TRINITY COLLEGE FOR WOMEN NAMAKKAL

Department of Computer Science

EDC - II FUNDAMENTALS OF COMPUTERS AND COMMUNICATIONS

EVEN Semester

Presented by

Mrs. K. MEKALA

Assistant Professor

Department of Computer Science

http://www.trinitycollegenkl.edu.in/

Introduction to Computers

What Is a Computer?

➢ A computer is an electronic device, operating under the control of instructions stored in its own memory, that can accept data, process the data according to specified rules, produce results, and store the results for future use.

Data and Information

➢ Computers process data into information.

➢ **Data** is a collection of unprocessed items, which can include text, numbers, images, audio, and video.

➢ **Information** conveys meaning and is useful to people.

Information Processing Cycle

➢ Computers process data (input) into information (output).

➢ Computers carry out processes using instructions, which are the steps that tell the computer how to perform a particular task.

➢ A collection of related instructions organized for a common purpose is referred to as software.

➢ A computer often holds data, information, and instructions in storage for future use.

➢ Some people refer to **the series of input, process, output, and storage activities** as the **information processing cycle**.

The Components of a Computer

➢ A computer contains many electric, electronic, and mechanical components known as **hardware**.

➢ These components include

- Input devices

- Output devices

- System unit

- Storage devices

- Communications devices

Central Processing Unit
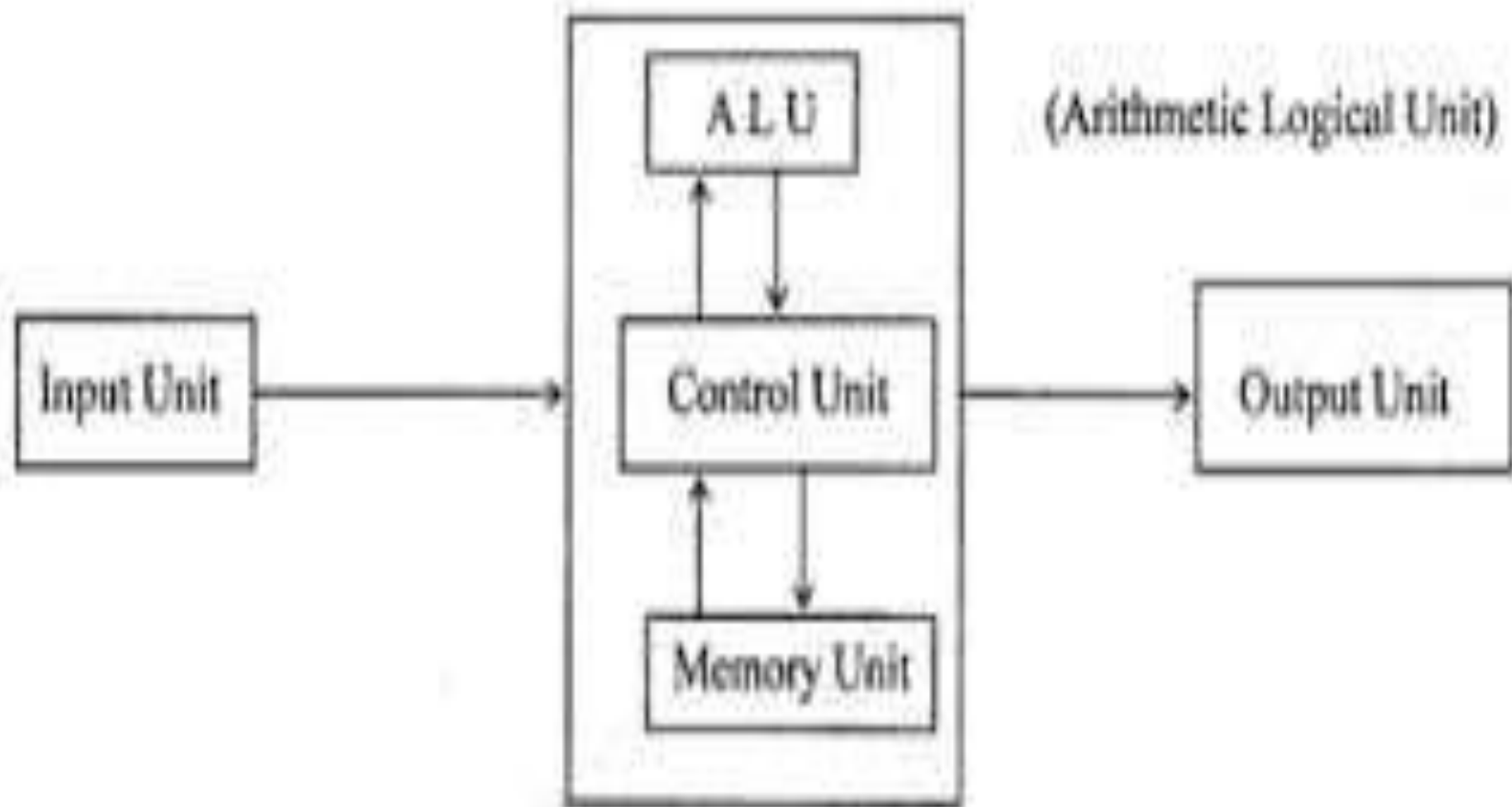
Block Diagram of Computer

Input Devices

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

➢ Five widely used input devices are

- Keyboard

- Mouse

- Microphone

- scanner

- Web cam

- A computer **keyboard** contains keys you press to enter data into the computer.

- A **mouse** is a small handheld device. With the mouse, you control movement of a small symbol on the screen, called the pointer, and you make selections from the screen.

- A **microphone** allows a user to speak into the computer.

- A **scanner** convert's printed material (such as text and pictures) into a form the computer can use.

- A **Web cam** is a digital video camera that allows users to create movies or take pictures and store them on the computer.

Output Devices

➤ An output device is any hardware component that conveys information to one or more people.

➤ Three commonly used output devices are

- Printer

- Monitor

- Speakers

➤ A **printer** produces text and graphics on a physical medium such as paper.

➤ A **monitor** displays text, graphics, and videos on a screen.

➤ **Speakers** allow you to hear music, voice, and other audio (sounds).

System Unit

➤ The system unit is a case that contains electronic components of the computer that are used to process data.

➤ The circuitry of the system unit usually is part of or is connected to a circuit board called the **motherboard**.

➤ Two main components on the motherboard are the **processor and memory**.

➤ The **processo**r, also called the **CPU (central processing unit),** is the electronic component that interprets and carries out the basic instructions that operate the computer.

➤ **Memory** consists of electronic components that **store instructions** waiting to be executed and data needed by those instructions.

Storage Devices

➢ A computer keeps data, instructions, and information on storage media.

➢ Examples of storage media are USB flash drives, hard disks, optical discs, and memory cards.

➢ A storage device records (writes) and/or retrieves (reads) items to and from storage media.

➢ A **USB flash drive** is a portable storage device that is small and lightweight enough to be transported on a keychain or in a pocket. The average USB flash drive can hold about 4 billion characters.

➢ A **hard disk** provides much greater storage capacity than a USB flash drive. The average hard disk can hold more than 320 billion characters.

- An **optical disc** is a flat, round, portable metal disc with a plastic coating.

- CDs, DVDs, and Blu-ray Discs are three types of optical discs. A CD can hold from 650 million to 1 billion characters. Some DVDs can store two full-length movies or 17 billion characters.

- Blu-ray Discs can store about 46 hours of standard video, or 100 billion characters.

- Some mobile devices, such as digital cameras, use **memory cards** as the storage media.

- You can use a **card reader/writer** to transfer stored items, such as digital photos, from the memory card to a computer or printer.

Communications Devices

➤ A communications device is a hardware component that enables a computer to send (transmit) and receive data, instructions, and information to and from one or more computers or mobile devices.

➤ A widely used communications device is a **modem**.

➤ Communications occur over cables, telephone lines, cellular radio networks, satellites, and other transmission media.

➤ Some transmission media, such as satellites and cellular radio networks, are wireless, which means they have no physical lines or wires.

Advantages and Disadvantages of Using Computers

Advantages of Using Computers

➢ The benefits from using computers are possible because computers have the advantages of speed, reliability, consistency, storage, and communications.

• **Speed**: When data, instructions, and information flow along electronic circuits in a computer, they travel at incredibly fast speeds. Many computers process billions or trillions of operations in a single second.

• **Reliability**: The electronic components in modern computers are dependable and reliable because they rarely break or fail.

- **Consistency:** Given the same input and processes, a computer will produce the same results consistently. Computers generate error-free results, provided the input is correct and the instructions work.

- **Storage:** Computers store enormous amounts of data and make this data available for processing anytime it is needed.

- **Communications:** Most computers today can communicate with other computers, often wirelessly. Computers allow users to communicate with one another.

Disadvantages of Using Computers

➢ Some disadvantages of computers relate to the violation of privacy, public safety, and the impact on the labour force, health risks, and the impact on the environment.

• **Violation of Privacy:** In many instances, where personal and confidential records stored on computers were not protected properly, individuals have found their privacy violated and identities stolen.

• **Public Safety:** Adults, teens, and children around the world are using computers to share publicly their photos, videos, journals, music, and other personal information. Some of these unsuspecting, innocent computer users have fallen victim to crimes committed by dangerous strangers.

• **Impact on Labour Force:** Although computers have improved productivity and created an entire industry with hundreds of thousands of new jobs, the skills of millions of employees have been replaced by computers. Thus, it is crucial that workers keep their education up-to-date. A separate impact on the labour force is that some companies are outsourcing jobs to foreign countries instead of keeping their homeland labour force employed.

- **Health Risks:** Prolonged or improper computer use can lead to health injuries or disorders. Computer users can protect themselves from health risks through proper workplace design, good posture while at the computer, and appropriately spaced work breaks. Two behavioural health risks are computer addiction and technology overload. Computer addiction occurs when someone becomes obsessed with using a computer.

- **Impact on Environment:** Computer manufacturing processes and computer waste are depleting natural resources and polluting the environment. Green computing involves reducing the electricity consumed and environmental waste generated when using a computer. Strategies that support green computing include recycling, regulating manufacturing processes, extending the life of computers, and immediately donating or properly disposing of replaced computers.

THANK YOU

http://www.trinitycollegenkl.edu.in/