

## **Information Processing Modes**

### **Batch Processing/Deferred Processing/Off-line Processing**

Transactions are collected and processed against the master file at some given period.

#### **Advantages:**

- No user intervention needed when processing begins.
- An economical method of processing large volumes of data.
- System is secure because when a new file is created the old one can be used as a backup.

#### **Disadvantages:**

- Data in reports is outdated by the time the report is generated.
- Requires expensive computers.
- Errors can only be corrected after the report is generated.

#### **Uses:**

- Payroll
- Utility companies (e.g. light, water, gas)
- Service industries (e.g. telephone, department stores)
- Bank loan repayments
- Insurance companies (e.g. mortgages and premium payments)
- Credit card companies.

## Realtime System

A computer system that responds to transactions by immediately updating the appropriate master files and/or generating a response in a time frame fast enough to keep an operation moving at its required speed. Such systems are usually dedicated to one type of application and no one is allowed to access a file until it is updated.

### Advantages:

- Information is accurate and up-to-date.
- Provides a quick response.
- Provides better service.

### Disadvantages:

- Requires expensive software and hardware.
- The computer must be dedicated solely to the task.
- The computer must be continually online.

### Uses:

- ATM
- Banking
- Airline reservations
- Police enquiry systems
- Controlling the timing of traffic lights,

- Provide flight instructions
- Monitoring patient's vital signs
- CAI
- Process control (monitoring temperature of substances in a chemical plant)
- Monitoring nuclear power stations
- Controlling missile launches
- Machines controlled by robots
- Stock control systems
- Electronic funds control
- Flight simulation.

### **On-Line Processing System**

Computers and peripherals devices are online when they are connected to the main processor and turned on. Data is processed as soon as it is available. The terminal user is on-line while the data submitted to the computer are processed. A realtime system is an on-line system but not all on-line systems are realtime.

#### **Advantages:**

- Immediate processing of data.
- Data are processed within a short time. (NB processing may begin immediately but if the system is slow it can take a long time to complete the processing tasks).
- Requires little attention by operators.
- System may be used from a distant (via the Internet or a network)

#### **Disadvantages:**

- If the user activity is high the response time is slow.
- Not possible to run jobs with large inputs.

### Uses:

- Printer connected to the computer and turned on
- Surfing the Internet provided that you are connected

### Time-sharing Systems

This system allows many users to share time on a single computer. Each user is given a slice of CPU time by the computer. The computer operates so fast that it appears that the user is the only person accessing the resources of the computer. Examples are:

- Bank card system which allows many customers to access the same program from the bank's mainframe.
- Multitasking (executing several programs simultaneously).
- Multiprocessing (two or more processors executing instructions).
- Multi-user (several users accessing the resources from a network)
- Multi-programming (using one CPU to execute multiple programs).

### Advantages:

- By allowing a large number of users to interact concurrently with a single computer, time-sharing lowers the cost of access to computer systems.
- Makes it possible for persons and organizations to use a computer without owning one.

### Disadvantage:

- May experience delays when servers get busy.