

Current PC Operating System

- CPU
 - Central Processing Unit
 - Single-processor
 - One CPU
 - Multiprocessor machine
 - Multiple CPU
 - Classifications of CPU
 - Design Type
 - CISC
 - Complex Instruction Set Computer
 - Advantage
 - General purpose hardware
 - Driven by software
 - Disadvantage
 - Complexity of hardware and on chip software
 - Reprogram on-chip hardware
 - RISC
 - Reduced instruction Set Computer
 - Advantage
 - Special hardware to perform tasks
 - Most function on chip rather than in software
 - Disadvantage
 - Need more hardware
 - Use pipelining
 - Since each instruction is carried out in its own special hardware, the CPU can fetch the next instruction while the special hardware does its job
 - See example on page 30
 - Speed
 - Internal clock speed
 - Measured in MHZ
 - CPU perform an action on a clock tick
 - External Clock Speed
 - Rate at which it can interface with external devices
 - Cache
 - Storage within CPU
 - Can access data at internal clock not external clock if it has to go to ROM(Read Only Memory)
 - Cache controller
 - Tries to anticipate what is needed and bring data from ROM into Cache

- Address Bus
 - Internal communications pathway that specifies the source and target address for memory reads and write
 - Instrumental in transfer of data to and from computer memory
 - Data Bus
 - Allows CPU, display adapter main memory to share information
 - Number of bits in data bus indicates how many bits of data can be transferred from memory to the CPU or vice versa in a clock tick
 - Popular Processors
 - Intel
 - 8088
 - IBM PC
 - 4.7 MHZ
 - address bus 8 bits
 - external 16 bits
 - 8086
 - 16 bit data
 - 80386
 - 32 bits address
 - higher clock speeds 16,20,40
 - 80486
 - different internal and external clocks
 - called Pentium
 - a whole line in itself
 - Pentium Pro
 - MMX
 - Multimedia Extension
 - Pentium II
 - Motorola
 - Macintosh, UNIX machines
 - 68000 line
 - Sun Microsystems
 - SPARC
 - RISC
 - Popular Operating Systems
 - MS-DOS and PC-DOS
 - DOS
 - Disk Operating System
 - Fit on Floppy Disk
 - Advantages
 - Runs on Minimal hardware]
 - Small size
 - Minimal memory

- Disadvantages
 - Newer hardware
 - Minimal utilities & user support
 - Cannot support large memory
 - Command line interface requires knowledge and training
- Internal command – OS command memory resident
 - VER
 - DIR
 - CD
 - MKDIR
 - RMDIR
 - COPY
 - DEL
- External Commands – programs on disk
 - CHKDISK
 - FORMAT
- Windows 3.1
 - Run on top of DOS
 - Runs in 16 bit mode
 - Autoexec.bat
 - Command file run at startup
 - User interface
 - File Manager
 - Visual viewing of directories
 - Multitasking – cooperative
 - Windows for workgroups 3.11
 - Included networking
 - Peer to peer
 - Every machine can be a server and a client
 - Small workgroups
 - Share files
 - Share printers
 - Email
- Windows 95
 - 32 bits
 - networking support
 - came to market about the same time the Internet took off (TCP/IP support built in)
 - required twice the memory, twice the disk space, twice the processor power
 - Plug and Play hardware
 - Let OS and hardware communicate
 - User Interface

- Desktop
 - Task bar at bottom of screen
- Active X
 - Component Object Model(com)
 - Standard way for programs to communicate with each other
- Registry
 - Database that stores information about hardware and software configurations
 - Store configuration information
 - Present in Windows 3.1 but not used much
 - Contains
 - OS configuration
 - Service and driver information and configuration
 - Static tuning parameters
 - Software and application parameters
 - hardware configuration
 - performance information
 - data previously stored in .ini files, each application had its own .ini file
- Multitasking still cooperative
 - Task supervisor can detect tasks that are errant
 - Gives user ability to close task without shutting down computer
- Networking and communication features
 - Network control panel
- Windows 98
 - Expanded PNP
 - Advanced Power management
 - Support for new hardware standards such as USB(Universal Serial BUS)
 - Improved cooperative multitasking
 - Greater integration of Internet and network features
 - Extended multimedia support
- Windows NT
 - Preemptive multitasking
 - Kernel optimized for maximum performance
 - Networking support
 - Security
 - User has to log on
 - Strong authentication
 - Domain
 - Client have to authenticate through domain
- UNIX
 - Berkley System Distribution(BSD) or System Release 4

- Shells
 - Bourne (sh)
 - Bourne again (BASH)
 - C Shell (csh)
- GUI
 - X Windows
- Networking based on
 - TCP/IP
- File System
 - NFS
 - Network File System