INPUT DEVICES

PREPARED BY
PROF. ANUPAMA PANDEY
COMPUTER SCIENCE DEPARTMENT

Input

- Input is any data and instructions entered into the memory of a computer.

Input

- Instructions can be entered into the computer in the form of programs, commands, and user responses.
  - Program: A series of related instructions that tells a computer what tasks to perform and how to perform them.
  - Command: An instruction that causes a program to perform a specific action.
  - User Response: An instruction a user issues by replying to a question displayed by a program.

Input Devices

- An input device is any hardware component that allows users to enter data and instructions into a computer.

- Depending on the application and your particular requirements, the input devices selected may vary.

The Keyboard

- A keyboard is an input devices that contains keys users press to enter data and instructions into a computer.
- Usually have from 101 to 105 keys, including the letters of the alphabet, numbers, punctuation marks, and other basic keys.
- Many have a numeric keypad on the right side of the keyboard.

The Keyboard

- An enhanced keyboard has twelve or more function keys along the top, two CTRL keys, two ALT, keys, and a set of arrow and additional keys.
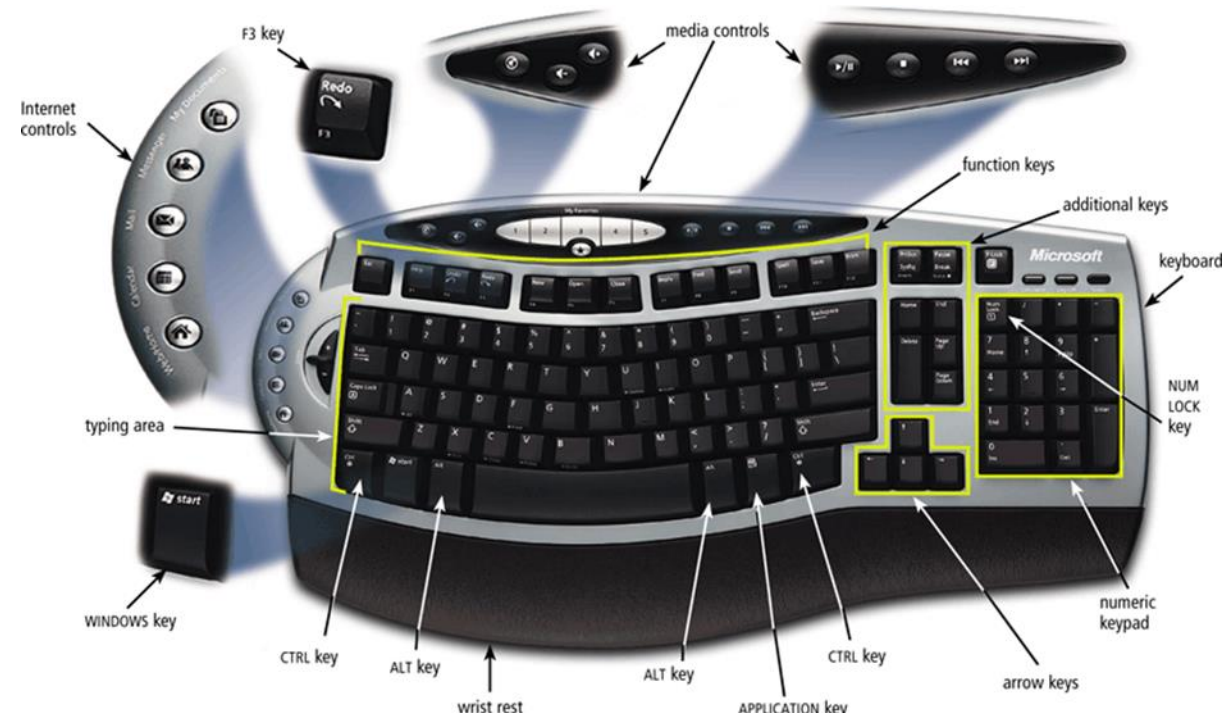
The Keyboard

- Function keys, labeled with the letter F followed by a number, are special keys programmed to issue commands to a computer.

- To issue commands, users often can press a function key in combination with other special keys (SHIFT, CTRL, ALT, and others)

The Keyboard

- Keyboards also often have a WINDOWS key(s) and an APPLICATION key.
  - The WINDOWS key displays the Windows Start menu.
  - The APPLICATION key displays an item's shortcut menu.
- A toggle key is a key that switches between two states each time a user presses the key.
  - Num Lock, Caps Lock, Scroll Lock

The Keyboard

- The insertion point, also known as a cursor, in some programs, is a symbol on the screen, usually a blinking vertical bar, that indicates where the next character you type will appear.

The Keyboard

- Desktop computer keyboards often attach via a cable to a USB port or a keyboard port on the system unit.

- A wireless keyboard is a battery-powered device that transmits data to the system unit using wireless technology.

Pointing Devices

- A pointing devices is an input devices that allows a user to control a pointer on the screen.

- In a graphical user interface, a pointer is a small symbol on the screen, whose location and shape change as a user moves a pointing device.

- They are used to move the insertion point, select objects, and click buttons.

Mouse

- A mouse is a pointing device that fits under the palm of your hand comfortably.

- It is the most widely used pointing device on desktop computers.

- With a mouse, users control the movement of the mouse pointer.

left mouse button · wheel button · right mouse button · thumb buttons

Mouse

- The top and sides of a mouse have one to four buttons; some also have a wheel.

- An optical mouse uses devices that emit and sense light to detect the mouse's movement.

Mouse

- Many types connect with a cable that attaches to a USB port or a mouse port on the system unit.

- A wireless mouse is a battery-powered device that transmits data using wireless technology, such as Bluetooth or IrDA.

Other Pointing Devices

- Trackball, Touchpad, Pointing Stick, Touch Screen, Touch-sensitive Pads, Stylus, Pen, Signature Capture Pad, and Graphics Tablet.

Trackball

- A trackball is a stationary pointing device with a ball on its top or side.
- To move the pointer, rotate the ball.

Touchpad

- A touchpad is a small, flat, rectangular pointing device that is sensitive to pressure and motion.
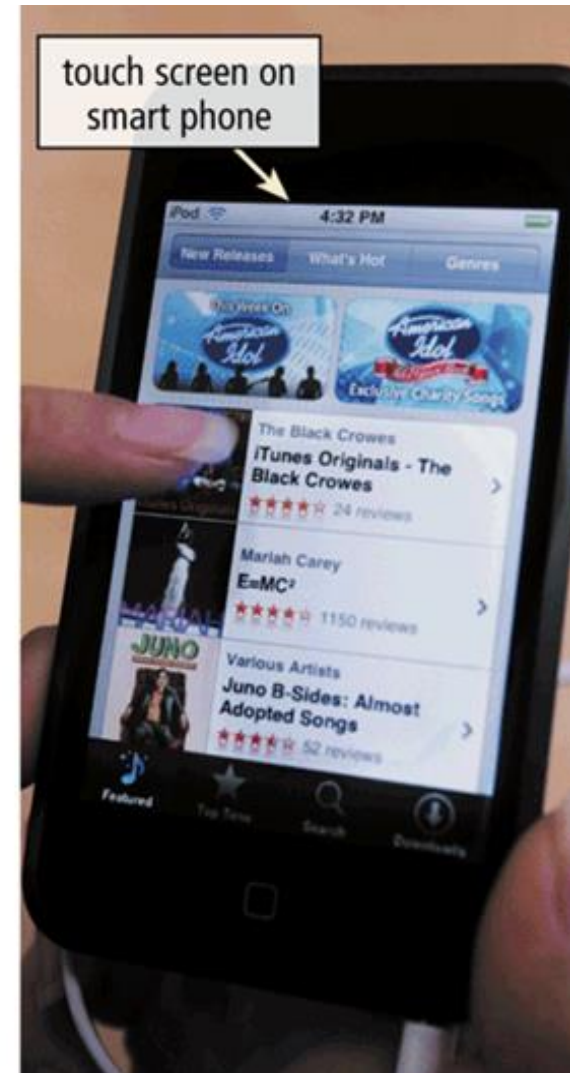
Pointing Stick

- A pointing stick is a pressure-sensitive pointing device shaped like a pencil eraser that is positioned between keys on a keyboard.

Touch Screens and Touch-Sensitive Pads

- A touch screen is a touch-sensitive display device.

- Multi-touch can recognize multiple points of contact at the same time.

- Some models of desktop computers and many mobile devices have touch screens.

- A kiosk, a free standing computer, usually includes touch screens.

touch screen on smart phone

Touch-Sensitive Pads

touch-sensitive pad

- A touch-sensitive pad is an input device that enables users to scroll through and play music, view pictures, watch videos, etc., found in portable media players.

- They typically contain buttons and/or wheels that are operated with a thumb or finger.

Pen Input

- With pen input, you touch a stylus or digital pen on a flat surface to write, draw, or make selections

- A stylus is a small metal or plastic devices that looks like a tiny ink pen but uses pressure instead of ink.

- A digital pen, which is slightly larger than a stylus, typically provides more functionality than a stylus: erasers, programmable buttons.

Pen Input

- A signature capture pad is used to capture a handwritten signature with a stylus.

- A graphics tablet is a flat, rectangular, electronic, plastic board that is used on computers that do not have a touch screen.

Other Input for Smart Phones

obtain maps and directions on the phone by attaching this navigation receiver to your vehicle's window

speak into the microphone that wirelessly communicates with the phone

take a picture using the digital camera built into the back of the phone

use one end of the stylus to write on the phone's screen and the other end as a ballpoint pen

transfer data and instructions to and from the computer and phone by connecting it to the computer with a cable

enter text-based messages via a wireless keyboard

Game Controllers

- Video games and computer games use a game controller as the input device that directs movements and actions of on-screen objects.

- They include gamepads, joysticks and wheels, light guns, dance pads, and a variety of motion sensing controllers.

Game Controllers

- Gamepad: held with both hands; controls actions of players or objects in games.
- Joystick: handheld vertical lever mounted on a base.
- Wheel: a steering-wheel0type input device.
- Light Gun: used to shoot targets and moving objects when the trigger is pulled.
- Dance Pad: flat electronic device divided into panels that users press with their feet.
- Motion-Sensing Game Controllers: allow the user to guide on-screen elements by moving hand held input device in predetermined directions through the air.

Game Controllers

Digital Cameras

- A digital camera is a mobile device that allows users to take pictures and store the photographed images digitally, instaed of on traditional film.

- Some look like traditional cameras, others are built into mobile devices.

- Contents can be downloaded and stored into computers.

- Resolution is the number of horizontal and vertical pixels in a display device.

Voice Input

- Voice input is the process of entering input by speaking into a microphone.

- Voice recognition, or speech recognition, is the compute's capability of distinguishing spoken words.

- Voice recognition programs recognize a vocabulary of preprogrammed words, ranging from two to millions of words.

Audio Input

- Voice input is part of a larger category called audio input.
- Audio input is the process of entering any sound into the computer such as speech, music, and sound effects.
- Music production software allows users to record, compose, mix, and edit music and sounds.

Video Input

- Video input is the process of capturing full-motion images and storing them on a computer's storage medium.

- Computers record digital signals from digital devices, such as digital video (DV) cameras, or convert analog signals to digital signals.

Web Cams

- A Web cam is a type of digital video camera that enables a home or small business user to capture video and still images and broadcast them over the Internet.

- They attach to the computer's USB port or FireWire port.

- Some can display their output on a Web page by streaming.

Video Conferencing

- A video conference is a meeting between two or more geographically separated people who use a network or the Internet to transmit audio and video data.

Optical Character Recognition

- Optical character recognition is a technology that involves reading typewritten, computer printed, or hand-printed characters form ordinary documents and translating the images into a form that the computer can process.

- A turnaround document is a document that you return to the company that creates and sends it.

Optical Mark Recognition

- Optical Mark Recognition (OMR) is a technology that reads hand-drawn marks such as small circles or rectangles.
- A person places these marks on a form, such as a test or survey.

Bar Code Readers

- An optical reader that uses laser beams to read bar codes by using light patterns that pass through the bar code lines.

Magnetic Stripe Card Readers and MICR Readers

- A magnetic stripe card reader reads the magnetic stripe on the back of credit cards, entertainment cards, bank cards, and other similar cards.

- A MICR reader converts MICR characters into a form the computer can process.

- MCIR (magnetic-ink character recognition devices read text printed with magnetic ink.

Biometric Input

- Biometrics is the technology of authenticating a person's identity by verifying a personal characteristic.

- A biometric identifier is a physiological or behavioral characteristic.

- A biometric device translates a personal characteristic into a digital code.

- A fingerprint reader captures curves and indentations of a fingerprint.

- Others: face recognition, hand geometry, voice verification, signature verification, iris recognition.

Terminals

- A terminal is a computer, usually with limited processing power, that enables users to send data to and/or receive information from a host computer.

- Most retail stores use a POS Terminal (point of sale) to record purchases, process credit or debit cards, and update inventory.

- An automated teller machine (ATM) is a self-service banking machine that connects to a host computer through a network.