INTRO TO PROGRAMMING

Shells and Python

VIMTUTOR

If you have downtime during the class, work on getting
through vimtutor at least once

Shell command to start vimtutor:

```
vimtutor
```

Keys to press while vim is active to
quit back to the shell
environment:

```
:q!
```

(Press \<esc\> key first and beware caps lock!)

ESSENTIAL VIM

Save buffer to `newfile.txt` in cwd: `:w newfile.txt`

Delete current line `dd`

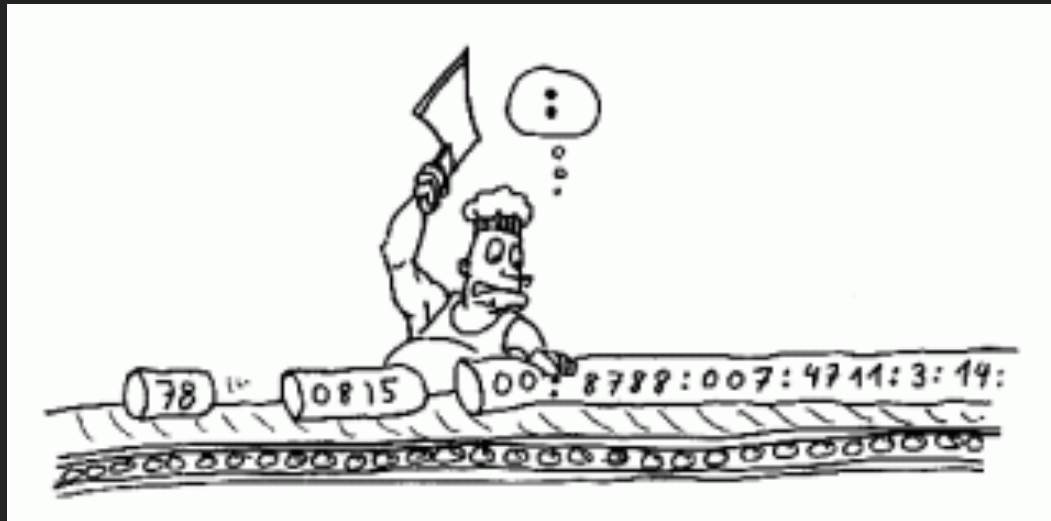Put (paste) text into buffer `p`

Enter insert mode: `i` `a`

Move forward to word boundaries: `w` `e`

TOKENIZATION

`git remote add origin https://github.com/user/repo.`

PATH AND EXECUTABLES

Executables are lumps of data specifying instructions the computer can run.

The shell looks for executables on the PATH

```
echo $PATH
```

I got a result that looked like this:

/usr/local/sbin:/usr/local/bin:/usr/sbin:
/usr/bin:/sbin:/bin:/usr/games:/opt/vagrant_ruby/bin

ENVIRONMENT VARIABLES

The shell stores information that can be referenced by name.

```
echo $HOME

# can define variables also
my_name="Ian"
echo Hello $my_name
```

FILE INPUT / OUTPUT

- Default channels exist where a program can easily read data or print regular or error output
  - STDIN
  - STDOUT
  - STDERR

Redirect STDOUT to file:
```
ls -l > directory_contents.tx
```

Read file as input to STDIN:
```
cat < file.txt
```

SHELL DEMO

- navigate directories
- discuss prompt, customizing:
  - https://www.digitalocean.com/community/tutorials/how-to-customize-your-bash-prompt-on-a-linux-vps
- Executables and PATH
- IO Redirection
- Environment Variables

PYTHON

Application that parses text (known as source code) and sends it to the computer

```
# instructions to install python3.4, enter following commands
sudo apt-get install make

cd /home/vagrant/
sudo wget https://www.python.org/ftp/python/3.4.1/Python-3.4.1.ta
sudo tar -xvf Python-3.4.1.tar.xz
cd Python-3.4.1
sudo ./configure
make
sudo make install
```

(These commands will take a while to execute, get them

going as soon as you have a chance)

BELLS AND WHISTLES

BPython is a "wrapper" around python that provides
some helpful extra features

- syntax highlighting
- keyword and argument completion suggestions
- automatic formatting assistance

```
sudo apt-get install bpython
```

PYTHON ENVIRONMENT

A virtual environment stores a copy of the interpreter and any specific python modules

```
mkdir ~/intro-programming/python
cd ~/intro-programming/python

python3 -m venv VENV
source VENV/bin/activate
```

PIP

Package manager for python code

```
# activate your VENV if you haven't already
source VENV/bin/activate

pip list
```

PYTHON DEMO

- print a string to output
- concatenate strings
- print the contents of a file
- student suggestions

NEXT TIME

Saving shell and python commands to a file to create a *script*.