Course: Computer Skills/ Applications **Program:BS(DT/RAD/MIC)**
Semester: 4th **Total Marks:** 30
Instructor: Zakir Rahim **Time**: 4 Hours
Due Date: 21 August, 2020

Instructions:

- Students are required to solve the provided assignment and upload it on SIC within specified time.
- The solutions must be type-written.
- The solutions must be uploaded either in Ms-Word format or pdf format.
- Students are required to save the file with their name and student id. For example ahmad_12345.

Q1. (a) In your opinion what are the 3 most important characteristics of computers, Explain each characteristic?   (5)

   (b) Write key characteristics of fourth generation of computers? (5)

Q2. (a)Discuss the importance of Arithmetic logic unit and Control unit of a computer system?   (5)

   (b)Write a detailed note on importance of RAM (Random Access Memory)? (5)

Q3. Write a detailed note on Basic Organization of a computer System along with the functions of each part.   (10)

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Section... A

Q1...

Ans...A.. 1. Speed: - As you know computer can work very fast. It takes only few seconds for calculations that we take hours to complete. You will be surprised to know that computer can perform millions (1,000,000) of instructions and even more per second.

Therefore, we determine the speed of computer in terms of microsecond (10-6 part of a second) or nanosecond (10 to the power -9 part of a second). From this you can imagine how fast your computer performs work.

2. Accuracy: - The degree of accuracy of computer is very high and every calculation is performed with the same accuracy. The accuracy level is 7.

determined on the basis of design of computer. The errors in computer are due to human and inaccurate data.

3. Diligence: - A computer is free from tiredness, lack of concentration, fatigue, etc. It can work for hours without creating any error. If millions of calculations are to be performed, a computer will perform every calculation with the same accuracy. Due to this capability it overpowers human being in routine type of work.

I KNOW MANY IMPORTANT CHARECTRESTIC OF COMPUTER BUT YOU NEED ONLY THREE...

Q1....

Ans..b... The period of the fourth generation was from 1971- 1980. The (VLSI) huge scale integrated circuits are used in the computers of this generation. These circuits have 5000 transistors and other circuit elements. The computers of the fourth-generation become more powerful, compact, reliable, and affordable.

There are various advanced features such as time-sharing, real-time networks, distributed operating system were used in the fourth generation. All high-level language like C, C++, Java, PHP are used in this generation.

These computers are also used in the LSI (large scale integration). The fourth generation is the extension of the third generation. The computer of the first generation filled the entire room space, but these computers can fit in the palm.

The microprocessor chips are used in this generation of computers. The object-oriented programming was used in the fourth generation of computer. Various types of language exist in object-oriented programming such as Java, Visual Basic, etc.

These object-oriented programs are designed to solve specific problems and require little specialized user training. This includes query language and application generators. The Intel was the first company which can develop the microprocessors. IBM developed the first personal computer related to the fourth generation. These computers required a minimal amount of electricity to run. The fourth generation of the computer had the first supercomputer that was able to perform many calculations accurately. These supercomputers are also used in networking. The storage capacity increased up to several gigabytes or even terabytes.

Features of the fourth generation

- The vast scale integrated circuits are used in the fourth generation of computer.

- The computers become easily available in this generation.

- No AC required when we use the computer of the fourth generation.

- We have great development in the field of computer network during the fourth generation.

- These computers are very small in size.

- The computers of the fourth generation were portable and reliable.

- These computers are very cheap.

- The computers of the fourth generation were used in pipeline processing.

- The concept of the internet was introduced in this generation of computer.

- We can use personal computers in the fourth generation of computers.

Q2...

Ans...ALU...

An arithmetic logic unit (ALU) is a digital circuit used to perform arithmetic and logic operations. It represents the fundamental building block of the central processing unit (CPU) of a computer. Modern CPUs contain very powerful and complex ALUs. In addition to ALUs, modern CPUs contain a control unit (CU).

Most of the operations of a CPU are performed by one or more ALUs, which load data from input registers. A register is a small amount of storage available as part of a CPU. The control unit tells the ALU what operation to perform on that data and the ALU stores the result in an output register. The control unit moves the data between these registers, the ALU, and memory.

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An **arithmetic logic unit (ALU)** is a digital circuit used to perform arithmetic and logic operations. It represents the fundamental building block of the **central processing unit (CPU)** of a computer. Modern CPUs contain very powerful and complex ALUs. In addition to ALUs, modern CPUs contain a control unit (CU).

ALU WORKS... An ALU performs basic arithmetic and logic operations. Examples of arithmetic operations are addition, subtraction, multiplication, and division. Examples of logic operations are comparisons of values such as NOT, AND, and OR.

All information in a computer is stored and manipulated in the form of **binary numbers**, i.e. 0 and 1. **Transistor** switches are used to manipulate binary numbers since there are only two possible states of a switch: open or closed. An open transistor, through which there is no current, represents a 0. A closed transistor, through which there is a current, represents a 1.

Operations can be accomplished by connecting multiple transistors. One transistor can be used to control a second one - in effect, turning the transistor switch on or off depending on the state of the second transistor. This is referred to as a **gate** because the arrangement can be used to allow or stop a current.

The simplest type of operation is a NOT gate. This uses only a single transistor. It uses a single input and produces a single output, which is always the opposite of the input. This figure shows the logic of the NOT gate:

Other gates consist of multiple transistors and use two inputs. The OR gate results in a 1 if either the first or the second input is a 1. The OR gate only results in a 0 if both inputs are 0. This figure shows the logic of the OR gate:

The AND gate results in a 1 only if both the first and second input are 1s. This figure shows the logic of the AND gate:

The XOR gate, also pronounced X-OR gate, results in a 0 if both the inputs are 0 or if both are 1. Otherwise, the result is a 1. This figure shows the logic of the XOR gate:

SIR I DON'T MAKE HIS GRAPH BECAUSE I DON'T KNOW TO MAKING A GRAPH OF THIS MODE...THE GATE GRAPH...

CU... The **control unit** (CU) is a component of a computer's central processing unit (CPU) that directs the operation of the processor. It tells the computer's memory, arithmetic and logic unit and input and output devices how to respond to the instructions that have been sent to the processor.
It directs the operation of the other units by providing timing and control signals. Most computer resources are managed by the CU. It directs the flow of data between the CPU and the other devices. John von Neumann included the control unit as part of the von Neumann architecture. In modern computer designs, the control unit is typically an internal part of the CPU with its overall role and operation unchanged since its introduction.

Q2...

Ans.. Read Only Memory(ROM)..

• data is stored permanently

• Usual program can't alter this data.

• The process of permanently storing data in ROM chip is called "Burning in of data".
• ROM chip does not lose its data in case of power off or interruption.

There are two types of read only memory.

a. Manufactured programme

b. User programmed

(A).. Manufactured programme.. • data is burnt in by the manufacturer of the electronic

equipment in which it is used .

b. User programmed.. • A user can load and store "read-only" programs and data.

• It is possible for a user to "customise" a system by converting his/her programs to programmable Read Only Memory (PROM) because a user can program it.

• Once a user programs a PROM chip it becomes a ROM.

ITS IMPORTANT…

For practical purposes, it could be said that the proper functioning of RAM memory is essential in a

computer because it is one of the components that most directly affects its good performance, especially **in**

terms of speed.

As we have already seen, RAM is responsible for "helping" the processor in its operations, so that it "holds",

for memory purposes, all the instructions and data that the processor needs to use when running a

program.

So suppose you want to run several programs on your computer, tablet or smartphone at the same time. For

example, a text editor, a browser with 3 open tabs and a business program. If the RAM is in good condition

and has enough capacity, you shouldn't have any problems.

Now imagine that you want to keep using more programs at the same time, or that you want to use more

modern programs with higher hardware requirements. For example, in addition to what we saw in our

previous example, there are 10 more browser tabs and 3 new and highly demanding enterprise software. In

this type of situation, and unless you have a large RAM memory capacity, it is likely that it will start to suffer

and your computer will suffer from it.

Q3…

Ans…BASIC ORGINAZATION OF COMPUTER FUNCTION…
Arithmetic Logic Unit (ALU)

Control Unit (CU)

Central Processing Unit (CPU)

Computer as a system

Inputting. The process of entering data and **Inputting**. The process of entering data and
instructions into the computer system.
Input function… 1. It accepts (or reads) instructions and data from outside world

2. It converts these instructions and data in computer acceptable form
3. It supplies the converted instructions and data to the computer system for further processing
Storing. Saving data and instructions to make them readily available for initial or additional
processing whenever required

Processing. Performing arithmetic operations (add, subtract, multiply, divide, etc.) or logical operations (comparisons like equal to, less than, greater than, etc.) on data to convert them into useful information into the computer system

Storing. Saving data and instructions to make them readily available for initial or additional processing whenever required

STORAGE THE FOLLOWING.. 1. Data and instructions required for processing (received from input devices)

2. Intermediate results of processing

3. Final results of processing, before they are released to an output device.

TWO TYPES OF STORAGE...

Primary storage

- Used to hold running program instructions

- Used to hold data, intermediate results, and results of ongoing processing of job(s)

- Fast in operation

- Small Capacity

- Expensive

- Volatile (looses data on power dissipation)

- ß **Secondary storage**

- Used to hold stored program instructions

- Used to hold data and information of stored jobs

- Slower than primary storage

- Large Capacity

- Lot cheaper that primary storage
- Retains data even without power

Processing. Performing arithmetic operations (add, subtract, multiply, divide, etc.) or logical operations (comparisons like equal to, less than, greater than, etc.) on data to convert them into useful information.

Outputting. The process of producing useful information or results for the user such as a printed report or visual display.

Controlling. Directing the manner and sequence in which all of the above operations are performed.

Arithmetic logic unite..

Arithmetic Logic Unit of a computer system is the place where the actual executions of instructions takes place during processing operation.

Control unite..

Control Unit of a computer system manages and coordinates the operations of all other components of the computer system.

Arithmetic logic unite + Control unite + Central processing unite

- It is the brain of a computer system

- It is responsible for controlling the operations of all other units of a computer system.

Last one key phrases..

Arithmetic Logic Unit (ALU)+
- Auxiliary storage+
- Central Processing Unit (CPU)+
- Computer system +
- Control Unit (CU)+
- Controlling+
- Input interface+
- Input unit+
- Inputting+

- Main memory+

- Output interface
- Output unit
- Outputting
- Primate storage
- Processing
- Secondary storage
- Storage unit
- Storing

- System

THE END..💙