System-level programming

CISC220

Who Am I?

- Dr. Burton Ma
- office
  - Goodwin 754
- office hours are virtual on Teams
  - Thu 2:30-4:00, and
  - by appointment
- email
  - include CISC220 in subject line so I know what course you are in
  - burton.ma@queensu.ca

Teaching assistants

- Aarushi Mathur
- Callum Kipin
- Mohammad Massad
- Truman Be

- contact information and office hours will be posted on onq

Course information

- everything will be on onq
- lectures are live streamed and recorded
  - live stream URL
    - https://stream.queensu.ca/Watch/StirlingC
    - need to log in using Queen's netid
  - no built-in disadvantage for students who choose to attend remotely

Textbooks

- course notes (written by Dr. David Lamb)
  - https://qspace.library.queensu.ca/handle/1974/22632
- library has excellent online books:
  - Linux Command Line, 2nd edition
    - https://ocul-qu.primo.exlibrisgroup.com/permalink/01OCUL_QU/r9d0r2/alma9952310562805158
  - Modern C
    - https://ocul-qu.primo.exlibrisgroup.com/permalink/01OCUL_QU/r9d0r2/alma9952389914705158

Grading

Assessment	Weight	Comments
Assignment 1	5%	Bash
Assignment 2	9%	Bash
Assignment 3	9%	Bash
Assignment 4	9%	C
Assignment 5	9%	C
Assignment 6	9%	C
Midterm	15%	Online via onq
Exam	35%	In-person via Exam Office

Assignments

- to be done individually, submitted via onq
- solution posted 72 hours after assignment due date
- late submission policy
  - not accepted after 72 hours after the posted due date
    - this includes students with accommodations (contact me for alternate arrangements)
  - lose 10% of the total marks for the assignment for each 24 hour period late

Midterm

- online on onq during a regularly scheduled lecture hour
  - obviously no lecture on that day
- covers Bash

Exam

- in-person administered by Exam Office
- 3 hours, closed book
- includes small amount of Bash, mostly C

What is this course about?

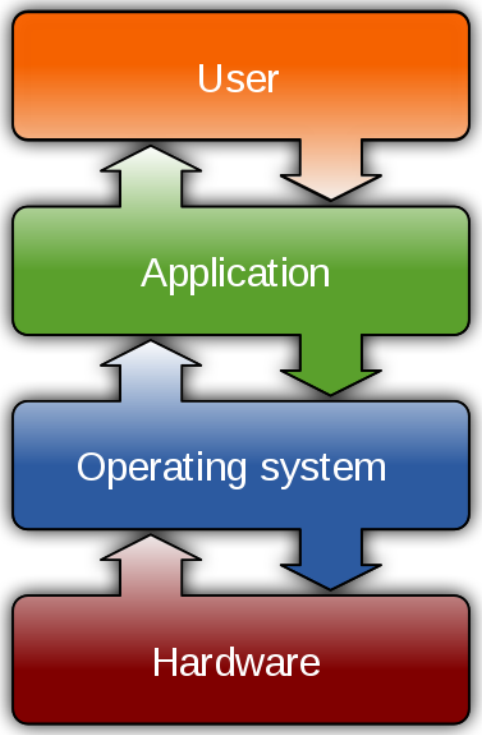
CISC 220: System-Level Programming

Basic concepts of Unix-like systems. Shells and scripting. System-level programming in the C language. Software development tools and techniques.

- learn about an operating system named Linux
- use the Bash shell including writing Bash scripts
- program in C

What is an operating system?

- system software that manages computer hardware providing an interface to the hardware for other application software



https://en.wikipedia.org/wiki/File:Operating_system_placement.svg

GUI versus CLI

- most users interact with the operating system via a graphical user interface (GUI)
- an alternative form of interaction is to use a command line interface (CLI)
  - commands typed into a console
- most of this course involves using a CLI to interact with a Linux operating system

What is GNU/Linux?

- https://www.linux.org/threads/what-is-linux.4106/
- in brief, GNU/Linux is a free, open-source, operating system widely used on servers, mainframes, supercomputers, and embedded devices

- common to simply say Linux when talking about the GNU/Linux operating system

Using Linux for this course

- macOS is close enough for our purposes
- Windows users:
  - install Linux subsystem for Windows and Visual Studio Code
    - https://docs.microsoft.com/en-us/windows/wsl/install-win10
      - follow the Manual Installation Steps carefully
        - *not the Simplified Installation for Windows Insiders*
      - use Ubuntu as your Linux distribution
    - https://docs.microsoft.com/en-us/windows/wsl/tutorials/wsl-vscode
- all users:
  - use CASLab
    - https://courses.caslab.queensu.ca

Silly command line fun

- this demo is easiest to run in Linux where you have administrator privileges
- on Windows Linux subsystem, make sure to run

  ```
  sudo apt update
  ```

  before trying to install the necessary software

- **`cal, date, sl, fortune, cowsay, toilet, cmatrix`**