MODULE : 1

1. What is software? What is software engineering?

Software :-

- In a computer system, the software is basically a set of instructions or commands that tell a computer what to do.

- Software is a generic term used to refer to applications, scripts and programs that run on a device.

- The two main categories of software are application software and system software.

Software Engineering :-

- Software engineering is the branch of computer science that deals with the design , development , testing and maintenance of software application.

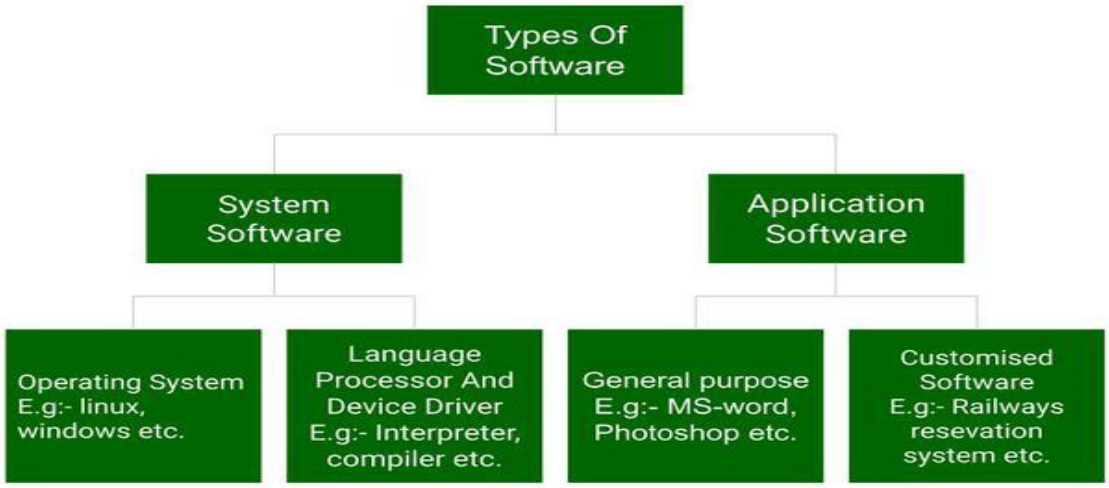
- It is a systematic and disciplined approach to software development that aims to create high-quality, reliable, and maintainable software.

2. Explain types of software.

- Software is the set of instruction or programs used to operate computers and execute specific tasks.

- Types of Software :-

- The chart below describes the types of software:-



- As per diagram , we will briefly describe each types and its subtypes.

1. **System Software**
    - Operating System
    - Language Processor
    - Device Driver
2. **Application Software**
    - General Purpose Software
    - Customize Software
    - Utility Software

[1].System Software :-

(i) Operating System :-

- Operating system is a program that acts as an interface between computer hardware and user.

- Basically, it manages all the resources such as computer memory, CPU , memory , hard disk, etc.

- macOS , Linux , Windows are the examples of operating system.

(ii) Language Processor :-

- we know that system software converts the human-readable language into a machine language.

- So, the conversion is done by the language processor.

- It converts programs which written in high-level programming language like java , c , c++ , python etc (known as source code) into sets of instructions that are easily readable by machines(known as machine code).

(iii) Device Driver :-

- A device driver is a program or software that controls a device.

- It enable the operating system to communicate with hardware devices.

- Every device like a printer, mouse etc. needs a driver to connect with the computer system eternally.

[2]. <u>Application Software</u> :-

(i) General purpose Software :-

- This type of application software is used for a variety of tasks and it is not limited to performing a specific task only.

- For example, MS-Word, MS-Excel, PowerPoint, etc.

(ii) Customized Software :-

- This type of application software is used or designed to perform specific tasks or functions.

- For example, railway reservation system , airline reservation system, invoice management system, etc.

(iii) Utility Software :-

- Utility software is a type of system software designed to help manage, maintain, and control computer resources.

- For example, antivirus , memory tester, disk repair, disk cleaners, disk space analyzer, etc.

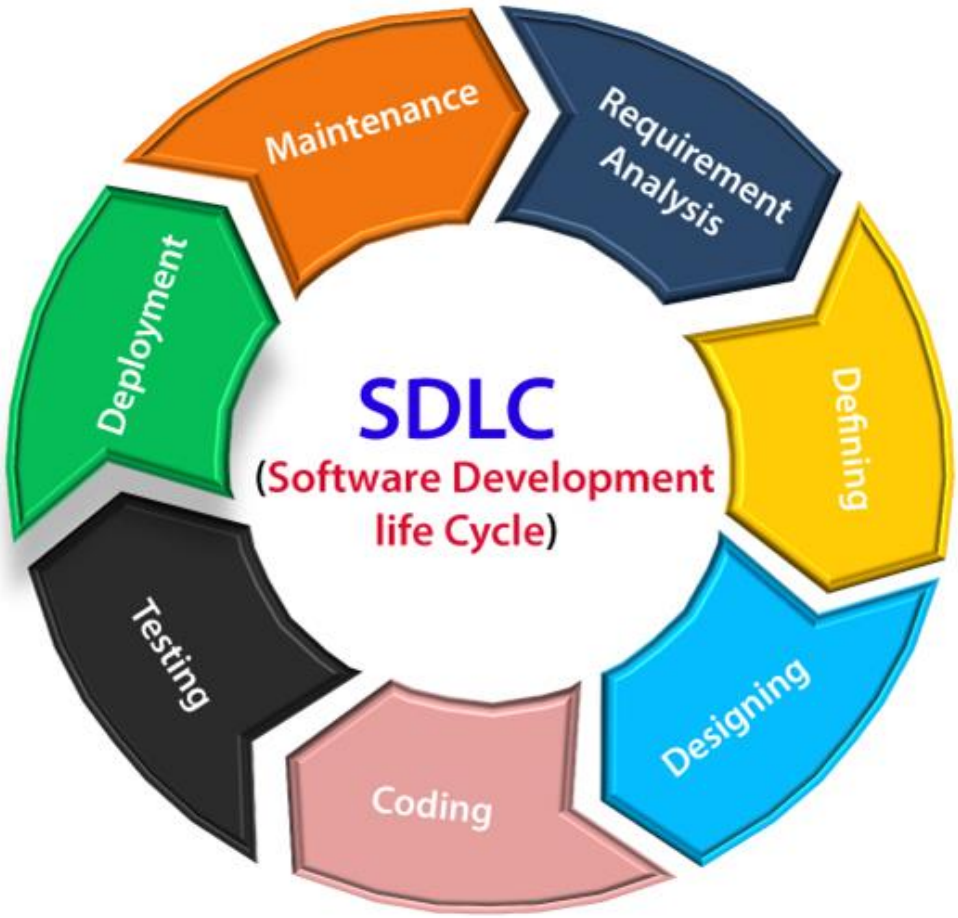
3. What is SDLC? Explain each phase of SDLC.

- Here , SDLC stands for Software Development Life Cycle.

- SDLC is a structured process that is used to design, develop, and test good-quality software.

- The goal of the SDLC life cycle model is to deliver high-quality, maintainable software that meets the user's requirements.

-> **Software Development Life Cycle :-**



(i) Planning and requirement analysis :-

- Requirement Analysis is the most important and necessary stage in SDLC.

- This is attained from customer inputs, and sales department/market surveys.

- The information from this analysis forms the building blocks of a basic project.

- In this stage, the basic project is designed with all the available information.

(ii) Defining Requirements :-

- Once the requirement analysis is done, the next stage is Defining Requirements.

- In this stage, all the requirements for the target software are specified. These requirements get approval from customers, market analysts, and stakeholders.

- This is fulfilled by utilizing SRS (Software Requirement Specification).

(iii) Designing the Software :-

- The next phase is about to bring down all the knowledge of requirements, analysis, and design of the software project.

- This phase is the product of the last two, like inputs from the customer and requirement gathering.

(iv) Developing the project :-

- At this stage, the fundamental development of the product starts.

- For this, developers use a specific programming code as per the design in the DDS.

(v) Testing :-

- After the development of the product, testing of the software is necessary to ensure its smooth execution.

-Although, minimal testing is conducted at every stage of SDLC.

(vi) Deployment :-

- Once the software is certified, and no bugs or errors are stated, then it is deployed.

- After the software is deployed, then its maintenance begins.

(vii) Maintenance :-

- The software will need maintenance to address any issues or bugs that arise, implement new features, and ensure the software remains functional and secure over time.

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

- DFD stands for Data Flow Diagram.

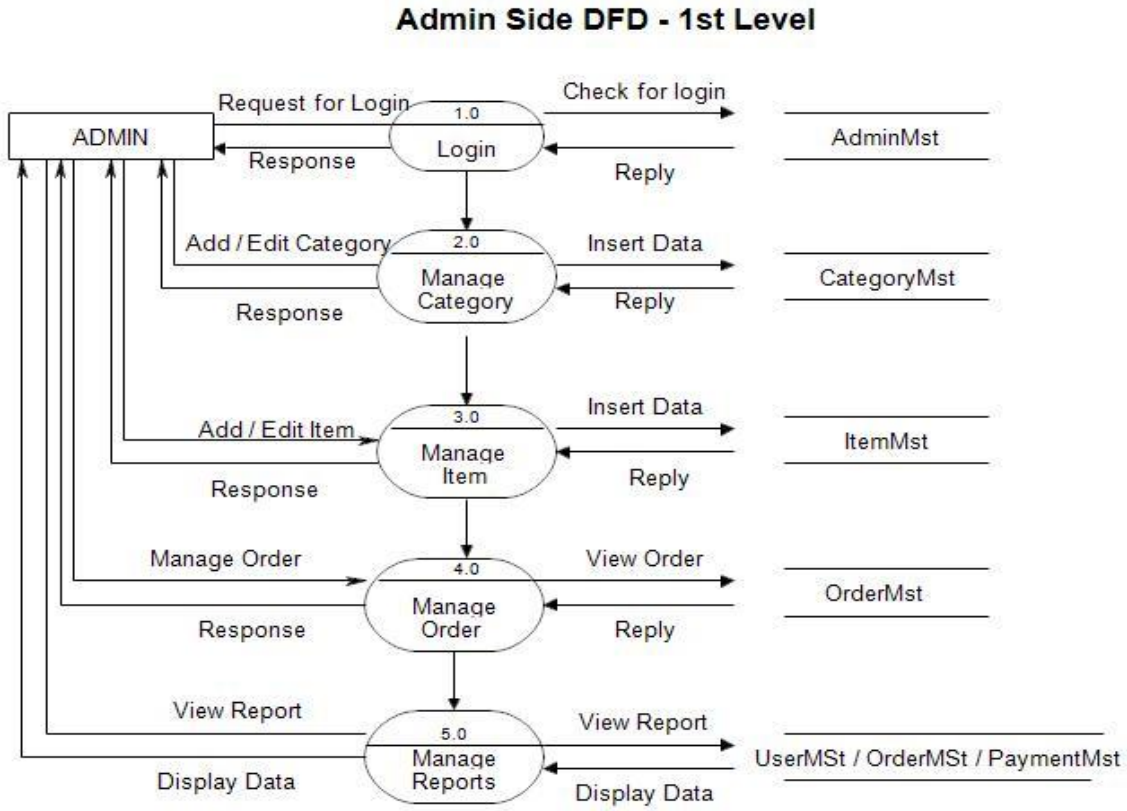
- Data Flow Diagram (DFD) represents the flow of data within information systems.

- Data Flow Diagrams (DFD) provide a graphical representation of the data flow of a system.

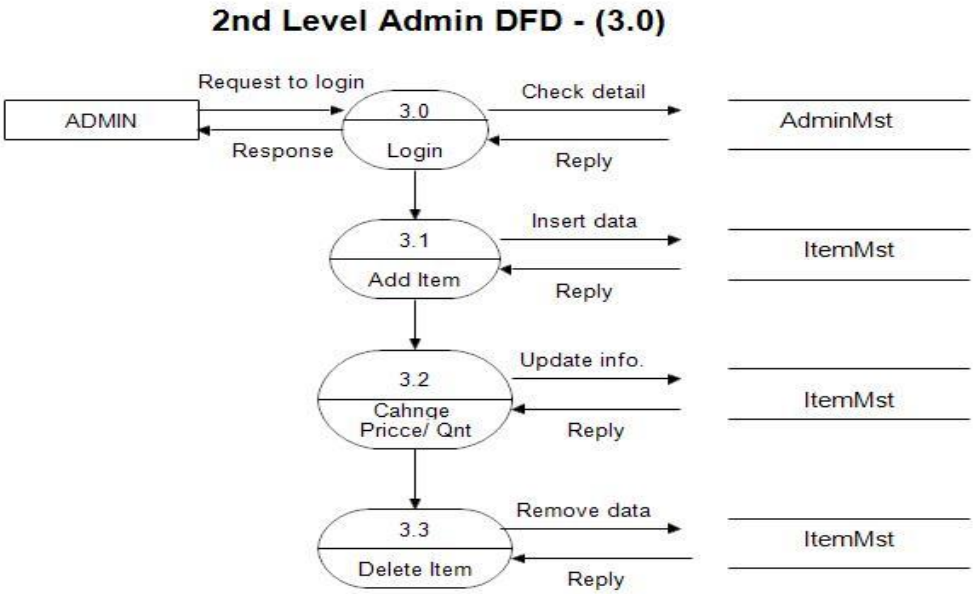
- DFD diagram on flipkart :

- **Context level DFD – 0 level**

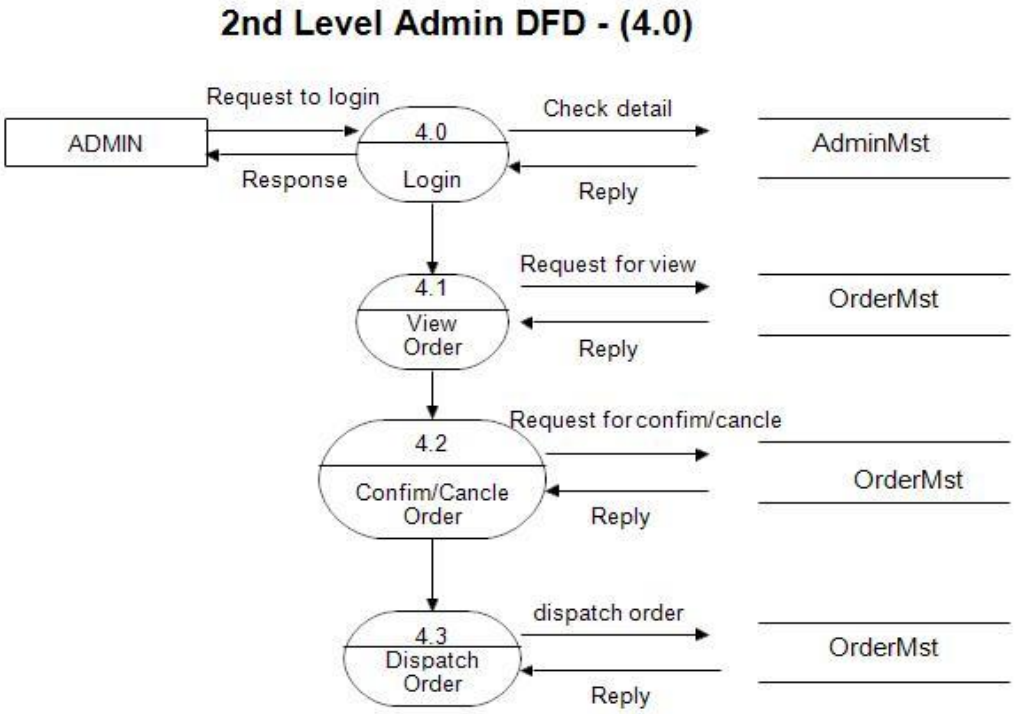
- 1st Level Admin Side DFD



- <u>2nd Level – Admin side DFD (3.0)</u>



- 2nd Level – Admin side DFD (4.0)



5. What is Flow chart? Create a flowchart to make addition of two numbers.

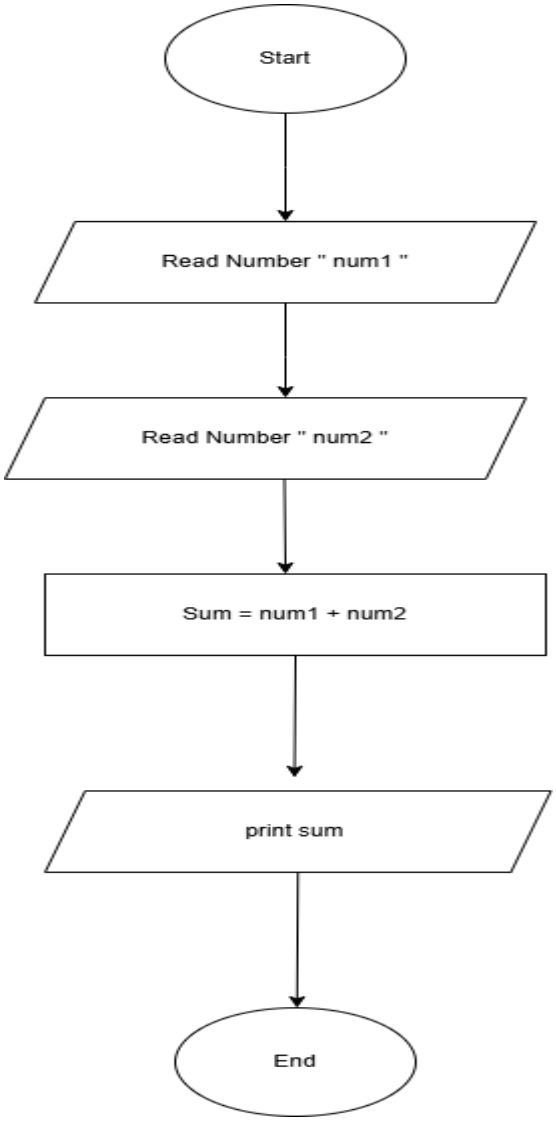
- A flowchart is a type of diagram that represents a workflow or process.

- Flowcharts are the graphical representation of the data or the algorithm for a better understanding of the code visually.

- It displays step-by-step solutions to a problem, algorithm, or process.

- A flowchart is a picture of boxes that indicates the process flow sequentially.

- Here is flowchart of addition of two numbers.



6. What is Use case Diagram? Create a use-case on bill payment on paytm.

- A Use Case Diagram is defined as a graphical representation of the interactions between users and a system.

- It illustrates the various ways in which users interact with a system to achieve specific goals or tasks.

- A Use Case Diagram is a type of Unified Modelling Language (UML) diagram.

- Here is Use case diagram on bill payment on paytm.