CCA-101: Fundamentals of IT & Programming

Assignment -1

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

A computer has four main components: the central processing unit or CPU, the primary memory, input units and output units. A system bus connects all four components, passing and relaying information among them.

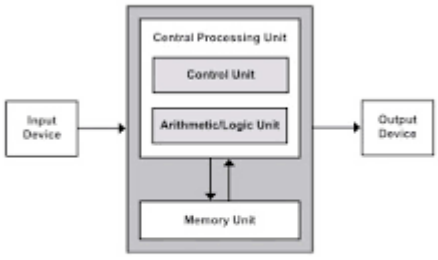
CPU: Computer scientists typically call the CPU the "brain" of the computer because this is where programs are executed. A program is a set of instructions that tells the computer how to accomplish a specific task, such as sending a file to the printer, opening a browser window, or playing music or video.

Memory: Once the CPU converts a specific set of computer program instructions into machine code, it stores that machine code in primary storage or memory. The machine code will be treated as either data or instructions. The CPU fetches data and instructions from memory, uses an instruction to manipulate the data, and then sends the result and the next set of instructions back to memory.

Input Units: Input units are all the devices you use to feed information to the computer, such as a keyboard, a hard drive or a networking card. These devices, in essence, bring data from the "outside world" into your computer, in much the same way that your eyes and ears bring information to your brain. Each input device has its own hardware controller that connects to the CPU and primary memory, and it has a set of instructions that tells the CPU how to use it.

Output Units: Output units are the devices your computer uses to relay information to the user, such as a printer, monitors and speakers. For example, everything you see on your computer monitor starts as machine code in memory. The CPU takes that machine code and converts it into a format required by your monitor's hardware. Your monitor's hardware then converts that information into different light intensities so that you see words or pictures.

The System Bus: The system bus lets the four components of the computer communicate with one another. The system bus transmits data and instructions. It also sends addresses that tell the CPU where in primary memory the data and instructions are coming from and where the results should go.



Block diagram of computer system

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

CLASSIFICATION BASED ON SIZE AND CAPABILITY

Based on size and capability, computers are broadly classified into

a) Microcomputers (Personal Computer): A microcomputer is the smallest general purpose processing system. The older pc started 8-bit processor with speed of 3.7MB and current pc 64-bit processor with speed of 4.66 GB.
Examples: IBM PCs, APPLE computers

Microcomputer can be classified into 2 types:
1. Desktops
2. Portables

The difference is portables can be used while travelling whereas desktops computers cannot be carried around.

The different portable computers are: -

1) Laptop
2) Notebooks
3) Palmtop (hand held)
4) Wearable computers

Laptop: this computer is similar to a desktop computer but the size is smaller. They are expensive than desktop. The weight of laptop is around 3 to 5 kg.

Notebook: These computers are as powerful as desktop but size of these computers are comparatively smaller than laptop and desktop. They weigh 2 to 3 kg. They are more costly than laptop.

Palmtop (Hand held): They are also called as personal Digital Assistant (PDA). These computers are small in size. They can be held in hands. It is capable of doing word processing, spreadsheets and hand writing recognition, game playing, faxing and paging. These computers are not as powerful as desktop computers. Ex: - 3com palm.

Wearable computer: The size of this computer is very small so that it can be worn on the body. It has smaller processing power. It is used in the field of medicine. For example, pace maker to correct the heart beats. Insulin meter to find the levels of insulin in the blood.

b) Minicomputer: A minicomputer is a medium-sized computer. That is more powerful than a microcomputer. These computers are usually designed to serve multiple users simultaneously (Parallel Processing). They are more expensive than microcomputers.
Examples: Digital Alpha, Sun Ultra.

c) Mainframe computers: - Computers with large storage capacities and very high speed of processing (compared to mini- or microcomputers) are known as mainframe computers. They support a large number of terminals for simultaneous use by a number of users like ATM transactions. They are also used as central host computers in distributed data processing system.
Examples: IBM 370, S/390.

d) Supercomputer: Supercomputers have extremely large storage capacity and computing speeds which are many times faster than other computers. A supercomputer is measured in terms of tens of millions of Instructions per second (mips), an operation is made up of numerous instructions. The supercomputer is mainly used for large scale numerical problems in scientific and engineering disciplines such as Weather analysis.
Examples: IBM Deep Blue.

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

A computer is a machine manipulating data or information electronically. It can store, retrieve, and analyse the information. A computer can now be used to follow instructions, send email messages, play online games, and browse the internet. Editing or making spreadsheets, reports, and sometimes even videos can also be used. Yet the development of this complex structure began approximately 1940 with the very first Computer Generation and has since evolved. The computer revolution is always marked as a technological breakthrough that has fundamentally altered the unique way for computers work, culminating in ever smaller, cheaper, increasingly efficient, and much more efficient machines. Reference is often made to the development of computer technology in relation to the various types of computing devices. Computer revolution completely changed the way computer's function, resulting in ever smaller, cheaper, more efficient, and much more secure computers.

First Generation: These early computers used vacuum tubes as circuitry and magnetic drums for memory. As a result, they were enormous, literally taking up entire rooms and costing a fortune to run. These were inefficient materials which generated a lot of heat, sucked huge electricity and subsequently generated a lot of heat which caused ongoing breakdowns.
These first-generation computers relied on 'machine language' (which is the most basic programming language that can be understood by computers). These computers were limited to solving one problem at a time. Input was based on punched cards and paper

tape. Output came out on print-outs. The two notable machines of this era were the UNIVAC and ENIAC machines – the UNIVAC is the first every commercial computer which was purchased in 1951 by a business – the US Census Bureau.

Second Generation: The replacement of vacuum tubes by transistors saw the advent of the second generation of computing. Although first invented in 1947, transistors weren't used significantly in computers until the end of the 1950s. They were a big improvement over the vacuum tube, despite still subjecting computers to damaging levels of heat. However, they were hugely superior to the vacuum tubes, making computers smaller, faster, cheaper and less heavy on electricity use. They still relied on punched card for input/printouts.
The language evolved from cryptic binary language to symbolic ('assembly') languages. This meant programmers could create instructions in words. About the same time high level programming languages were being developed (early versions of COBOL and FORTRAN). Transistor-driven machines were the first computers to store instructions into their memories – moving from magnetic drum to magnetic core 'technology'. The early versions of these machines were developed for the atomic energy industry.

Third Generation: By this phase, transistors were now being miniaturised and put on silicon chips (called semiconductors). This led to a massive increase in speed and efficiency of these machines. These were the first computers where users interacted using keyboards and monitors which interfaced with an operating system, a significant leap up from the punch cards and printouts. This enabled these machines to run several applications at once using a central program which functioned to monitor memory.
As a result of these advances which again made machines cheaper and smaller, a new mass market of users emerged during the '60s.

Fourth Generation: This revolution can be summed in one word: Intel. The chip-maker developed the Intel 4004 chip in 1971, which positioned all computer components (CPU, memory, input/output controls) onto a single chip. What filled a room in the 1940s now fit in the palm of the hand. The Intel chip housed thousands of integrated circuits. The year 1981 saw the first ever computer (IBM) specifically designed for home use and 1984 saw the MacIntosh introduced by Apple. Microprocessors even moved beyond the realm of computers and into an increasing number of everyday products.
The increased power of these small computers meant they could be linked, creating networks. Which ultimately led to the development, birth and rapid evolution of the Internet. Other major advances during this period have been the Graphical user interface (GUI), the mouse and more recently the astounding advances in lap-top capability and hand-held devices.

Fifth Generation: Computer devices with artificial intelligence are still in development, but some of these technologies are beginning to emerge and be used such as voice recognition.
AI is a reality made possible by using parallel processing and superconductors. Leaning to the future, computers will be radically transformed again by quantum computation, molecular and nano technology.

Q4: Differentiate between Volatile & Non- Volatile memories.

Parameter	Volatile Memory	Non-Volatile Memory
Definition	It is a temporary type of computer memory that stores data and information only until it gets a continuous power supply.	It is a permanent type of computer memory that stores and retains the data even after a user turns the system off.
Stored Data	The volatile memory stores data of those programs that the CPU is processing in real-time. A system stores all the frequently used information and data in the device's volatile memory.	The non-volatile memory stores data from the basic booting process of any computer system BIOS. It stores all the types of data and media that need to exist for a longer time or permanently on the computer
Effect on Performance	Volatile memory does not affect a system's performance. A higher amount of storage space for cache, RAM, and other volatile memory increases the efficiency of a computer system	Non-volatile memory also affects a system's performance and storage. A higher amount of storage space lets a user save more data permanently. Thus, the system runs comparatively smoother.
Speed	The volatile memory is the fastest form of memory in nature. These memories hold the most frequently	Non-volatile memory is a relatively slower form of memory. The process of accessing data from a non-volatile memory is

	used data- and any user can access them quickly	comparatively slower
Data Retention	It can only retain data until there is a continuous power supply.	It retains data and info even after one turns the power supply off.
Data Transfer	Transferring data from a volatile memory is very easy.	Transferring data from a non-volatile memory is very difficult.

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

System Software	**Application Software**	**Open-source software**
System software designed to provide a platform to other software.	Application software designed to perform a group of coordinated function, task or activities for the benefits of users.	It is referred to the software that developed to tested through open collaboration.
It manages resource and helps to run hardware and application software.	It performs specific task according to type.	It performs with academic knowledge, inspect and modify and redistributed course code.
Example: operating system, language processer and device drive.	Example: world processer, spreadsheet, web browser, presentation software, graphical presentation.	Example: Android, Firefox, Liber office, Ubuntu, Free BSD etc.
Essential for proper functioning of system.	Not essential for important functioning of system.	Better flexibility which has more freedom with encourage innovations.
Developed using language like C, C++, Assembly.	Developed using languages like Java, C, C++, Visual basics.	It is not aimed with uninstalled users outside of programming community.

It runs when the system shorts and runs till the end.	It runs when the users require.	Its project managed by open-source community of developers and programmers.

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.

- Go to the start menu and look for Microsoft Word icon
- Click the icon to open the Microsoft Word
- You will see a blinking cursor or insertion point in the text area below the ribbon
- Now, start typing, the words will appear on the screen in the text area
- To change the location of insertion point press spacebar, Enter or Tab keys.
- After, typing we can change the change the font size and style, line spacing.
- Now, save the file.

Q6 b) Write steps regarding followings

To change the font style, to change the font size, to change the font colour, to highlight (in yellow) the line that reads "need to get IMS's address".

To change the font style

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

To change the font size

- Select the text that you want to modify
- In Home tab locate the Font group
- In Font group click the drop-down arrow next to font size box
- Font size menu appears
- Select the desired font size with a left click
- Select the text and click the increase or decrease font size buttons

To change the font colour

- Select the text you want to modify
- In Home tab locate the Font group
- Click the drop-down arrow next to Font colour button
- Font colour menu appears
- Select the desired font colour with a left click
- Word will change the Font colour of the selected text.

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

- Open Ms word in computer
- Select the text that need to be highlight
- Before that type "need to get IMS's address"
- Then select yellow colour in text highlight and drag down the mouse and line will get highlighted with yellow.

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.

- Open Ms word in system and type he line as given.
- Select all the lines and select font style as Times new Roman.

- Select the first line and change the font size to 18.
- In second line select “Ms word” alone and give font colour red, and in the same line select word “processer” and underline it.
- In third line select “Ms word” and make inti italic.
- Select the word “creating” and change font colour into light blue, Select the word “saving” and change the font colour into red, Select the word “and” and use strike through, select the text “printing any type of document” and use bold.
- Add bullet to each line.
- Save the file as “MS Word”.

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

- Open Ms word in system
- Type the given equation given in paper
- Use subscript and superscript
- Save the file as “Equation”

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.

- Open MS word in system and type the given sentences that given in question paper
- Change the font size to Times new roman and font size to 14
- Select the insert tab, click table, covert text to table, a new dialogue box will appear
- Give number of columns 2 and Auto lift behaviour, fixed column width “auto” and separate text as “paragraph” and click ok

- Then table will appear remember for “insert, table, convert text to table, a new” words should be in bold
- Finally save it as **‘**text_to_table’

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

- Open MS word in system
- Select the insert table
- Select insert
- Select table
- Select 5 boxes for columns and select 3 boxes for rows
- Box will appear on page
- Save the file as “Q10”

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

- Open MS Excel in system
- Type the given table as given question paper
- Rename the sheet as student
- Save the file as “Book 1”

Q12. Calculate the following things of a range (C2:C11) of data in the worksheet created in question no10.

The sum of the marks using AutoSum in a range of cells (C2:C11)

- Select C2:C11 from the excel cell
- Click auto sum in tool bar

Average of the marks in a range of cells (C2:C11)

- Select C2:C11 from the excel cells
- Select the sum and click average in tool bar

Highest marks in a range of cells (C2:C11)

- Select C2:C11 from the excel cells
- Select the sum and click max from the tool bar

Minimum marks in a range of cells (C2:C11)

- Select C2:C11 from the excel cell
- Select the sum and click Min from the tool bar

Q13 a) Describe various steps involved in the following

- Open MS excels
- Select page layout tab

To modify column width of a worksheet

- Click the width and apply it on column

To modify the row height of a worksheet

- Click the height and fix it to the row

To delete rows and columns of a worksheet

- Select the home tab
- Click delete to delete the rows
- And click delete to delete the columns

Q13 b) Describe following terms in the worksheet

Absolute reference and relative reference in formula

- Absolute references, on the other hand, remain constant no matter where they are copied.
- Relative references change when a formula is copied to another cell.
- Absolute reference formulae- =D2*A2
- Relative reference formulae- =D12*A10
- Open MS excels in system
- Make a table for absolute and relative reference with unit cost, unit size number, package size, inventory, total cost
- Use the formulae of absolute and relative reference
- Save the file

Cell Address

- A cell reference, or cell address, is an alphanumeric value used to identify a specific cell in a spreadsheet. Each cell address contains 'one or more letters' followed by a number. The letter or letters identify the column and the number represents the row.

Q14. a) What tools are available to customize our PowerPoint presentation?1.

1. Home: The Home tab holds the Cut and Paste features, Font and Paragraph options, and what you need to add and organize slides.

2. Insert: Click Insert to add something to a slide. This includes pictures, shapes, charts, links, text boxes, video and more.

3. Design: On the Design tab, you can add a theme or colour scheme, or format the slide background.

4. Transitions: Set up how your slides change from one to the next on the Transitions tab. Find a gallery of the possible transitions in the Transition to This Slide group – click More at the side of the gallery to see all of them.

5. Animations: Use the Animations tab to choreograph the movement of things on your slides. Note that you can see many possible animations in the gallery in the Animation group.

6. Slide Show: On the Slide Show tab, set up the way that you want to show your presentation to others.

7. Review: The Review tab lets you add comments, run spell-check, or compare one presentation with another (such as an earlier version).

8. View: Views allow you to look at your presentation in different ways, depending on where you are in the creation or delivery process.

9. File: At one end of the ribbon is the File tab, which you use for the behind-the-scenes stuff you do with a file, such as opening, saving, sharing, exporting, printing and managing your presentation. Click the File tab to open a new view called the Backstage. Click from the list on the side to do what you want to do; for example, click Print to find the options and settings for printing your presentation. Click Back to return to the presentation that you were working on.

10. Tools tabs: When you click some parts of your slides, such as pictures, shapes, SmartArt or text boxes, you might see a colourful new tab appear.

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

Open a Blank presentation

- Open MS power point presentation in system
- Click office button, click new, click blank prestation, click create
- Blank presentation is created

Save the presentation as Lab1.pptx

- Click office button
- Click save as, file name “as lab-1 pptx”

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

- Click click to add title
- Type college name
- Select college name, click quick style in home tab, click blue colour
- Select font style into Times New Roman
- Select font size 48
- Select font colour to yellow

Type your first name and last name in the Subtitle section

- Click click to add subtitle
- Type first name and last name
- Select first and last name, click quick style, click green colour
- Select font style into Times New Roman
- Select font size to 48
- Select font colour to red

Add a New Slide which has a Title and Content

- Click new slide in home tab
- Add title and content toa the slide
- Change the design by using design tab
- Save the power point presentation

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

- Open power point presentation in system
- Click new slide, click title slide
- Click click to add title and subtitle
- Click bullets
- Now type the points
- Save the file

Inserting Excel Sheet

- Open Ms excel sheet in system
- Create a table in excel
- Save the excel sheet
- Now open power point presentation
- Go to insert, click hyperlink
- Hyperlink will open and select the excel sheet that have been created
- Click ok

Clip art and Text

- For clip art Type a text and go to insert and now go to clip art and select any format
- For text Change the font style, font size, and font colour

Slide show effects

- For slide show, click animation and select anything
- Click ribbon button and save it

Part -2

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

Machine Language	**High-Level Language**
A machine language is the only language that a computer directly understands, it is usually written in zeros (0) and ones (1).	a high-level language is a programming language that uses English and mathematical symbols, like +, -, % and many others, in its instructions.
Machine language, or machine code, is the only language that is directly understood by the computer, and it does not need to be translated. All instructions use binary notation and are written as a string of 1s and 0s. A program instruction in machine language may look something like this:	A high-level language is a programming language that uses English and mathematical symbols, like +, -, % and many others, in its instructions. When using the term 'programming languages,' most people are actually referring to high-level languages. High-level languages are the languages most often used by programmers to write programs. Examples of high-level languages are C++, Fortran, Java and Python.
It can't understand programming language	It can understand programming language
Machine language are number	High value language is near to human language
It can directly understand by computer	Need a computer to convert to machine language

Q17. Discuss about different data types of C programming Language.

Each variable in C has an associated data type. Each data type requires different amounts of memory and has some specific operations which can be performed over it.

Let us briefly describe them one by one:
Following are the examples of some very common data types used in C:

- **chart:** The most basic data type in C. It stores a single character and requires a single byte of memory in almost all compilers.
- **int:** As the name suggests, an int variable is used to store an integer.
- **float:** It is used to store decimal numbers (numbers with floating point value) with single precision.
- **double:** It is used to store decimal numbers (numbers with floating point value) with double precision.

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=30-20
Y=10

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

Z= 40*2/10-2+10
Z=80/10-2+10
Z=8-2+10
Z=6+10
Z=16

Q20. Find the output of the following program segments

A)

IMS Ghaziabad =0
IMS Ghaziabad =1

B)

IMS Ghaziabad =0
IMS Ghaziabad =1

C)

Largest Number =100

Q 15

COMPUTER DEVICES

- Keyboard
- Mouse
- Joystick
- Light pen
- Scanner
- Microphone

INPUT DEVICES

EXCEL SHEET

S. NO	INPUT DEVICES	OUTPUT DEVICES
1	Key Board	Moniter
2	image Scanner	Printer
3	Printers	Head Phone
4	Microphone	LCD Projection Pannels
5	Mouse	Plotters

Q10.

Q10.

$X_2 + Y_5 = 30$

$Z^3 + Q^4 = 50$

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

Q14 B.

ST. JOSEPH'S COLLEGE

K. DHEVI SOWMIYA PUSHPA

Q9.

MS Word

MS Word is a widely commercial word processor developed by Microsoft,

MS word is application software, which is capable of

- creating,
- editing,
- saving, ~~and~~
- **printing any type of document**

Roll NO	Name	Marks	
1	n1	60	
2	n2	70	
3	n3	80	**Q11**
4	n4	90	
5	n5	40	
6	n6	50	
7	n7	77	
8	n8	44	
9	n9	88	
10	n10	55	
	SUM	654	
	AVERAGE	65.4	**Q12**
	MAXIMUM	90	
	MINIMUM	40	

Q9.

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

CCA-101: Fundamentals of IT and programming

Assignment-1

part-B

Q19. Syntax

a) If - False statements

```
if (expression)
  {
  true Block of statements;
  }
else
  {
  else Block of statements;
  }
```

b) for loop

```
for (expression 1; expression 2; expression 3)
  {
Block of statements;
}
```

c) while loop

```
while (condition)
    Single statement;
```

-OR-

```
while (condition)
{
Block of statement;
}
```

d) Do-while-loop

```
do
{
Single statement
    or
Block of statements
} while (condition);
```

Q6. A

I am K. Dhevi Sowmiya Pushpa. We are four members in my family including me. I am native to Trichy. Currently, I am pursuing MSc in Biotechnology at the St. Joseph's college and I will be entering into final year of my graduation studies in the next couple of months. I am a self-motivated, and a disciplined soul. I am always keen to up-skill myself by learning new things whenever I get a chance. My strengths are my analytical approach, my human touch to the situations, my appreciable communication, and presentation skills. I believe upon being realistic.In my free time, I enjoy spending time with friends, sometimes cooking, listening to music, doing drama, reading, travelling, and playing outdoor sports.