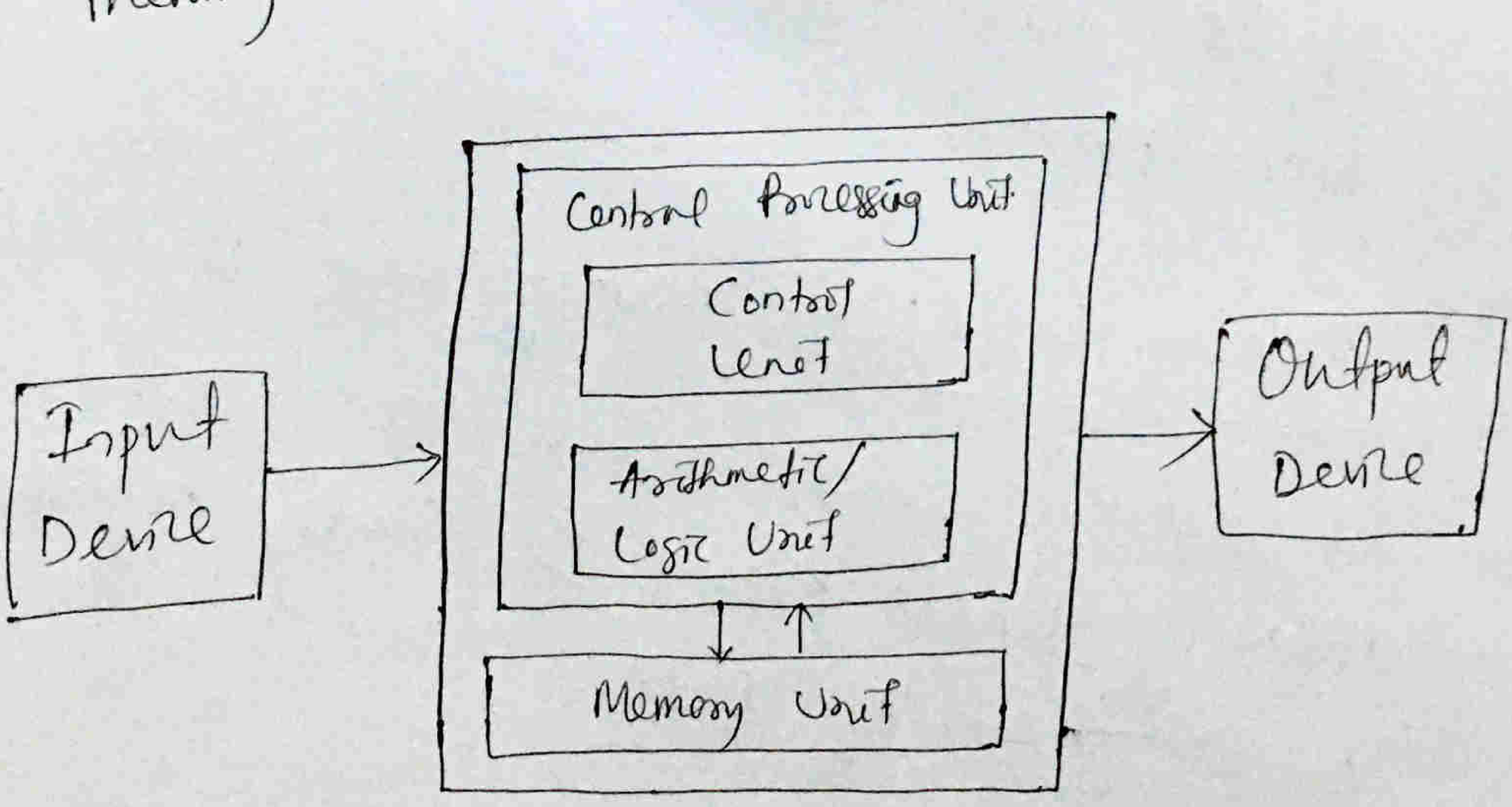
CCA-101: Fundamentals of IT & Programming

Assignment - 1

(1) What are the four fundamental parts of Computer ? Explain it with the help of diagram ?.

Ans The four fundamental parts of Computer System includes input, processing unit, memory unit and output devices.



(1) Input Devices

Computers Systems use many devices for input purpose. Input devices include the mouse, input pen, touch-screen, and microphone. Regardless of the

of the type of device used, all are components for interpretation and communication between people and Computer systems.

② Control Processing Unit

It is the brain of the Computer without this unit Computer unable to process.

③ Output device

Output device is used to show the result of the instructions. Example. Monitor, printer, Headphones etc.

④ Memory Unit: A memory unit is the collection of storage units or devices together. The memory units stores the binary information in the form of bits.

(2) Discuss about the classification of Computers based on size and capacity?

Ans Based on size and capacity, Computers are classified as follows -

(1) Super Computers
(2) Mainframe Computers
(3) Mini Computers
(4) Micro Computers.

(1) Super Computers

- Super Computers are the biggest, fastest, powerful, and most expensive type of Computer for processing data type; they are designed to process an immense amount of data. A Super Computer can deal to tens of instructions/ seconds is a second. It has thousands of interconnected processors.
- Super Computers are especially used in scientific

and engineering applications such as weather forecasting, quantum mechanics, climate research, scientific simulation, nuclear energy research, etc. where a high level of performance is required.

Eg: IBM Roadrunner, INTEL ASCI RED PARAM-10000, BM Blue Gene, and CRAY-XMP 14.

(2) Mainframe Computers

Computers utilized by large organizations to manage bulk data are designated as Mainframe Computers. Mainframe Computers are multi-programming, high-performance, and multi-user Computers, which implies they can manage the workload of more than 100 users at a time or so Computers.

- Mainframe computers, therefore, are mainly employed by departmental and Commercial organizations like Banks, Scientific research Centres, Companies, and govt. departments like railways, paying employees, ticket booking etc.

③ Mini Computers

Mini Computers are comparatively smaller than mainframe computers as can say a mini computer lies within the mainframe and micro computers as it is smaller than mainframe computer but larger than a micro computer.

- Mini computers are digital & multi-user Computer systems with the connection of more than one CPU. Thus, multiple users can work on these computers simultaneously. Mainframe Computers are employed to institutes and work units for tasks such as billing, accounting, and record management.

① Micro Computers.

The micro computers is also recognised as a personal computer, these are comparately economical. Micro computers incorporating a microprocessor, CPU, memory storage area, an input unit and an output unit.

- It is a general-propose computer that is utilized/outlined for personal use. Examples include. Desktop, laptop, tablets, smartphones

(3) What is the meaning of Computer generation? How many Computer generations are defined? What technologies were/are 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 ~~Computers~~ organization of Computers and programming languages.

five Generations of Computers.

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

⇒ The first Computer systems used vacuum tubes for circuitry & magnetic drums for memory.

- These Computers were very expensive to operate
- Computers of this generation Consumed a lot of memory.

→ First generation computers relied on machine language, the lowest-level programming language understood by computers to perform operations.

→ 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.

→ Ex: UNIVAC & ENIAC

② Second Generation: Transistors. (1956 - 1963)

→ Transistors replaced vacuum tubes in the second generation of computers.

→ 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.

-) Second-generation computers still relied on punched cards for input and printouts for outputs.

-) Second generation computers moved from binary machine language to symbolic or assembly language.

(3) Third-generation : Integrated circuits (1964-1971).

=) The development of the integrated circuit was the hallmark of the third generation of computers.

-) Transistors were replaced by Integrated circuits, 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.

-) Computers for the first time became accessible to a mass audience because they were smaller and cheaper than their predecessor.

(4) 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.

-) In 1981, IBM introduced its first Computer for the home user.

-) In 1984, Apple introduced the Macintosh

-) Microprocessors also moved out to the desktop Computers.

-) fourth generation Computers also covered the development of Graphical User Interface (GUIs), mouse and handheld devices.

(5) fifth Generation : Artificial Intelligence (Present and Beyond)

-) fifth generation Computing devices, based on artificial intelligence, are still in development, though there are some applications, such as voice recognition, that are being used today. The use of parallel processing & superconductors is helping to make AI a reality.

-) Quantum Computation & molecular & 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 & self-organization.

(4) Differentiate between Volatile & Non-Volatile Memories ?.

Ans Volatile Memory.

-> Volatile Memory is a computer storage that only maintains its data while the device is powered.

-> RAM (Random access memory) is volatile. When we are working on a document, it is kept in RAM, and if the computer loses power, your work will be lost

Non-volatile Memory

Non-volatile memory is a type of Computer memory that has the capacity to hold saved data even if the power is turned off.

a) Read-only memory (ROM), Hard disk, floppy disk; etc.

(5) Distinguish among System Software, application software and open source software on the basis of their features?

Ans.

→ System Software is the type of software that is the interface between application software and System. Low-level languages are used to write the System software.

→ Application Software is the type of software that runs as per user request. It runs on the platform which is provided by System Software. High level languages are used to write the application software.

→ Open Source Software is software that is distributed with its source code, making it available for use, modification, and distribution with its original rights. Open Source Software typically includes a license that allows programmers to modify the software to best fit their needs and control how the software can be distributed.

(b) (a) Create a file in MS-word to write a paragraph about yourself and save it with file name "yourself". Describe all steps involved in it?.

Ans Steps

Explanation

Step-1 : Open MS word on your System

Step-2 : ~~Open~~ Click on the new file and open the word file when the dialog box appears.

Step-3 : Once this click on Blank doc under the recent section, it will get is bold or highlighted by default

Step-4 : Click on the create A new blank doc will open

Step-5 : Once it is opened I can write anything I want in the doc for ~~myself~~ yourself.

Step-6 : You can also edit the text you have written as you can change the background colour, of the text and many other things in the docs.

Step-7 : To save it with filename yourself, click on the file and on then save as, choose the location — then filename as 'yourself' and then click on save to save the file as per the selected location.

(6)(B) Write steps regarding followings.

=> To change the font style.

(1) Select the text you want to modify
(2) Select the Home tab and locate the Font group
(3) Click the drop-down arrow next to font style box
(4) font style menu appears
(5) With a left click select the desired font style

→ To change the font size

① Select the text or cells with text you want to change. To select all text in a document, press ctrl+A.

② On the Home tab, click the font size box and then the font size you want.

→ 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 line "need to set IMS's address" you want to highlight.

② Go to Home and select the arrow next to Text Highlight Color and select Yellow Color to highlight.

(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.

Steps

- Open the word file
- Type the words as mentioned in the section.
- Choose bullets Command for bulleting the words.
- finally click on save and save the file as the given file name MS-word.

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

Equations

$X_2 + Y_5 = 30$

$Z^3 + Q^4 = 50$

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

Ans Steps.

(1) On the navigation menu click on the insert option.

(2) Under Equations tools click on the Equations

(3) Under Equations tools, in Design section choose Script to add a subscript or superscript to the equation.

(4) Then basic math dialog box choose the appropriate math symbols for the equation

(5) Then insert the equation as per the requirement

④ click OK to insert your table.

⑨ create a file in MS-word that Convert existing highlight text to table as shown below and save the file name (text-to-table' Describe all steps involved in it.

Step

① open the document you want to work in ms

② select all the text in the document and then choose insert → Table → Convert text to Table.

③ You can pass ctrl+A to select all the text in the document.

④ click OK.

⑤ Save the changes to the document.

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

Ans (A) Steps to make a table from the Tables & Borders toolbar.

(1) Place the cursor where you want to place the table

(2) Click the Insert Table icon on the Table and Borders toolbar at the top of the window

(3) Drag the corner of the table until you have the desired number of columns and rows.

(4) Click the mouse to insert the table.

(B) To make a table from the Insert Table dialouge box

(1) Click on Table from the menu bar. Select Insert, and then Table. A dialouge box will open.

(2) Enter the desired number of rows and columns.

(3) Choose Autofit behavior if you want the tables cells to automatically expand to fit the text inside them. Choose Autoformat if you would rather select a table with a specific format

→ highest marks in the range of cell (C2:C11)

= MAX(C2:C11)

= (90)

→ minimum marks is a range of cell (C2:C11)

= MIN(C2:C11)

= (40)

(*) I have checked the results by using the above commands in my own laptop. in formulas section in Excel sheet.

(11) create a following worksheet in MS-excel and save it with name 'Sam1'

Ans (created by me in my laptop as per the given questn and instructions.

→ Cell address

A cell reference or cell address is a combination of a column letter and a row number that identifies a cell or a worksheet. for example; A1 refers to the cell ~~that~~ at the intersection of column A and row 1. B2 refers to the second cell in column B, and so on.

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

→ Sum of the marks using Autosum in a range of cell (C2:C11) = Sum(C2:C11)

= 654.

→ average of the marks in the range of cells (C2:C11)

= AVERAGE(C2:C12)

= 65.4

→ To modify the row height of a worksheet

- Select the row or rows that you want to change
- On the Home tab, in the Cell 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

Select the rows and columns that you want to delete. Right click, and then select the appropriate Delete option.

(13) (b) Describe following terms in Ms worksheet

- Absolute reference and relative reference in formula.

There are two types of cell references: relative & absolute. Relative and absolute references behave differently when copied and filled to other cells. Relative references change when a formula is copied to another cell. Absolute reference, on the other hand, remain constant. no matter where they are copied.

⇒ Type your first name and last name in the Subtitle section.

- click Home; then click on New slide, then insert Title Slide

- click to add subtitle

- Type first name and last name in the subtitle section.

⇒ Add a new slide which has a Title and Content

- click Home, then click on New slide, then insert Title and Content slide

(13) (a) Describe various steps involved in the following

⇒ To modify column width of a worksheet.

- Set the column or columns that you want to change
- On the Home tab, in the cell group, click Format
- Under cell size, click column width.
- In the column width box, type the value that you want
- click OK.

(14) (b) Write the steps for the following action for creation of power point presentation.

=> Open a Blank Presentation

- click on Start
- Select MS office PowerPoint Presentation
- Double click on it

=> Save the Presentation as lab1.pptx

click on file
- select Save As
- choose the path/ location where to save
- select file name as lab1
- Then click Save.

=> Add a Title to the first slide: the name of your college.

- go to "Home" tab and click Layout then "Title only"
- then place your cursor in the "click to add title" box on the slide and type the name of your college in your respective slide title.

=> Slide show effects

① Select the object or text you want to animate
② Select Animations & chose an animation
③ Select Effect options and chose an effect.

(14) (a) What tools are available to customize ours PowerPoint Presentation?

Ans ① Templates and Themes
② Slide layouts
③ fonts
④ Colour Themes
⑤ Icons
⑥ Shapes
⑦ Stock photos
⑧ charts and Graphs
⑨ Maps
⑩ Tables
⑪ Flowcharts
⑫ Icon chards
⑬ Radials
⑭ Progress bars
⑮ Animation
16 Transitions
⑰ Audio & video

⇒ Inserting Excel sheet

① In powerpoint, on the Insert tab, click on top Object

② In the Insert object. dialog box, select create from file.

③ Click on top Browse, and in the Browse box, find the Excel workbook with the data you want to insert. and Click to

④ Before you close Insert Object box, select link, and click Ok.

⇒ clip art and Text

① Select Insert > Pictures > Online Pictures.

② Type a word or phrase to describe what you are looking for, then press enter

③ filters the results by type for clipart

④ Select a picture

⑤ Select Insert.

(15) Write steps for creation of a set of Power Point slides that demonstrates your skills to use the tools of Power Point.

⇒ Title Slide & bullet list.

Title Slide

. click Home > layout. Select Title Slide for a standalone title page or select the Title and Content for a slide that contains a title and a full slide text box.

Bullet list

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① On the new tab, click normal

② click the text box to placeholder where you want to add bulleted

③ On the Home tab, in the paragraph group, click Bullets, and begin typing your text.

PART- 2

(b) what is the difference between Machine language & High level language?

Ans Machine language

- A Computer programming language consisting of binary instructions which a computer can respond to directly
- Sometimes, it is referred to as machine code or object code. Machine language is a collection of binary digits or bits that the computer reads.
- This language makes fast and efficient use of the computer
- It requires no translator to translate the code. It is directly understood by the computer.

High-level Language

- A high-level language is a programming language that enables development of a program in a much more user-friendly programming context.

- This language is a programming language with strong abstraction about the details of the Computer in contrast to low-level programming language

Ex. C, C++, Java

- High level languages are grouped in two categories based on execution model - Compiled or interpreted languages.

- High level languages are programmer friendly. They are easy to write, debug & maintain.
- It provides higher level of abstraction from machine language.
- It is machine independent language
- Easy to learn
- Less error prone
- High level programming results in better programming productivity.

(17) Discuss about different data types of C programming Language ?.

Ans Variables in C are associated with its data type. Each type requires an amount of memory and performs specific operations.

There are some Common data types in C -

(A) int - Used to store an integer value

(B) char - Used to store a single character

(C) float - Used to store decimal numbers with single precision.

(D) double - Used to store decimal with double precision.

(18) find the output of the following expression.

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

Ans $20/5 * 2 + 30 - 5$

first $20/5 = (4)$

$4 * 2 + 30 - 5$

Now $4 * 2 = (8)$

$8 + 30 - 5$

Now $8 + 30 = (38)$

Now $38 - 5 = (33)$ Ans.

finally:

(b) $Y = 30 - (40/10+6) + 10$

Ans $Y = 30 - (40/10+6) + 10$

$= 30 - (4+6) + 10$

$= 30 - 10 + 10$

$= 20 + 10$

$= (30)$ Ans.

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

$= 40 * 0.2 - 2 + 10$

$= 8 - 2 + 10$

$= 8 (16)$ Ans

(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 (initializationStatement; testExpression; UpdateStatement)
{
    // Statements inside the body of loop

}.
```

(c) While Loop

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

}.
```

(d) do-while loop.

```
do {
    // the body of the loop

}
while (testExpression);
```

(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");
}
}
```

output : IMS Ghaziabad

(b)

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

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);
}
```

Output: Not executed; Missing character.