Module – 1 Assignment

1. What is software? What is software engineering?

Ans : Software is a collection of instructions, data, or programs that allow computers to perform specific tasks.

Software engineering is a branch of computer science that involves the design, development, testing, and maintenance of software applications.

2. Explain types of software.

Ans : There are two main types of software.

- Application Software
- System Software

- **Application Software :**
  - The most common type of software, application software is a computer software package that performs a specific function for a user, or in some cases, for another application. - It is designed to fulfill the requirements of the user for performing specific tasks.
  - Application software serves specific purposes for end-users, such as productivity, entertainment, communication, and more.
  - **Example :** Word, Excel, Photoshop, Spotify etc…

- **System Software :**
  - These software programs are designed to run a computer's application programs and hardware.
  - System software coordinates the activities and functions of the hardware and software.
  - In addition, it controls the operations of the computer hardware and provides an environment or platform for all the other types of software to work in.
  - **Example :** Device drivers, Firmware etc…

- **Driver software :**
  - Also known as device drivers.
  - this software is often considered a type of system software.
  - Device drivers control the devices and peripherals connected to a computer, enabling them to perform their specific tasks.
  - **Example :** Keyboards, headphones and printers etc…

- **Middleware :**
  - The term middleware describes software that mediates between application and system software or between two different kinds of application software.
  - It is also used to send a remote work request from an application in a computer that has one kind of OS, to an application in a computer with a different OS.

- It also enables newer applications to work with legacy ones.

- **Programming software :**
  - Computer programmers use programming software to write code.
  - Programming software and programming tools enable developers to develop, write, test and debug other software programs.
  - **Example :** compilers, debuggers etc…

3. What is SDLC? Explain each phase of SDLC.

Ans : SDLC stands for Software/System Development Life Cycle.

- SDLC is a structured process that enables the production of high-quality, low-cost software, in the shortest possible production time.

SDLC Phases :

1. Gathering Requirements & Analysis
2. Design
3. Coding or Implementation
4. Testing
5. Deployment
6. Maintenance

1) Gathering Requirements & Analysis :

- The first step of SDLC is gathering maximum information from the client requirements for the product. Discuss each detail and specification of the product with the customer.
- The development team will then analyze the requirements keeping the design and code of the software in mind.
- Further, investigating the validity and possibility of incorporating these requirements into the software system.

2) Design :

- The program developer scrutinizes whether the prepared software suffices all the requirements of the end-user.
- The project is feasible for the customer technologically, practically, and financially.

3) Coding or Implementation :

- Time to code! It means translating the design to a computer-legible language.
- the tasks are divided into modules or units and assigned to various developers.
- The developers will then start building the entire system by writing code using the programming languages they chose.
- This stage is considered to be one of the longest in SDLC.
- The developers need certain predefined coding guidelines, and programming tools like interpreters, compilers, debugger to implement the code. **4) Testing :**

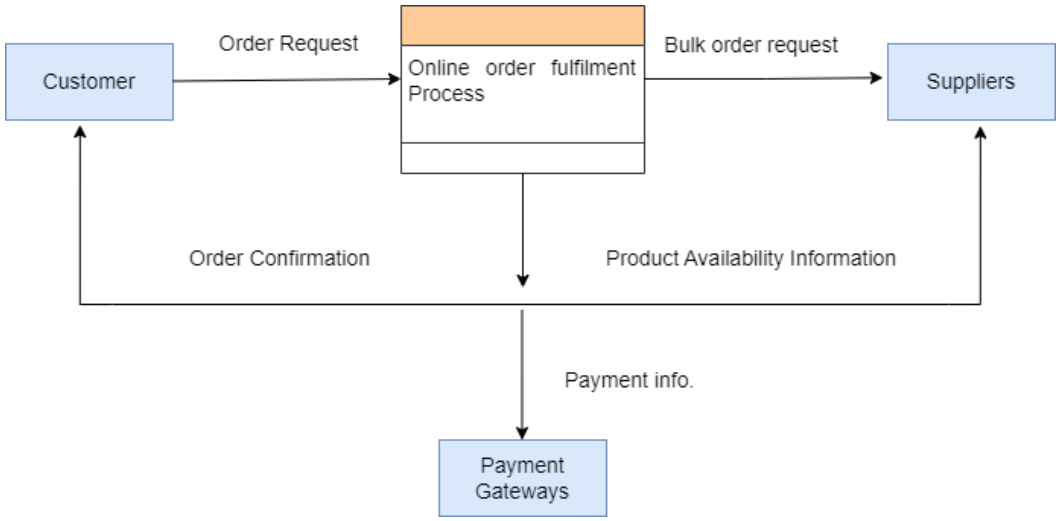
- Once the developers build the software, then it is deployed in the testing environment. Then the testing team tests the functionality of the entire system.
- The testing is done to ensure that the entire application works according to the customer requirements.
- After testing, the team might find some bugs or defects and communicate the same with the developers.
- The development team then fixes the bugs and send for a re-test.
- This process goes on until the software is stable, bug-free and working according to the business requirements of that system.

5) **Deployment :**
   - Once the testing is done, and the product is ready for deployment, it is released for customers to use.
   - The users are then provided with the training or documentation that will help them to operate the software.
6) **Maintenance :**
   - The actual problem starts when the customer actually starts using the developed system and those needs to be solved from time to time.
   - Maintenance is the seventh phase of SDLC where the developed product is taken care of.
   - According to the changing user end environment or technology, the software is updated timely.

4. What is DFD ? create a DFD diagram on Flipkart.

- A data-flow diagram is a way of representing a flow of data through a process or a system. - The DFD also provides information about the outputs and inputs of each entity and the process - itself.

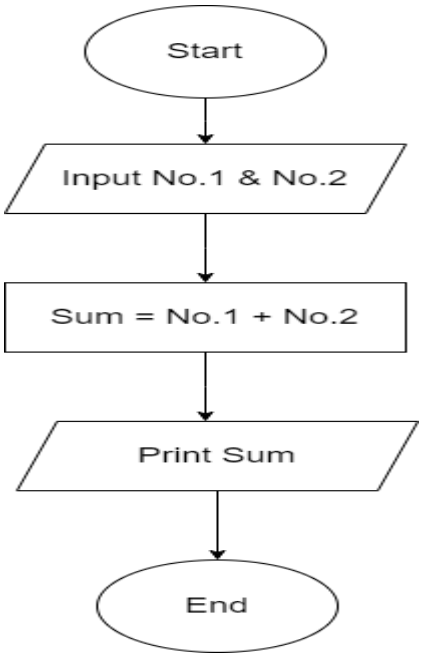
DFD diagram on Flipkart :



5. What is flowchart ? create a flowchart to make addition of two numbers.

- A flowchart is a picture of the separate steps of a process in sequential order.

flowchart to make addition of two numbers :



6. **What is use case diagram ? create a use case on bill payment on Paytm.**
   - A Use Case Diagram is a vital tool in system design, it provides a visual representation of how users interact with a system.
   - It serves as a blueprint for understanding the functional requirements of a system from a user's perspective, aiding in the communication between stakeholders and guiding the development process.

Use case on bill payment on Paytm :

7. Instagram activity diagram.