A computer system consists of hardware, system programs, and application programs

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Operating Systems

- The interface between the user and the computer hardware.

Operating System – Extended Machine

- CPU
- ALU
- System calls to simplify usage
- Memory
- I/O Devices
- Storage devices
Operating System – Resource Manager

- CPU
- Memory
- Files
- Programs use to manage and control
- I/O

Operating System structure

User mode
- User interact with operating system

Kernel mode
- Interface with hardware

Operating System Classification

- Operating system
  - Multiuser: when two or more users can work with programs and share peripheral devices (printer, scanner, fax)
  - Multitasking: multiple applications operated at the same time
  - Multiprocessing: more than one CPUs that can be shared
  - Multithreading: execute multiple processes or threads concurrently

Operating System Generations

Generation 1 (1945 – 55)
- Vacuum tubes and plugboards
Operating System Generations

Generation 2 (1955 – 65)
Transistors and batch systems

Operating System Generations

Generation 3 (1965 – 80)
Integrated Circuits and multiprogramming

Operating System Generations

Generation 4 (1980 – Present)
Personal computers

Operating System Generations

Generation 5 (Present)
Mobile devices and cloud computing
Desktop Operating System

Operating System

Windows  Mac  Linux

Mobile Operating System

- operating system that controls a mobile device

Mobile OS

Symbian OS  iPhone OS  RIM BlackBerry  Windows Mobile  Linux  Palm OS  Android

Windows

- Easy to use
- Expensive
- Not secure
- Gaming
- Familiar

Mac

- Great GUI
- Stable
- Expensive
- Not all software runs
- Not all software runs
- Secure
- Better for graphic designer

Mac

- Bad Gaming
- Secure
- Not all software runs
- Not all software runs
- Good for designers
Linux

- Lack of support
- Not all software runs
- Low per-computer cost
- Source Code
- Free
- Stable
- Secure

Operating System usage Statistics

- Windows 8
- Windows 7
- Vista
- NT
- Windows XP
- Linux
- Mac
- Mobile

- A minimal OS complying with POSIX
- Designed for teaching