

NON-IMPACT PRINTERS

A nonimpact printer forms characters and graphics on a piece of paper without actually striking the paper. Some spray ink, while others use heat or pressure to create images. Commonly used nonimpact printers are ink-jet printers, laser printers, thermal printers, plotters, and mobile printers.

Ink-jet printer

- An ink-jet printer forms characters and graphics by spraying tiny drops of liquid ink onto a piece of paper.
- Ink-jet printers produce text and graphics in both black-and-white and color on a variety of paper types & sizes.
- an ink-jet printer contains ink-filled print cartridges.
- Each cartridge has very many small ink holes, or nozzles.
- The ink propels through a combination of the holes to form a character or image on the paper.



Ink Jet printer



Ink cartridges

Advantages

- ✓ Cheaper than a laser printer
- ✓ Ink jet printers are generally quiet
- ✓ Cartridges cost less to replace than toners
- ✓ Inkjet printers can produce high quality color output.
- ✓ Speed - faster than a dot-matrix

Disadvantages

- ✓ Noisier than a laser printer (but not as noisy as a dot-matrix)
- ✓ Colour printing can be extremely slow
- ✓ Cost of printouts per page are more expensive than a laser printer
- ✓ Cartridges need to be replaced more often than a laser printer
- ✓ Ink will smudge while it is still wet
- ✓ Colours can become saturated and often don't look the same as on the screen
- ✓ If not used for a while, the cartridges can dry out

Laser printer

A **laser printer** is a high-speed, high quality nonimpact printer.

Operating in a manner similar to a copy machine, a laser printer creates images using a laser beam and powdered ink, called **toner**, which is packaged in a cartridge.

When printing a document, laser printers process and store the entire page before they actually print it. For this reason, laser printers sometimes are called *page printers*.

Storing a page before printing requires the laser printer to have a certain amount of inbuilt memory.



Laser Printer



Toner cartridge

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Advantages

- ✓ Laser printers are generally quiet and fast.
- ✓ Laser printers can produce high quality output on ordinary papers.
- ✓ The cost per page of toner cartridges is lower than other printers.

Disadvantages

- ✓ Most expensive printer type to buy, especially colour lasers
- ✓ Toner is more expensive than ink-jet cartridges
- ✓ Expensive to repair - lots of complex equipment inside
- ✓ Fairly bulky - larger than ink-jet printers
- ✓ Can't use continuous or multi-part stationary to create carbon copies like you can with a dot-matrix printer

Thermal printers

A thermal printer generates images by pushing heated pins against a coated heat-sensitive paper. The coating turns black in the areas where it is heated, producing an image.

Basic thermal printers are cheap, but the print quality is low and the images tend to fade over time.

Thermal printing technology is, however, ideal for use in small devices e.g. ATM receipt printers.

Plotters

Plotters are printers used to produce large, high-quality, vector graphic drawings such as blueprints, maps, posters, and signs.

These printers are usually very costly, and are used in specialized fields such as engineering, and graphic art.

They use ink-jet printer technology, on a much larger scale, to print professional quality displays.



Advantages

- ✓ Drawings are of the same quality as if an expert drew them
- ✓ Larger sizes of paper can be used than most printers can manage

Disadvantages

- ✓ Plotters are slower than printers because each line is drawn separately
- ✓ They are often more expensive than printers
- ✓ They do not produce very high quality text printouts

Mobile Printers

A mobile printer is a small, lightweight, battery powered printer that allows a mobile user to print from a notebook computer, Tablet PC, PDA, smart phone or other personal mobile device while traveling.

They fit easily in a briefcase alongside a notebook computer.

Mobile printers mainly use ink-jet, thermal, wax-transfer, or dye-sublimation technology.

Terms associated with Printers

1. **Toner** is a powder used in laser printers and photocopiers to form the printed text and images on the paper.
2. **dpi.** (Dots per inch) is a measure of the number of individual dots printed in a line within the span of 1 inch (2.54 cm). The DPI value correlates with image resolution.
3. **hard copy** is a permanent reproduction, on the form of a physical object, of any media suitable for direct use such as paper.
4. **Page orientation** is the way in which a rectangular page is focused on for normal viewing.
 - The two most common types of orientation are portrait and landscape.
 - A page in portrait orientation is taller than it is wide, with information printed across the shorter width of the paper.
 - A page in landscape orientation is wider than it is tall, with information printed across the widest part of the paper.

Audio Output Devices

Audio output devices are the components of the computer system that produce music, speech, or other sounds, such as beeps.

Common Audio Output Devices include:

Computer Speakers

Headphones and Earphones

Computer Speakers

Computer Speakers typically have tone and volume controls, allowing users to adjust settings. To boost the low bass sounds, surround sound speaker systems also include a woofer, with one or two center speakers and two or more satellite speakers that are positioned so that sound emits from all directions.

Some Computer Speakers use Wireless technology.

PC internal Speakers

- Most personal computers have a small internal speakers that basically output beeps and low-quality sound.

Headphones and Earphones

In a crowded computer laboratory environment, speakers might not be applicable. Instead, users can plug head-phones or earphones in a port on the sound card, in a speaker, or on the front of the system unit.

With the headphone or earphone, only the individual wearing the headset hears the sound from the computer.

Other Output Devices

There are very many kinds of emerging output devices. Some are both input and output devices. Examples include:

1. Fax (or facsimile) machine
2. Interactive whiteboard.
3. Machine Tools.
4. LED displays.
5. Multifunction peripherals.

Fax (or facsimile) machine

A fax machine is a device that transmits and receives typed or hand written documents over telephone lines.

A stand alone fax machine scans the original document, converts the image into digitized data, and transmits the digitized image.

A fax machine at the receiving end reads the incoming data, converts the digitized data into an image, and prints or stores a copy of the original image.

Fax capability also can be added to a computer using an external fax modem.

Interactive whiteboard (IWB)

- An interactive whiteboard is a touch-sensitive device, resembling a dry-erase board, that displays the image on a connected computer screen.
- The presenter can use bare hands, a special tablet, or remote control to interact with the device.
- Notes written on the interactive whiteboard can be saved directly on the computer.
- Interactive whiteboards are used frequently in classrooms as a teaching tool.



- Three basic technologies exist for displaying computer images on an interactive whiteboard:
 - front projection:
a separate projector displays an image from the computer screen on the interactive whiteboard;
 - rear projection:
a projector built into the back of interactive whiteboard displays an image from the computer screen on the whiteboard; and
 - an interactive whiteboard fits over an LCD screen or a plasma display.

Machine Tools

- This is a machine for shaping metal or other rigid materials, usually by cutting, boring, grinding, or shearing.
- Through Computer-aided manufacturing (CAM) computers are used to control the output of machine tools and related machinery in the manufacturing of work pieces.

Multifunction peripheral (MFP)

- A multifunction peripheral (MFP) is a device that performs a variety of functions that would otherwise be carried out by separate peripheral devices.
- As a rule, a multifunction peripheral includes at least two of the following:
 - A printer
 - A scanner
 - A photocopier
 - A fax machine

Advantages of a multifunction device are that

- it takes up less office space.
- it is significantly less expensive than if you purchased each device separately.

disadvantage

- if it breaks down you lose all functions.

