BAHRIA UNIVERSITY (KARACHI CAMPUS)
Computing Fundamentals (CSC - 110)
Assignment 01
Fall 2022

Class: BSE 1B
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Date: 24 Oct 2022
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Shift: Morning
Submission: 4 Nov 2022
Marks: 05 Points
Registration #:02131222099

Question no. 01 [5 Marks]   **[CLO 2]**

Explain and differentiate between the various input and output device of computer.

Answer:

Input Device:

An Input Device is a piece of Equipment used to provide Data and control Signals to a Computer or information appliance.

Examples:

Touch Screen, Microphone, Webcam, Scanner, Keyboard, Mouse, Game Controller, Optical Mark Reader (OMR), Biometric Devices.

1. Touch Screen:

A Touch Screen is a display device that allows users to interact with a computer using their finger or stylus. They're a useful alternative to a mouse or keyboard for navigating a GUI (Graphical User Interface).

2. Microphone:

A microphone is an electronic device that records sound and converts it into an electrical signal that can be played back on a device like a sound card. Microphones are used in different industries, including music, video, and communication.

3. Webcam:

A webcam is an input device used to capture video from the user's point of view. The video is then sent to a computer or other device for processing. Webcams are often used for online communication, such as video chat and streaming.

4. **Scanner:**

   The scanner is an input device capable of storing data and information in digital form. They can convert data and information into digital format like images, pictures, documents, text documents, PDF, Spreadsheets, etc.

5. **Keyboard:**

   A keyboard is an input device that allows users to input text into a computer. It consists of multiple buttons, which create numbers, symbols, and letters, and special keys like the Windows and Alt key, including performing other functions.

6. **Mouse:**

   A mouse is an input device uses an optical sensor to track the speed and direction of movements and then sends this information onto computer. CPU then processes the data and creates instructions which it sends onto other parts of the computer system.

7. **Game Controller:**

   Game Controller is an input device used with video games or entertainment systems to provide input to a video game, typically to control an object or character in the game. It has pedals and dozens of buttons to perform different tasks.

8. **Optical Mark Reader (OMR):**

   Optical Mark reader (OMR) is an input Device that enter data into a computer system. Optical Mark Readers reads pencil or pen marks made in pre-defined positions on paper forms as responses to questions or tick list prompts. OMR scanning is fast.

9. **Biometric Devices:**

   A biometric device is based on a technology that can identify a person using their unique facial characteristics, fingerprints, signatures, DNA, or iris pattern.

   Types:

   Based on their functionality, biometric devices are classified into the followed types:

   - **Authentication Devices:**
     In biometric authentication, an individual's characteristics data is compared with the same individual's biometric template. The aim is to confirm whether the individuals hold a resemblance to their claimed identity. Biometric authentication systems compare physical or behavioral characteristics to data in a database that has been identified.

- **Fingerprinting:**
  The automated process of recognizing or verifying an individual's identification based on the comparison of two fingerprints is known as fingerprint recognition.

- **Retina Scanner:**
  These scan the unique biometric pattern in each person's iris, and match it against a certain number of unique identifying marks that set every person apart from everyone else.

Output Devices:

The output device displays the result of the processing of raw data that is entered in the computer through an input device. There are a numbers of output devices that display output in different ways such as text, images, hard copies, and audio or video.

Examples:
Projector, Printer, Speakers, Monitor, Speech Synthesizer, GPS.

1) Projector:

A projector is an output device that takes images generated by a computer or Blu-ray player and reproduce them by projection onto a screen, wall, or another surface. In most cases, the surface projected onto is large, flat, and lightly colored.

2) Printer:

A printer is an external hardware output device that takes the electronic data stored on a computer or other device and generates a hard copy. For example, if you created a report on your computer, you could print several copies to hand out at a staff meeting.

Types:

Understanding the features, uses, pros and cons of these three types of printer options can help you make an informed choice.

- **Inkjet Printer:**
  Inkjet Printer are used as consumer/home-use printers. They're inexpensive and use liquid ink that is relatively inexpensive to replace. They can produce high-quality color printing or fast monochrome (aka B&W) prints. The ink can be a source of consternation. Some models won't print anything if they're out of a certain color, even if you don't need that color.

- **Laser Printer:**

  Laser Printers use a laser beam to heat a toner material that embeds itself onto the paper. Most business-oriented models are monochrome, but there are color laser printers as well. Laser printers, on average, have a faster print speed than inkjet printers, and usually have a higher print quality. Laser printers are common in offices, they'll print faster and produce a better-quality result.

- **3D Printer:**

  A 3D printer is a type of material design printer that designs and builds 3D models and products of devices and components using an additive manufacturing process. 3D printers design three-dimensional prototypes and create the end products by directly building them using computer aided design (CAD) or software-created 3D design diagrams, figure and patterns.

3) Speaker:

A speaker is an output device that is used to produce sound waves that can be heard by people. Speakers are also used in devices like phones, televisions, and computers. It is an Electromechanical transducer that converts an electrical signal into sound. It consists of a rigid cone attached to a flexible suspension that moves back and forth to produce sound waves with frequencies within our hearing range (20 Hz to 20 kHz).

4) Monitor:

A monitor is an output device which displays information in the form of text, graphic and video. Information is sent to the monitor from the CPU. This information is sent to the monitor in machine language, which it then converts to a format a human user can interpret.

Types:

There are several types of monitors, some are as follow:

- **LCD Monitor:**

  LCD (Liquid crystal display) screen contains a substance known as liquid crystal. The particles of this substance are aligned in a way that the light located backside on the screens, which allow to generate an image or block. Liquid crystal display offers a clear picture and emits less radiation.

- **LED Monitor:**

  LED display is the Light-emitting diode. As the source of light, it uses a panel of LEDs. Nowadays, a wide number of electronic devices, both large and small devices such as laptop screens, mobile phones, TVs, computer monitors, tablets, and more, use LED displays.

- **DLP Monitor:**

  DLP stands for Digital Light Processing is a technology, which is used for presentations by projecting images from a monitor onto a big screen. Before developing the DLP, most of the computer projection systems produced faded and blurry images as they were based on LCD technology. DLP technology utilizes a digital micromirror device, which is a tiny mirror housed on a special kind of microchip. Furthermore, it offers better quality pictures that can also be visible in a lit room normally.

5) **Speech Synthesizer:**

   A speech synthesizer is a computerized device that takes in data, interprets it, and generates audible words. It might be a computer card, a box connected by a cable, or software that works with the computer's sound card.

6) **GPS:**

   GPS is an output device because it provides a location-measurement system. GPS receivers are placed on a user's body, and the receiver collects data about the user's movements. The data is then processed to create a location-measurement system.

   The main difference Between INPUT and OUTPUT devices are as Below:

Input Devices	Output Devices
It sends any information or data to the computer.	Displays the result of the processing of raw data that is entered in the computer through an input device.
Instructions to follow are given by the user.	All instructions are given by the processor.
All the data is given by the user and sent to the processor for execution as input.	The processed data from the processor is sent back to users as output.
Convert human language to machine language.	Convert machine language to human language.
Device designs are more complex.	Device designs are less complex than input device designs
Example: Keyboard, Mouse, Microphone, Bar Code Reader, Track Ball, etc.	Example: Monitor, speaker, printer, headphones, projector, etc.