Optimize your Engineering Life: Outline

General

- Mouse Selection
- Vim
- Bash
  - Jobs
  - Shell scripts
  - Directory stack
  - History
  - Editor mode
- SSH Keys
- Tmux

Meta-optimizations

Selecting Using the Mouse

Use command keys!

To select multiple words:

Double-click to select a word

Drag to extend the selection (word-at-a-time)

To select multiple lines:

Triple-click to select a line

Drag to extend the selection (line-at-a-time)

Editing code: to move one or more lines:

Triple-click select and cut

Move to *beginning* of the desired paste line

Paste

Bonus: Don’t delete selected text before typing

Vim

`/usr/bin/vimtutor`

Master your text editor!

Practice something new each day.

Don’t use arrow keys (`h j k l`, instead)

Redo last command: `.`

Undo last command: `u`

`:help user-manual`

Vim

Insert mode:

- Different ways to get into insert mode:
  - i: insert where cursor is
  - a: insert after where cursor is
  - o: create new line after this line and insert there
  - O: create new line before this line and insert there
  - A: insert after the end of this line
  - I: insert before the beginning of this line

Replace mode:

- R: like insert mode but replaces existing characters

Hint: map caps-lock key to ESC

Vim

Normal mode:

- Powerful movement operators.
- Deletion, clipboard commands, macros.

Command mode:

- Enter with : character
  - Operates on one or more lines
  - Very powerful
    - Fancy regular expression search/replace
      - E.g., replace all occurrences of foo with bar
      - :%s/foo/bar/g
    - Sort all lines :%!sort

Visual mode:

- make rectangular selections of text

Job Handling in Bash

Run command in background

```
command &
```

List background and suspended jobs

```
jobs
```

Suspend foreground job

```
<Ctrl-Z>
```

Put current suspended job in background

```
bg
```

Bring background job to foreground

```
%job_number
```

Directory Stack

Change directories and push onto stack

```
pushd dirName
```

Pop current directory off stack

```
popd
```

Swap top two directories

```
pushd
```

List directories

```
dirs
```

Switch to last directory you were in (doesn't use the stack)

```
cd -
```

Show contents of top two directories

```
ls ~1 ~2
```

History

Show last 20 commands

```
history 20
```

Rerun last command

```
!!
```

Rerun command with given number

```
!command number
```

Rerun last command beginning with prefix

```
!bla
```

Rerun last command containing string

```
!?bla
```

History (continued)

Run last command substituting foo for bar

```
^foo^bar
```

Rerun last command substituting all instances of foo with bar

```
!!:gs/bar/foo
```

List (don’t run) last command starting with foo

```
!foo:p
```

Last parameter of last command

```
!$
```

All parameters of last command

```
!*
```

Editor mode in the shell

Add to ~/.bashrc

```
set -o vi
```

Enter vi mode

```
<ESC>
```

Within vi mode:

Use vim commands (f, ^, $, i, …)

Exit vim mode:

`<ESC>` (or `<return>` to execute command)

SSH Keys

Login via ssh without typing username and password

- Create ssh key
- Copy public key to remote host (~/.ssh/authorized_keys)

Tmux

Window manager in terminal window

Create new screen session

```
tmux
```

Attach to existing screen session

```
tmux a
```

Create new screen

```
<Ctrl-B>c
```

Switch screens

```
<Ctrl-B>n
```

Enter/exit scrollback mode

```
<Ctrl-B>[
```

Help

```
<Ctrl-B>?
```

Outline

General

Meta-optimizations

Meta-optimizations

/usr/bin/vimtutor

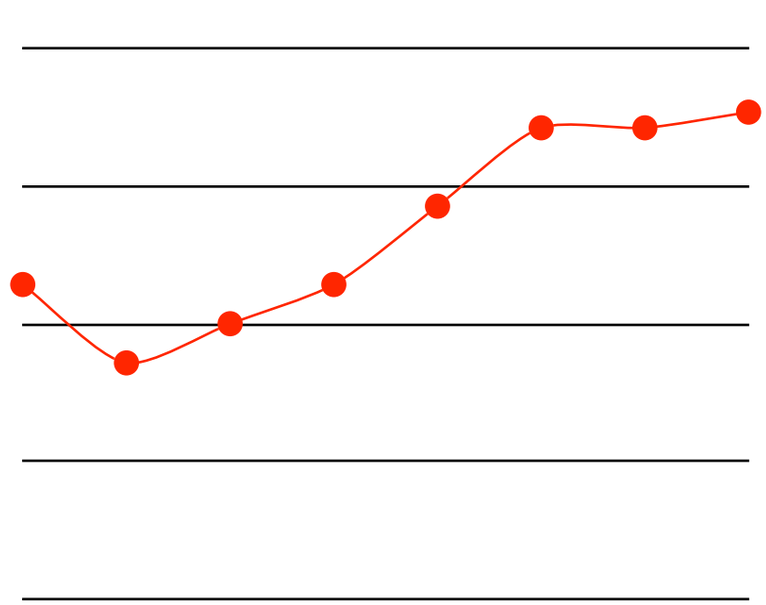
Learn your tools

Become {bash,vim,emacs,WebStorm,…}-savvy

Keep notes

~/notebook.txt

Performance curve when learning:



Learning is an investment: pay some immediate productivity for increased future productivity

Increase the amount of work done

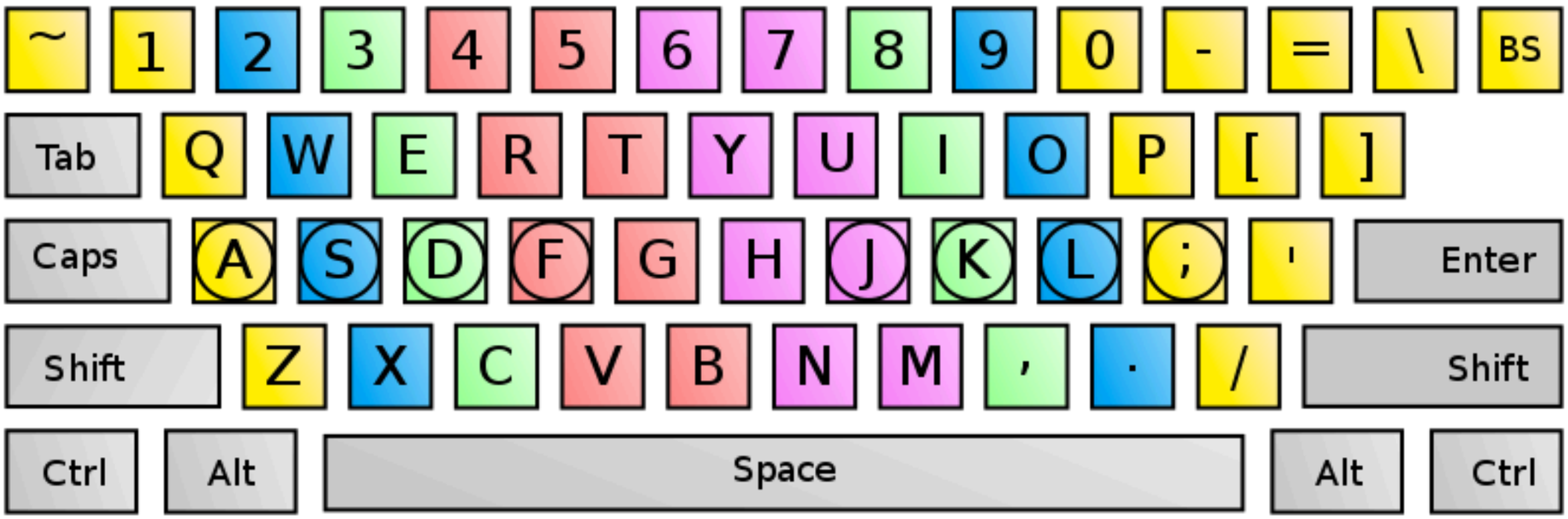
$$\frac{\text{work done}}{\text{lifetime}} = \frac{\text{work done}}{\text{keystroke}} \times \frac{\text{keystroke}}{\text{lifetime}}$$

Type faster!

Learn to touch-type in 4 easy steps:

1. Print out keyboard chart

Chart from https://en.wikipedia.org/wiki/File:Touch_typing.svg



2. Mount chart near your monitor
3. Don't *ever* look at your keyboard while typing (if temptation is too great, buy a keyboard with blank keys)
4. *Always* use the "correct" fingering