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CSC345-01: Operating Systems
Lab 0

Computer systems can be broken into four general components: the hardware, the operating system, the application programs, and a user. The hardware functions to provide basic resources for computation and is composed of the central processing unit (CPU), memory and input and output devices (I/O). The application programs are modes of using those hardware resources to solve the problems of the user, example of which are word processors, compilers and web browsers.The operating system functions as the middleman between the hardware and application programs by facilitating the exchange of resources and information between the hardware, software and user.

One example of how hardware interacts with the operating system is interrupts, the device will send a signal to the CPU that there is something happening that needs to be interrupted. The operating system works similar to a government model, where it facilitates task completion but does not actually produce any product. By using a multiprocessor computer architecture, multiple jobs can be executed at once and algorithms multi-task between processes making the response times short for the user. The computer has two modes: kernel mode and user mode. Kernel mode is for general management such as timers, interrupts and I/O control. An OS also manages memory and will dynamically allocate and free up space when needed.