Module-1

SE – Overview of IT Industry

Que-1 what is Software? What is Software Engineering?

→What is Software?

Software is more than simply program code. A program is a piece of executable code that performs some kind of processing with is used to perform some specific tasks.

Software is defined as a collection of executable programming code, associated libraries, and documentation. When software is created to meet a specific need, it is referred to as a software product.

→What is Software Engineering?

Software Engineering indicates the meaning of two words namely **Software + Engineering = Software Engineering**.

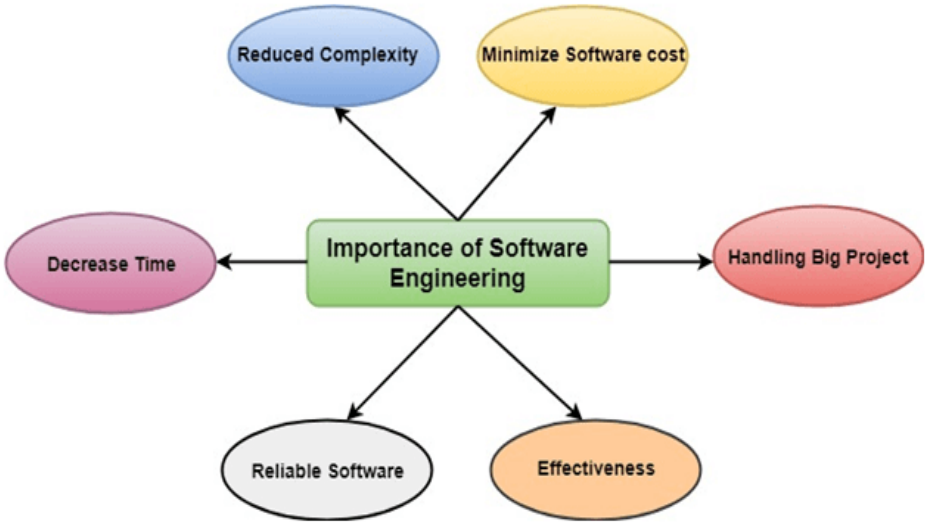
Software:

Software is more than simply program code. A program is a piece of executable code that performs some kind of processing.

Engineering:

Engineering is the process of designing and constructing something by employing best practices, concepts, and methodologies.

Software engineering is a discipline of engineering concerned with the creation of software products using well-defined scientific concepts, methodologies, and procedures. The result of software engineering is a dependable and efficient software product.



Que-2 Explain types of 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. An application can be self-contained, or it can be a group of programs that run the application for the user.

Example: any modern application

→ **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.

Example: Operating System

→ **Driver Software:**

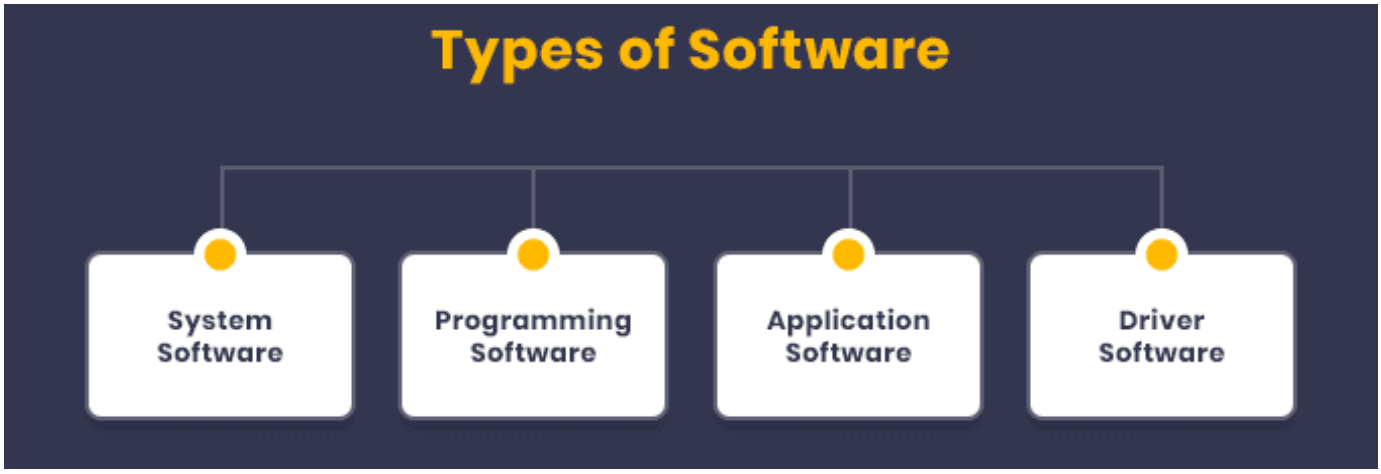
Also known as device drivers, this software is often considered a type of system software. Device drivers control the devices and peripherals connected to a computer, enabling them to perform their specific tasks. Every device that is connected to a computer needs at least one device driver to function.

Example: USB storage devices

→ **Driver 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: assemblers, compilers, debuggers and interpreters.

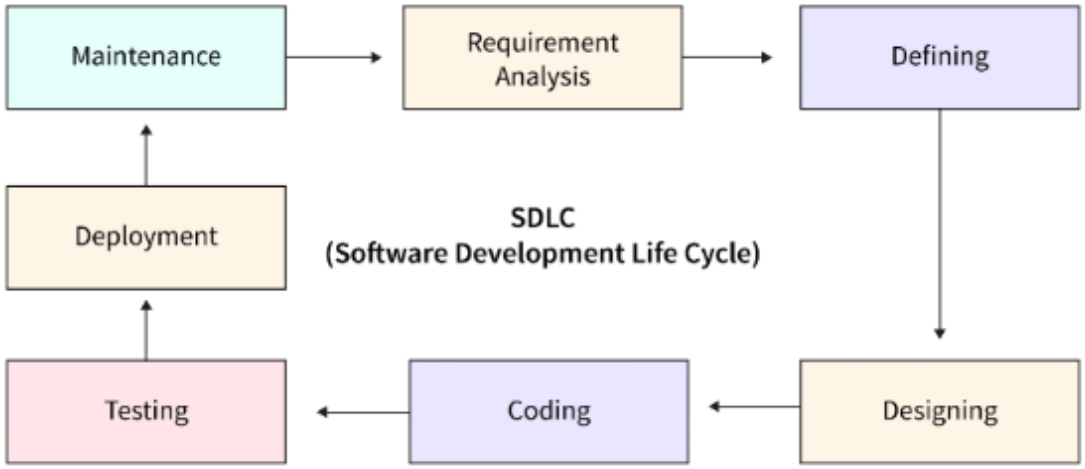


Que-3 What is SDLC? Explain each phase of SDLC.

→ **What is SDLC?**

- SDLC is a methodical approach to developing software that ensures its quality and correctness. The SDLC process is designed to provide high-quality software that satisfies customer requirements and ensures system development is completed within the schedule and budget constraints.
- It represents all of the procedures required to move a software product through the stages of its life cycle. It also captures the structure in which these procedures will be carried out.

→ **Explain phases of SDLC**



1. Requirement Collection/ Planning

- The **most crucial and fundamental stage in SDLC** is requirement collection. It is carried out by senior members of the team with input from the client or customer, the sales department, market surveys, and industry domain specialists. This data is then used to plan the basic project approach and conduct product feasibility studies on various aspects described in the next phase of the SDLC methodology. The **requirement collection phase** is essential for understanding the software product's business use case.

2. Defining requirements & Feasibility study

- Following the completion of the requirement collection, the next stage is to explicitly describe and record the product needs and obtain approval from the client or market analysts. This is accomplished through the SRS (Software Requirement Specification) document, which includes all the product requirements to be defined and developed throughout the project life cycle. Once the SRS document is prepared, the requirements are evaluated for feasibility.

3. Designing

- In this phase, the SRS document is used as input to prepare the DDS - Design Document Specification. Software architects use the requirements defined in SRS as a reference to come up with the best architecture for the product being developed.

4. Coding

- In this phase, the **developer receives the design document**, and the software design is converted into source code in the most appropriate high-level programming language. It can be called the most prolonged phase of SDLC.

5. Testing

- Once the coding phase is over and the **modules are ready for testing**, they are deployed in the testing environment and tested against the requirements to ensure that the products address the needs identified and obtained during the requirements stage. Unit testing, integration testing, system testing, and acceptability testing are all performed during this stage. The QA (Quality Assurance) and testing teams may discover faults or defects, which they report to developers. The development team fixes the bug and sends it back to QA for another round of testing. This procedure is repeated retesting and regression testing) until the program is bug-free, stable, and meets the system's business requirements. Testers refer to the SRS document to ensure that the software meets the customer's standard.

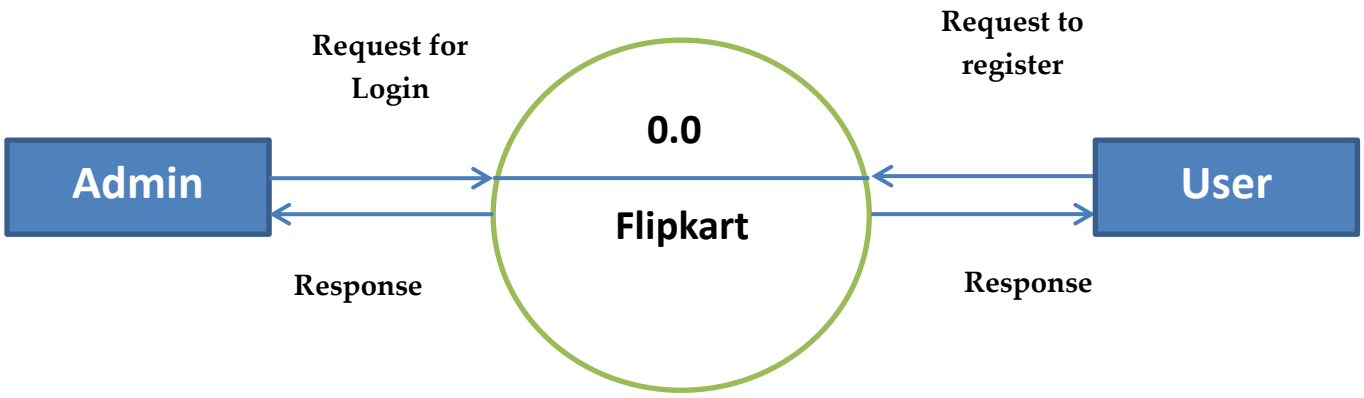
6. Maintenance

- Once the built software is deployed, issues might arise while the code runs in the production environment and need to be solved on the go. In SDLC models, this is called the maintenance phase of a software project

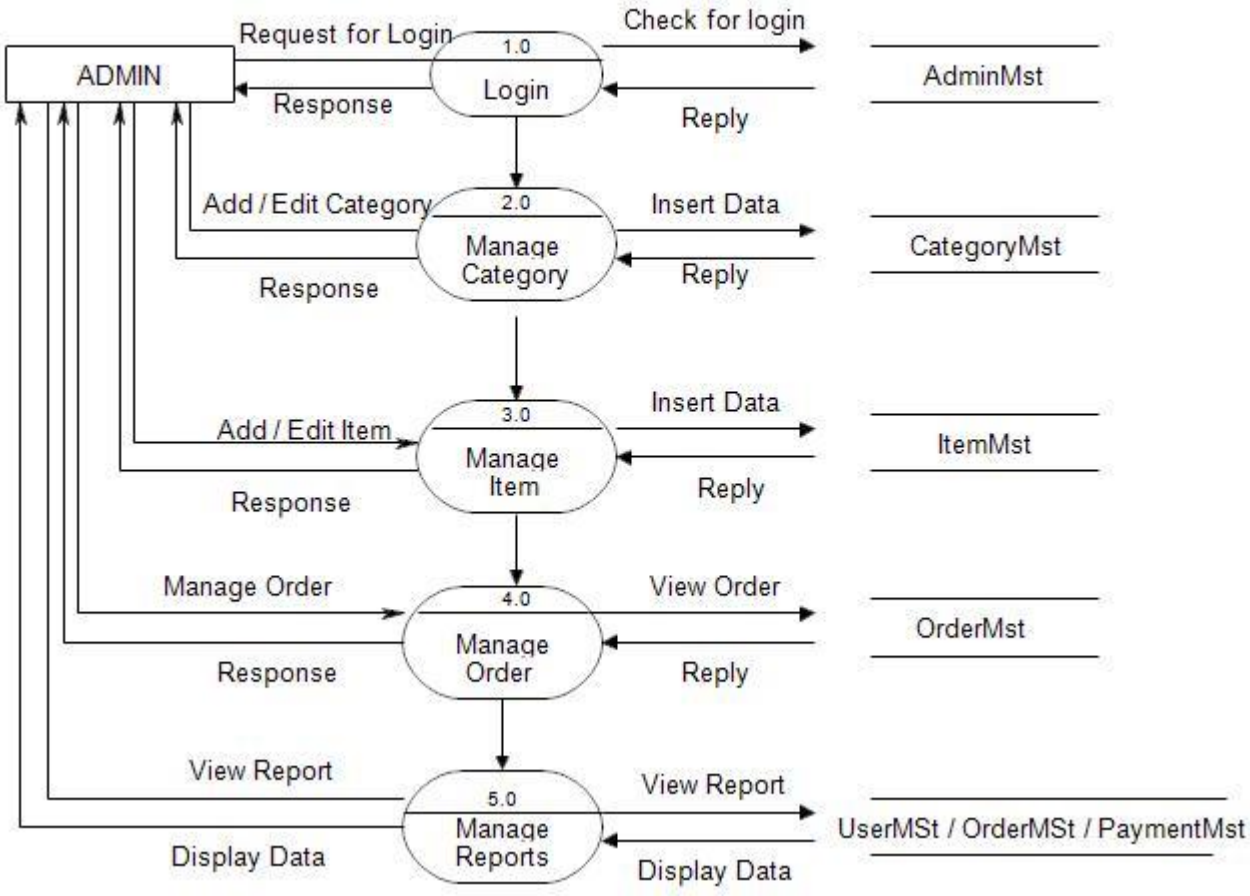
Que-4 what is DFD? Create a DFD diagram on Flipkart.

→ **DFD :**

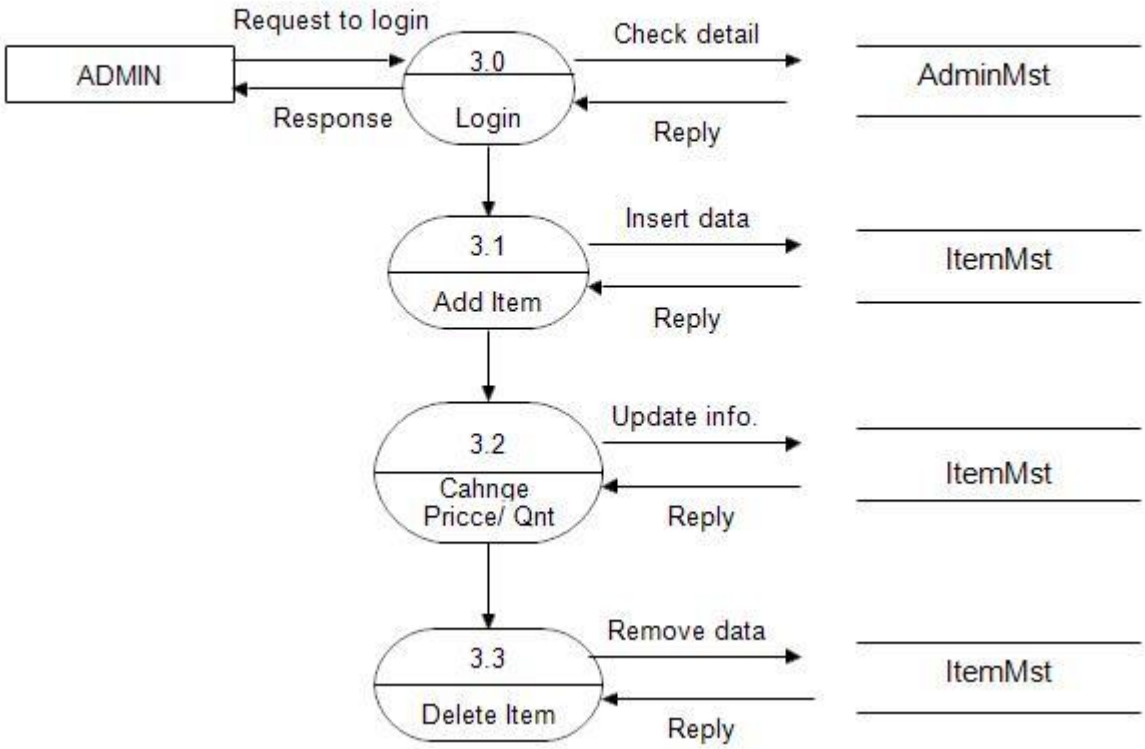
- **DFD** is the abbreviation for **Data Flow Diagram**. The flow of data of a system or a process is represented by DFD. It also gives insight into the inputs and outputs of each entity and the process itself. DFD does not have control flow and no loops or decision rules are present. Specific operations depending on the type of data can be explained by a flowchart. It is a graphical tool, useful for communicating with users, managers and other personnel. it is useful for analysing existing as well as proposed system.



Admin Side DFD - 1st Level



2nd Level Admin DFD - (3.0)



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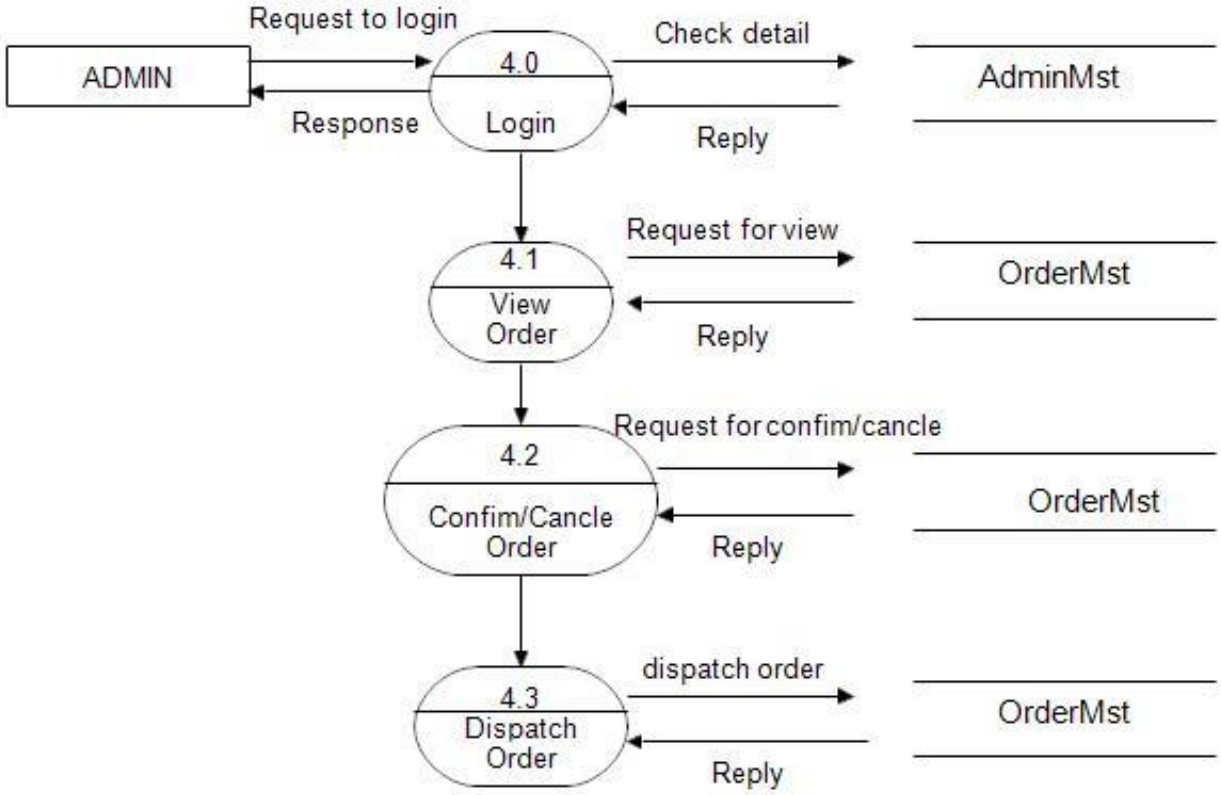
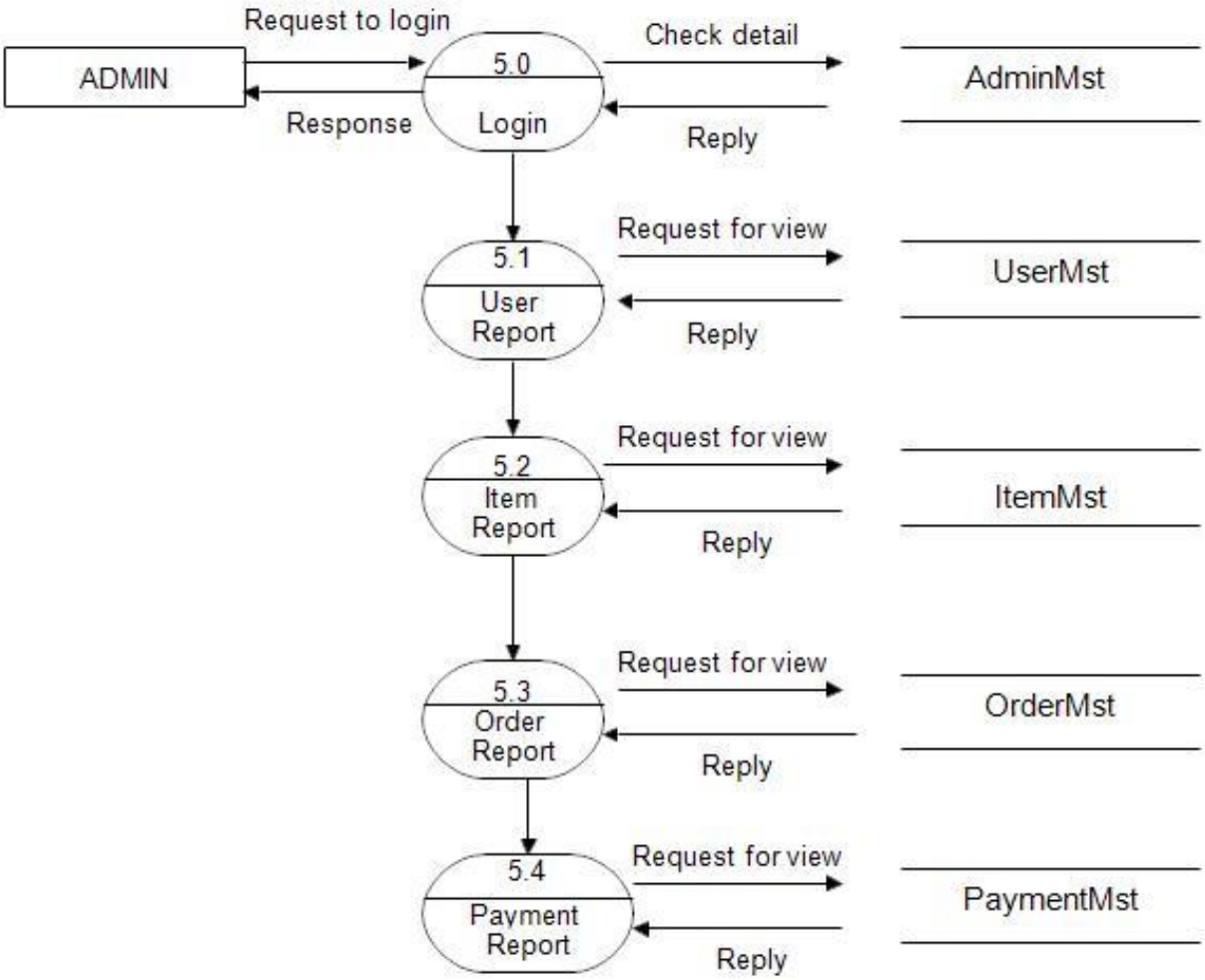
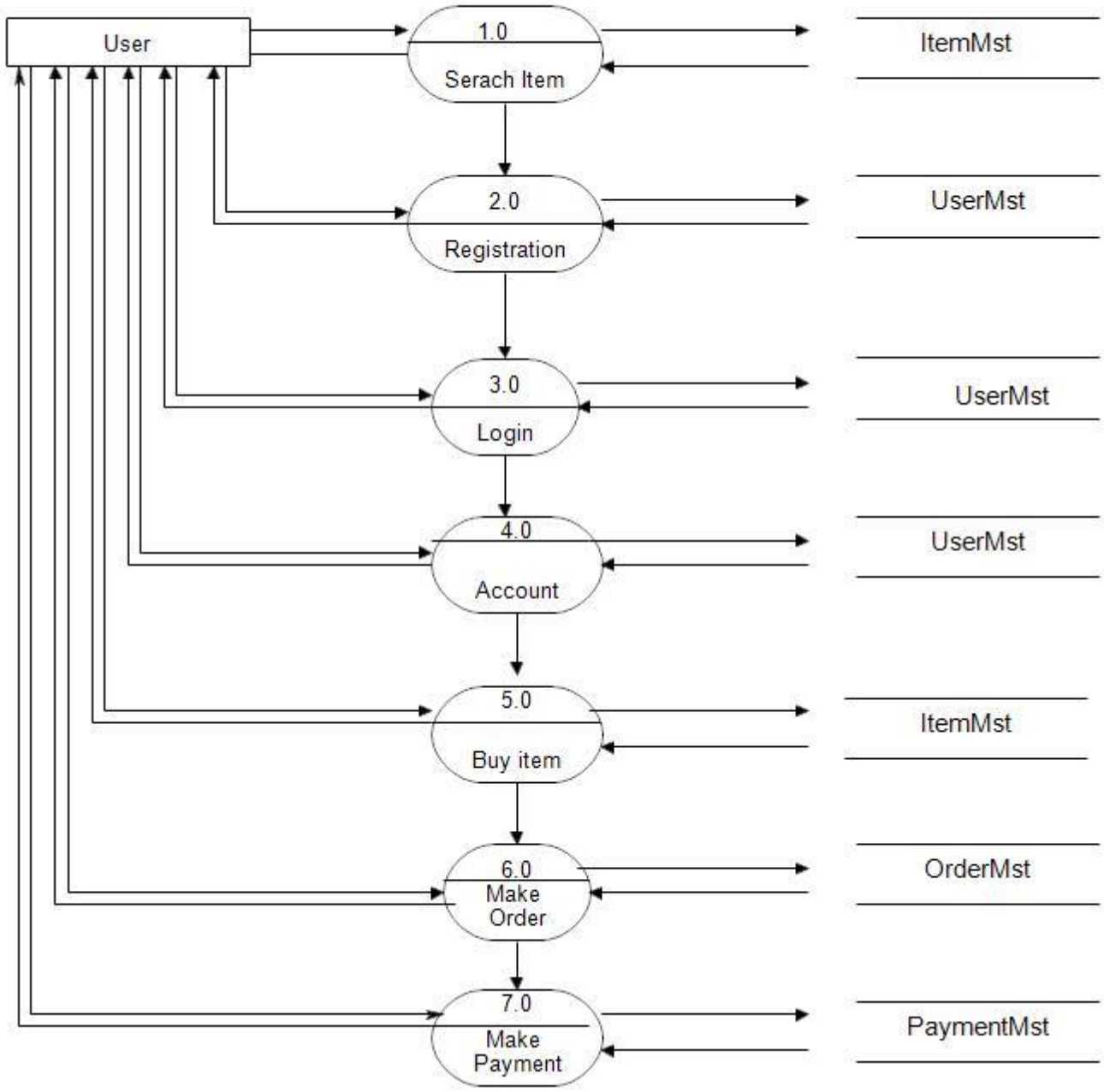


2nd Level Admin DFD - (5.0)



1st Level User side DFD

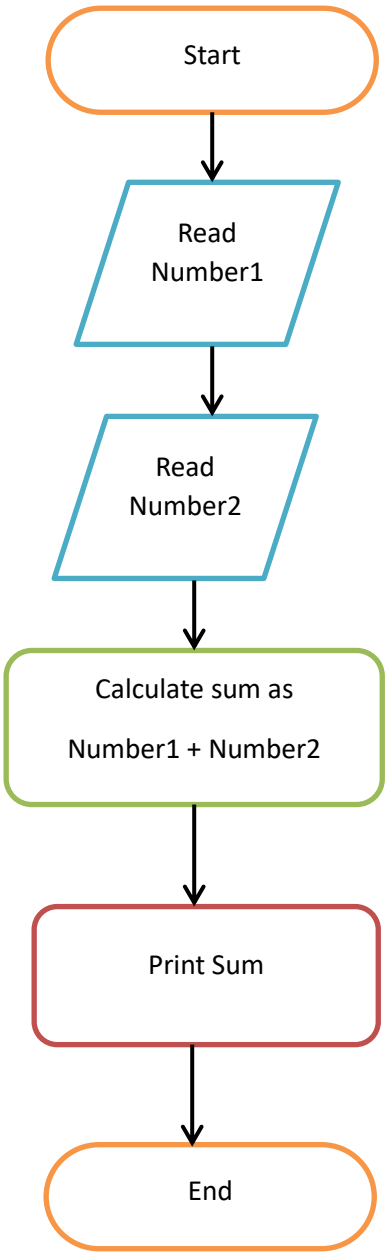


Que-5 what is Flowchart? Create a flow chart to make addition of two numbers.

→ **Flowchart**

- **Flowcharts** are nothing but 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.

→ **Flowchart to make addition of two numbers :**



Que-6 what is Use case diagram? Create a use case on bill payment on paytm.

→ **Use Case Diagram :**

- A Use Case Diagram is a visual representation of how users interact with a system.
- A use case is a specific sequence of interactions between an external actor and a system that results in a measurable outcome. These interactions are depicted in the Use Case Diagram, outlining the essential functionalities and behaviours of the system as experienced by the user.

→ **Use Case on Bill Payment on paytm :**