Operating System

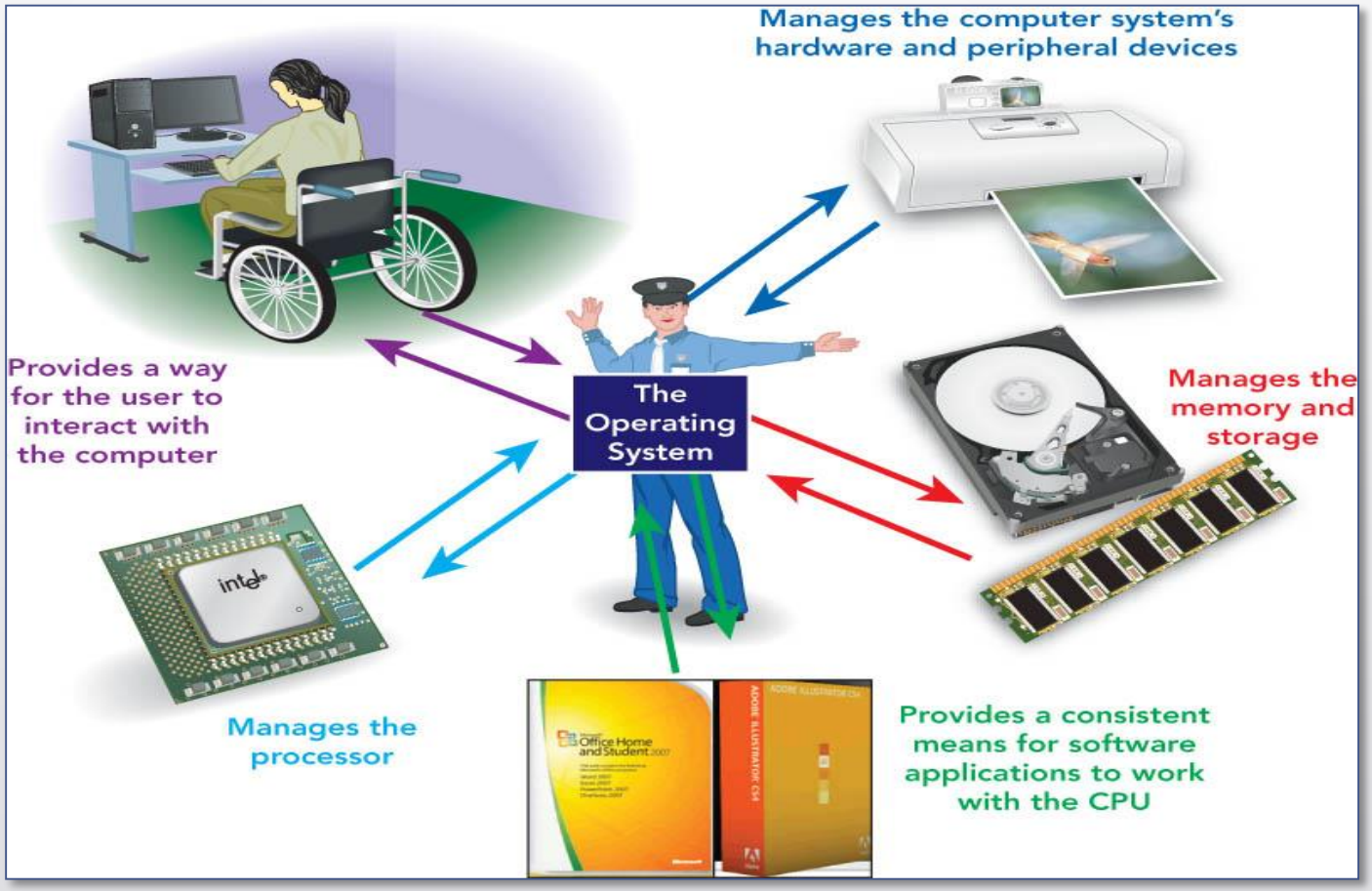
COMPUTER LITERACY

Software

- Types of software
  - Applications software
  - Systems software

- Systems software include programs that enable the computer and its peripheral devices to function smoothly, such as
  - The **operating system**
  - System utilities (utility programs)

Operating System



Types of Operating Systems

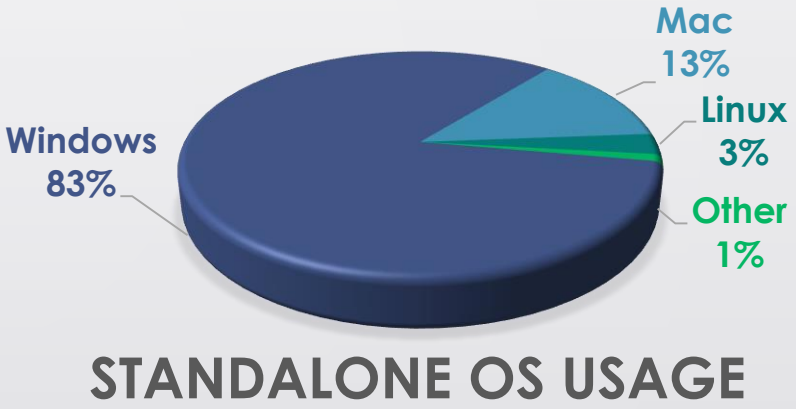
Type	**Application**
Stand-alone OS: used by single users	laptop and desktop
Server OS: used in client/server network environments	typical business network, ecommerce application and large scale application.
Embedded OS: found on ROM chips in portable or dedicated devices	mobile devices, tablets, in-vehicle or any hand held devices

Popular Standalone Operating Systems

Platform is determined by combination of microprocessor chip & OS

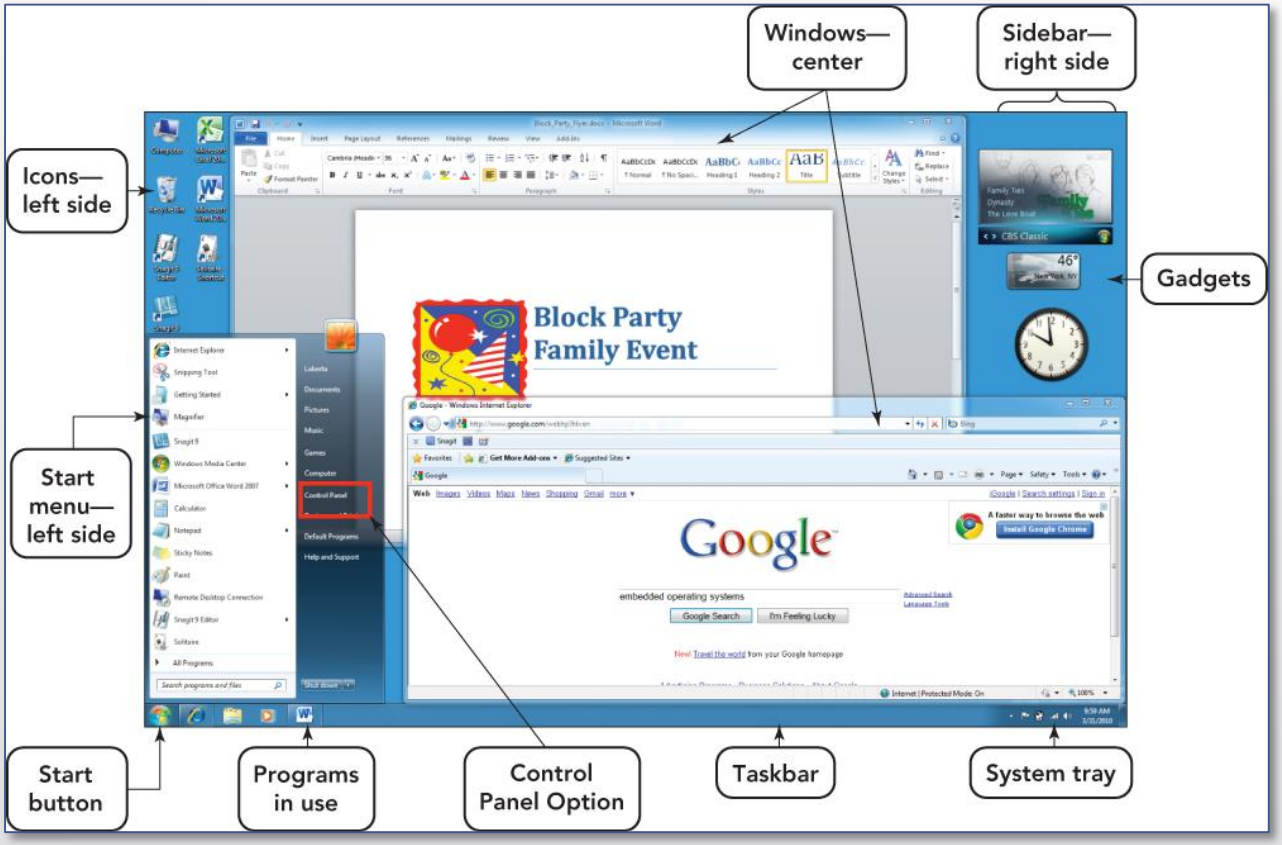
Windows [Windows OS]
- Dominates the marketplace
- Least secure, prone to viruses
- Intel or AMD chip

Mac [macOS]
- Can run Windows software
- More secure
- Intel or IBM/Motorolla



Linux [Many distributions…]
- Can be installed on PC or Mac machine
- Most secure, fewer viruses

Windows Operating System

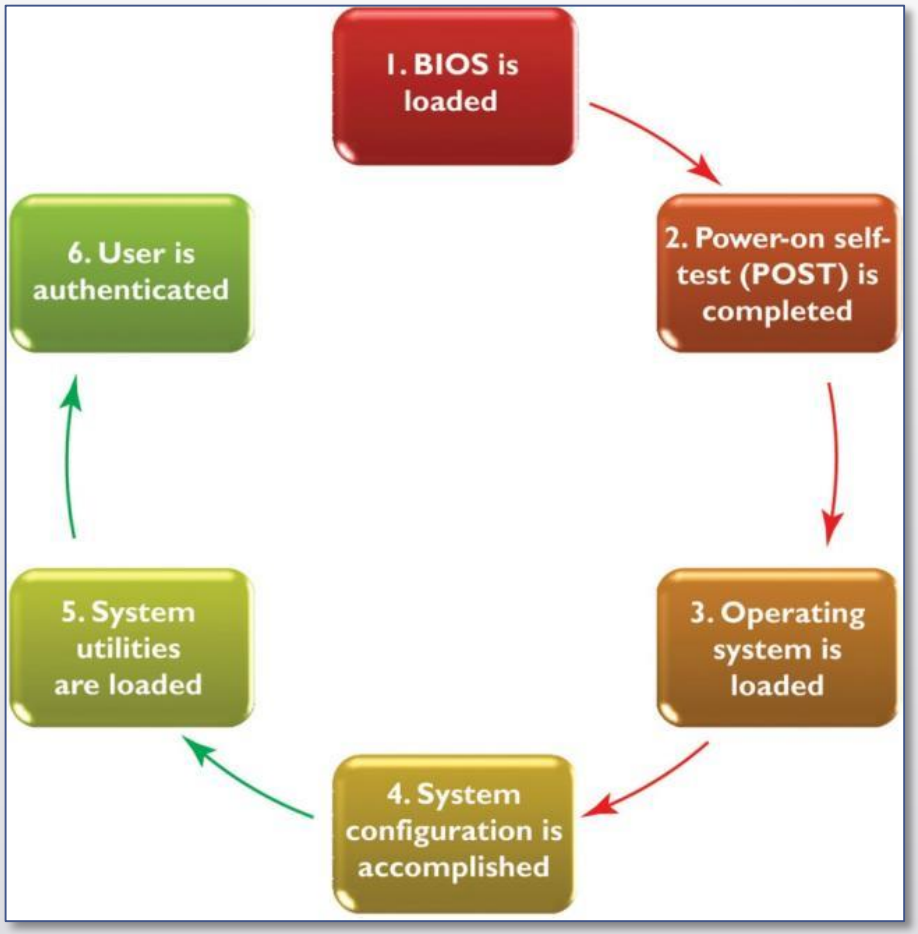


Booting the Computer

Booting: loads OS into RAM

- **Cold boot**: Start computer by turning power on
  - Performs hardware checks
  - Loads main OS in RAM
- **Warm boot**: Restart a computer that is already on
  - Shuts down all programs
  - Loads main OS in RAM

Booting Process



Step 1: BIOS and Setup Program

- **BIOS** (Basic Input/output System) instructions with descriptions of the internal equipment
  - BIOS is encoded on ROM (read-only memory)
  - Manages exchange of data between OS and I/O devices

- **Setup program**
  - Includes settings that control computer hardware
  - Making incorrect changes in BIOS will cause the system not to boot
    - Devices checked in following order
    - Hard disk > optical disk > flash drive

Step 2: Power-on Self-Test

- **Power-on Self-test**
  - Confirms that computer and peripheral devices are working
  - FAIL -> A beep will sound with an error message

Step 3: Load the Operating System

- **Load the Operating System**
  - Looks for the operating system
  - Loads the kernel into memory—the central part of the operating system—and the operating system loads the system configuration information.

Steps 4 & 5: System Configuration and System Utilities

- **Configure the System**
  - Checks the registry; Database that stores information about software and peripherals choices
  - Checks and installs the drivers: interfaces for I/O devices
  - Checks device conflicts and detects PNP (plug and play) devices
- **Load System Utilities**: anti-virus, volume control etc.

Step 6: User Authentication

- Uses a database of user name and password
- Use identification patterns such as finger prints, iris or face recognition
- Multiuser computer systems
  - each user has an account
  - Consists of user name, password, and storage space
  - Created by server/computer administrator
- **Loads user Profile**: a record of a specific user's preferences for the desktop theme, icons, and menu styles