



System Programming

Text Editing



Text Editing

- So far, we have manipulated files in the file system (`cp`, `mv`, `rm`, `ln`) and view their contents (`cat`, `less`)
- How do you edit the contents of files?
- Unix editors work with plain ASCII text files: `vi`, `emacs`, `pico`



Why vi?

- Availability
 - Any Unix/Linux system
- Commands are keys
 - Accessible via remote login (e.g., ssh)
 - Avoids use of mouse
- Simple and powerful text editor
- Vi Improved (`vim`)



vi Basics

- Invoke with: `vi [filename(s)]`
- Editor controls the window
- Mode based
 - Command mode
 - Keys are commands
 - Case and control shifts matter
 - Insert mode
 - Characters are text to add
 - Escape exits



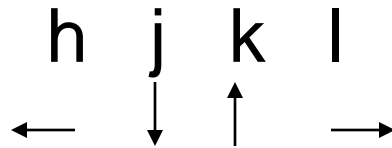
Command Mode

- `vi` starts in command mode
- Escape returns to command mode
- Commands for:
 - Cursor movement
 - Editing
 - File operations
 - Search and replace
 - Entering insert mode



Cursor Movement

- Single characters: right hand on keyboard



- Larger movements – `n` is a number
 - `n{j|k|l|h}` – repeat `n` times
 - `4j` – move four lines down
 - `CTRL-F, CTRL-B` – page forward, page back
 - `w, b` – next word, word back
 - `:n` – move to line `n`
 - `]], [[` – move to next or previous section
 - Lines starting with `{` (as in C functions), (default: EOF)
 - `0, $` – move to beginning or end of current line



Editing Commands

- u – undo the effects of last command
- x – delete current character*
- dd, dw – delete current line*/ word*
- cc, cw – change current line*/word*
- D, C – delete/change rest of line
- *rx* – replace current character with *x**
- yy – copy current line*
- p – paste copied/deleted items
- J – join two lines

*can be preceded by a number to do operation multiple times (e.g. *nr*x, *ncw*, *nr*x)



File Operations

- ZZ, :wq – write and quit
- :w – write
- :w *filename* – write to filename
- :q – quit editing
- :q! – quit without saving
- :e *filename* – edit another file
- :n – edit next file
- :r *filename* – read *filename* into current file



Search and Replace

- `/word` – search forward for *word*
- `?word` – search backwards for *word*
- `n` – repeat last search
- `N` – repeat search opposite direction
- `%` - find match of current `(`, `[`, `{`
- `:%s/\r/` – replace the `^M` with `\r`
- `:%s/old/new/g` – replace all instances of *old* with *new*



Entering Insert Mode

- i – insert before cursor
- I – insert before beginning of line
- a – append after cursor.
- A – append at end of the line
- o – open line above cursor
- O – open line below cursor
- cw – change (replace) current word
- C – change rest of line



Additional Information

- *UNIX in a nutshell*, ch. 8 lists all vi commands
- Trivia: vi uses all lowercase characters except ‘v’ (and many uppercase and punctuation characters) for commands
 - Be careful!
 - Use ‘u’, ‘U’, and ‘: q!’ if you mess up
- *UIAN*, ch. 7 covers emacs