Information

Computer Devices: Peripheral

A **peripheral** is a "device that is used to put information into or get information out of the computer."[1]

There are three different types of peripherals:

- Input, used to interact with, or send data to the computer (mouse, keyboards, etc.)
- Output, which provides output to the user from the computer (monitors, printers, etc.)
- Storage, which stores data processed by the computer (hard drives, flash drives, etc.)

Overview

A peripheral device is generally defined as any auxiliary device such as a computer mouse or keyboard, that connects to and works with the computer in some way. Other examples of peripherals are expansion cards, graphics cards, image scanners, tape drives, microphones, loudspeakers, webcams, and digital cameras.

RAM—random access memory—straddles the line between peripheral and primary component; it is technically a storage peripheral, but is required for every major function of a modern computer and removing the RAM will effectively disable any modern machine. Many new devices such as digital watches, smartphones and tablet computers have interfaces which allow them to be used as a peripheral by a full computer, though they are not host-dependent as other peripheral devices are.

According to the most technical definition, the only pieces of a computer *not* considered to be peripherals are the central processing unit, power supply, motherboard, and computer case.

Usually, the word peripheral is used to refer to a device external to the computer case, like a scanner, but the *devices located inside the computer case are also technically peripherals.*

Devices that exist outside the computer case are called external peripherals, or auxiliary components, Examples are: "Many of the external peripherals I own, such as my scanner and printer, connect to the peripheral ports on the back of my computer."[2]

Devices that are inside the case such as internal hard drives or CD-ROM drives are also peripherals in technical terms and are called internal peripherals, but may not be recognized as peripherals by laypeople.

In a system on a chip, peripherals are incorporated into the same integrated circuit as the central processing unit. They are still referred to as "peripherals" despite being permanently attached to (and in some sense part of) their host processor.

Common Peripherals

Input

- Keyboard
- Computer mouse
- Graphic tablet
- Touchscreen
- Barcode reader
- Image scanner
- Microphone
- Webcam
- Game controller
- Light pen
- Scanner
- Digital camera

Output

- Computer display

- Printer
- Projector
- Speaker
- Storage devices
- Floppy disk drive
- Flash drive
- Disk drive
- Smartphone or Tablet computer storage interface
- CD/DVD drive

Input/Output

- Modem
- Network interface controller (NIC)

Input Devices

In computing, an **input device** is a peripheral (piece of computer hardware equipment) used to provide data and control signals to an information processing system such as a computer or other information appliance. Examples of input devices include keyboards, mice, scanners, digital cameras and joysticks.

Many input devices can be classified according to:

- modality of input (e.g. mechanical motion, audio, visual, etc.)
- the input is discrete (e.g. key presses) or continuous (e.g. a mouse's position, though digitized into a discrete quantity, is fast enough to be considered continuous)

Pointing devices, which are input devices used to specify a position in space, can further be classified according to:

- Whether the input is direct or indirect. With direct input, the input space coincides with the display space, i.e. pointing is done in the space where visual feedback or the pointer appears. Touchscreens and light pens involve direct input. Examples involving indirect input include the mouse and trackball.
- Whether the positional information is absolute (e.g. on a touch screen) or relative (e.g. with a mouse that can be lifted and repositioned)

Direct input is almost necessarily absolute, but indirect input may be either absolute or relative. For example, digitizing graphics tablets that do not have an embedded screen involve indirect input and sense absolute positions and are often run in an absolute input mode, but they may also be set up to simulate a relative input mode like that of a touchpad, where the stylus or puck can be lifted and repositioned.

Input and output devices make up the hardware interface between a computer and a scanner or 6DoF controller.

Keyboards

A **keyboard** is a human interface device which is represented as a layout of buttons. Each button, or key, can be used to either input a linguistic character to a computer, or to call upon a particular function of the computer. They act as the main text entry interface for most users. Traditional keyboards use spring-based buttons, though newer variations employ virtual keys, or even projected keyboards. It is typewriter like device composed of a matrix of switches.

Examples of types of keyboards include:

- Keyer
- Keyboard
- Lighted Program Function Keyboard (LPFK)

Pointing Devices

Pointing devices are the most commonly used input devices today. A **pointing device** is any human interface device that allows a user to input spatial data to a computer. In the case of mice and touchpads, this is usually achieved by detecting movement across a physical surface. Analog devices, such as 3D mice, joysticks, or pointing sticks, function by reporting their angle of deflection. Movements of the pointing device are echoed on the screen by movements of the pointer, creating a simple, intuitive way to navigate a computer's graphical user interface (GUI).

Composite Devices

Input devices, such as buttons and joysticks, can be combined on a single physical device that could be thought of as a composite device. Many gaming devices have controllers like this. Technically mice are composite devices, as they both track movement and provide buttons for clicking, but composite devices are generally considered to have more than two different forms of input.

- Game controller
- Gamepad (or joypad)
- Paddle (game controller)
- Jog dial/shuttle (or knob)
- Wii Remote

Imaging and Input Devices

Video input devices are used to digitize images or video from the outside world into the computer. The information can be stored in a multitude of formats depending on the user's requirement.

- Digital camera
- Digital camcorder
- Portable media player
- Webcam
- Microsoft Kinect Sensor
- Image scanner
- Fingerprint scanner
- Barcode reader
- 3D scanner
- Laser rangefinder
- Eye gaze tracker

Medical Imaging

- Computed tomography
- Magnetic resonance imaging
- Positron emission tomography
- Medical ultrasonography

Audio Input Devices

Audio input devices are used to capture sound. In some cases, an audio output device can be used as an input device, in order to capture produced sound.

- Microphones
- MIDI keyboard or other digital musical instrument

Output Devices

An **output device** is any piece of computer hardware equipment used to communicate the results of data processing carried out by an information processing system (such as a computer) which converts the electronically generated information into human-readable form.[3][4]

Display Devices

A display device is an output device that visually conveys text, graphics, and video information. Information shown on a display device is called soft copy because the information exists electronically and is displayed for a temporary period of time. Display devices include CRT monitors, LCD monitors and displays, gas plasma monitors, and televisions.[5]

Input/Output

There are many input and output devices such as multifunction printers and computer-based navigation systems that are used for specialized or unique applications.[6] In computing, input/output refers to the communication between an information processing system (such as a computer), and the outside world. Inputs are the signals or data received by the system, and outputs are the signals or data sent from it.

Examples

These examples of output devices also include input/output devices.[7][8] Printers and visual displays are the most common type of output device for interfacing to people, but voice is becoming increasingly available.[9]

- Speakers
- Headphones
- Screen (Monitor)
- Printer
- Voice output communication aid
- Automotive navigation system
- Braille embosser
- Projector
- Plotter
- Television
- Radio

Computer Memory

In computing, **memory** refers to the devices used to store information for use in a computer. The term primary memory is used for storage systems which function at high-speed (i.e. RAM), as a distinction from secondary memory, which provides program and data storage that is slow to access but offer higher memory capacity. If needed, primary memory can be stored in secondary memory, through a memory management technique called "virtual memory." An archaic synonym for memory is **store**.[10]

Volatile Memory

Volatile memory is computer memory that requires power to maintain the stored information. Most modern semiconductor volatile memory is either Static RAM (see SRAM) or dynamic RAM (see DRAM). SRAM retains its contents as long as the power is connected and is easy to interface to but uses six transistors per bit.

Dynamic RAM is more complicated to interface to and control and needs regular refresh cycles to prevent its contents being lost. However, DRAM uses only one transistor and a capacitor per bit, allowing it to reach much higher densities and, with more bits on a memory chip, be much cheaper per bit.

SRAM is not worthwhile for desktop system memory, where DRAM dominates, but is used for their cache memories. SRAM is commonplace in small embedded systems, which might only need tens of kilobytes or less.

Forthcoming volatile memory technologies that hope to replace or compete with SRAM and DRAM include Z-RAM, TTRAM, A-RAM and ETA RAM.

Non-Volatile Memory

Non-volatile memory is computer memory that can retain the stored information even when not powered. Examples of non-volatile memory include read-only memory (see ROM), flash memory, most types of magnetic computer storage devices (e.g. hard disks, floppy discs and magnetic tape), optical discs, and early computer storage methods such as paper tape and punched cards.

Forthcoming non-volatile memory technologies include FeRAM, CBRAM, PRAM, SONOS, RRAM, Racetrack memory, NRAM and Millipede.

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Question 1

Not yet answered

Marked out of 1.00

Which of the following is NOT considered a peripheral device?

- a. Printer
- b. Keyboard
- c. CPU
- d. Webcam

Question 2

Not yet answered

Marked out of 1.00

RAM is considered a peripheral device.

- ○ True
- ○ False

Question 3

Not yet answered

Marked out of 1.00

What type of peripheral is a microphone?

- ○ a. Input/Output (I/O)
- ○ b. Storage
- ○ c. Input
- ○ d. Output

Question 4

Not yet answered

Marked out of 1.00

Internal peripherals are devices that are always external to the computer case.

- ○ True
- ○ False

Question 5

Not yet answered

Marked out of 1.00

Which of the following is an example of an external peripheral?

- ○ a. Scanner
- ○ b. RAM
- ○ c. Internal hard drive
- ○ d. CD-ROM drive

Question 6

Not yet answered

Marked out of 1.00

A touchscreen is classified as a direct input device.

- ○ True
- ○ False

Question 7

Not yet answered

Marked out of 1.00

What is the primary function of an output device?

- ○ a. To input data into the computer
- ○ b. To store data for later use
- ○ c. To communicate processed data to the user
- ○ d. To provide power to the computer

Question 8

Not yet answered

Marked out of 1.00

A printer is classified as an input device.

- ○ True
- ○ False

Question 9

Not yet answered

Marked out of 1.00

All peripheral devices must connect to the computer via a USB port.

- ○ True
- ○ False

Question 10

Not yet answered

Marked out of 1.00

Which type of memory requires power to maintain stored information?

- a. Volatile memory
- b. Flash memory
- c. Secondary memory
- d. Non-volatile memory