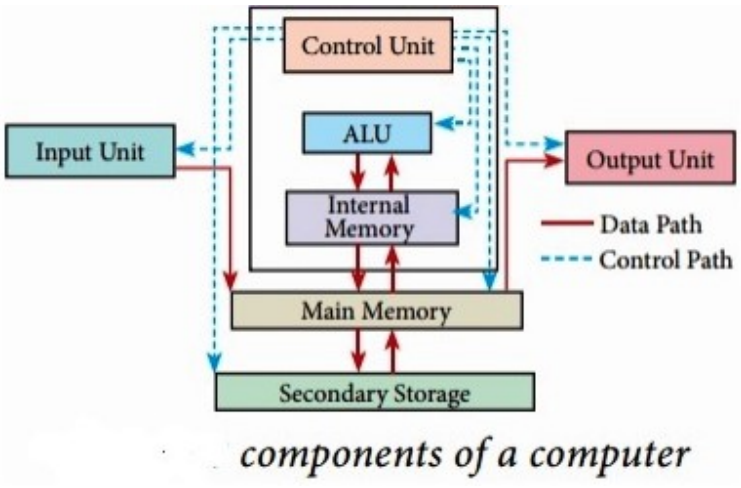
CCA-101: Fundamentals of IT & Programming
Assignment -1

1. Ans:- There are four main computer hardware components that this blog post will cover: **input devices, processing devices, output devices and memory (storage) devices**. Collectively, these hardware components make up the computer system.



components of a computer

Input device: Input unit is used to feed any form of data to the computer, which can be stored in the memory unit for further processing
Eg: Keyboard, mouse, etc.

Central processing unit (CPU): CPU is the major component which interprets and executes software instructions. It also controls the operation of all other components such as memory, input and output units. It accepts binary data as input process the data according to the instructions and provides the result as output. The CPU has three components which are Control unit, Arithmetic and logic unit (ALU) and Memory unit.

(i) **Arithmetic and Logic Unit**: The ALU is a part of the CPU where various computing functions are performed on data. The ALU performs arithmetic operations such as addition, subtraction, multiplication, division and

(ii) **Control Unit:** The control unit controls the flow of data between the CPU, memory and I/O devices. It also controls the entire operation of a computer.

Output Unit: An Output Unit is any hardware component that conveys information to users in an understandable form. Example: Monitor, Printer etc.

Memory Unit: The Memory Unit is of two types which are primary memory and secondary memory. The primary memory is used to temporarily store the programs and data when the instructions are ready to execute. The secondary memory is used to store the data permanently.

i. The Primary Memory is volatile, that is, the content is lost when the power supply is switched off. The Random Access Memory (RAM) is an example of a main memory.

ii. The Secondary memory is non volatile, that is, the content is available even after the power supply is switched off. Hard disk, CD-ROM and DVD ROM are examples of secondary memory.

Q.2.Ans:- Computer Classification:-A computer is a device that transforms unusable data into information. According to the set of instructions the user gives it, it processes the input and generates the desired outcome. Modern digital computers are classified on the basis of their size and capacity. The size and data handling capabilities of the various types of computers may be used to categorize them into two groups.

1. Computers according to Size:

- Supercomputer.
- Mainframe computer.
- Personal computer.
- Workstation.
- Minicomputer.

2. Computers according to their Capacity to manage data:

- Digital computer.
- Hybrid computer.
- Analog computer.

Classification According to Size

There are four different sorts of computers based on their size and how they are configured to operate:

1. Supercomputers

The most efficient computers in terms of processing data and performance are supercomputers. These computers are used for research and exploratory purposes. Supercomputers are exceedingly large and highly expensive. It can only fit in large, air-conditioned spaces.
Supercomputers are used for a range of tasks, such as space exploration, seismic research, and the testing of nuclear weapons.

Supercomputer Features:

- They make use of AI (Artificial intelligence)
- They are the fastest and strongest;
- They are very costly.
- They are enormous in size.

- They are employed by companies that manufacture goods.
- They process information at a rapid rate.

2. Mainframe Computers

Despite being less efficient than supercomputers, mainframe computers are nevertheless extremely expensive. Large corporations and governmental organizations frequently employ mainframe computers to run everyday operations. They have the ability to store and analyze a lot of data. To maintain information on their customers, students, and insurance policyholders, banks, colleges, and insurance companies utilize them. They may also act as a server in a network environment. Hundreds of users may be managed simultaneously by them.

Mainframe Computer Features:

- They have enormous amounts of memory.
- They are capable of running several different operating systems.
- They have a significant number of CPUs with powerful processing speeds.
- Tightly Coupled Clustering Technology is employed.

3. Minicomputers

Minicomputers are used by small businesses and industries. They go by the term "Midrange Computers." These minicomputers frequently have several users, just as mainframe computers. They are a bit slower than mainframe computers. For example, the manufacturing department may employ minicomputers to keep an eye on specific production processes.

Features of Minicomputers:

- It is smaller than mainframes or supercomputers in terms of size.
- In comparison to a mainframe or supercomputer, it is less costly.
- It is able to perform many jobs at once.
- It may be utilized by several users simultaneously.
- It is utilized by small businesses.

4. Microcomputers.

A microcomputer, sometimes referred to as a personal computer (PC), is a type of computer that runs on a smaller scale than traditional computers (Personal Computer). A component that is commonly referred to as a motherboard houses the central processing unit (CPU), a microprocessor, memory in the form of ROM (Read Only Memory), RAM (Random Access Memory), I/O ports, and a bus system of connecting wires. They are the most affordable.

Features of Microcomputers:

- They are extensively employed for personal usage.
- They are smaller and comparably less expensive.
- Multi-user functionality is not supported.

- It has a limited computational capacity.
- They are quite simple to use.

Based on Capacity

According to fundamental operating principles, there are three different kinds of computers. They are as follows:

1. Analogous Computers

Analog computers process analog data. Temperature, pressure, weight, depth, and voltage are a few examples of this type of data. These have an infinite range of values and are continuous quantities.
The first computers were analog, and they laid the groundwork for today's digital computers.

2. Digital Computers

In digital computers, letters, numbers, and other special symbols are represented by digits. On-off (ON-OFF) inputs are used by digital computers, and ON-OFF signals are also generated by them.
An ON is often represented by a 1 and an OFF by a 0, respectively. A digital computer is capable of processing both numerical and non-numerical data. In addition to doing fundamental arithmetic operations like addition, subtraction, multiplication, and division, it can also perform logical operations.

3. Hybrid Computers

Computers that combine digital and analog components are called hybrid computers. It combines the best features of both types, having the speed of an analog computer with the memory and precision of a digital computer. Hybrid computers are typically used in specific applications where both forms of data need to be processed. As an example, a gas pump contains a processor that converts measurements of fuel flow into information about quality and cost.

Q.3. Ans:-**Generations of Computers**:-Generation in computer terminology is a change in technology a computer is/was being used. Initially, the generation term was used to distinguish between varying hardware technologies. Nowadays, generation includes both hardware and software, which together make up an entire Computer system.

There are five computer generations known till date. Each generation has been discussed in detail along with their time period and characteristics. In the following table, approximate dates against each generation have been mentioned, which are normally accepted.

Following are the main five generations of computers:-

Sl. No.	Generation & Description
1	**First Generation** The period of first generation: 1946-1959. Vacuum tube based.
2	**Second Generation** The period of second generation: 1959-1965. Transistor based.
3	**Third Generation** The period of third generation: 1965-1971. Integrated Circuit based.
4	**Fourth Generation** The period of fourth generation: 1971-1980. VLSI microprocessor based.
5	**Fifth Generation** The period of fifth generation: 1980-onwards. ULSI microprocessor based.

i. **First Generation Computers:-**The period of first generation was from 1946-1959. The computers of first generation used vacuum tubes as the basic components for memory and circuitry for CPU (Central Processing Unit). These tubes, like electric bulbs, produced a lot of heat and the installations used to fuse frequently. Therefore, they were very expensive and only large organizations were able to afford it. In this generation, mainly batch processing operating system was used. Punch cards, paper tape, and magnetic tape was used as input and output devices. The computers in this generation used machine code as the programming language.

ii. **Second Generation Computers:-**The period of second generation was from 1959-1965. In this generation, transistors were used that were cheaper, consumed less power, more compact in size, more reliable and faster than the first-generation machines made of vacuum tubes. In this generation, magnetic cores were used as the primary memory and magnetic tape and magnetic disks as secondary storage devices.
In this generation, assembly language and high-level programming languages like FORTRAN, COBOL were used. The computers used batch processing and multiprogramming operating system.

iii. **Third Generation Computers**:-The period of third generation was from 1965-1971. The computers of third generation used Integrated Circuits (ICs) in place of transistors. A single IC has many transistors, resistors, and Capacitors along with the associated circuitry.

The IC was invented by Jack Kirby. This development made computers smaller in size, reliable, and efficient. In this generation remote processing, time-sharing, multi-programming operating system were used. High-level languages (FORTRAN-II TO IV,COBOL, PASCAL PL/1,BASIC, ALGOL-68 etc.) Were used during this generation.

iv. **Fourth Generation Computers:-**The period of fourth generation was from 1971-1980. Computers of fourth generation used Very Large Scale Integrated (VLSI) circuits. VLSI circuits having about 5000 transistors and other circuit elements with their associated circuits on a single chip made it possible to have microcomputers of fourth generation.

Fourth generation computers became more powerful, compact, reliable, and affordable. As a Result, it gave rise to Personal Computer (PC) revolution. In this generation, time sharing, real time networks, distributed operating system were used. All the high-level languages like C, C++, DBASE etc., were used in this generation.

v. **Fifth Generation Computers:-**The period of fifth generation is 1980-till date. In the fifth generation, VLSI technology became ULSI (Ultra Large Scale Integration) technology, resulting in the production of microprocessor chips having ten million electronic components.

This generation is based on parallel processing hardware and AI (Artificial Intelligence) software. AI is an emerging branch in computer science, which interprets the means and method of making computers think like human beings. All the high-level languages like C and C++, Java, .Net etc., are used in this generation.

Q.4.Ans:-

	Volatile Memory	Non-Volatile Memory
Memory Type	Temporary. It stores the data only until the power is supplied.	Permanent. The data is stored even after the system is turned off.
Data Storage	Stores data that are currently in process by the CPU	Stores the system's information, BIOS, and all the other kinds of data
Speed	The fastest type of memory.	Slower as compared to volatile memories.
CPU Access	CPU can access data stored in volatile memory.	CPU can access data if it is copied from non-volatile memory to volatile memory.
Location	Volatile memory chips are usually kept in memory slots.	The non-volatile memory chip is embedded in the motherboard.
Costs	Volatile memory is inefficient in terms of cost; thus, higher costs are involved.	Less costly.

Q.5.Ans:System software is a computer programme designed to run a computer hardware and application programs.

It responsible for managing and coordinating all the activities.On the other hand, application software is meant

To enable the user to carry out some specific set of tasks or function.

Q.6.Ans(a) step 1:Open word.orif word is already open,select file>New.

Step 2:in the search for online templates box,enter a search word like letter,resume,or invoice.or,select

Category under the search box like business,personal,or education.

Step 3: click a template to see a preview.

Step 4:select create.