



# Lecture- 04



### **1.4.2 Data**

According to section 2(1)(o) of the IT Act “data” means a representation of information, knowledge, facts, concepts or instructions which are being prepared or have been prepared in a formalised manner, and is intended to be processed, is being processed or has been processed in a computer system or computer network, and may be in any form (including computer printouts magnetic or optical storage media, punched cards, punched tapes) or stored internally in the memory of the computer; Simply put, data is

1. a representation of information, knowledge, facts, concepts or instructions,
2. prepared or being prepared in a formalized manner,
3. processed, being processed or sought to be processed in a computer.

#### **Illustration**

Sanya is typing a document on her computer. The moment she presses keys on her keyboard, the corresponding alphabets are shown on her screen. But in the background some parts of the document are stored in the RAM of her computer (being processed) while other parts are stored on the hard disk (processed). At any given instant some information would be passing from her keyboard to the computer (sought to be processed).

Data can be in many forms such as

1. computer printouts,
2. magnetic storage media e.g. hard disks,
3. optical storage media e.g. CD ROMs, DVDs, VCDs
4. punched cards or tapes i.e. a paper card in which holes are punched.

#### **Illustration**

The electronic version of this book stored on your computer or on a CD would be “data”. A printout of the electronic version of this book will also be “data”.

### **1.4.3 Computer Software**

Computer software is a general term that describes a collection of:

1. computer programs,
2. procedures and
3. documentation.

Computer hardware, on the other hand, consists of the physical devices that can store and execute computer software.

#### **Illustration**

Sanya downloads the OpenOffice software from the Internet. In effect what she downloads is an executable file. She double-clicks on the executable file and begins to install the software on her computer.

- During the installation she specifies the part (drive and folder name etc) of the hard disk where the software files must be saved.
- During the installation the software also makes entries in system files (e.g. registry) maintained by the operating system (e.g. Windows XP).
- Once the installation is complete, Sanya can run the software. When she runs the software, relevant software files get loaded into RAM and are subsequently executed in the CPU (central processing unit).
- Computer software can be divided into two fundamental categories – system software and application software.
- Application software uses the computer directly for performing user tasks. System software enables the application software to use the computer’s capabilities.

## **Analogy**

An oil company drills for oil on the sea bed. This oil is then processed and provided to the customer in the form of petrol for his car. Here the petrol is like the application software – it helps the user to run his car. The oil company is like the system software – it enables the petrol to be taken to the user.

System software can be of various types such as:

1. operating systems which form the platform for all other software on a computer,
2. device drivers which allow computer programs to interact with a hardware devices such as printers, scanners etc,
3. programming tools which help programmers to develop and test other programs,
4. compilers which compile the source code into the object code,
5. linkers which link object code files (and libraries) to generate an executable file,
6. utility software that helps manage and tune the computer hardware, operating system or application software.

Application software include

1. word processors (e.g. Microsoft Word),
2. spreadsheets (e.g. Microsoft Excel)
3. presentation software (e.g. Microsoft Powerpoint)
4. media players (e.g. Microsoft Windows Media Player)
5. games (e.g. Need for Speed, Age of Empires)
6. forensic software (e.g. Winhex, X-Ways Forensics)
7. encryption software (e.g. PGP)
8. Internet browsers (e.g. Mozilla Firefox)

9. FTP clients (e.g. FireFTP) and hundreds of other types of software.