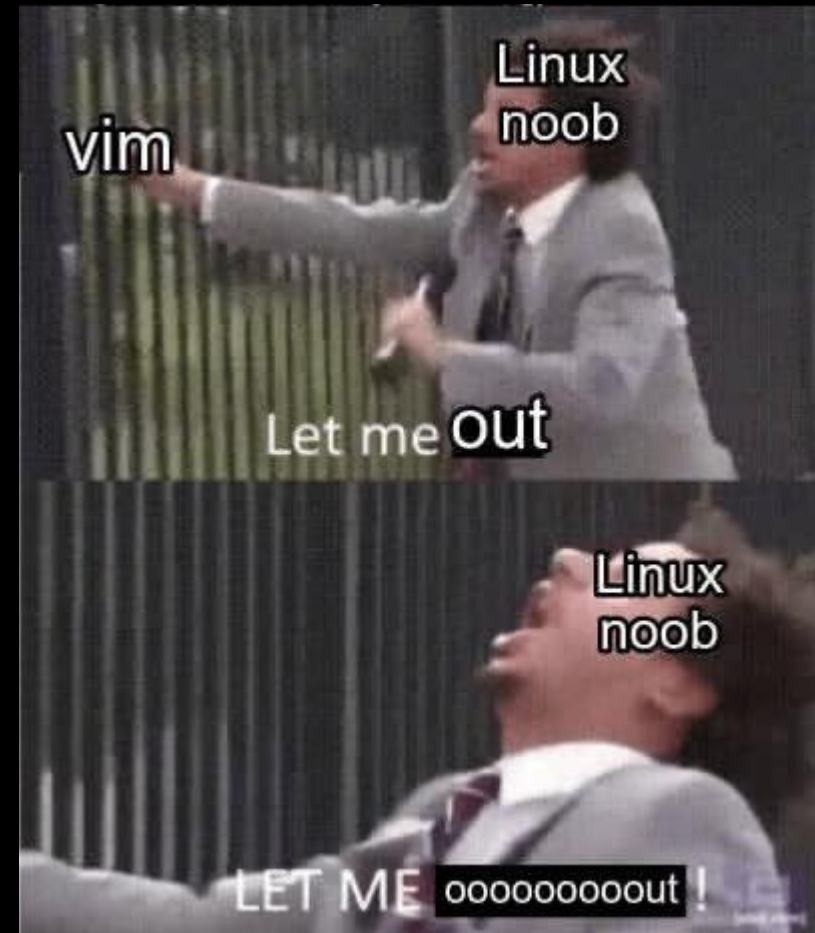   - run commands

Switching between modes

- start at normal mode
- use `i` to enter insert mode
- use `<esc>` to exit insert mode
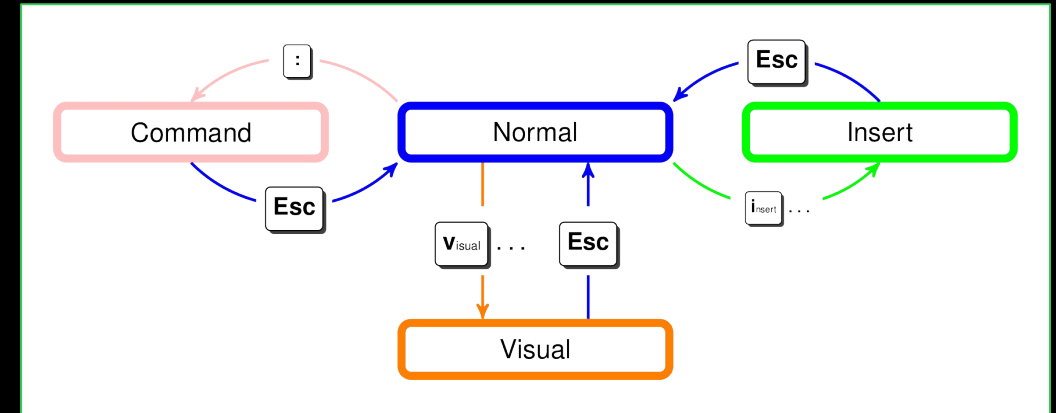
How do I exit?

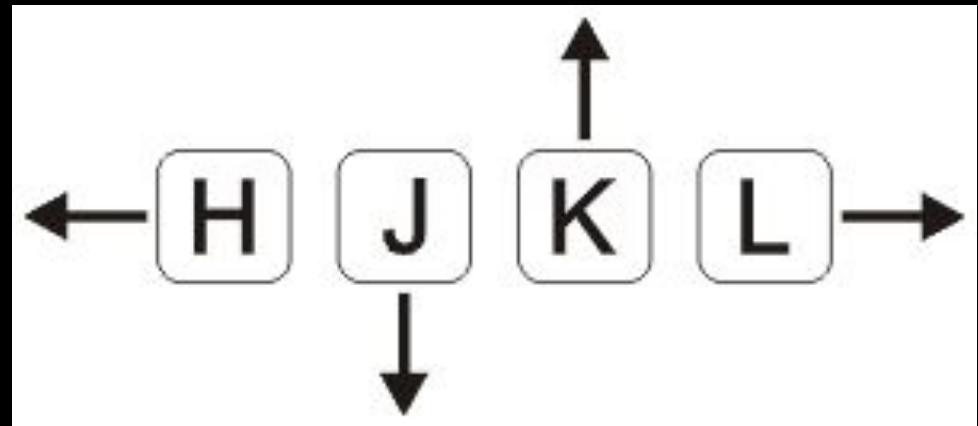- ~~unplug your computer~~
- these all have to be done in normal mode
  - press `<Esc>` a couple of times to return to normal mode
- `:wq<Enter>` (`ZZ`)
  - save and quit
- `:q<Enter>`
  - exit please
- `:qa<Enter>`
  - I don't care about other windows
- `:qa!<Enter>`
  - `sudo` I don't care about other windows

Movement

- **`<c-u>`**: scroll up
- **`<c-d>`**: scroll down
- **`h`/`j`/`k`/`l`**
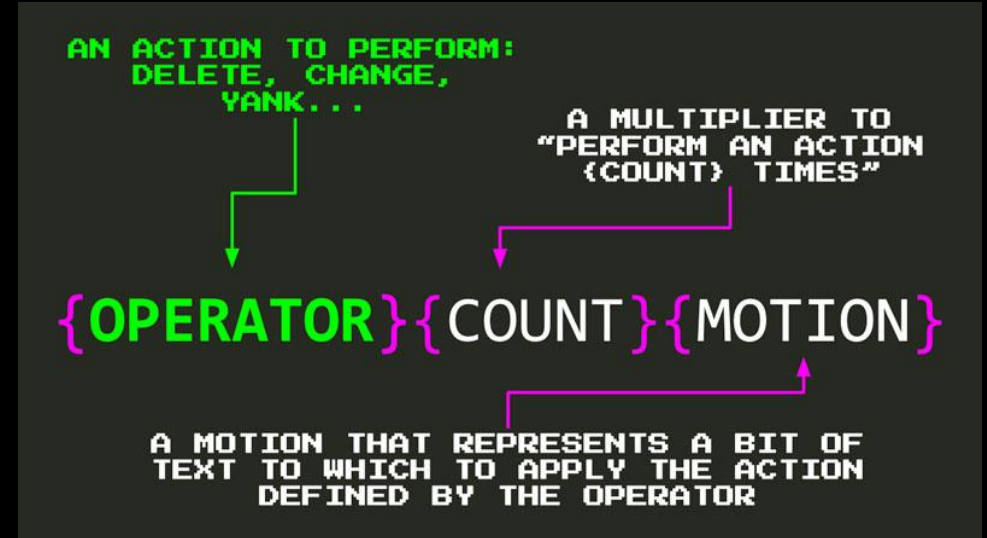
Actions

Operators:

- **y**: yank (copy)
- **d**: delete (cut)
- **c**: change

Motions:

- **w**: word
- **j**: down a line
- **$**: to end of line

AN ACTION TO PERFORM:
DELETE, CHANGE,
YANK...

A MULTIPLIER TO
"PERFORM AN ACTION
{COUNT} TIMES"

{OPERATOR}{COUNT}{MOTION}

A MOTION THAT REPRESENTS A BIT OF
TEXT TO WHICH TO APPLY THE ACTION
DEFINED BY THE OPERATOR

Source

Example: Actions

- **yw**: copy the next word
- **d3j**: delete the next 3 lines

If you "repeat" the operator as the motion, it acts on the current line

- **yy**: copy current line
- **dd**: delete current line

Remember, these only work in normal mode!

Commands

- Type `:` in normal mode to enter "command mode"
- Useful commands:
  - `:w`: write (save)
  - `:h`: help

Basic vim example

- `i`: enter insert mode
- `hello world`: type "hello world"
- `<esc>`: exit insert mode
- `:wx<cr>`: save and quit

Vim Setup

- ~/.vimrc
  - config file
  - download a [sample one](#)
  - to download, run

`curl -L https://gist.githubusercontent.com/richyliu/8ff2f83db1ae3a9afd85765c14cd6241/raw/.vimrc -o ~/.vimrc`

Kakoune

- Heavy focus on unix philosophy
- Selection then action, unlike Vim
- Why use Vim tabs/windows when tmux exists?
- Netrc, more like

```
define-command broot-overlay -params 0.. -file-completion -docstring 'Choose file with broot' %{

    connect popup broot "--conf=%val{config}/broot/select.toml" %arg{@}

}
```

Other editors

Everyone's favorite OS: GNU ~~Linux~~Emacs

- Why Emacs?
  - Extensible, hackable
  - Open ecosystem
  - Aims to be full "IDE" as opposed to Vim
- Why *not* Emacs?
  - Steep learning curve
  - Emacs pinky[*]
  - Anathema to Unix philosophy
  - Harder to find support
    - Less common than other editors, like VSCode

LATEST: 10.17 [UPDATE]

CHANGES IN VERSION 10.17:
THE CPU NO LONGER OVERHEATS
WHEN YOU HOLD DOWN SPACEBAR.

COMMENTS:

LONGTIME USER4 WRITES:
THIS UPDATE BROKE MY WORKFLOW!
MY CONTROL KEY IS HARD TO REACH,
SO I HOLD SPACEBAR INSTEAD, AND I
CONFIGURED EMACS TO INTERPRET A
RAPID TEMPERATURE RISE AS "CONTROL".

ADMIN WRITES:
THAT'S HORRIFYING.

LONGTIME USER4 WRITES:
LOOK, MY SETUP WORKS FOR ME.
JUST ADD AN OPTION TO REENABLE
SPACEBAR HEATING.

EVERY CHANGE BREAKS SOMEONE'S WORKFLOW.

VSCode

- Visual Studio Code
- Open source, extensible, fast
- Much heavier mouse use compared to Vim/Emacs

Next Meetings

2024-02-01 • **Next Thursday**

- Intro to Pentesting with Ronan!

2024-02-02 • **Next Friday**

- Come play DiceCTF quals with us!

ctf.sigpwny.com

sigpwny{Type :qa! and press <Enter> to abandon all changes and exit Vim}

Meeting content can be found at sigpwny.com/meetings.

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