



Computing devices

A computing device is any piece of equipment that can be connected to a computer's motherboard. These include input, output, and storage devices.

Input devices

Input devices are used to enter data into a computer.

- **Mouse:** Controls the pointer on screen for selecting items, dragging, scrolling or controlling tools. Variations include gaming mice (ergonomic designs with custom buttons) and trackball mice (stationary devices that use a rolling ball).
- **Touchpad:** Built into laptops; used for pointer control when space is limited or for portability.
- **Keyboard:**
 - › **QWERTY:** Quick way to enter data, especially for those who can touch-type.
 - › **Dvorak/Colemak:** Keyboards designed to decrease wrist strain.
 - › **Braille:** Raised patterns for visually impaired users.
 - › **Concept:** Keys with symbols for specific tasks (for example fast food orders).
- **Scanner:**
 - › **Flatbed:** Captures images of hard copy documents, transferring them to the computer.
 - › **Handheld:** Portable, useful for items in shops that are too large for a flatbed scanner or located in awkward spaces.
- **Digital camera/webcam:** Capture images and video for transfer to a computer, communication (such as video calls) or security (such as iris recognition).
- **Graphics tablet:** Allows drawing or tracing with a stylus to transfer illustrations to the computer. Useful for precise drawing or entering complex symbols.
- **Joystick:** Hand-held device for controlling movement in computer games and simulation software.
- **Microphone:** Inputs sound for gaming, online meetings or voice commands/text input.
- **MIDI keyboard:** Sends signals via USB or MIDI cable. You can use it like a piano keyboard and transfer sound to a computer for editing and storage.
- **QR code reader:** Scans QR codes – often via mobile phone – to retrieve information such as text or website links, or for authentication.
- **Barcode reader:** Transfers information from barcodes to the computer, commonly used in retail for pricing and stock control.
- **Optical mark reader (OMR):** Reads marked positions on documents. OMR is used for surveys, registers, multiple-choice exams and scanning lottery tickets.
- **Magnetic ink character recognition (MICR):** Reads magnetic ink characters on cheques, primarily used by banks for fast and secure processing.
- **Magnetic stripe readers:** Read data from magnetic stripes on cards (credit, debit, library, hotel keys).
- **Radio-frequency identification (RFID) readers:** RFID tags allow item tracking via radio waves without line-of-sight, useful for supply chains and tracing livestock.
- **Near-field communication (NFC):** Derived from RFID, NFC enables short-range, secure data transfer for applications like contactless smartphone payments.
- **Sensors:** Record and input data on environmental conditions like temperature, light, pressure or pH levels. Useful for continuous monitoring in various environments.
- **Biometric devices:** Input unique physical characteristics, such as fingerprints, facial features or iris scans, for identification and security.

Output devices

Output devices allow users to receive data from the computer in audio, visual or hard copy forms.

- **Screen/monitor:** Displays visual output, allowing users to view and edit documents, images and videos. Higher resolution provides sharper images.
- **Projector:** Displays computer output onto a large screen, ideal for presentations to large audiences.
- **Speakers:** Produce sound output, essential for music, videos, game audio and alerts. Important for visually impaired users with screen readers.
- **Headphones:** Deliver sound privately to an individual, useful in shared environments or for privacy.

Printers and plotters: There are several different types of printers. They all produce hard copy output, but each has a slightly different functionality.

- **Ink-jet printer:** A common choice for home use; affordable and provides good print quality at moderate speeds.
- **Laser printer:** Faster, higher-quality and more economical per page for high-volume printing (such as in businesses). Uses toner instead of ink.
- **Dot matrix printer:** Uses pins to strike an inked ribbon; robust and capable of printing multiple carbon copies. Lower print quality, but durable in harsh environments.
- **Thermal printer:** Uses heat on coated paper to create black-and-white images, with some models supporting two-colour printing.
- **Dye-sublimation printer:** Uses heat to print on non-paper materials such as plastic, fabric or card (for example ID badges and banners).
- **Plotter:** Creates large-scale vector graphics drawings – such as maps or architectural plans – or cuts shapes into materials.
- **3D printer:** Creates 3D objects using additive manufacturing, building layer by layer. Uses CAD software and materials such as plastic or resin.