Lecture.0.Introduction.txt

- Computer System Structure
    - A computer system has four components
        1. Hardware
            - i.e. CPU, Memory, I/O Devices, etc.
        2. Operating System
            - i.e. Windows, Linux, etc.
        3. Application Programs
            - i.e. Compilers, Web Browsers, Development Kits, etc.
        4. Users
            - i.e. John, Mary, Kate,
    - What is an Operating System (OS)?
        - An Operating System:
            - Controls and coordinates use of hardware among various application and users
            - Services API requests from applications
            - Helps multiple programs run concurrently on the same system
            - Is required to run laptops, desktops, etc.
        - Microsoft's Windows OS is one of the most complex software tools ever built for a single computer
            - Contains more than 50 million lines of code

- Popular Operating Systems
    - GNU/Linux
        - GNU is developed by Richard Stallman
            - Launched in 1983
        - Linux is developed by Linus Torvalds
            - Released in 1991
            - i.e. Red Hat, Fedora, Debian, Ubuntu, etc.
        - Some distributions are FREE, and others are open-source only
            - FREE software can be used by anyone for any purpose
            - Open source software is when the code is publicly available, but you may need a license to use it
    - Microsoft Windows
        - Was started by Bill Gates
        - Is closed source
        - Based on proprietary software
    - Apple's macOS
        - Was started by Steve Jobs
        - Hybrid approach
            - Based on open-source kernel named Darwin, but includes proprietary, closed-source components as well

- Open Source & Free Software
    - Free Software
        - The source code is available, licensed to allow no-cost use, redistribution, and modification are permitted
            - You can take Free software, modify it, and then sell it

           as your own software
- Anybody can develop the software, but no one can publicly claim it
- Open Source
  - The source code is available, but a license to allow no-cost use may not be offered
    - i.e. You must pay to use the software

- Berkeley Software Distribution (BSD)
  - Started in 1978 as a derivative of AT&T's Unix
  - Open source; code is publicly available
    - Released in 1994
  - Examples of distributions:
    - FreeBSD, NetBSD, OpenBSD, and DragonflyBSD