

CHAPTER FIVE

Input and Output Devices

Input and Output Devices

Input Devices

1-Keyboard:

The most commonly used input device is the keyboard, its ability to enter text and number. It has 101 keys arranged in five groups:

a- Alphanumeric keys

The alphanumeric keys –the part of the keyboard that looks like a typewriter arranged the same way on almost every keyboard. Sometimes this common arrangement is called the (QWERTY) because the first six keys on the top row of letters are Q, W, E, R, T and Y.

b- Modifier Keys

Besides the character keys, a keyboard incorporates special keys that do nothing by themselves but modify the functions of other keys. For example, the ⇧ Shift key can be used to alter the output of character keys, whereas the Ctrl (control) and Alt (alternate) keys trigger special operations when used in concert with other keys.

c- Numeric Key

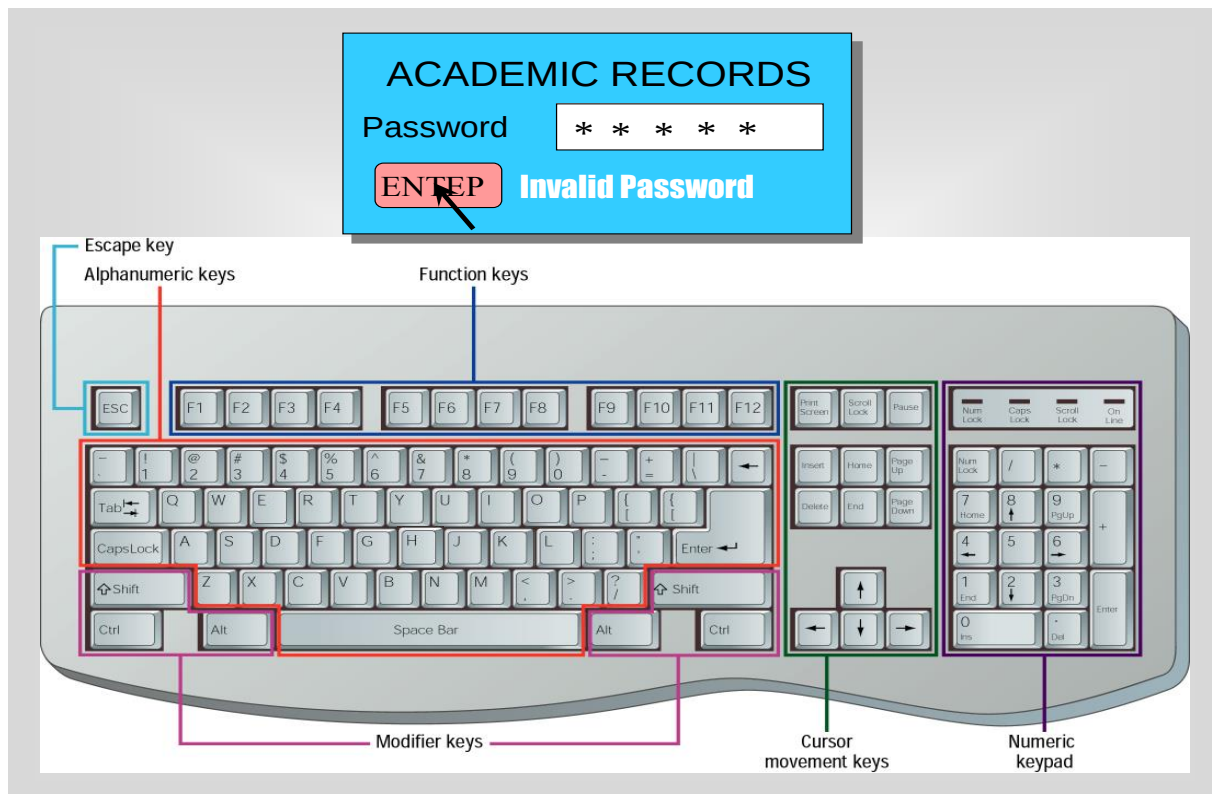
The Numeric Key located on the right of the keyboard, it is used for numeric data as well as mathematical operation (+, -, *, and /).

d- Function Key

The fourth parts of the keyboard, these keys (labeled F1, F2, and so on) are usually arranged in the top of keyboard. Each function key's purpose depends on the program you are using.

e- Cursor –Movement keys

The fifth part of the keyboard is the set of cursor –movement keys, which let you move around the screen without using a mouse such as → ↑ ← ↓ as well as print screen, home.



Parts of Keyboard Circuitry:

a- Keyboard controller

b- Scan code

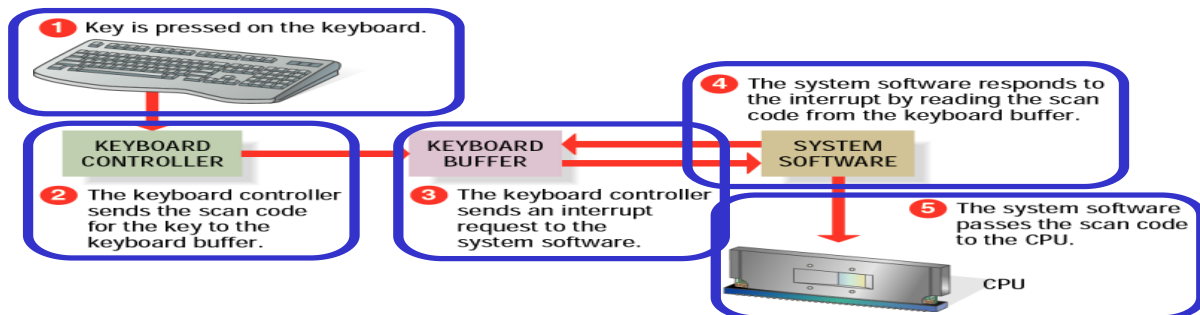
c- Keyboard buffer

d- Interrupt request

How the Computer Accepts Input from the Keyboard

A tiny chip called the Key board controller notes the key has been pressed the Keyboard controller places a code in to part of memory called the keyboard buffer, this code is called the key's Scan code, the Keyboard controller then send signals to the computer system software that something has happened at the key signal called interrupt request for read the code of the keyboard. When the system software receives an

interrupt request to reads the code from the keyboard buffer .It then sends the key's scan code to the CPU.



How the Computer Accepts Input from the Keyboard

2- Touch Screens

- Touch-screen systems accept input directly through the monitor.
- Touch screens use sensors to detect the touch of a finger.

A touch screen has three main components:

1- touch screen sensor

A touch screen is the glass panel which generates an electrical current or signal accurately in the place where it presses directly.

2- touch screen controller

It takes information from the touch sensor and translates it into processor by cable USB.

3- software driver

It used for processing and run the screen.



Types of Touch Screen:

- *Resistive touch screen:*

Resistive-type screens the most common in use today , they tend to be very durable and can be used in a variety of environments.

- *Capacitive Touch Screen:*

It is charge storing screen that uses electric charges where stored by hand at the pressure, capacitive panels must be touched with a finger.

- *Surface Acoustic Wave Screen (SAW):*

Surface wave touch panels are the more advanced of the two types, offering the highest clarity.

3- Mouse:

Is a pointing device that rolls around on a flat surface which is used to control the movement of a mouse pointer on the screen and also called mouse pointer that is used to select text, access menus, and interact with programs, files or data that appear on the screen.

Types of Mouse:

- 1- Mechanical mouse.
- 2- Opt. mechanical mouse.
- 3- Optical mouse.

Component of Opt. mechanical mouse:

- Container mouse.
- Function Buttons.
- Interconnect Cable.
- Internal Sensors.
- Tracking ball.
- Light Emitting Diode (LED).

How the Mouse work?

Mouse has the two units to generate light in each unit has light emitting diode and transistor to sensor light, the emitter is located on one of the aspects of wheel that sends light through the holes and when the wheel round, cutting the light passing through the holes and oriented sensor light on the other side of wheel, which receives light and converts it to electrical signals in the form of flashes. The computer processes these flashes to know the amount and direction movement of tracking ball in a mouse.

Output Devices (Monitors)

- *Cathode Ray Tube (CRT):*

CRT is the technology used in a computer monitors and televisions, works by moving an electron beam back and forth across the back of the screen. Each time the beam makes a pass across the screen, it lights up phosphor dots on the inside of the glass tube, thereby illuminating of the screen. The smallest number of phosphor dots (pixel). Common sizes are 15, 17, 19, 21, and 22 inches.

Resolution:

Is the term used to describe the number of dots, or pixels, used to display an image. Higher resolutions mean that more pixels are used to create the image, resulting in a cleaner image. The display, or resolution on a monitor, is composed of thousands of pixels or dots. This display is indicated by a number combination, such as 800 x 600. This indicates that there are 800 dots horizontally across the monitor, by 600 lines of dots vertically.

Compared between CRT and Liquid Crystal Displays (LCDs):

- 1- Cathode Ray Tubes (CRT) They are large, bulky and consume a lot of power. Liquid Crystal Displays more commonly known as (LCDs) to replace CRTs in most applications today, Consume screens (LCD) less energy compare to (C RT).
- 2- the important features in the LCD monitors is the viewing area, for example, screen size of 15 inches type LCD equals in the viewing area of a 17-inch screen of CRT.
- 3- Characterized of screens (LCD) that its image is sharp and accurate in addition to the clarity of colors compared to CRT.

Printers:

Device used to print the data or text on the pages, the output printed of computer called hard copy.

The printers different depending on:

- 1- The printer color (color or black).
- 2- Technique type (Thermal, Ink-Jet and Laser printers).
- 3- Printer accuracy.

- 4- The functions.
- 5- Printer speed.

There are two types of printers Depending on the work nature:

1- Impact printers:

Creates symbols by using small hammers or pins, by pressing on the tape against the paper. This type is limited speed, and the shape and size of letters are fixed.

2- Nonimpact Printers:

Creates symbols by heating effect or electrical effect and laser beam that prints more thousands of line per seconds.

There are many types of printers:

- 1- Thermal printers.
- 2- Ink-Jet printers.
- 3- Laser printers.