

Chapter one

Introduction to computer

1.1 What is Computer?

Computer is the device that receives input data by input units, and processes these data by processing units; then either it saves the processed information in the storage units or outputs them by output devices.

In order to explain the functions that can be implemented by computer, it must be understood the meaning of the following words:

1-Data

Data are many types of information which can be processed by computer such as orders, numbers, selections, pictures, sounds, etc.

2-Processing

It is a method of treating the data and converting them from such form to another. This function is done in the processor or random memory.

3- Output

It is the method of appearing the information with such a way that can be understood from user such as screen display, earphone, printer, etc.

4-Storage

It means the save of information in computer in order to use them consequentially. This save may be done by CD, DVD, Flash, etc.

5-Networks

They are groups of computers connected with each other where any computer can transmit the information to any other computer. Networks may be constructed from two computers or may include millions of computers.

1.2-Use of computer

There are many functions that can be implemented by computer. The difference between computer and other devices is that the computer can do

many task while the other devices are designed to do limited objects .For example, TV can be used for watching only, Radio is used for listening only, etc. However, there are some of simple functions that can be done by computer:

- i- Implementation of calculation of any company or state.
- ii- Different types of games.
- iii- Designing and printing the drawings and movements.
- iv- Printing the messages and papers.
- v- Using internet.
- vi- Engineering drawing such as 3D drawing
- vii- Programming the devices.
- viii- Arranging and giving lectures.
- ix- listening for music and watching videos.

Also, many other complex and simple applications can be implemented by computers.

1.3 The stages of development of computer

A- First stage (1940-1959)

B-second stage (1959-1964)

C-third stage (1964- beginning of seventies)

D-fourth stage (beginning of seventies-present time)

1.4 General types of computer

In general, the computers differ from each other based on their ability of processing the data. Some of computers have a limited ability while there are types of computers that have very high ability of processing the data. This variety of computer types makes them suitable for different

applications and with adequate ranges of costs which can be acceptable for most user requirements.

1- Central computers (Mainframe).

They are very big computers such as that used in banks and government corporations (ex. Ministry of interior). These great size computers cannot be bought by normal persons because of their high cost. They can process large amount of data such as information of millions of peoples.

2- Personal computers.

This type can be used by normal users in houses or in work. It may be used for processing words, playing different games, using internet, learning, etc. however, this type of computers can be classified as:

a- Desktop computers

This type is larger than the other type and can be put on table in the house or in the work. Its cost is less than that of the other type and cannot be moveable because of its large size.

b- Notebook or Laptop

They are small sizes of computers used at travelling. They are represent personal computers and they are easy in movement because of their light weights and because they are constructed as a unique piece. This type is run with recharged battery in order to be able for using at movement. Also, laptop can do the same functions that can be implemented by desktop computer with keeping the light weight and small size therefor this type has higher cost as compared with the first one.

3-Servers

This type is used in networks to represent the main center of the network. It represents the place of saving and managing the network. Also, this type should be strong sufficiently in order to be able to manage the large number of computers in the network. In fact, with the development of the

personal computers they can be used as servers and now the difference between personal computers and servers has decreased gradually.

1.5 Output appearance of computer

A-Case:

It is a metal box which contains the mother board. This mother board contains number of cards such as monitor card, sound card... etc. The output appearance of case consists of:

1- Operating switches: there are two types of switches:

i- Power switch: The main function of this switch is the connection of electrical current. This switch is of two types:

a- AT switch: it is a normal switch (**On-Off**).

b- ATX switch: This is a new switch where it can run the device by one press and then the computer can be returned to the shutting down way by such order from inside of the computer.

ii- Reset: which is used for restarting the computer when such a problem has occurred such as when the computer cannot respond or implement any order. However, there are some cases that need to use the Restart switch:

- When the computer do not respond to any order.
- When adding any new part or device such as printer or scanner.
- When setting up any new program in the computer.

2-Drivers:

There are many types of drivers such as:

i- CD-Rom

This is used to drive the (CDs) and it means (Compact Disk Read Only Memory).

ii- Floppy Disk Driver

This is used to drive the floppy disks that operate with magnetic effects.

iii- CD-Writer Driver

By this driver, the information can be saved in the empty disks. The empty disk is named as (CD-Recordable). After burn, the CD will be able to read only.

Note: This driver can be used for reading and writing at the same time.

iv- ZIP Driver

This is the responsible driver for driving the ZIP disks. These disks are similar to the floppy disks except that ZIP disks are larger in thickness and greater in the capacity of storage.

v- DVD driver

This driver is used to drive the DVD disks which are similar to CD disks but DVD disks have greater capacity for storage.

B- Monitor

It is the part of computer that can display the results of the programs and applications as pictures, symbols, information ...etc. It represents the importance unit of display and it can be classified according to the cards such as CGA, EGA, and VGA which are old types. The new types such as flat screen and digital SVGA contain five switches:

- 1- power (on-off) switch.
- 2- Control menu switch.
- 3- Right and left movement switches.
- 4- Exit switch.

C- Key Board

It is one of the input units which contain about 150 key. These keys include symbols, Arabic letters and English letters. Also, this unit contains many orders that can be issued to the computer.

D- Mouse

Its size is as the fist and it has right and left sides. Also, it has a wheel at its center used for browsing the windows.

1.6 Representation of data in computer

The computer is electronic device which has some properties such as the ability for saving the information, processing data and display the information. The computer uses electrical signal which has two states either it is exist or not, or, with other word, this signal may be positive (+) or negative (-). Therefore, the representation of data inside the computer depends on the use of these two states of signal which take a digital binary by using either number (1) or number (0). Where the number (1) represents the positive signal (it is existing), while, the number (0) represents the negative signal (it is not exist). Therefore, the information is represented by (**Byte**) which consists of the numbers (1) and (0). Knowing that, the numbers (1) or (0) represent one (**Bit**). For example, to represent the Arabic letter (ا) in the computer it will take the form (11000110) which equal to (8) **Bits**. The word **Bit** means **Binary Digital** or it also may mean **piece**.

1.7 Units of measuring the storage capacity in computer.

* **Bit:**

Bit is the smallest piece or unit of storage which has one of the two forms either (1) or (0).

****Byte:**

Every one Byte consists of chain of (8) Bits. The Byte may represent one letter or one symbol such as (?) , (!) ,....etc.

*****Kilo Byte (K.B)**

1 K.B=1024 Byte

Or

1 K.B $\approx 10^3$ Byte

*** **Mega Byte (M.B)**

1 M.B=1024 K.B

Or

1 M.B = 1024×1024 Byte

Or

1 M.B = 10^6 Byte

****** Giga Byte (G.B)**

1 G.B = 1024 M.B

Or

1 G.B = 10^9 Byte