



**Input facilities** are those which transfer information from the outside world into a computer system. E.g. keyboard, mouse, touch screen, joystick, microphone, scanner etc.

**Output facilities** are those which transfer data out of the computer in the form of text, images, sounds etc to a display screen, printer, storage device etc.

Hard disks, USB disks, floppies act as both input and output facilities.

**Processing facilities** primarily refers to the Central Processing Unit (CPU) of a computer. Referred to as the “brain” of the computer, the CPU processes instructions and data.

**Storage facilities** include hard disks and other data storage facilities. This term would also include the physical cabinet in which a computer is housed.

**Computer software facilities** refer to the operating system and application software that are essential for a computer to function in a useful manner.

**Communication facilities** include the network interface cards, modems and other devices that enable a computer to communicate with other computers.

### **Illustrations**

Considering the wide definition given to the term computer by the IT Act the following are examples of “computers”:

- desktop personal computers
- mobile phones
- microwave ovens
- computer printers
- scanners
- installed computer software
- Automatic Teller Machine (ATM)
- “smart” homes which can be controlled through the Internet

### **Relevant Case Law**

In an interesting case, the Karnataka High Court laid down that **ATMs are not computers, but are electronic devices under the Karnataka Sales Tax Act, 1957.**

Diebold Systems Pvt Ltd [a manufacturer and supplier of Automated Teller Machines (ATM)] had sought a clarification from the Advance Ruling Authority (ARA) in Karnataka on the rate of tax applicable under the Karnataka Sales Tax Act, 1957 on sale of ATMs.

The majority view of the ARA was to classify ATMs as "**computer terminals**" liable for **4% basic tax** as they would fall under Entry 20(ii)(b) of Part 'C' of Second Schedule to the Karnataka Sales Tax Act.

The Chairman of the ARA dissented from the majority view. In his opinion, ATMs would fit into the description of **electronic goods**, parts and accessories thereof. They would thus attract **12% basic tax** and would fall under Entry 4 of Part 'E' of the Second Schedule to the KST Act.

The Commissioner of Commercial Taxes was of the view that the ARA ruling was erroneous and passed an order that ATMs cannot be classified as computer terminals.

The High Court of Karnataka acknowledged that **the IT Act provided an enlarged definition of "computers"**. However, the Court held that **such a wide definition could not be used for interpreting a taxation related law** such as the Karnataka Sales Tax Act, 1957.

The High Court also said that an **ATM is not a computer by itself and it is connected to a computer** that performs the tasks requested by the persons using the ATM. The computer is connected electronically to many ATMs that may be located at some distance from the computer.

*Diebold Systems Pvt Ltd vs. Commissioner of Commercial Taxes ILR 2005 KAR 2210, [2006] 144 STC 59(Kar)*





## 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.