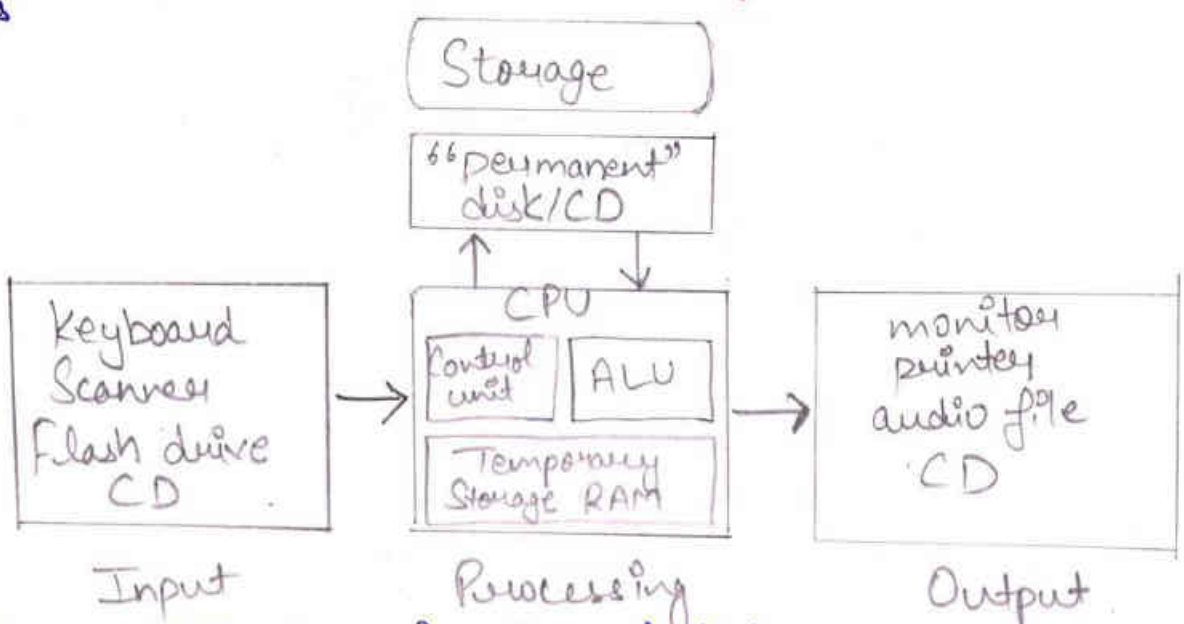
CCA-101: Fundamentals of IT & Programming

Assignment-1

Q-1 :⇒ What are the four fundamentals parts of computer? Explain it with the help of diagram.

Ans



Input :⇒ The transferring of information into a computer system; data entry. In addition to the more commonly found methods of input (Keyboard, Scanner, flash drive, CD), data can also be entered via vocal dictation and even body movements. For our purpose input will be accomplished when you, the programmer, type source code at the keyboard or open a previously typed program.

Processing :⇒ The manipulation and control of information (data) within the computer system. The Central Processing Unit (CPU) is the "brain" of a computing device. Manipulations are handled by the Control Unit, the Arithmetic Logic Unit and temporary Storage. The Control Unit is the

computer's "policeman" that directs the traffic of the computer's "thinking". The Arithmetic Logic Unit performs mathematical and logical computations, and the temporary Storage (RAM) holds the "thoughts" of the CPU.

Storage :→ The means by which information can be "permanently" saved (until such time as you wish to delete it). This storage may be computer's internal or external storage. Storage usually occurs on a hard drive, flash drive, a CD, or a cloud account.

Output :→ The displaying of information. Output may occur via a display monitor, audio file, hard-copy printing on paper, or printing as 3-D models. For our purposes, output will be accomplished when your program displays information on the monitor.

Q-2 Discuss about the classification of computers based on size and capacity.

Ans Classification of computers.

Based on size and capacity, computers are classified as follows :→

> Super Computers
> Mainframe Computers
> Mini Computers.
> Micro Computers.

(1) Super Computers :→ Super computers are the most powerful and physically the largest by size. These are systems designed to process huge amounts of data and the fastest supercomputers can perform over one trillion calculations in a second. Supercomputers have thousands of processors. Because of their extraordinary speed, accuracy and processing power, supercomputers are well suited for solving highly complex problems and performing tasks that demand huge amounts of calculations.

(2) Mainframe Computer :→ Mainframe computers are very large often filling an entire room and can process thousands of millions of instructions per second. In a mainframe environments, users connect to the mainframe through the many terminals wired to the mainframe. Mainframes are capable of supporting hundreds to thousands wired to the mainframe. Mainframes are mainly performing functions include :→ flight scheduling, reservations and ticketing for an airline etc.

(3) Minicomputers :→ Minicomputers are much smaller than mainframes. These computers are also less expensive. Sometimes.

referred to as Midrange Server or Midrange Computer, they are typically larger, more powerful and more expensive than desktop computers. Midrange computers are usually used by small and medium-sized business as their servers. Users connect to the server through a network by using desktop computers.

(4) Microcomputers :- Microcomputers are the most frequently used type of computer. Also, known as Personal Computer (PC), a microcomputer is a small computer system designed to be used by one person at a time.

Q-3 What is the meaning of computer generation? How many computer generations are defined? What technologies were used?

Ans The evolution of digital computing is often divided into generations. Each generation is characterized by dramatic improvements over the previous generation in the technology used to build computers, in terms of the internal organization of computer and programming languages.

Five Generations of Computers:-

- First Generation
- Second Generation

- Third Generation
- Fourth Generation
- Fifth Generation.

★ First Generation: Vacuum Tubes (1940-1956):

The first computer systems used vacuum tubes for circuitry and magnetic drums for memory, and were often enormous, taking up entire rooms. These computers were very expensive to operate and in addition to using a great deal of electricity, the first computers generated a lot of heat, which was often the cause of malfunctions. First generation computers relied on machine language, the lowest-level programming language understood by computers, to perform operations, and they could only solve one problem at a time. It would take operators days or even weeks to set-up a new problem. Input was based on punched cards and paper tape, and output was displayed on printouts.

The UNIVAC (Universal Automatic Computer) and ENIAC (Electronic Numerical Integrator and Computer) computers are examples of first-generation computing devices. The UNIVAC was the first commercial computer delivered to a business client, the U.S. Census Bureau in 1951

★ Second Generation: Transistors (1956-1963):
The world would see transistors replace vacuum tubes in the second generation of computers. The transistor was invented at Bell Labs in 1947 but did not see widespread use in computers until the late 1950s.

- The transistor was far superior to the vacuum tube, allowing computers to become smaller, faster, cheaper, more energy-efficient and more reliable than their first-generation predecessors.
- Though the transistor still generated a great deal of heat that subjected the computer to damage, it was a vast improvement over the vacuum tube. Second-generation computers still relied on punched cards for input and printouts for output. Second-generation computers moved from cryptic binary machine language to symbolic, or assembly, language.

★ Third Generation: Integrated Circuits (1964-1971).
The development of the integrated circuit was the hallmark of the third generation of computers. Transistors were miniaturized and placed on silicon chips, called semi-conductors, which drastically increased the speed and efficiency of computers. Instead of punched cards and printouts,

users interacted with third generation computers through keyboards and monitors and interfaced with an operating system, which allowed the device to run many different applications at one time with a central program that monitored the memory. Computers for the first time became accessible to a mass audience because they were smaller and cheaper than their predecessors.

★ Fourth Generation: Microprocessors (1971-Present)

The microprocessor brought the fourth generation of computers, as thousands of integrated circuits were built onto a single silicon chip. What in the first generation filled an entire room could now fit in the palm of the hand. The Intel 4004 chip, developed in 1971, located all the components of the computer - from the unit and memory to input/output controls - on a single chip.

In 1981 IBM introduced its first computer for the home user, and in 1984 Apple introduced the Macintosh. Microprocessors also moved out of the realm of desktop computers and into many areas of life as more and more everyday products began to use microproces-
-ors.

As these small computers became more powerful, they could be linked together to form networks, which eventually led to the development of the Internet. Fourth generation computers also saw the development of GUIs, the mouse and handheld devices.

★ Fifth Generation: Artifical Intelligence (Present and Beyond):

Fifth generation computing devices, based on artifical intelligence, are still in development, though there are some applications, such as voice recognition, that are being used today. The use of parallel processing and super-conductors is helping to make artifical intelligence a reality.
Quantum computation and molecular and nanotechnology will radically change the face of computers in years to come. The goal of fifth-generation computing is to develop devices that respond to natural language input and are capable of learning and self-organization.

Q-4 Differentiate between Volatile & Non-Volatile memories.

Ans

Volatile memory	Non-Volatile memory
(1) Volatile memory is the type of memory in which data is lost as it is powered-off.	(1) Non-volatile memory is the type of memory in which data remains stored even if it is powered-off.
(2) Contents of Volatile memory are stored temporarily.	(2) Contents of Non-volatile memory are stored permanently.
(3) It is faster than non-volatile memory.	(3) It is slower than volatile memory.
(4) RAM (Random Access Memory) is an example of volatile memory.	(4) ROM (Read Only Memory) is an example of non-volatile memory.
(5) In Volatile memory, process can read and write.	(5) In Non-volatile memory, process can only read.
(6) Volatile memory generally has less storage capacity.	(6) Non-volatile memory generally has more storage capacity than volatile memory.
(7) Volatile memory is more costly per unit size.	(7) Non-Volatile memory is less costly per unit size.

Q-5 Distinguish among system software, application software and open source software on the basis of their features.

Ans Software is a set of instructions used to operate computers and execute specific tasks.

(1) System Software :- It is a type of software that is designed to run a computer's hardware and application programs. Software like operating systems, compilers, editors and drivers etc. come under this category. A computer cannot function without the presence of these. If we think of the computer system as a layered model, the system is the interface between the hardware and user applications.

Features of system software :-

(1) High Speed
(2) Hard to manipulate.
(3) Written in a low-level computer language.
(4) Close to the system.
(5) Versatile.

(2) Application Software :- It is software created for a specific purpose, used by end users. It can be called an application or simply an app. Examples :- Word processor, accounting application, a web browser, an email client, media player etc.

(3) Open-Source Software :- Open Source Software is a type of computer software in which source code is released under a license in which the copyright holder grants users the rights to study, change, and distribute the software to anyone

and for any purpose. The Linux operating system (OS) is the best-known examples of open source software technology.

Features of Open Source Software :->

(1) Innovation.
(2) Freedom.
(3) Integrity.
(4) Continuity.
(5) Giving Back to the Community.
(6) Final thoughts.

Q-6 (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.

Ans (1) Open Microsoft Word on your computer.
(2) Click on the "File" tab located at the top left corner of the screen.
(3) Click on "New" to create a new document.
(4) Choose a template or a blank document to start with.
(5) Type or add your content to the new document. In this case, type a paragraph about "yourself."
(6) Click on the "File" tab again.
(7) Click on "Save" to save the document.
(8) Choose a location to save the document on your computer.

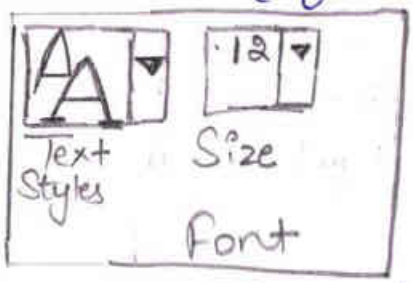
(9) Type in a name for the document. In this case, type "yourself".
(10) Choose a file format (e.g. .docx) from the drop-down menu.
(11) Click on the "save" button to save the document.

Q-6 (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 "need to get IMS's address".

Ans ★ To change the font Style.

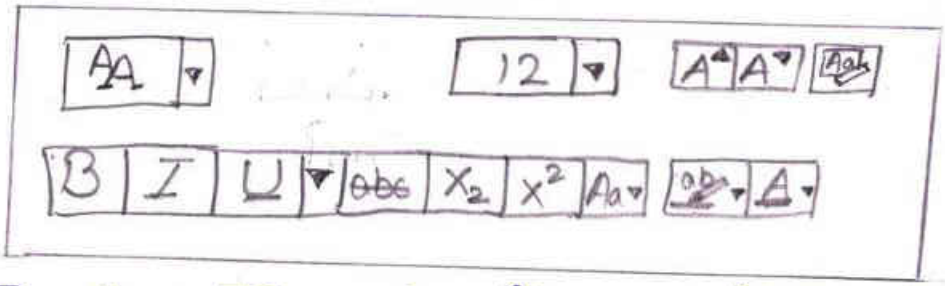
(1) Click Fournat (Font) > Text Styles.



(2) In the Item to Change list, click All, then select the font, size, or color you want for all text in the current view.
To change the font of just tasks and not milestones or summary tasks, click Noncritical tasks, change the font, then in turn Click Critical Tasks.
(3) Repeat this process for other views. Changing the font in one view has no effect on the font in other views.

✱ To change the font size.

(1) Click Font > Font size.



(2) In the Item to Change list, click All, then select the size you want for all text in the current view.

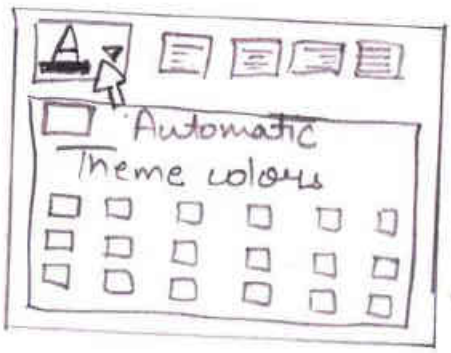
(3) Repeat this process for other views.

(4) Select the text and click the increase or decrease font size buttons for another option for font size.

✱ To change the font color.

(1) Select the text that you want to change.

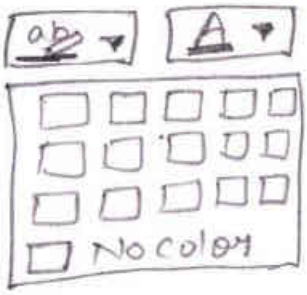
(2) On the Home tab, in the Font group, choose the arrow next to Font color, and then select a color.



★ To highlight (in yellow) the line that reads "need to get IMS's address."

(1) Select the text that you want to highlight.

(2) Select the highlighter (in yellow).



(3) Choose the highlighter color.

(4) Then the line that reads "need to get IMS's address" shows the line with highlight the sentence.

Q-7 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

Ans (1) Open the Ms-woud.
(2) Click office button.
(3) Click New (New document).
(4) Click Blank document and then Select create button. Blank Page is open.
(5) Type the text content :-
"MS woud is application software, which is capable of
- creating
- editing
- saving, and
- printing any type of document."

(6) Click on the "file" tab again.
(7) Click on "save" to save the document.
(8) Choose a location to save the document on your computer.
(9) Type in a name for the document. In this case, type "text".
(10) File name 'ms-woud'. Then choose a file format (eg..docx) from the drop-down menu.
(11) Click on the "save" button to save the document.

Q-8 Create a file in MS-word for the following document and save it with file name "equations". Describe all steps involved in it.

Equations.

$X_2 + Y_5 = 30$

$Z^3 + Q^4 = 50$

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

Ans (1) Open MS-word.

(2) Click on the "File" tab located at the top left corner of the screen.

(3) Click on "New" to create a new document.

(4) Choose a template or blank document to start with.

(5) Type or add your content to the new document. For example.

Equations.

$X_2 + Y_5 = 30$

$Z^3 + Q^4 = 50$

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

(6) Click on the "File" tab again.

(7) Click on "Save" to save the document.

(8) Choose a location to save the document on your computer.

(9) Type the file name "equations".

(10) Choose a file format (eg. .docx) from the drop-down menu.

(11) Click on the "save" button to save the document.

Q-9 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 appears.
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.

Select the text you want to convert	Select the Insert tab.
Click on Table command. A dialog box appears.	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.

Ans (1) Select the text which you convert to text into table.
(2) Select the text, then Click the Insert and Click the table.
(3) Now Select the convert text to table in drop-down menu in the table.
(4) Then fill Columns which do you want.
(5) Click the OK button.
(6) Text will convert to table form.
(7) Save the file with file name 'text_to_table'.
(8) Then click the file format (eg. .docx) from the drop down menu.

(9) Click on the "Save" button to save the document.

Q-10. Create a file in MS-word to insert a table in the document. Describe all steps involved in it.

Ans (1) Place your cursor where you want to insert the table.
(2) Select the Insert tab in the ribbon
(3) Select the Table button in Tables group.
(4) Select Insert Table from the drop-down menu.
(5) Enter the no of rows and columns in the Insert Table dialog box.
(6) Select An Autofit behavior :-
- Fixed Column width
- Autofit to contents.
- Autofit to Window
(7) Check Remember dimensions for new tables if you want to create the same size table in the future.
(8) Select the OK button to close the Insert Table dialog box and insert your new table.

Q-11 Creat a following worksheet in MS-excel and save it with name 'book1'.

BOOK 1

	A	B	C
1	Roll No	Name	Marks
2	1	n1	60
3	2	n2	70
4	3	n3	90
5	4	n4	80
6	5	n5	40
7	6	n6	50
8	7	n7	77
9	8	n8	44
10	9	n9	88
11	10	n10	55
12			
13			

Ans:1) Open MS-Excel.
(2) Create New Blank Sheet.
(3) Then Create the Marksheet.
(4) Fill the data in the sheet.
Roll No > Name > Marks.

Roll No	Name	Marks
1	n1	60
2	n2	70
3	n3	90
4	n4	80
5	n5	40
6	n6	50

(5) Save the document file name "book1".
(6) Choose the file format (eg. xlsx) from the drop down menu.
(7) Click on the "Save" button to save the document.

Q-12 Calculate the following things of 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).

Ans:1) The Sum of the marks using Autosum in a range of cells (C2:C11) :→ Sum of the marks :→ (C2+C3+C4+C5+C6+C7+C8+C9+C10+C11)
→ Select the C2:C11, then Click the Autosum button.
→ Then you will shown the result for this method.
(2) Average of the marks in a range :→ Average of the marks :→ formula :→ =Average (C2:C11)
→ Select the C2:C11, then apply the formula of average.

→ Then you will shown the result.

(3) Highest marks in a range of cells ($C_2:C_{11}$) :→ Highest marks in a range of cells :→ Formula :→ =max($C_2:C_{11}$)

→ Select the $C_2:C_{11}$, then apply the maximum no. of formula.

→ Then you will shown the result.

(4) Minimum marks in a range of cells ($C_2:C_{11}$) :→ Minimum marks in a range of cells ($C_2:C_{11}$) :→ Formula :→ min ($C_2:C_{11}$).

→ Select the $C_2:C_{11}$, then apply the min no. of formula.

→ Then you will shown the result.

Q-13 (a) Describe various steps involved in the following.

→ To modify column width of a worksheet.

→ To modify the row height of a worksheet.

→ To delete rows and columns of a worksheet.

Ans (1) To modify column width of a worksheet :→

Steps :→

(1) Select the columns you want to modify.

(2) Click the Format command on the Home tab. The format drop-down menu appears.

(3) Select Column Width.

(4) The Column Width dialog box appears. Enter a specific measurement.

(5) Click OK. The width of each selected column will be changed in your worksheet.

(2) To modify the row height of a worksheet :→

Steps :→

(1) Select the rows you want to modify.

(2) Click the Format command on the Home tab. The format drop-down menu appears.

(3) Select Row Height.
(4) The Row Height dialog box appears. Enter a specific measurement.
(5) Click OK. The selected rows heights will be changed in your spreadsheet.

(3) To delete rows and columns of a worksheet :-

Steps :-

(1) Select a cell in the row to be deleted.
(2) ~~Choose~~ Click the Delete button.
(3) Then you will shown the result. All the rows and columns of a worksheet is deleted.

Q-13(b) Describe following terms in the worksheet
→ Absolute reference and relative reference in formula
→ Cell address.

Ans (b) (1) (a) Absolute reference :- 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.

(b) Relative reference in formula :- 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.

Formula :- SUM (B5 : B8).

(b) (2) Cell address :- A cell reference, or cell address, is an alphanumeric value used to identify a specific cell in a spreadsheet. Each cell reference

contains one or more letters followed by a number. The letter or letters identify the columns and the number represents the row.

Q-14 a) What tools are available to customize our PowerPoint presentation?

Ans Design tools are available to customize our Power Point presentation: Customize your theme :->

(1) On the Design tab, hover over any theme, and click the down arrow button that shows below the themes panel.

(2) Click Save Current Theme. When you save your theme to the Themes folder, it'll automatically show in the gallery under custom Themes.

Q-14 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.

Ans (1) Open a Blank presentation.

Steps :->

(1) Open Power-point.
(2) In the left pane, select New.
(3) Select an option:
→ To create a presentation from scratch, select Blank Presentation.

→ To use a prepared design, select one of the templates.
→ To see tips for using Power-point, select Take a Tour, and then select Create.

(2) Save the presentation as Lab1.pptx :->
→ Open power-point.
→ Create New Blank slide.
→ Add the content in the slide.
→ Save the document with(presentation) with Presentation name as Lab1.pptx.
→ Then choose the format (.pptx)
→ Click the save button.

(3) Add a Title to the first slide : the name of your college.
→ Click the New slide, then you will choose the Format which you want.
→ Add the college name in the title box.

(4) Type your first name and last name in the Subtitle section.
→ Select the subtitle box, the Name in this Section.
→ According to you which you given the guidence.

(5) Add a New Slide which has a title and Content.
→ Click the New Slide, the you will choose the Format which you want. Choose the title and content Slide.
→ Then add the details.

Q-15 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.

Ans → (a) Title slide :- Select the slide whose layout you will change so that it can have a title. Click Home > Layout. Select Title Slide for a standalone title page or select Title and Content for a slide that contains a title and a full slide text box. Many others layout options include titles.

(b) Bullet list :- Select the slide, the Click the bullet list in the paragraph. Click Home > Paragraph > bullets. Select the bullet which you want.

→ Inserting Excel sheet :- In Powerpoint, on the Insert tab, click on top Object. In the Insert Object dialog box, select Create from file. Click on top Browse, and in the Browse box, find the Excel workbook with the data you want to insert and link to.

→ Clip art and Text :- In powerpoint, the Insert tab, Clip art. Click Insert > Clip art. Select the clip art. then search the different things which you want.

Text :- Click Insert > Text box. Click the Text box then add the details in the text box.

→ Slide Show effects :>

(1) Select the object or text you want to animate.
(2) Select Animations and choose an animation.
(3) Select Effect Options and choose an effect.

Part-2

Q-16 What is the difference between Machine Language and High Level Language?

Ans Machine Language :> Low-level language is the only language which can be understood by the computer. Low-level language is also known as Machine Language. The machine language contains only two symbols 1 & 0. All the instructions of machine language are written in the form of binary numbers 1's & 0's. A computer can directly understand the machine language.

High Level Language :> High-level language which can be understood by the users. The high-level language is very similar to human languages and has a set of grammar rules that are used to make instructions more easily. Every high-level language has a set of predefined words known as Key words and a set of rules known as Syntax to create instructions. The high-level language is easier to understand for the users but the computer can not understand it. High-level language needs to be converted into the low-level language to make it understandable by the computer. We use Compiler or interpreter to convert high-level

language to low-level language. Languages like FORTAN, C, C++, JAVA, Python, etc., are examples of high-level languages.

Q-17 Discuss about different data types of C programming language.

Ans In a C programming language, data types are used to define the type of data that a variable can hold.

Each data types has a specific size and range of values that it can represent.

There are several built-in data types in C, which include:

- int - used to store integers (whole numbers)
- float - used to store floating-point numbers (numbers with a decimal point).
- double - used to store double-precision floating-point numbers.
- char - used to store single characters.
- short - used to store small integers.
- long - used to store large integers.
- long long - used to store very large integers.
- unsigned int - used to store non-negative integers.
- unsigned char - used to store non-negative single characters.
- void - used to indicate an empty data type, usually used with pointers.

(1) Basic Data Types.

These are the fundamental data types in C that are directly supported by the programming language.

They include:
- int: Used to store whole numbers.
- char: Used to store a single character.
- float: Used to store floating-point numbers.
- double: Used to store double-precision floating-point numbers.
- void: Used to indicate an empty data type.

(2) Derived Data Types.

The derived data types in C are derived from the basic data types and can be created using various operators.

They include:
- Arrays
- Pointers
- Structures.
- Unions.

(3) User-defined Data Types.

The user-defined data types in C are defined by the programmer and are created using the basic and derived data types.

They include:
- Enums: A user-defined data type that represents a set of named constants.
- Typedefs: A way to create a new name for an existing data type to improve code readability and maintainability.

Q-18 Find the output of the following

(1) $X = 20/5*2+30-5$

$= 4*2+25$

$= 8+25$

$= 33$

(2) Y = 30 - (40 / 10 + 6) + 10.

= 30 - (4 + 6) + 10.

= 30 - (10) + 10.

= 30 - ~~10 + 10~~.

Y = 30.

(3) Z = 40 * 2 / 10 - 2 + 10.

= 80 / 8 + 10.

= 10 + 10

= 20.

2 = 40 * 2 / 10 - 2 + 10

= 40 × 2/10 - 2 + 10

= 8 - 2 + 10 = 16

Q-19 Describe the syntax of the following statements.

(a) If-else statement.

Ans If (test expression)

```
{
  // run code if test expression is true
}
else
{
  // run code if test expression is false.
}
```

(b) for loop

```
For (expression 1; expression 2; expression 3) {
  // code block to be executed
}
```

(c) while loop

```
while (condition {
//code block to be executed.
}
```

(d) do-while loop.

```
do {
    Statement(s);
} while (condition);
```

Q-20 Find the Output of the following program segments.

(a)

```
#include <stdio.h>
int main()
{
int i;
for (i=1; i<2; i++)
{
printf("IMS Ghaziabad\n");
}
}
```

Ans Output :-

IMS Ghaziabad.
IMS Ghaziabad.

b)
```
#include <Stdio.h>
int main()
{
int i=1;
while (i<=2)
{
printf("IMS Ghaziabad\n");
i=i+1;
}
}
```

Ans Output

IMS Ghaziabad
IMS Ghaziabad.

c)
```
#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);
}
```

Ans Output.

Largest number is 100.