3.1

**batch processing:** the execution of jobs by collecting them in a single batch, then executing them without further interaction with the user. The jobs residing in mass storage waited for execution in a job queue.

**FIFO:** first-in, first-out, objects are removed from the queue in the order in which they arrive.

Jobs waiting in the job queue can be assigned different **priorities**.

Computer operator is becoming obsolete. System admin now manages the computer system (hardware, software, accounts, disk space, etc.)

**Interactive Processing:** execution of programs that carry on a dialogue with the user through remote terminals or workstations.

The activities taking place in a machine must be coordinated with the activities in the machine’s environment is called **real-time processing**.

**Time-sharing:** a technique of dividing time into intervals, or time slices, and then restricting the execution of a job to only one time slice at a time. The “illusion” of several jobs executing simultaneously is created. Significant overhead. However, computers systems spend a lot of time “waiting”.

**Networks:** couple computer systems. Shared resources (printing, software, data, and information)

**Internet:** a network of networks.

**Load Balancing**

**Scaling**

3.2

**Application Software:** consists of the programs for performing tasks particular to the machine’s utilization. i.e. spreadsheets, databases desktop publishing, development software and games.

**System Software:** performs those tasks that are common to computer systems in general. 2 categories: OS and utility (format, disk copy)

  **OS**

  **shell:** the interface between the OS and it’s users. Modern shells are typically implemented as **GUIs**. Older shells are implemented as **CLIs**.
The internal part of an OS is often called its **kernel**. Performs the very basic functions (file manager including directory/folder and path, device drivers, memory manager, scheduler and dispatcher).

**Virtual Memory**: programs and data are rotated back and forth between main memory and mass storage. Typically swaps 4 kilobyte “pages”.

Booting Process: See Figure 3.5 on page 131.

3.3

The activity of executing a program is known as a **process**. **Process state** is a snapshot of the machine (PC, registers, memory, etc) at that time. A single program can be associated with more than one process.

**Process table**: used by the scheduler to keep track of all the processes.

The procedure of changing from one process to another is called a **process switch**.

**Interrupts** are generated at the end of each **time slice** or **quantum**, current machine cycle is completed and control is handed over to the **interrupt handler** (part of the dispatcher) See Figure 3.6.

**Client** (makes requests of other units)/**Server** (satisfies the requests made by clients) **Model**. Can be one machine or separate machines connected via a network.

3.5

**LAN**: spans a single building or complex.

**WAN**: can span a city or the world.

Networks like the Internet can be open via TCP/IP, other are close or proprietary such as Novell’s IPX.

Network configurations or topologies can be ring, bus or star.

The **Internet**, a network of networks, initiated in 1973 by DARPA.

Networks are connect via **routers**.

**Domain** is a collection of network clusters operated by a single organization.

IP Address: 32 bits, 2 parts, the domain or **network identifier** and a **host address**.

**Domain Name** a unique mnemonic address that corresponds to a specific domain.
**e-mail** or electronic mail.

A directory containing the mnemonic address and the corresponding numeric Internet address of each machine within a domain is implemented on a **name server**.

**ISP** or Internet Service Provider, offers Internet access to individuals on a commercial basis.

Other key words to know:

- hypertext
- World Wide Web
- browser
- hypermedia
- uniform resource locator (URL)
- Hypertext Markup Language (HTML)
- protocols
- file transfer protocol (ftp)
- telnet
- packets
- Transmission Control Protocol/Internet Protocol (TCP/IP)
- public-key encryption
- virus