SPIS 10:15am Lecture, Monday week 1

What is an engineer? What is a scientist? What is a computer scientist?

Characteristics of an engineer

- Determination
- Persistence
- Concise
- Precise
- Curious
- Relevance
- Purpose
- Problem solver
- Automater
- Skilled

Setting expectations

Algorithmic thinking, focus and levels of abstraction

To be successful is to be influential

Ignorance and confusion

Respect

Pair Programming:

- Roles:
  - Driver – driver doesn't do anything that the navigator doesn't direct
  - Navigator – directs the driver
- Switch roles regularly
  - Both partner's need to understand and develop skills
- Respect your partner
  - Show up on time
  - Practice good hygiene
- Measure of success
  - You BOTH need to succeed
- Benefits:
  - Learn from your partner (both in explaining and listening)
  - Greater focus
  - Less interruptions
  - More approaches to solutions are considered
  - More errors are discovered during development
  - Knowledge transfer from senior to junior engineers
  - Helps with topics that have high learning curves
- Industry

    - Collaboration (pair or group effort)
    - Individual contributions (it's all YOU!)
- Best suited for complex tasks
    - Simple solutions can best be created individually
- Projects at the end of the course
    - You may want to divide and conquer for simple tasks.
    - Pair program for harder aspects.

Getting to Lab00:

    - Start at SPIS home page
- spis.ucsd.edu
    - Click: 2019 Academic Program at the top left
        - https://sites.google.com/a/eng.ucsd.edu/spis/home/academicprogram
    - Click: FoCS: Foundations of Computer Science
        - https://sites.google.com/a/eng.ucsd.edu/spis/home/academicprogram/2019_focs
    - Click: 2019 FoCS Website
        - https://ucsd-cse-spis-2019.github.io/
    - Expand "Labs", and click: lab00
        - https://ucsd-cse-spis-2019.github.io/lab/lab00/

GitHub:

- Cloud based electronic repository for your work
- Area to collaborate with others

UNIX Accounts:

- Search: Find Your Account UCSD
    - https://sdacs.ucsd.edu/~icc/index.php

Login at the computers in CSE B230 & CSE B240

Login from your own computer using SSH:

- Only get a command shell prompt
- SSH (Secure SHell) to ieng6.ucsd.edu
    - Ex: ssh spis19t1@ieng6.ucsd.edu (text only)

Login from your own computer using Virtual Network Computing (VNC)

- Search: UCSD VNC
- Gives the same display as you get in the labs.
- Ask tutors for assistance in getting connected

Unix commands

- mkdir: make a directory (like a folder)
  - mkdir directory
- cd: change directory
  - cd <Enter>: returns to your HOME directory
  - cd directory: changes your working directory to directory
- clear: clears the screen
- finger: shows who is logged into computer
- ls: list files in the current directory
  - ls -1: shows alphabetic listing in one column
  - ls –l: shows "long" or listing with details
  - ls –t: shows listing sorted by time
- more: show text one screenful at a time
  - enter key: advances one line
  - space bar: advances one page
- pwd: prints the working directory
- uptime: checks status of computer
- vimtutor: tutorial for "vim" editor

Redirection:

- sending input or output that normally goes to screen elsewhere

- pipe: | (vertical bar)
  - sends output of one command to be input to anther command
  - example: ls -1 | more
    - current director file listing is displayed one line at a time

vi (vim/gvim) editor:

- command mode
  - movement
    - h goes left
    - j goes down
    - k goes up
    - l goes right
    - b goes back one end
    - B same as b includes punctuation
    - E goes to end of word
    - e same as e includes punctuation
    - g/G goes to a line
      - gg goes to line 1
      - G goes to last line
      - 10G goes to line 10
    - w goes forward by one word
    - W same as w includes punctuation

        - 0 goes to beginning of line
        - $ goes to end of line
    - . (called “dot”) repeats last change
    - cc changes one line (deletes then insert mode)
        - c<move> changes from cursor to movement
    - dd deletes one line
        - d<move> deletes from cursor to movement
            - ex: dw deletes one word
            - ex: dG deletes until end of file
    - p pastes deleted or yanked line below cursor
    - yy yanks (copies) one line
        - y<move> yanks from cursor to movement
- Insert mode: (use <ESC> to escape insert mode)
    - a append after the cursor
    - A appends at the end of the line
    - i inserts before the cursor
    - I inserts at the beginning of the line
- Colon mode:
    - :! Execute one command from shell without leaving the editor
    - :w writes (saves)
    - :w <filename> (save as)
    - :q quits the editor
    - :wq writes and then quits