Operating Systems

Typical Operating System Functions

Functions and activities of the operating system:

- Provides user interface
- allocates RAM memory to programs
- performs tasks related to file management
- manages flow of information to and from CPU
- Provides network capability
- Controls access to system resources

Common Hardware Functions

- Application programs must perform these tasks:
- Retrieving input from input device
- Retrieving data from hard disks
- Storing or writing data on hard disks
- Displaying information as output on output device

Operating Systems Definition

Operating Systems

- Specialized software which controls all hardware and software used by the personal computer or mainframe
  - allocates RAM memory to programs
  - performs tasks related to file management
  - manages flow of information to and from CPU

Memory Management

- Operating systems typically control
- Physical allocation of storage
- All locations in RAM as well as direct access storage media have addresses – think mail box – to designate a physical location
- Paging – swapping programs or instructions, data,
- between RAM memory & disk devices

Some Processing Tasks

- Multitasking
  - Run more than one application at a time; note this is NOT multiprocessing….. Just efficient usage of machine cycles
- Time sharing
  - Users share computer (typically network) utilizing time slices of CPU time; used for database activities

Windows architecture

- GUI: graphical user interface
- Software must interact with windows OS to utilize printer, I/O
  - Windows NT has HAL (Hardware Allocation Layer) and only hardware which complies with NT requirements will function

UNIX

- Multi users, multi-tasking operating system for workstations
- Originally written in C programming language, developed by Bell Labs
- Commands are similar to DOS, written so that programmers and designers/engineers could utilize powerful workstations without complex mainframe operating systems

Linux

- Operating system
- GNU Public Licensed source code
- Kernel: heart of operating system, manages memory, files and allocated hardware resources

Open Source Trends

- Approach to developing and licensing software
- Provides code to licensee and allows licensee to modify the code to fit particular company
- Opposite of proprietary source (Microsoft)

Advantages & Disadvantages of Open Source

- Advantages: not as costly, allow to modify, may share enhancements
- Disadvantages: reliability of shared code, how to make money from code