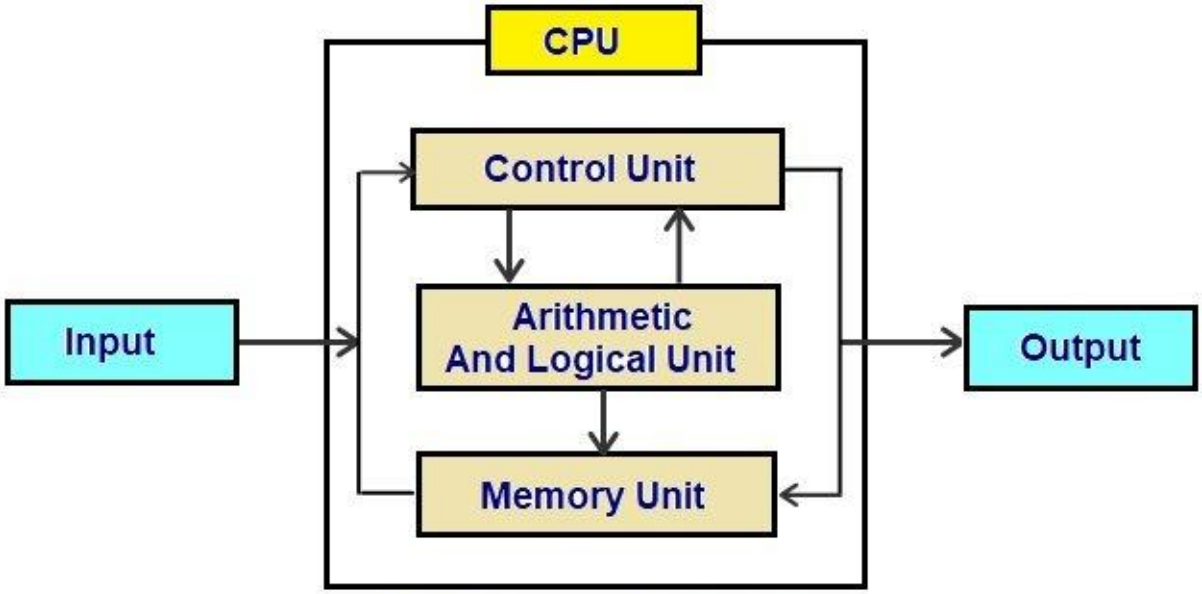
ASSIGNMENT – I

Q1. What are the four fundamental parts of computer? Explain it with the help of diagram.

Fundamentals parts of computer are Input Unit, Output unit, Processing Unit and Memory Unit



Block Diagram of a Computer

The 3 major functions of the input unit are-

- Take the data to be processed by the user.
- Convert the given data into machine-readable form.
- And then, transmit the converted data into the main memory of the computer. The sole purpose is to connect the user and the computer. In addition, this creates easy communication between them.

CPU – Central Processing Unit

Central Processing Unit or the CPU, is the brain of the computer. It works the same way a human brain works. As the brain controls all human activities, the CPU too controls all tasks.

Moreover, the CPU conducts all the arithmetical and logical operations in the computer.

Now the CPU comprises of two units, namely – ALU (Arithmetic Logic Unit) and CU (Control Unit). Both of these units work in sync. The CPU processes the data as a whole.

Let us see what particular tasks are assigned to both units.

ALU – Arithmetic Logic Unit

The Arithmetic Logic Unit is made of two terms, arithmetic and logic. There are two major functions that this unit performs.

1. Data inserted through the input unit into the primary memory. Performs the basic arithmetical operation on it. Like addition, subtraction, multiplication, and division. It performs all sorts of calculations required on the data. Then sends back data to the storage.
2. The unit is also responsible for performing logical operations like, AND, OR, Equal to, Less than, etc. In addition to this it conducts merging, sorting, and selection of the given data.

CU – Control Unit

The control unit as the name suggests is the controller of all the activities/tasks and operations. All this is performed inside the computer.

The memory unit sends a set of instructions to the control unit. Then the control unit in turn converts those instructions. After that these instructions are converted to control signals.

These control signals help in prioritizing and scheduling the activities. Thus, the control unit coordinates the tasks inside the computer in sync with the input and output units.

Memory Unit

All the data that has to be processed or has been processed is stored in the memory unit. The memory unit acts as a hub of all the data. It transmits it to the required part of the computer whenever necessary.

The memory unit works in sync with the CPU. This helps in faster accessing and processing of the data. Thus, making tasks easier and faster.

There are two types of computer memory-

1. **Primary memory** – This type of memory cannot store a vast amount of data. Therefore, it is only used to store recent data. The data stored in this is temporary. It can get erased once the power is switched off. Therefore, is also called temporary memory or the main memory.

   RAM stands for Random Access Memory. It is an example of primary memory. This memory is directly accessible by the CPU. It is used for reading and writing purposes. For data to be processed, it has to be first transferred to the RAM and then to the CPU.

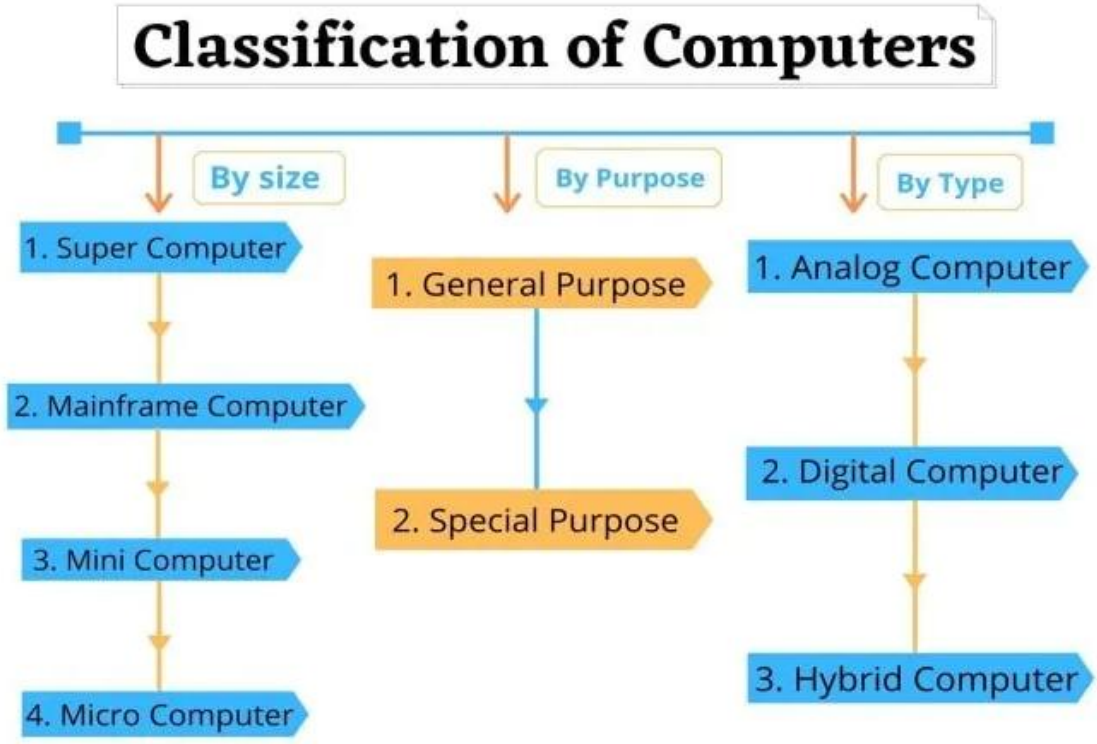
2. **Secondary memory** – As explained above, the primary memory stores temporary data. Thus it cannot be accessed in the future. For permanent storage purposes, secondary memory is used. It is also called the permanent memory or the auxiliary memory. The hard disk is an example of secondary memory. Even in a power failure data does not get erased easily.

Output

There is nothing to be amazed by what the output unit is used for. All the information sent to the computer once processed is received by the user through the output unit. Devices like printers, monitors, projector, etc. all come under the output unit.

The output unit displays the data either in the form of a soft copy or hard copy. The printer is for the hard copy. The monitor is for the display. The output unit accepts the data in binary form from the computer. It then converts it into a readable form for the user.

Q2: Discuss about the classification of computers on size and capacity.



1. Super Computer

A Supercomputer is the very fastest and powerful, and expensive type of computer for processing data. Supercomputers' size and storage capacity are also huge (can occupy huge premises) designed to process vast amounts of data in a short time with high productivity.

These are specially made to perform multi-specific tasks. Therefore, many CPUs work in parallel order on these supercomputers. This function of a Supercomputer is called Multiprocessing or Parallel Processing.

A supercomputer's design is complicated, like it can be heterogeneous, combining computers of different architectures, is significantly surpassed most existing personal computers. This made this machine an ultra-high-performance supercomputer.

Each part of a supercomputer is responsible for its own specific task, such as structuring and solving the most complex problems requiring an incredible amount of calculations.

Applications: The uses of supercomputers are dedicated to –

- In research and study of energy and nuclear weapons and designing the aircraft, airplanes, and flight simulators.

- Climate research and Weather Forecasting and Prediction of Natural Disasters.
- Spaceship and Satellite Launching.
- Used in scientific research laboratories.
- Used in Chemical and Biological research and for highly calculation complex tasks.

2. Mainframe Computer

Mainframe computers are multi-programming, high-performance computers, and multi-user, which means it can handle the workload of more than 100 users at a time on the computer.

The storage capacity of the mainframe is enormous, with a high-speed data process as well. As well as handling hundreds of input and output devices at a time.

The mainframe is a highly efficient computer capable of simultaneously solving complex calculations and continuously for a long time. These computers have several microprocessors that have the ability to function the data at too high performance and speed.

The mainframe is ahead of our conventional modern Personal computers in almost every metric. The possibility of their "hot" replacement in the mainframe computer ensures continuity of operation. And the standard amount of processor utilization effortlessly exceeds 85% of the total power.

In today, IBM company is leading the production of mainframe computers. Mainframe reliability is increased with development in the past 60 years. These computers can fix most of the hardware and software bugs.

Applications: Uses of Mainframe Computer –

Mainframe computers are mainly used by departmental and commercial organizations like Banks, Companies, Scientific research centers, and governmental departments like railways. These computers can work for 24 hours. Hundreds of users can work on these computations simultaneously.

Using the mainframe completes the tasks, Such as keeping details of payments, research centers, advertising, sending bills and notices, paying employees, ticket booking, maintaining details of purchases by users, keeping detailed tax details, etc.

3. Mini Computer

Minicomputer is a digital and multi-user computer system with the connection of more than one CPU. Thus, many people can work on these computers simultaneously instead of a single person. Also, it can process with other accessories like a printer, plotter, etc.

Minicomputers are the medium type of computers that have more functionality power and are expensive than microcomputers. On the other hand, the size, storage, and speed of minicomputers are large but less than the mainframe and supercomputers.

Minicomputers are made for performing multiple computing tasks at a single point of time, instead of assigning many microcomputers for a single task, which will be time-consuming and expensive.

In general, a minicomputer is a multi-threaded system (several processes at a time) capable of supporting from one to up to 200 users simultaneously: these computers are currently used to *store large databases, multi-user applications, and the automation industry*

Applications: The uses of Minicomputers –

The minicomputers are used as real-time applications in Industries, bookings, and Research Centres. Banks also use minicomputers for preparing payroll for employees' salaries, records, tracking of financial accounts, etc. As well as in the field of Higher Education and Engineering.

4. Micro Computer

Today we are using many computers at home is also the most common microcomputer. With this invention of the microprocessors in the year 1970, it became possible to use computers for people personally at a low cost and reasonable price known as Digital Personal Computer.

The design of microcomputers is minimal in size and storage capacity. These computers consist of many parts like *Input and Output devices, Software, operating systems, networks, and Servers* all these need to connect to form a complete Personal Digital Computer.

There is not only a PC or laptop are examples of microcomputers. Other examples of the microcomputer are smartphone, Tablet, PDA, server, palmtop, and workstation. This can be installed in any work area or even at home for personal use.

The primary purpose of microcomputers is to keep and process everyday tasks and needs of the people. Only one person can work on a single PC at a time, but its operating system is multitasking. The PC can be connected to the Internet to take benefits and enhance the user experience.

The development of multimedia, small equipment, optimized energy consumption, and the LAN made the microcomputers increase in demand for every field.

The increase in the demand and need for microcomputers between the people leads to the tremendous development of each part related to the microcomputers.

Applications: **The** uses of MicroComputer –

PC is being widely used in many fields like home, office, data collection, business, education, entertainment, publishing, etc. It keeps the details and prepares letters for correspondence in small businesses, creating bills, accounting, word processing, and operation of the filing systems in a large company.

Some of the major PC manufacturers are IBM, Lenovo, Apple, HCL, HP, etc.
Examples**:** Desktops, tablets, smartphones, and Laptops**.**

The above is the classification of computers according to Size and Capacity!

Computers on the **Basis Purpose**

1. General Purpose

General computers can do various **everyday tasks** such as writing a word processing letter, Document preparation, recording, financial analysis, Printing documents, creating databases, and calculations with accuracy and consistency.

The size, storage capacity, and cost of such computers are mainly less. The ability of these computers is limited in performing specialized tasks. Still, it has versatility and useful for serving people's basic needs at home or in the workplace in the environment.

Examples:
Desktops, laptops, smartphones, and tablets are used on daily basis for general purposes.

2. Special Purpose

These computers are designed to perform a particular or specialized task. The size, storage capacity, and cost of such computers mainly depend on the nature and size of the work. The function of these computers is consistent with any particular task.
The special computer **needs specific processors and input and devices** to conduct work efficiently.
These computers are used for special purposes in *weather forecasting, space research, agriculture, engineering, meteorology, satellite operation, traffic control, and research in chemical sciences.*
Examples:

- Automatic teller machines (ATM),
- Washing machines,
- Surveillance equipment,
- Weather-forecasting simulators,
- Traffic-control computers,
- Defense-oriented applications,
- Oil-exploration systems,
- Military planes controlling computers.

Computers on the Basis of **Hardware Design** and **Data Handling**.

*1. **Analog Computer***

An analog computer performs tasks using continuous data (*the physical amount that changes continuously*). Analog computers are used primarily to measure physical units like voltage, pressure, electric current, temperature, and convert them into digits.
It is also used to measure and perform arithmetic calculations of numbers, the length of an object, or the amount of voltage that passes through a point in an electrical circuit.
Analog computers obtain all their data from some measurement way.
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Examples:

An analog computer installed on a petrol pump measures the amount of petrol coming out of the pump and appears in liters. And calculates its value. These quantities vary continuously while measuring the amount, such as the temperature of a human body changes consistently.

A simple clock, the **vehicle's speedometer, Voltmeter**, etc. are examples of analog computing.

*2. **Digital Computer***

As its name suggests, a digital computer represents the digital computer's letters, numerical values, or any other special symbols. This computer is the computer that calculates the number for processing the data.

They run on electronic signs, and the binary numeral method Binary System 0 or 1 is used for calculation. Their speed is fast.

It can perform arithmetic operations such as *addition, occurrence, subtraction, multiplication, or division and all types of logical(mathematical) operations.* Today, most of the computers available in the market are digital computers.

Digital computers are built to bring the solution of equations to an almost unlimited precision, but in a bit slow manner compared to analog computers. To some extent, they all have similar components for receiving, processing, sorting, and transmitting data and use a relatively small number of essential functions to perform their tasks.

Digital computers use discrete electrical signals for operation rather than continuous electrical signals as analog computers have, making them the most common form of computers today because of their **versatility, speed, and power**.
The desktop or Laptop at our home is one the common and best example of a digital computer.

3. ***Hybrid Computer***

A hybrid computer is a combined complex computer unit built using both ***analog and digital*** properties and united by a single control system. The purpose of designing hybrid computers is to provide functions and features that can be found on both analog and digital devices.

Applications of hybrid Computer:

Hybrid computers are most commonly used in vast industries, research centers, organizations, and manufacturing firms (where many equations need to be solved). Also, the solutions and uses of hybrid computers have proved to be much more detailed, accurate, and useful. Hybrid computers are used in scientific calculations, for nations' defense and radar systems as well.

Q3 : What is the meaning of computer generation? How many Computer Generations are defined? What technologies were / are used?

What is the meaning of computer generation?

The generation of computer means the gap between the developments of the computer in terms of the technologies. Each generation of computer is characterized by a major technologies development that fundamentally changed the way computer operate, resulting i smaller, cheaper, and more powerful, efficient and reliable device.

How many computer generations are defined?

There are Five generations of computers.

What technologies were / are used?

The evolution of computer technology is often divided into five generations.

Five Generations of Computers

Generations of computers	**Generations timeline**	**Evolving hardware**
First generation	1940s-1950s	Vacuum tube based
Second generation	1950s-1960s	Transistor based
Third generation	1960s-1970s	Integrated circuit based
Fourth generation	1970s-present	Microprocessor based
Fifth generation	The present and the future	Artificial intelligence based

The main characteristics of first generation of computers (1940s-1950s)

- Main electronic component – vacuum tube
- Main memory – magnetic drums and magnetic tapes
- Programming language – machine language
- Power – consume a lot of electricity and generate a lot of heat.
- Speed and size – very slow and very large in size (often taking up entire room).
- Input/output devices – punched cards and paper tape.
- Examples – ENIAC, UNIVAC1, IBM 650, IBM 701, etc.

- Quantity – there were about 100 different vacuum tube computers produced between 1942 and1963.

Second Generation of Computers

The main characteristics of second generation of computers (1950s-1960s)

- Main electronic component – transistor
- Memory – magnetic core and magnetic tape / disk
- Programming language – assembly language
- Power and size – low power consumption, generated less heat, and smaller in size (in comparison with the first generation computers).
- Speed – improvement of speed and reliability (in comparison with the first generation computers).
- Input/output devices – punched cards and magnetic tape.
- Examples **–** IBM 1401, IBM 7090 and 7094, UNIVAC 1107, etc.

Third Generation of Computers

The main characteristics of third generation of computers (1960s-1970s)

- Main electronic component – integrated circuits (ICs)
- Memory – large magnetic core, magnetic tape / disk
- Programming language – high level language (FORTRAN, BASIC, Pascal, COBOL, C, etc.)
- Size – smaller, cheaper, and more efficient than second generation computers (they were called minicomputers).
- Speed – improvement of speed and reliability (in comparison with the second generation computers).
- Input / output devices – magnetic tape, keyboard, monitor, printer, etc.
- Examples **–** IBM 360, IBM 370, PDP-11, UNIVAC 1108, etc.

Fourth Generation of Computers

The main characteristics of fourth generation of computers (1970s-present)

- Main electronic component – very large-scale integration (VLSI) and microprocessor.
- VLSI– thousands of transistors on a single microchip.
- Memory – semiconductor memory (such as RAM, ROM, etc.)
    - RAM (random-access memory) – a type of data storage (memory element) used in computers that temporary stores of programs and data (volatile: its contents are lost when the computer is turned off).

    - ROM (read-only memory) – a type of data storage used in computers that permanently stores data and programs (non-volatile: its contents are retained even when the computer is turned off).
- Programming language – high level language (Python, C#, Java, JavaScript, Rust, Kotlin, etc.).
    - A mix of both third- and fourth-generation languages
- Size – smaller, cheaper and more efficient than third generation computers.
- Speed – improvement of speed, accuracy, and reliability (in comparison with the third generation computers).
- Input / output devices – keyboard, pointing devices, optical scanning, monitor, printer, etc.
- Network – a group of two or more computer systems linked together.
- Examples **–** IBM PC, STAR 1000, APPLE II, Apple Macintosh, etc.

Fifth Generation of Computers

The main characteristics of fifth generation of computers (the present and the future)

- Main electronic component: based on artificial intelligence, uses the Ultra Large-Scale Integration (ULSI) technology and parallel processing method.
- **ULSI** – millions of transistors on a single microchip
- **Parallel processing method** – use two or more microprocessors to run tasks simultaneously.
- Language – understand natural language (human language).
- Power – consume less power and generate less heat.
- Speed – remarkable improvement of speed, accuracy and reliability (in comparison with the fourth generation computers).
- Size – portable and small in size, and have a huge storage capacity.
- Input / output device – keyboard, monitor, mouse, trackpad (or touchpad), touchscreen, pen, speech input (recognise voice / speech), light scanner, printer, etc.
- Example **–** desktops, laptops, tablets, smartphones, etc.

Q4. Differentiate Volatile and Non volatile memory.

Following are the important differences between Volatile and Non-Volatile Memory.

Sr. No.	Key	Volatile Memory	Non-Volatile Memory
1	Data Retention	Data is present till power supply is present.	Data remains even after power supply is not present.
2	Persistence	Volatile memory data is not permanent.	Non-volatile memory data is permanent.
3	Speed	Volatile memory is faster than non-volatile memory.	Non-volatile memory access is slower.
4	Example	RAM is an example of Volatile Memory.	ROM is an example of Non-Volatile Memory.
5	Data Transfer	Data Transfer is easy in Volatile Memory.	Data Transfer is difficult in Non-Volatile Memory.
6	CPU Access	CPU can access data stored on Volatile memory.	Data to be copied from Non-Volatile memory to Volatile memory so that CPU can access its data.
7	Storage	Volatile memory less storage capacity.	Non-Volatile memory like HDD has very high storage capacity.
8	Impact	Volatile memory such as RAM is high impact on system's performance.	Non-volatile memory has no impact on system's performance.
9	Cost	Volatile memory is costly per unit size.	Non-volatile memory is cheap per unit size.

Q5. Distinguish among system software, application software and open source software on the basis of their features

System Software	Application Software
System software is meant to manage the system resources. It serves as the platform to run application software.	Application software helps perform a specific set of functions for which they have been designed.
System software is developed in a low-level language (assembly language for example)	Application software is developed in a high-level language such as Java, C++, .net and VB.
System software automatically starts running once the system is turned on and stops when the system is shut down.	Application software runs as and when the user requests it.
A system cannot even start without system software	Application software is user specific and it is not needed to run the system on the whole.
System software is endowed with a general purpose.	Application software carries a specific purpose.
A typical example for a system software is Windows Operating System	Some characteristic examples for application software is MS Office, Photoshop and CorelDraw

The term **open source** refers to software whose source code — the medium in which programmers create and modify software — is freely available on the Internet; by contrast, the source code for proprietary commercial software is usually a closely guarded secret.

The most well-known example of open source software is the Linux operating system, but there are open source software products available for every conceivable purpose.

Open source software is distributed under a variety of licensing terms, but almost all have two things in common: the software can be used without paying a license fee, and anyone can modify the software to add capabilities not envisaged by its originators.

A **standard** is a technology specification whose details are made widely available, allowing many companies to create products that will work interchangeably and be compatible with each other. Any modern technology product relies on thousands of standards in its design — even the gasoline you put in your car is blended to meet several highly-detailed specifications that the car’s designers rely on.

For a standard to be considered an **open standard**, the specification and rights to implement it must be freely available to anyone without signing non-disclosure agreements or paying royalties. The best example of open standards at work is the Internet — virtually all of the technology specifications it depends on are open, as is the process for defining new ones.

An **Application Programming Interface (API)** is a feature of a software application that allows other software to inter-operate with it, automatically invoking its functionality and exchanging data with it. The definition of an API is a form of technology standard. The term **open API** doesn't yet have a universally accepted definition, but it's generally expected to be "open" in the same manner as an open standard.

The common theme of "openness" in the above definitions is the ability of diverse parties to create technology that interoperates. When evaluating your organization's current and anticipated software needs, consider a solution's capability to interoperate as an important criterion. To extend the value of your technology investment, select a software solution that is based on open standards and APIs that facilitate interoperability and has the capability for direct integration between various vendors' products.

Q6. a) Create a file in MS-Word to insert a paragraph about yourself and save it with file name "yourself". Describe all steps involved in it.

My name is **Nivethithaa**. I have completed my Degree **B.E.,** Now I am working as **BPM** in Coimbatore District.

Q6. b) Write steps regarding followings

- To change the font style
- To change the font size
- To change the font color
- To highlight (in yellow) the line that reads "needs to get IMS's address"

Nivethithaa

C/o. Arumugam Advocate

4 Palaniandvar Kovil street,

Konavaikalpalayam,

Coimbatore

Q7. Create a file in MS-Word for the following document and save it with file name 'ms_word'. Describe all steps involved in it.

MS Word

MS Word is a widely used commercial word processor developed by Microsoft.

Ms Word is application software, which is capable of

- Creating,
- Editing,
- Saving, ~~and~~
- **Printing any type of document**

Q8 : Create a file in MS-word for the following document and save it with file name 'equations'. Describe all steps involved in it.

Equations

$X_2 + Y_5 = 30$

$Z^3 + Q^4 = 50$

$A_2 + B^8 = X_2 + Y^8$

Q9. Create a file in MS-word that convert existing highlight text to table as shown below and save it as file name 'text_to_table'. Describe all steps involved in it.

Select the text you want to convert Select the **Insert** tab

Click on **Table** command. A dialog box appear Click on **Convert Text to Table**, a new dialog box appears

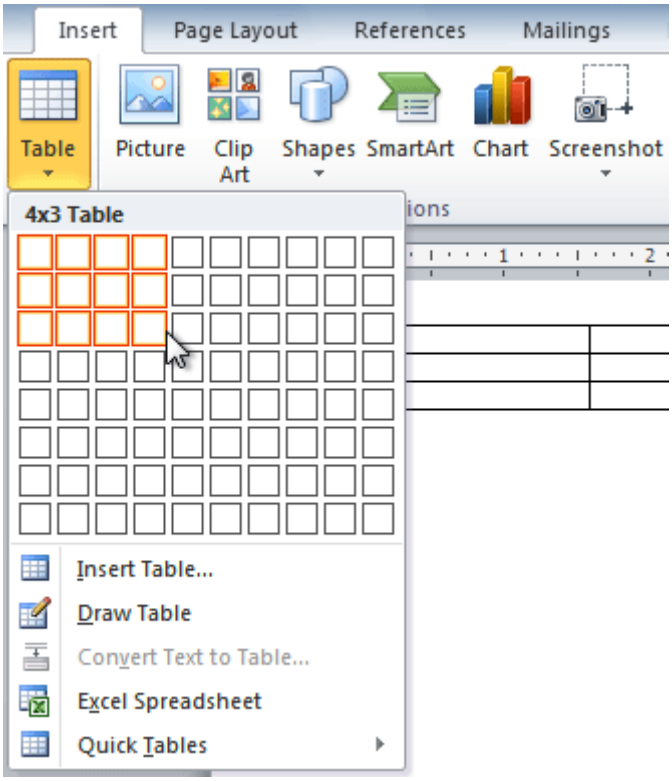
Here set number of columns in a table Click on OK Finally Selected text convert

Select the text you want to convert	Select the **Insert** tab
Click on **Table** command. A dialog box appear	Click on **Convert Text to Table**, a new dialog box appears
Here set number of columns	Click on OK Finally Selected text convert in a table

Q10. Create a file in MS-Word to insert a table in the document. Describe all steps involved in it.

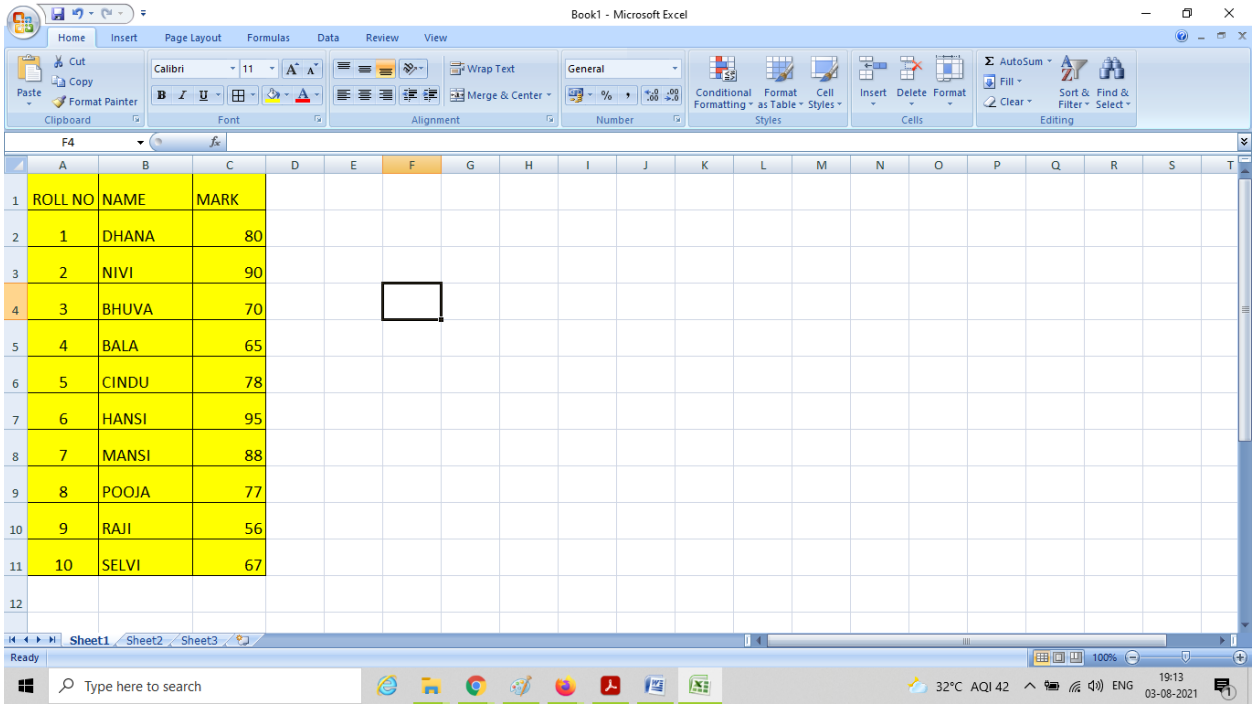
To insert a blank table:

1. Place your insertion point in the document where you want the table to appear.
2. Select the **Insert** tab.
3. Click the **Table** command.
4. Hover your mouse over the diagram squares to select the number of **columns** and **rows** in the table.



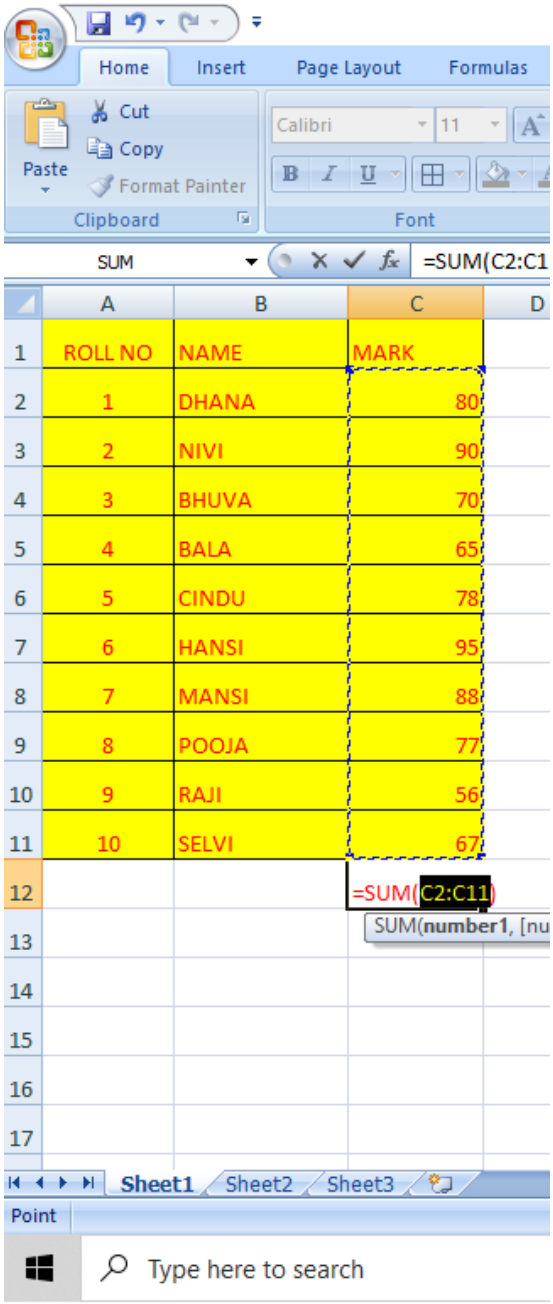
5. Click your mouse, and the table appears in the document.
6. You can now place the insertion point anywhere in the table to add text.

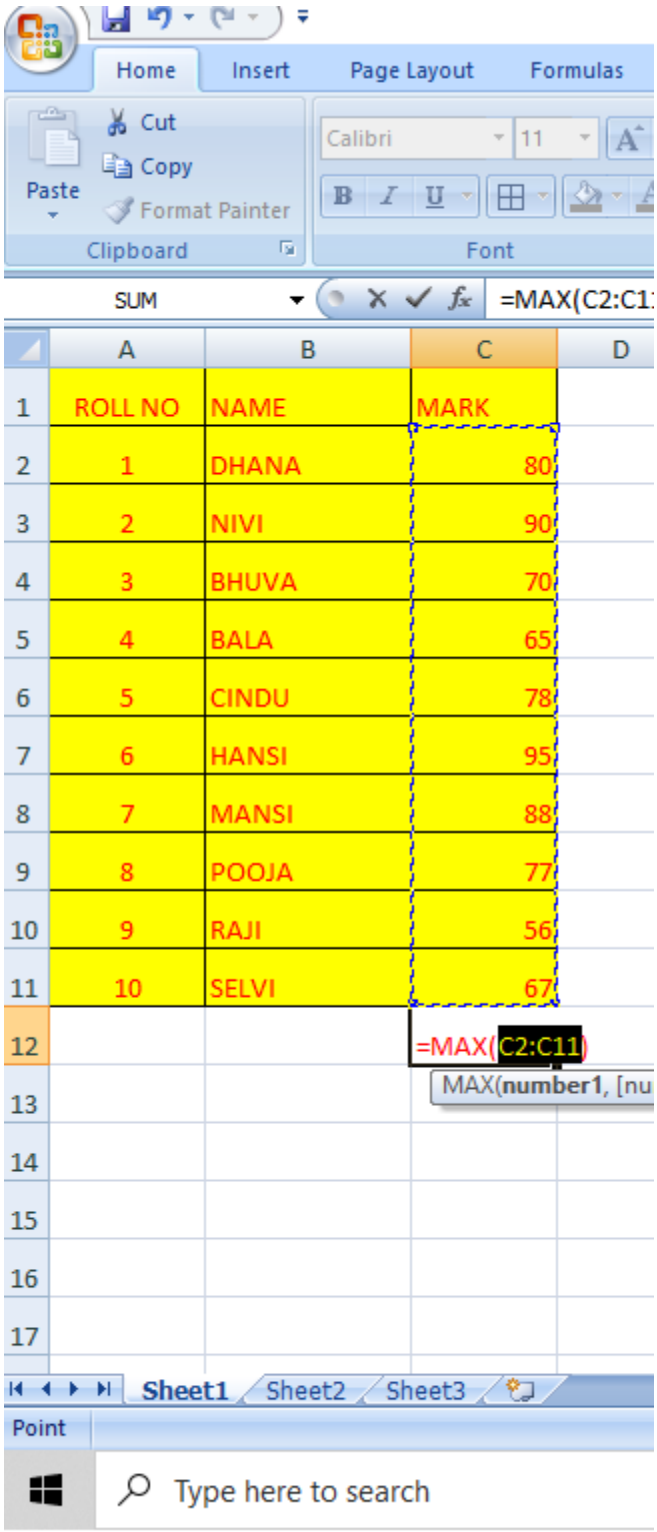
Q11. Create a following worksheet in MS-excel and save it with name ‘book1’.



Q12. Calculate the following things of a range (C2:C11) of data in the worksheet created in question no 10.

- the sum of the marks using AutoSum in a range of cells (C2:C11)
- average of the marks in a range of cells (C2:C11)
- highest marks in a range of cells (C2:C11)
- minimum marks in a range of cells (C2:C11)

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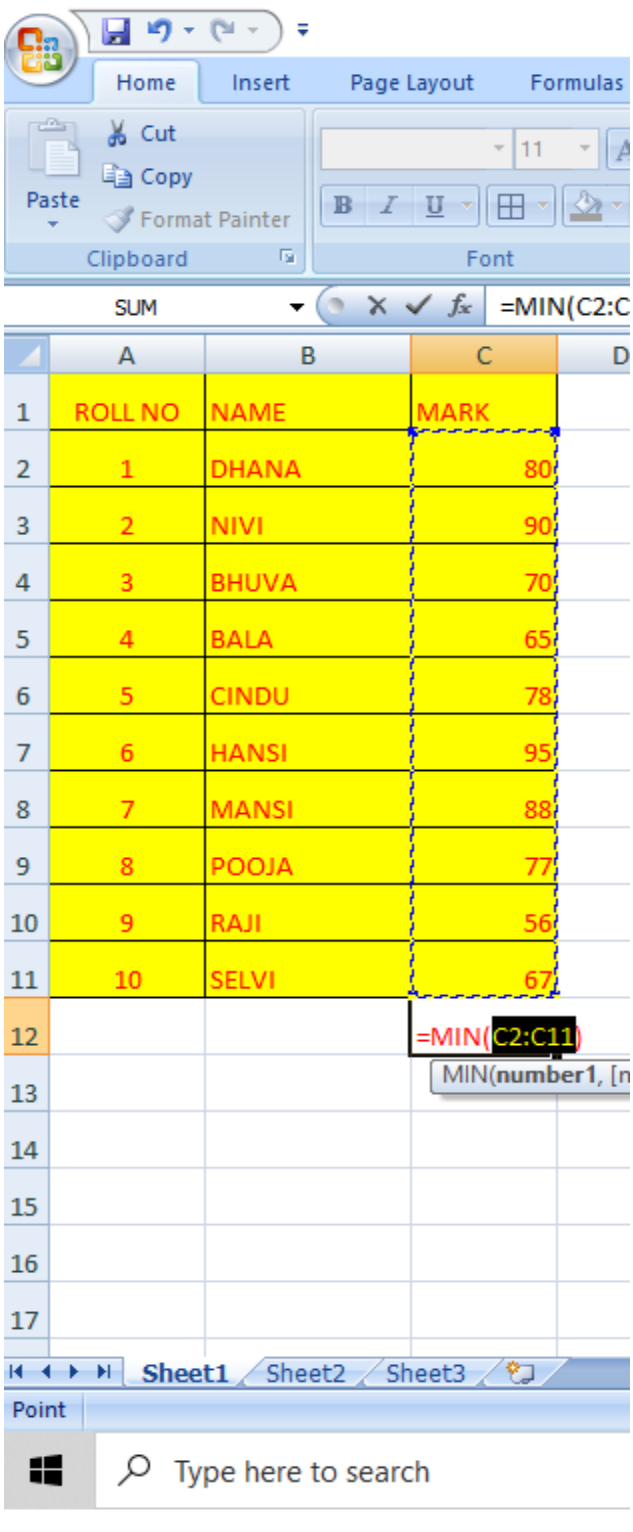
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Q13 a) Describe various steps involved in the following

 To modify column width of a worksheet

- Select the column or columns that you want to change.
- On the Home tab, in the Cells group, click Format.
- Under Cell Size, click Column Width.
- In the Column width box, type the value that you want.
- Click OK

 To modify the row height of a worksheet

- Select the row or rows that you want to change.
- On the Home tab, in the Cells group, click Format.
- Under Cell Size, click Row Height.
- In the Row height box, type the value that you want, and then click OK.

 To delete rows and columns of a worksheet

1. Select the cells, rows, or columns that you want to delete.
2. Right-click, and then select the appropriate delete option, for example, Delete Cells & Shift Up, Delete Cells & Shift Left, Delete Rows, or Delete Columns.

Q13 b) Describe following terms in the worksheet

- Absolute reference and relative reference in formula
- Cell address

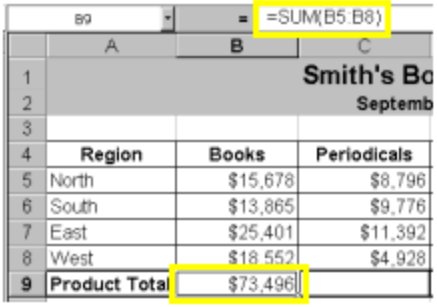
Excel uses two types of cell references to create formulas. Each has its own purpose. Read on to determine which type of cell reference to use for your formula.

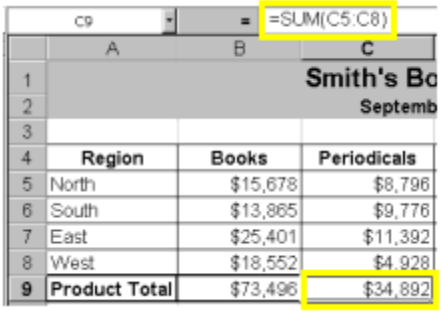
Relative Cell References

This is the most widely used type of cell reference in formulas. Relative cell references are basic cell references that adjust and change when copied or when using AutoFill.

Example:

=SUM(B5:B8), as shown below, changes to =SUM(C5:C8) when copied across to the next cell.





Absolute Cell References

Situations arise in which the cell reference must remain the same when copied or when using AutoFill. Dollar signs are used to hold a column and/or row reference constant.

Example:

In the example below, when calculating commissions for sales staff, you would not want cell B10 to change when copying the formula down. You want both the column and the row to

remain the same to refer to that exact cell. By using B10 in the formula, neither changes when copied.

	A	B	C
1	**Commissions - November 2000**		
2			
3		Total Sales	Commission
4	Bob	26,000	=B4*B10
5	Sally	35,350	
6	Joseph	42,000	
7	Celia	28,800	
8			
9			
10	**Rate:**	10%	

C5 = =B5*B10

	A	B	C
1	**Commissions - November 2000**		
2			
3		Tot:	
4	Bob	26,000	2600
5	Sally	35,350	3535
6	Joseph	42,000	4200
7	Celia	28,800	2880
8			
9			
10	**Rate:**	10%	

Cell B10 does not change when filled.

A more complicated example:

Let's pretend that you need to calculate the prices of items in stock with two different price discounts. Take a look at the worksheet below.

	A	B	C	D	E	F
1	**Sale Price Comparisons**					
2						
3	**Item #**	**Product**	**Price**		**Discount A**	**Discount B**
4	125A	Scooter	$59.99		=$C4-$C4*A$12	
5	789A	Tricycle	$129.95			
6	78B	Soccer Ball	$12.35			
7	489A	Crybaby Doll	$21.99			
8	57B	Art Kit	$14.95			
9						
10	**Discounts**					
11	A	B				
12	10%	15%				

Examine the formula in cell E4. By making the first cell reference $C4, you keep the column from changing when copied across, but allow the row to change when copying down to accommodate the prices of the different items going down. By making the last cell reference A$12, you keep the row number from changing when copied down, but allow the

column to change and reflect discount B when copied across. Confused? Check out the graphics below and the cell results.

Copied Across

F4 | =$C4-$C4*B$12

	A	B	C	D	E	F
1	Sale Price Comparisons					
2						
3	**Item #**	**Product**	**Price**		**Discount A**	**Discount B**
4	125A	Scooter	$59.99		$53.99	$50.99
5	789A	Tricycle	$129.95			
6	78B	Soccer Ball	$12.35			
7	489A	Crybaby Doll	$21.99			
8	57B	Art Kit	$14.95			
9						
10	**Discounts**					
11	A	B				
12	10%	15%				

Copied Down

E5 | =$C5-$C5*A$12

	A	B	C	D	E	F
1	Sale Price Comparisons					
2						
3	**Item #**	**Product**	**Price**		**Discount A**	**Discount B**
4	125A	Scooter	$59.99		$53.99	$50.99
5	789A	Tricycle	$129.95		$116.96	
6	78B	Soccer Ball	$12.35		$11.12	
7	489A	Crybaby Doll	$21.99		$19.79	
8	57B	Art Kit	$14.95		$13.46	
9						
10	**Discounts**					
11	A	B				
12	10%	15%				

Now, you might be thinking, why not just use 10% and 15% in the actual formulas? Wouldn't that be easier? Yes, if you are sure the discount percentages will never change - which is highly unlikely. It's more likely that eventually those percentages will need to be adjusted. By referencing the *cells* containing 10% and 15% and not the actual numbers, when the percentage changes all you need to do is change the percentage one time in cell A12 and/or B12 instead of rebuilding all of your formulas. Excel would automatically update the discount prices to reflect your discount percentage change.

Q14. a) What tools are available to customize our PowerPoint presentation?

Microsoft has upped the PowerPoint customization within Office. Now you can choose themes, theme variants, foreground patterns and color and different fill effects to an previously unknown extent.

Here's how to pretty up your next presentation.

1. Choose a theme from PowerPoint's preloaded themes, found under the Design tab.

2. Pick a variant if you like, such as a different color, under the Design tab and next to the available themes. This will use the same layout as the theme you chose with a different color scheme.

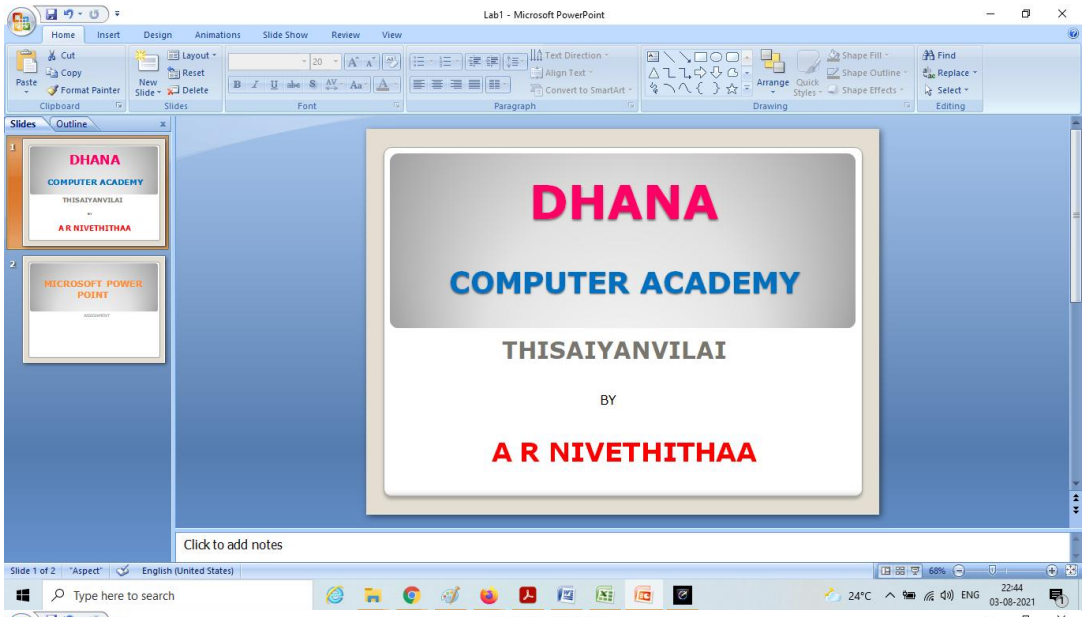
3. Customize your slides by choosing whether you'd like a solid, gradient, picture, texture or pattern fill, or whether you want to hide background graphics altogether. Click Format Background in the Design tab next to Variants, which will open a sidebar. Choose customized options such as fill, color, brightness and transparency. You can even insert your own picture as a background to your slide by selecting Picture Or Texture Fill then clicking Insert Picture From File or Online. Choose the picture you want to use, and click Open.

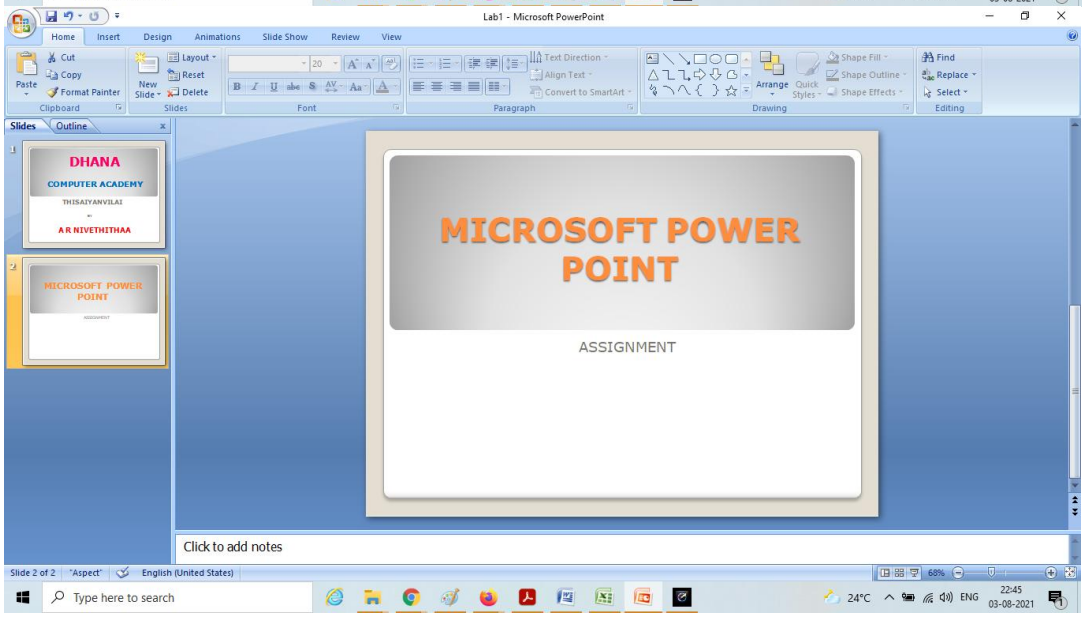
4. Get even more creative within fills by choosing color, transparency and different patterns such as polka dots, diagonal patterns and diamonds.

Q14 b) Write the steps for the following action for creation of power point presentation

- Open a Blank presentation
- Save the presentation as Lab1.pptx

- Add a Title to the first slide: the name of your college
- Type your first name and last name in the Subtitle section
- Add a New Slide which has a Title and Content





Q15.Write steps for creation of a set of PowerPoint slides that demonstrates your skill to use the tools of PowerPoint. It should include the following things

- Title slide &bullet list
- Inserting Excel Sheet
- Clip art and Text
- Slide show effects

1. Title slide & bullet list
   - ✓ Insert New slide
   - ✓ Select layout and then select title slide
   - ✓ Enter text in the Title slide
   - ✓ Next insert Title and Content slide
   - ✓ Enter the Topic heading in Title text box
   - ✓ And then type the content in Bullets numbering text box.
   - ✓ If you want to change bullet type select bullets and numbering option and then change the bullet models
2. Inserting excel sheet –
   - ✓ Next Insert another slide for Title and Content
   - ✓ Select Excel and insert data
3. Clip art and text
   - ✓ Insert new slide and then select title and content layout
   - ✓ Select Insert clipart command and then select clipart.
4. Slide show effects
5. If you want apply any design in the selected slide, select design tab and then select any design to change the design of the selected slide
6. If you want change any animation, select animation tab and then select any animation, click apply to the selected animation
7. Finally to View to show the all slides

Part - 2

Q16. What is the difference between Machine Language and High Level Language?

High-level language

- It can be easily interpreted as well as compiled in comparison to low-level language.
- It can be considered as a programmer-friendly language.
- It is easy to understand.
- It is easy to debug.
- It is simple in terms of maintenance.
- It requires a compiler/interpreter to be translated into machine code.
- It can be run on different platforms.
- It can be ported from one location to another.
- It is less memory efficient, i.e it consumes more memory in comparison to low-level languages.
- Examples of high level languages include C, C++, Java, Python.
- It is used widely in today's times.

Low-level language

- It is also known as machine level language.
- It can be understood easily by the machine.
- It is considered as a machine-friendly language.
- It is difficult to understand.
- It is difficult to debug.
- Its maintenance is also complex.
- It is not portable.
- It depends on the machine; hence it can't be run on different platforms.
- It requires an assembler that would translate instructions.
- It is not used widely in today's times.

We will now understand the differences between High-Level and Low-Level programming languages −

High-Level Language	Low-level language
It can be considered as a programmer-friendly language.	It is considered as a machine-friendly language.
It requires a compiler/interpreter to be translated into machine code.	It requires an assembler that would translate instructions.
It can be ported from one location to another.	It is not portable.
It is easy to understand.	It is difficult to understand.
It is easy to debug.	It is difficult to debug.
It is less memory efficient, i.e., it consumes more memory in comparison to low-level languages.	It consumes less memory.

Q17. Discuss about different data types of C programming Language

Data types specify how we enter data into our programs and what type of data we enter. C language has some predefined set of data types to handle various kinds of data that we can use in our program. These datatypes have different storage capacities.

C language supports 2 different type of data types:

1. **Primary data types**:

   These are fundamental data types in C namely integer(`int`), floating point(`float`), character(`char`) and `void`.

2. **Derived data types**:

   Derived data types are nothing but primary datatypes but a little twisted or grouped together like **array**, **stucture**, **union** and **pointers**. These are discussed in details later.

Data type determines the type of data a variable will hold. If a variable `x` is declared as `int`. it means x can hold only integer values. Every variable which is used in the program must be declared as what data-type it is.

Integer type

Integers are used to store whole numbers.

Size and range of Integer type on 16-bit machine:

Type	Size(bytes)	Range
int or signed int	2	-32,768 to 32767
unsigned int	2	0 to 65535
short int or signed short int	1	-128 to 127
unsigned short int	1	0 to 255
long int or signed long int	4	-2,147,483,648 to 2,147,483,647
unsigned long int	4	0 to 4,294,967,295

Floating point type

Floating types are used to store real numbers.

Size and range of Integer type on 16-bit machine

Type	Size(bytes)	Range
Float	4	3.4E-38 to 3.4E+38
double	8	1.7E-308 to 1.7E+308
long double	10	3.4E-4932 to 1.1E+4932

Character type

Character types are used to store characters value.

Size and range of Integer type on 16-bit machine

Type	Size(bytes)	Range
char or signed char	1	-128 to 127
unsigned char	1	0 to 255

void type

`void` type means no value. This is usually used to specify the type of functions which returns nothing. We will get acquainted to this datatype as we start learning more advanced topics in C language, like functions, pointers etc.

Q18. Find the output of the following expressions

a) X=20/5*2+30-5

X= 20/5*2+30-5

X= **4***2+30-5

X= **8**+30-5

X= **38**-5

X= 33

b) Y=30 – (40/10+6) +10

y= 30-(40/10+6)+10

y= 30-(**4**+6)+10

y= 30-(**10**)+10

y= 30-**10**+10

y= **20**+10

y= **30**

c) Z= 40*2/10-2+10

Z= **80**/10-2+10

Z= **8**-2+10

Z= **6**+10

Z= 16

Q19. Describe the syntax of the following statements
a) If – else statement b) for loop c) while loop d) do-while loop

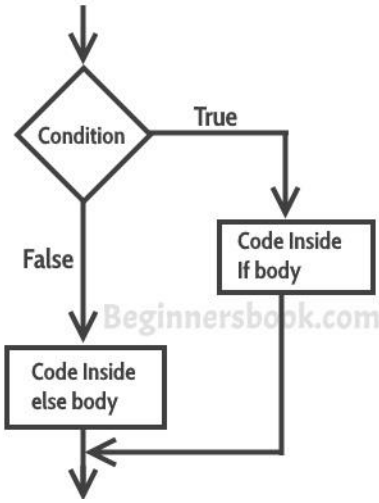
a) If else statement

Syntax of if else statement:

If condition returns true then the statements inside the body of "if" are executed and the statements inside body of "else" are skipped.
If condition returns false then the statements inside the body of "if" are skipped and the statements in "else" are executed.

```
if(condition) {
  // Statements inside body of if
}
else {
  //Statements inside body of else
}
```

Flow diagram of if else statement



Example of if else statement

In this program user is asked to enter the age and based on the input, the if..else statement checks whether the entered age is greater than or equal to 18. If this condition meet then display message "You are eligible for voting", however if the condition doesn't meet then display a different message "You are not eligible for voting".

```c
#include <stdio.h>
int main()
{
  int age;
  printf("Enter your age:");
  scanf("%d",&age);
  if(age >=18)
  {
          /* This statement will only execute if the
           * above condition (age>=18) returns true
           */
          printf("You are eligible for voting");
  }
  else
  {
          /* This statement will only execute if the
           * condition specified in the "if" returns false.
           */
          printf("You are not eligible for voting");
  }
  return 0;
}
```

Output:

```
Enter your age:14
You are not eligible for voting
```

b) For loop

for Loop

The syntax of the `for` loop is:

```
for (initializationStatement; testExpression; updateStatement)
{
    // statements inside the body of loop
}
```

How for loop works?

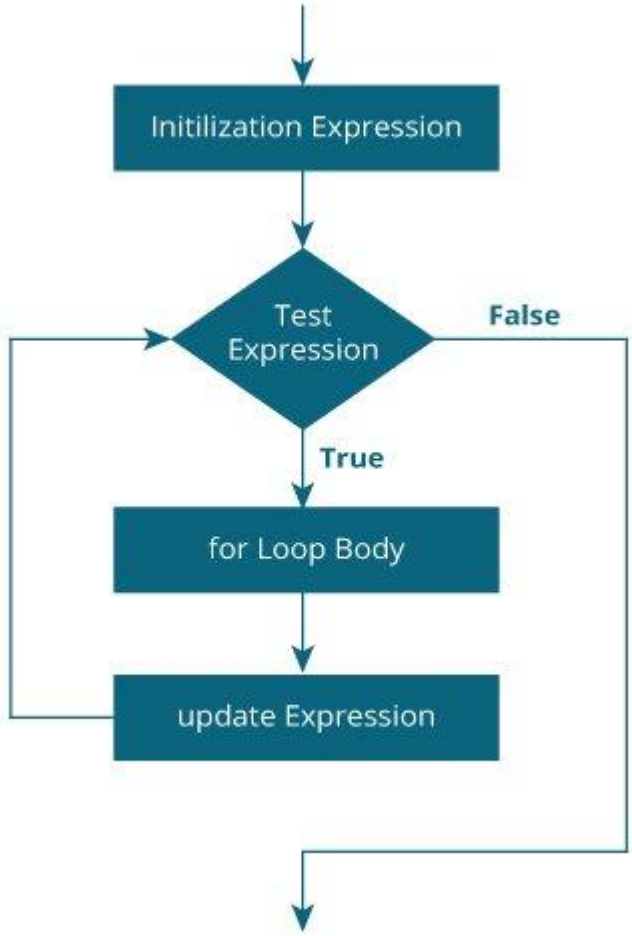
- The initialization statement is executed only once.
- Then, the test expression is evaluated. If the test expression is evaluated to false, the `for` loop is terminated.

- However, if the test expression is evaluated to true, statements inside the body of the `for` loop are executed, and the update expression is updated.
- Again the test expression is evaluated.

This process goes on until the test expression is false. When the test expression is false, the loop terminates.

To learn more about test expression (when the test expression is evaluated to true and false), check out relational and logical operators.

for loop Flowchart



Working of for loop

Example 1: for loop

```
// Print numbers from 1 to 10
#include <stdio.h>

int main() {
  int i;

  for (i = 1; i < 11; ++i)
```

```
  {
    printf("%d ", i);
  }
  return 0;
}
```

Output

```
1 2 3 4 5 6 7 8 9 10
```

1. *i* is initialized to 1.
2. The test expression `i < 11` is evaluated. Since 1 less than 11 is true, the body of `for` loop is executed. This will print the **1** (value of *i*) on the screen.
3. The update statement `++i` is executed. Now, the value of *i* will be 2. Again, the test expression is evaluated to true, and the body of `for` loop is executed. This will print **2** (value of *i*) on the screen.
4. Again, the update statement `++i` is executed and the test expression `i < 11` is evaluated. This process goes on until *i* becomes 11.
5. When *i* becomes 11, *i < 11* will be false, and the `for` loop terminates.

c) While loop

while loop

The syntax of the `while` loop is:

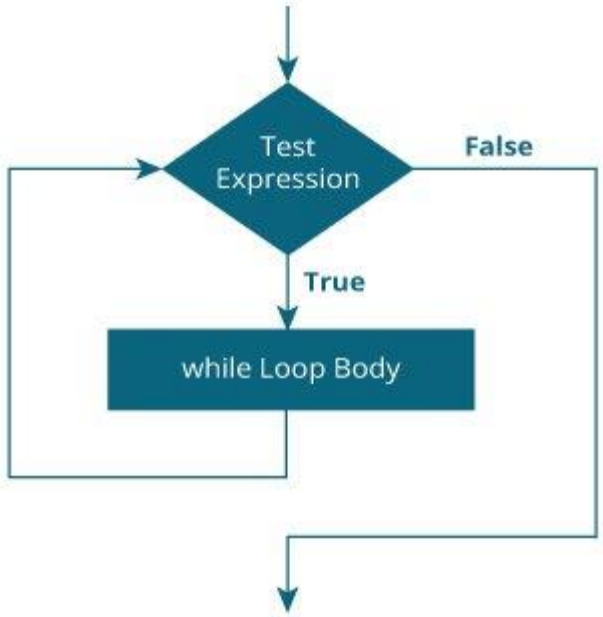
```
while (testExpression) {
  // the body of the loop
}
```

How while loop works?

- The `while` loop evaluates the `testExpression` inside the parentheses `()`.
- If `testExpression` is **true**, statements inside the body of `while` loop are executed. Then, `testExpression` is evaluated again.
- The process goes on until `testExpression` is evaluated to **false**.
- If `testExpression` is **false**, the loop terminates (ends).

To learn more about test expressions (when `testExpression` is evaluated to **true** and **false**), check out relational and logical operators.

Flowchart of while loop



Working of while loop

Example 1: while loop

```
// Print numbers from 1 to 5

#include <stdio.h>
int main() {
  int i = 1;

  while (i <= 5) {
    printf("%d\n", i);
    ++i;
  }

  return 0;
}
```

Output

```
1
2
3
4
5
```

Here, we have initialized *i* to 1.

1. When `i = 1`, the test expression `i <= 5` is **true**. Hence, the body of the `while` loop is executed. This prints `1` on the screen and the value of *i* is increased to `2`.

2. Now, `i = 2`, the test expression `i <= 5` is again **true**. The body of the `while` loop is executed again. This prints `2` on the screen and the value of *i* is increased to `3`.
3. This process goes on until *i* becomes 6. Then, the test expression `i <= 5` will be **false** and the loop terminates.

d) Do – while loop

do...while loop

The `do..while` loop is similar to the `while` loop with one important difference. The body of `do...while` loop is executed at least once. Only then, the test expression is evaluated.

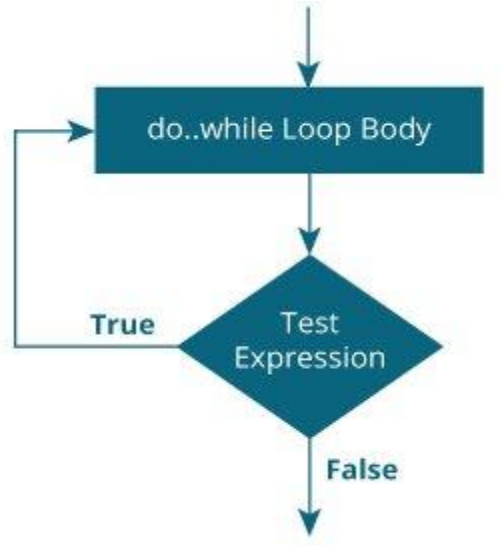
The syntax of the `do...while` loop is:

```
do {
  // the body of the loop
}
while (testExpression);
```

How do...while loop works?

- The body of `do...while` loop is executed once. Only then, the `testExpression` is evaluated.
- If `testExpression` is true, the body of the loop is executed again and `testExpression` is evaluated once more.
- This process goes on until `testExpression` becomes **false**.
- If `testExpression` is **false**, the loop ends.

Flowchart of do...while Loop



Working of do...while loop

Example 2: do...while loop

```
// Program to add numbers until the user enters zero

#include <stdio.h>
int main() {
  double number, sum = 0;

  // the body of the loop is executed at least once
  do {
    printf("Enter a number: ");
    scanf("%lf", &number);
    sum += number;
  }
  while(number != 0.0);

  printf("Sum = %.2lf",sum);

  return 0;
}
```

Output

```
Enter a number: 1.5
Enter a number: 2.4
Enter a number: -3.4
Enter a number: 4.2
Enter a number: 0
Sum = 4.70
```

Here, we have used a `do...while` loop to prompt the user to enter a number. The loop works as long as the input number is not `0`.

The `do...while` loop executes at least once i.e. the first iteration runs without checking the condition. The condition is checked only after the first iteration has been executed.

```
do {
  printf("Enter a number: ");
  scanf("%lf", &number);
  sum += number;
}
while(number != 0.0);
```

So, if the first input is a non-zero number, that number is added to the *sum* variable and the loop continues to the next iteration. This process is repeated until the user enters `0`.

But if the first input is 0, there will be no second iteration of the loop and *sum* becomes `0.0`.

Outside the loop, we print the value of *sum*.

Q20. Find the output of the following program segments

a)	b)	c)
#include <stdio.h> **int main()** **{** **int i;** **for (i=1; i<2; i++)** **{** **printf("IMS Ghaziabad\n");** **}** **}**	#include <stdio.h> int main() { int i = 1; while (i <= 2) { printf("IMS Ghaziabad\n"); i = i + 1; } }	#include <stdio.h> void main() { int a = 10, b=100; if(a > b) printf("Largest number is %d\n", a); else printf("Largest number is %d\n", b); }
Result :	Result :	Result
IMs Ghaziabad	**IMs Ghaziabad** **IMs Ghaziabad**	main.c: In function ‘main’: main.c:6:8: warning: missing terminating " character printf("Largest number is %d\n", a); ^ main.c:6:8: error: missing terminating " character printf("Largest number is %d\n", a); ^~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ main.c:7:1: error: expected expression before ‘else’ else ^~~~ main.c:8:8: warning: missing terminating " character printf("Largest number is %d\n", b); ^ main.c:8:8: error: missing terminating " character printf("Largest number is %d\n", b);

		`` ^~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ main.c:9:1: error: expected declaration or statement at end of input } ^ ```