

INPUT DEVICES

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Input Devices

- ▶ **Device:** is an instrument that performs a simple task.
- ▶ **Input:** something put into a system.
- ▶ An **input device** is any peripheral used to provide data and control signals to a computer.
- ▶ An input device is any tool device for entering information into a computer.

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List of Input Devices

- ▶ Keyboard
- ▶ Mouse
- ▶ Trackball
- ▶ Joystick
- ▶ Light Pen
- ▶ Digitizer

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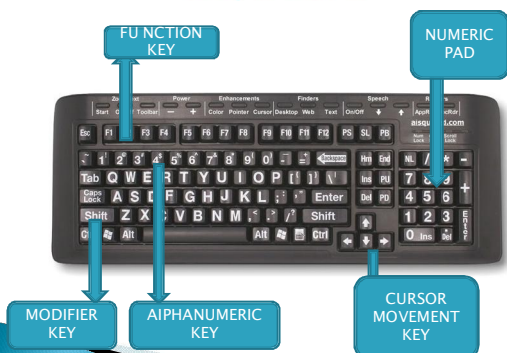
List of Input Devices

- ▶ Scanner
- ▶ Optical Character Recognition (OCR)
- ▶ Optical Mark Reader
- ▶ Optical Bar Reader
- ▶ MICR (Magnetic Ink Character Recognition)

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Keyboard



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How Keyboard Works

- ▶ Keyboard carries data in time.
- ▶ It has a microprocessor.
- ▶ The key is connected to a matrix.



Microprocessor & Controller Circuitry of Keyboard

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- ▶ When you press a key, it presses a **switch**, completing the circuit and allowing a tiny amount of current to flow through.
- ▶ It tells the processor the position of each key in the matrix and what each keystroke or combination of keystrokes represents.



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How Keyboard Works

- ▶ Most keyboards have between 80 and 110 keys, including: Typing keys, a numeric keypad, function keys and control keys.
- ▶ Using a keyboard, a person can type a document, use keystroke shortcuts, access menus, play games and perform a variety of other tasks.
- ▶ Keyboards can have different keys depending on the manufacturer, the operating system they're designed for, and whether they are attached to a desktop computer or part of a laptop.
- ▶ But for the most part, these keys, also called **keycaps**,

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Types of Keyboard (Based on Layout)

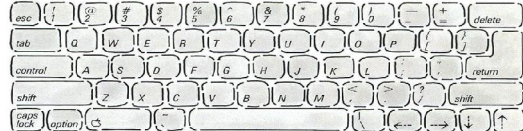
- ▶ QWERTY Layout
- ▶ DVORAK Layout
- ▶ ABCDE
- ▶ XPeRT
- ▶ AZERTY

Each is named for the first keys in the pattern. The QWERTZ and AZERTY arrangements are commonly used in Europe.

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Standard Keyboard



Dvorak Keyboard



Source: Apple IIc Plus Owner's Guide,
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Advantages of Keyboard

- ▶ Reliable for data input of text and numbers.
- ▶ Usually supplied with a computer so no additional cost.

Disadvantages of Keyboard

- ▶ Users may be slow for not very accurate typists.
- ▶ Slow for accessing menus etc. and difficult to use if you want to move objects around the screen.
- ▶ Difficult for people unable to use keyboards through paralysis or muscular disorder.

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MOUSE

- ▶ The **mouse** is used to control the movement of a pointer on the screen when it is moved horizontally over a flat surface.
- ▶ A ball under the mouse rotates when it is moved and turns two rods, one for left/right and one for up/down.
- ▶ Buttons on the mouse let you select options from menus and drag objects around the screen etc. Some models are now wireless.

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Types of Mouse

- ▶ **Mechanical Mouse**
 - A mouse that uses a rubber ball that makes contact with wheels inside the unit when it is rolled on a pad or desktop.
- ▶ **Optical Mouse**
 - A mouse that uses light to detect movement. It emits a light and senses its reflection as it is moved,

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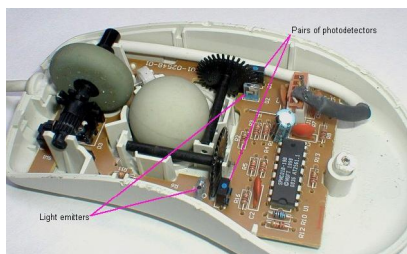
OPTICAL MOUSE



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MOUSE



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Advantages

- ▶ Moves cursor around the screen faster than using keystrokes
- ▶ Usually supplied with a computer so no additional cost.
- ▶ All computer users tend to be familiar with using them.

Disadvantages

- ▶ They need a flat space close to the computer.
- ▶ Requires moving hand from keyboard to mouse and back.

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TRACK BALL

- ▶ A **trackball** is a pointing device consisting of a ball held by a socket containing sensors to detect a rotation of the ball about two axes—like an upside-down mouse with an exposed protruding ball.
- ▶ Instead of moving the whole mouse around, the user rolls the trackball only, which is on the top or side.

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TRACK BALL



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Advantages of Trackball

- ▶ Ideal for use where flat space close to the computer is limited.
- ▶ Can be useful with laptops as they can be built into the computer keyboard or clipped on.

Disadvantages of Trackball

- ▶ Not supplied as standard so an additional cost and users have to learn how to use them.

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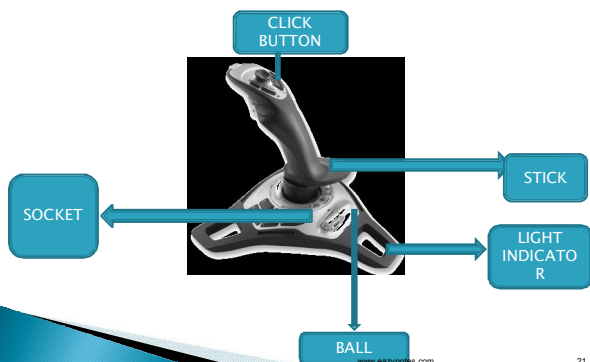
JOYSTICK

- ▶ A **joystick** is an input device consisting of a stick that pivots on a base and reports its angle or direction to the device it is controlling.
- ▶ Joysticks are often used to control video games, and usually have one or more push-buttons whose state can also be read by the computer.
- ▶ Joysticks are often used for playing computer games such as flight simulators. They can also be used to control the movement of a wheelchair or other machinery.

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JOYSTICK



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- ▶ **Advantages of Joystick**
- ▶ Easy to learn to use. Very simple design so they can be inexpensive.
- ▶ **Disadvantages of Joystick**
- ▶ Control can be a bit crude as the directions in simple joysticks are limited to forward, backwards, left and right.
- ▶ Better models offer diagonal movement or better.

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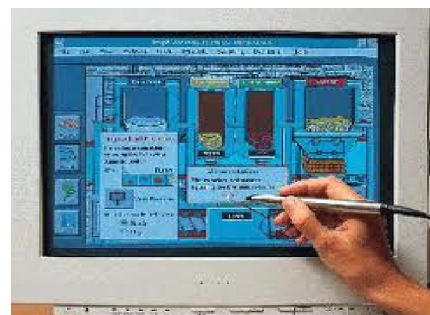
Light Pen

- ▶ A **light pen** is a computer input device in the form of a light-sensitive wand used in conjunction with a computer's CRT TV set or monitor.
- ▶ It allows the user to point to displayed objects, or draw on the screen, in a similar way to a touch screen but with greater positional accuracy.
- ▶ A light pen can work with any CRT-based display, but not with LCD screens, projectors and other display devices.

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LIGHT PEN



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DIGITIZER

- ▶ A digitizer is a input device used for converting pictures, maps and drawing into digital form for storage in computer.



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Touch Screen

- ▶ A **Touch screen** is an electronic visual display that can detect the presence and location of a touch within the display area.
- ▶ The term generally refers to touching the display of the device with a finger or hand.
- ▶ Touch Screens can also sense other passive objects, such as a stylus. However, if the object sensed is active, as with a light pen, the term touch screen is generally not applicable.

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Touch Screen

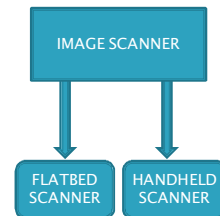


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Scanning Devices

- ▶ Scanning devices are input devices used for direct data entry in to a computer system.



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Flatbed Scanner

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Handheld Scanner

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Bar Code Reader

- ▶ A barcode reader consists of a scanner , a decoder , & cable used to connect the reader with a computer.
- ▶ Data coded in the form of small line are known as bar code.
- ▶ It directs a beam of light across the bar code & measures the amount of light that is reflected back.
- ▶ The scanner converts the light energy into electrical energy, which is then converted into data by decoder & forwarded to a computer.

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Magnetic Ink Character Recognition

MICR E13 B Font

11 11 11 11
 11 3 2 2 2 7 0 0 5 5 11 1 2 3 4 5 6
 11 11 11 11
 11 3 2 2 2 7 0 0 5 5 11 1 2 3 4 5 6 7 8 9 0 11 11

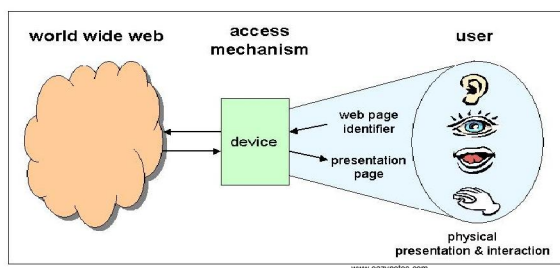
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Voice Recognition Devices



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