What is a Printer? Types of Impact and Non Impact Printers

Printers

Printers are the most commonly used and popular output devices. They provide information in a permanent readable from. They produce printed output of results, programs and data. Prints text or image on paper called hard copy. The printing speed of a printer is measured in pages per minute (ppm).Printer resolution is often measured in dots per inch (dpi).

Types of Printers

Printers are classified into two categories according to printing technology (working):

1. Impact printer
2. Non -Impact Printer

1. IMPACT PRINTER

Impact printers these Printers use an Electro-mechanical mechanism. An impact printer refers to all those printers whose printing heads touch the paper. His mechanism uses hammers or pins to strike against a ribbon and paper to print the text or image.

Types of Impact Printers

Impact printers are of two Types:
A) Character Printer
B) Line Printer

A) CHARACTER PRINTER

A Character printer prints a single character at a time. They are low speed printers. Their printing speed lies in the range of 10-600 character / second.

Types of Character printers

Character printers are generally of two types:-

1. Daisy wheel Printer
2. Dot Matrix Printer

1.DAISY-WHEEL PRINTERS

Also known as Letter Quality Printer. These printers use a print wheel font, which is termed as daisy wheel. Each petal or hammer of Daisy-Wheel has a character raised on it. A motor spins the wheel at a rapid rate. When the desired character spins to the correct position, a print hammer strikes it to produce the output.

The speed of these Daisy-Wheel Printers normally ranged between 10-75 characters per second. The noise levels of these printers are high. These printers are most commonly used in electronic typewriter.

Advantages of a Daisy-Wheel Printer

- Can print letter quality characters.
- Gives fine quality output.

Disadvantages of a Daisy-Wheel Printer

- Printing speed is very slow
- Noisy
- Cannot print Graphics
- They are very costly.

2.DOT MATRIX PRINTER

These printers print each character as a pattern of dots. The print head is made up of a matrix of tiny needles, typically 9 rows with 7 columns (9 *7 matrix needles). These shapes of each character are formed in the form of tiny dots.

The printing quality of a dot matrix printer is inferior to a daisy wheel printer. But the printing speed of a Dot Matrix Printer is range from 40 to 600 characters per second. Dot Matrix Printers are less expensive than daisy – wheel printer.

The main advantage of dot matrix printer over latter – quality printer is that dot – matrix printer can print characters in different shape, size and fonts. It has ability to print charts and graphics.

Advantages of a dot matrix printer

- Dot matrix printer uses continuous paper rather than requiring individual sheet.
- Dot matrix printer is fast and cheep.
- Dot matrix printer can print charts and graphics.

Disadvantages of a dot matrix printer

- Dot matrix printers are noisy.
- Dot matrix printers do not produce high quality.

B) LINE PRINTERS

Line printers are impact printers used with mini and mainframe computers. For producing large volume outputs. These printers print one line of the text at a time that is why known as line printer. Its printing speed lies in the range of 300-3000 lines per minute (LPM). Actually line printer prints only one character at a time but because of its printing speed, observer observes that it prints a whole line a time.

Types of Line Printers

Line Printers are of two types

1. Drum Printer
2. Chain Printer

1.DRUM PRINTER

The drum printer consists of a cylindrical drum. Asset of characters are embossed on its surface t print. A set of print hammers is associated with each character. As the drum rotates, the hammer wait for desired character and is activated when character appear in front of hammer. The hammer is placed behind the paper. There hammers strike the paper along with ribbon (ribbon is placed

between hammer and drum) against the embossed character on the surface one revolution of drum is needed to print a line. As the line is printed the paper moves upward to print next line.

2.CHAIN PRINTER

A chain containing characters is used for printing. The chain knows as print chain rotates very rapidly. With each link of the chain is character font. Magnetically driven hammers are there in each print position and all the characters which are to be printed are received by the printer through processor. When the desired character comes in the print position the hammers strike the ribbon and paper against the character thus it prints one line at a time. It is very noisy and its speed ranges from 400-24000 line per minute (LPM).

2. NON -IMPACT PRINTER

These printer uses ink and special electrical machines for producing outputs. Non – impact printers are all those printers whose printing heads do not touch paper. A non impact printer forms characters and image on a piece of paper without actually striking the paper.

Types of Non -Impact Printers

1. Laser printer
2. Inkjet printer
3. Thermal printer

1) LASER PRINTERS

They print one page at a time thus laser printer is also referred as Page Printer. A laser printer uses electronics, lasers, xerography and other techniques, which is called electro photographic technique.

A laser beam is directed across the surface of a light or photosensitive drum. An image is produced, with the use of raster scan principal, in the form of tiny dots. The laser exposed areas attract toner (or ink power). There after the drum transfers the toner to the paper. The paper then moves to a fusing station where the toner is permanently fused on the paper with heat or pressure. After this the drum is discharged and cleaned and ready for processing the next page.

Advantages of Laser Printers

- Very high speed .
- Low noise level
- Low maintenance requirement.
- Very high quality output on ordinary paper.
- Good graphics quality (300 dpi to 1200 dpi) and excellent graphics capabilities.
- Supports many fonts and different character size.
- Color printing possible

Disadvantages of Laser Printers

- Very Expensive.
- Require periodic maintenance.

2) INKJET PRINTERS

Inkjet printer is non impact character printer. It uses the dot matrix approach to print to print text and graphics. However the dots are formed by tiny droplets of ink. They print characters by spraying small drops of ink onto paper. For spraying drops nozzles are used. Special type of ink having high iron content is used for forming drops. Droplets of ink are electrically charged after leaving a nozzle when it passes through a valve. The droplets are then guided to the proper position on the paper by electrically charged horizontally and vertically deflection plates.
These printers can print 40-300 CPS (character/sec.) and can produce multi-color printouts.

Advantages of Ink jet Printers

- High quality text and graphics.
- Produces no noise

Disadvantages of Thermal Printers

- Its speed is slow than other impact printer and no- impact printers.
- Its image quality is also lower than other printer [low dpi (dot per inch) , bout 180 dpi].
- Ink cartridge is costly.

3) THERMAL PRINTER

The printer that produces images by pushing electrically heated pins against special heat – sensitive paper, is known as thermal printer.
This type of printer uses a special heat sensitive paper. These papers have a special heat sensitive coating. When a spot on the special paper is heated, it becomes dark. A character is printed with a matrix of dots. The heating element is heated by electric current. We can also say the heat sensitive paper ass chemically treated paper. In this type of printer neither the ink nor the ribbon in involved.
To print a character the printing head is moved first to the correct character position. Then the heating elements of desired character are turned on. After a short time they are turned off. There after the print head is moved to the next character. Such printers have a speed of about 200 characters per second.

Advantages of Thermal Printers

- Low noise
- Can produce high quality color output.

Disadvantages of Thermal Printers

- Expensive
- Slow Speed
- Required special paper