Module 1 – Overview of IT Industry

What is a program?

Question: Write a simple "Hello World" program in two different programming languages of your choice. Compare the structure and syntax.

Answer:

```
//program in c language
        #include<stdio.h>
        int main()
        {
            printf("\nHello World");
            return 0;
        }
```

//Explanation :

1) #include<stdio.h> : #include is a preprocessor, it means the code which we have written will first be processed by this preprocessor and then the compiler will compile the code. <stdio.h> is a standard input output header file which is present in the libraries of C language.

2) int main() : int in c language is a predefined word for integer and main() is the function in which the execution of the program will take place.This is a return type which will return an integer value after the successful execution of the code.

3){} : {} is called curly braces. Inside this block we will write the code in order to perform any task.

4)printf() : printf() prints the message which we want to print during the execution of our code. We will pass the message in the parenthesis like here we have written("\nHello World").

5)return 0: After the execution of the code, we will get 0 in return, which means our code has been successfully executed.

//Program in java language

```
class Main
   {
      public static void main(String[] args)
           {
             System.out.println("Hello World");
            }
    }
```

//Explanation

1) class Main: Main is the class name in a java program as in java it has at least one class.

2) public: This is the access specifier, here ‘public’ means anyone can access the method.

3)Static: using static means we can directly access the method without creating the objects of the class.

4):Void: means there is no return value from the method.

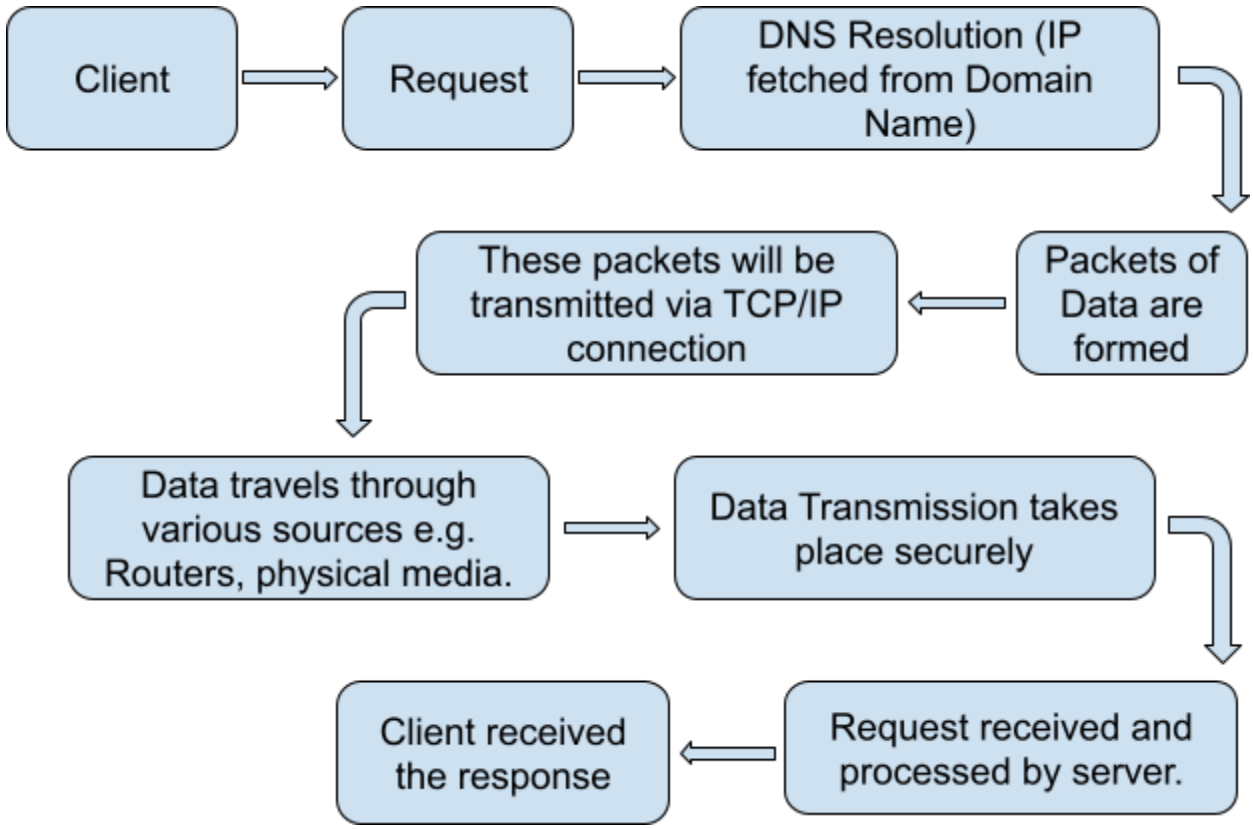
5)String[] args: It is a string array for passing argument lines.

6)System.out.println(): This will help to print the string message which we pass in this parenthesis.

World wide web & how the internet works?

Question: Research and create a diagram of how data is transmitted from a client to a server.

Answer:



Types of Internet Connections

Question: Research different types of internet connections (e.g., broadband, fiber, satellite) and list their pros and cons.

Answer:

Different types of Internet Connections:

1. Mobile Internet (4G/5G):
   Pros:
   I. High in speed.
   II. Wireless connections such as phones, hotspots etc.
   Cons:
   I. Speed depends on intensity of signal.
   II. Limitation of data pack.
2. Satellite Internet:
   Pros:
   I. Available in the area where no cable, fibre optics can be set up.
   II. No need for any cable.
   Cons:
   I. Expensive.
3. Fiber Optics:
   Pros:
   I. They are great for gaming, large downloads and streaming.
   II. Reliable.
   Cons:
   I. Installation is expensive.
   II. Availability is limited.

4. Broadband Connection:
   Pros:
   I. Network transmission is fast.
   II. Speed can be increased.
   III. Supports modern apps.
   Cons:
   I. Costly in rural areas.
   II. Requires a proper set such as Satellite towers, cables etc.
   III. Poor infrastructure will lead to poor network.

Application Security

Question: Identify and explain three common application security vulnerabilities. Suggest possible solutions.

Answer:

1. **Data privacy issue:**
   Too much data is collected by apps, it can be leaked.(e.g. Camera, microphone, contacts, personal info).
   Solution:
   - Save the data in encrypted format.
   - Privacy settings should be controlled by users.
2. **Hijacking of Account:**
   User accounts are prone to hacking.
   Solution:
   - Create Strong password.
   - Multi-factor authentication.
   - Login attempts must be limited.
3. **Regular Security Updates:**
   It is required to keep the system immune to new threats.
   Solution:
   - Providing time to time updates to user, so that, user's data will be secured.

Software Applications and Its Types

Question: Identify and classify 5 applications you use daily as either system software or application software.

Answer:

Application	Type	Description
Calculator	Application Software	It helps to perform different tasks viz. Addition, subtraction, multiplication and so on.
LinkedIn	Application Software	It is used to create a profile of an individual for job purposes.

One UI (Android)	System Software	It is used in smartphones.
Windows 11	System Software	Widely used Operating System in our PC's.
Dev C++	Application Software	It is an IDE used to compile & run C/C++ programs.

Source Code

Question: Write and upload your first source code file to Github.
Answer:
SOURCE CODE:

```
//program in c language
        #include<stdio.h>
        int main()
        {
            printf("\nHello World");
            return 0;
        }
```

1. First we will go to the source control panel in the leftmost menu of VS code.
2.Find your program file under the changes and click on + icon to stage the change.
3.Now under the Graph section there is a sign of "pull button" to push the code ,click on it to pull the latest changes from the repository.
4.Enter the commit message in the text box under the Changes section and click on commit.
5.Now go back to Graph section and select the "push button" to push the changes to the repository.

Github and Introductions

Question: Create a Github repository and document how to commit and push code changes.
Answer: First of all we will create a repository Follow the steps below:-
1. Go to your web browser and search github.
2. Click on the first link if your account is their on git so do log in or else sign up as a new user account on github.
3.There is a + In the top right corner,click the +sign and select the option "New Repository".

4.Now give a suitable name to your repository.
5.Click on create repository.

Steps to commit and push the changes are given below:
1. First we will go to the source control panel in the leftmost menu of VS code.
2.Find your program file under the changes and click on + icon to stage the change.
3.Now under the Graph section there is a sign of “pull button” to push the code ,click on it to pull the latest changes from the repository.
4.Enter the commit message in the text box under the Changes section and click on commit.
5.Now go back to Graph section and select the “push button” to push the changes to the repository.

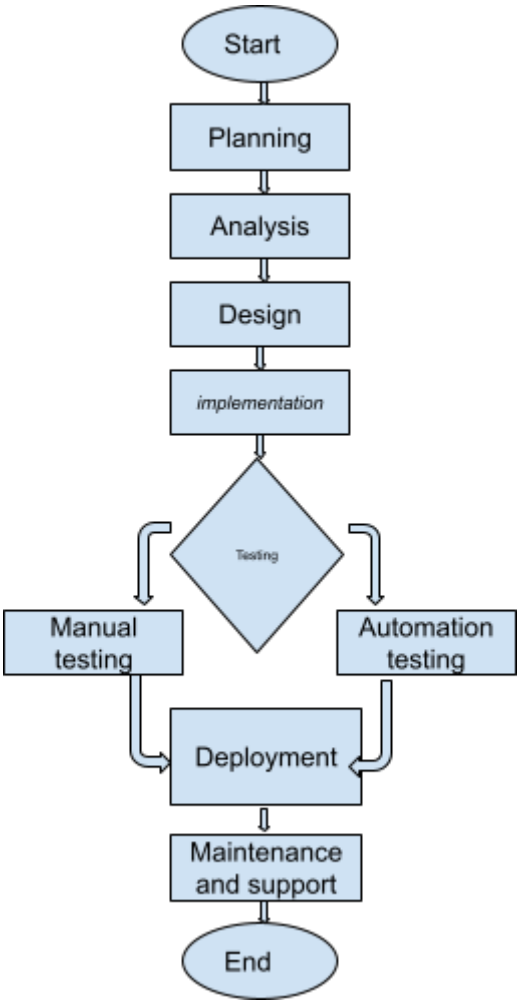
Types of Software

Question: Create a list of software you use regularly and classify them into the following categories: system, application, and utility software.
Answer:

S.no	Name	Type
1.	Whatsapp	Application software
2.	Antivirus	Utility software
3.	Disk cleanup	Utility software
4.	Notepad	Application software
5.	Google docs	Application software
6.	File manager	Utility software
7.	Windows 11	System software
8.	Android	System software
9.	Ubuntu	System software
10.	Mozilla firefox	Application software

Software Development Process

Question: Create a flowchart representing the Software Development Life Cycle (SDLC).
Answer:



Maintenance

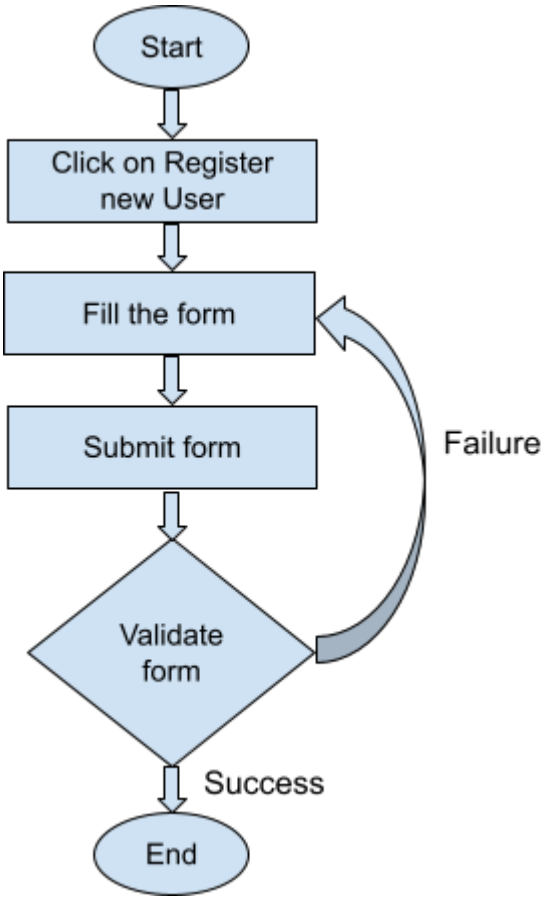
Question: Document a real-world case where a software application required critical maintenance.
Answer:
We all have heard about IRCTC i.e. Indian Railway Catering and Tourism Corporation, it is a website as well as an application which we use to book train tickets.

I have seen several times that at midnight it goes under maintenance.
From my point of view, there are some reasons to this-

- Due to heavy load on servers.
- Due to booking of tickets, cancellation of tickets, booking status, refunds, TDRs etc.

Flow Chart

Question: Draw a flowchart representing the logic of a basic online registration system.
Answer:



Google Docs links for Theory Exercises are given below:

https://drive.google.com/uc?id=1EWqiRS3KJE2ABKNysHSDC6VrP4v0yHae&export=download

https://drive.google.com/uc?id=1gOz_666itB46gOyaikkLflzc-131h5md&export=download

https://drive.google.com/uc?id=1Pmueih1ebc7V_bcwnPprpP6zYghY6lPm&export=download

https://drive.google.com/uc?id=1EWqiRS3KJE2ABKNysHSDC6VrP4v0yHae&export=download

1. theory exercise 1, 2, 3 - Made with Clipchamp_1744018045143.mp4
2. assignment part 2 - Made with Clipchamp_1744039391718.mp4
3. assignment part 3 - Made with Clipchamp_1744041629623.mp4
4. Assignment part 4 - Made with Clipchamp_1744042319162.mp4