1) batch processing is execution of a series of programs on a computer without manual intervention, so all input data is preselected through scripts or command-line parameters. A program takes a set of data files as input, processes the data and produces a set of output data files. The input data are collected into batches of files and are processed in batches by the program.

The operating system's major task was to automatically transfer control from one job to the following one.

or

Jobs with similar needs were batched together and were run as a group. The operating system's major task was to automatically transfer control from one job to the following one. A batch system is characterized by the lack of interaction between the user and the job during execution.

time sharing vs multiprogramming

Time sharing is a way of sharing out computer facilities between a number of people who want to use the computer at the same time. Each has a separate terminal and gets the impression that they have sole use of the computer with their own 'account'. Whereas multiprogramming is a term used to describe how a computer can run more than one application at the same time by dividing up its memory.

Read more: http://wiki.answers.com/Q/What_is_the_difference_between_time_sharing_and_multiprogramming#ixzz1Ru6AvQv9

Multiprocessing: several processors are used on a single computer system to increase the processing power of the machine.
Time sharing is a way of sharing out computer facilities between a number of people who want to use the computer at the same time. Each has a separate terminal and gets the impression that they have sole use of the computer with their own 'account'.

batch file:
a **batch file** is a text file containing a series of commands intended to be executed by the command interpreter.

or sequence of commands.

Soft real-time system: most specific environment. minimal interrupts. minimum input. no virtual memory. minimum ram. most code in rom. a critical real-time task gets priority over other tasks

example:

- LynxOS
- OSE
- QNX
- RTLinux

- VxWorks
- Windows CE

2)
Dual mode of operation is the distinction between execution of user mode and kernel mode (supervisor mode, system mode, and privileged mode). A mode bit is added to the hardware to indicate the current mode: Kernel(0) or user(1). Dual mode of operation provides us with more protection to the operating system. For example, if a kernel instruction is executed under user mode, the hardware does not execute it, although identifies it as an illegal execution and traps it to the operating system.

or dual mode is about the cpu implemented through the hardware.
reasons of having: protection of the OS and protection of the user processes.

Privileged - instructions are instructions that can be executed only in monitor mode. privileged instruction will be checked by the OS.
System call: interface between user process and OS (Kernel). OS calls the system. any access to the main memory is system call. everything goes through OS.

Boot-time:
when turn on the computer, a set of instructions (thats in the ROM) is executed. power-on self test (POST) check the hardware. BiOS seeks instruction on the master boot record. Bootstrap starts executing, loads in the main memory. the kernel of the OS.

first unix was written assembly language but now it's written in C.

Unix systems are characterized by various concepts: the use of plain text for storing data; a hierarchical file system; treating devices and certain types of inter-process communication (IPC) as files; and the use of a large number of software tools, small programs that can be strung together through a command line interpreter using

pipes, as opposed to using a single monolithic program that includes all of the same functionality. These concepts are collectively known as the Unix philosophy.

3)

Terminate and Stay Resident (**TSR**) is a computer system call in DOS computer operating systems that returns control to the system as if the program has quit, but keeps the program in memory.

tsr install, tsr service , tsr uninstall,

efficient if run very often.

all the processors run in system mode and user mode.

shell : rc, C shell, Z shell, TC shell

change shell : chsh

Win 32: interface between user mode and kernel. manages all keyboard, mouse, screen, I/O operation. starts all processes.

4

modern architecture :
modularity: horizontal : communication by messages and peers together.
use of microkernel concept: interface with the hardware.
load from different windows will still work(HAL)
executive: have different module. peers between them. communicate by messages, control by kernel.

example of Asynchronous: from operating system, come from hardware, scheduler timer.
example of synchronous: division by 0 will create interrupt, underflow or overflow will create interrupt, illegal reference, wait(), exit().

task of command interpreter : takes a command. like cut, copy, paste.
internal command : execution code of command is part of the shell. example background bg, change director cd , pwd, exit.