Software Engineering Assignment

MODULE: 1

SE – Overview of IT Industry

1. **What is software? What is software engineering?**

   Software refers to a collection of programs, data, and instructions that enable a computer to perform specific tasks or functions. It includes both application software (such as word processors, games, and web browsers) and system software (such as operating systems and device drivers).

   Software engineering is the systematic approach to designing, developing, testing, and maintaining software. It involves using engineering principles to create reliable, efficient, and high-quality software systems.

2. **Explain the types of software.**

   System Software: This includes operating systems, device drivers, and utility programs that manage and control computer hardware.

   Application Software: These are programs designed to perform specific tasks for users, such as word processors, spreadsheets, web browsers, and games.

   Middleware: Software that acts as a bridge between application software and system software, often used in networking and distributed systems.

   Embedded Software: Software that is embedded within devices or systems, such as firmware in electronic devices.

   Programming Software: Tools used by developers to write, debug, and test software code.

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

   SDLC stands for Software Development Life Cycle. It is a process used by software development teams to design, develop, and test high-quality software applications. The SDLC framework consists of several phases, each

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with its specific activities and deliverables. Here are the typical phases of the SDLC:

1. **Requirement Gathering and Analysis:**
   - This phase involves gathering and analyzing information from stakeholders to understand the software's purpose, functions, and features.
   - Activities include conducting interviews, surveys, brainstorming sessions, and studying existing systems.
   - Deliverables may include requirements specifications, use cases, user stories, and a feasibility report.
2. **System Design:**
   - In this phase, the system architecture is designed based on the requirements gathered.
   - It involves creating a high-level design that outlines the system's structure, interfaces, modules, database design, and other technical specifications.
   - Deliverables may include system architecture diagrams, data flow diagrams, database schema, and interface mockups.
3. **Implementation (Coding):**
   - This phase involves the actual coding of the software based on the design specifications.
   - Developers write code using programming languages and follow coding standards and guidelines.
   - The focus is on building each component/module, integrating them, and ensuring they work together as a cohesive system.
   - Deliverables include source code, documentation, and test cases.
4. **Testing:**
   - The testing phase is where the software is systematically tested to identify and fix defects.
   - Various testing types are employed, including unit testing (testing individual components), integration testing (testing how components work together), system testing (testing the entire system), and user acceptance testing (UAT) by end-users.
   - The goal is to ensure the software meets quality standards, functions correctly, and satisfies the requirements.
   - Deliverables include test plans, test cases, defect reports, and a tested, stable software build.
5. **Deployment:**
   - In this phase, the software is deployed to the production environment for end-users.
   - It involves preparing for the installation, configuration, and rollout of the software.

- Deployment might include data migration, user training, and setting up necessary infrastructure.
- Deliverables include the deployed software, installation guides, user manuals, and training materials.

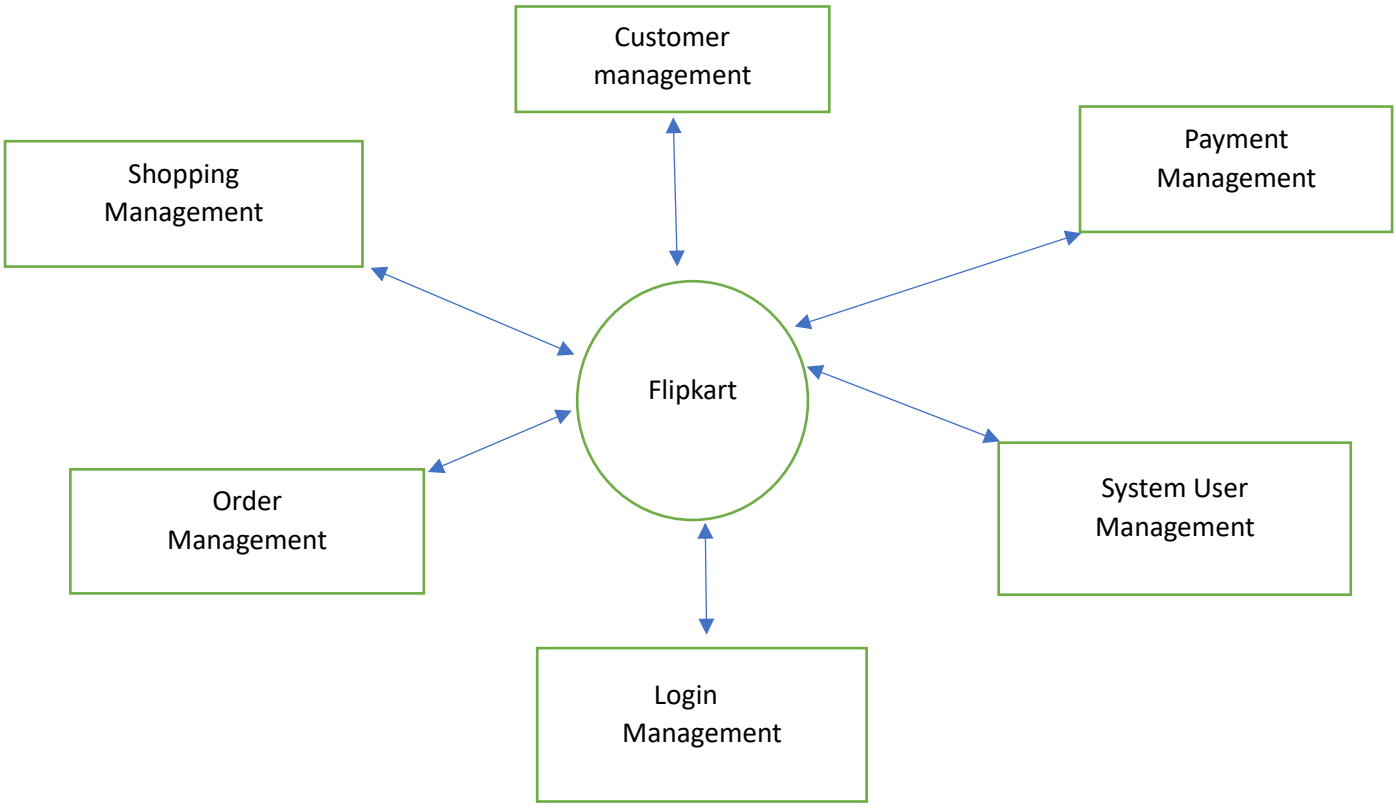
6. **Maintenance and Support:**
   - After deployment, the software enters the maintenance phase, where it is regularly updated, enhanced, and monitored for issues.
   - This phase involves fixing bugs, adding new features, optimizing performance, and addressing user feedback.
   - Support teams provide assistance to users, troubleshoot problems, and ensure the software continues to meet its objectives.
   - Deliverables include updated versions, bug fixes, patches, and support documentation.

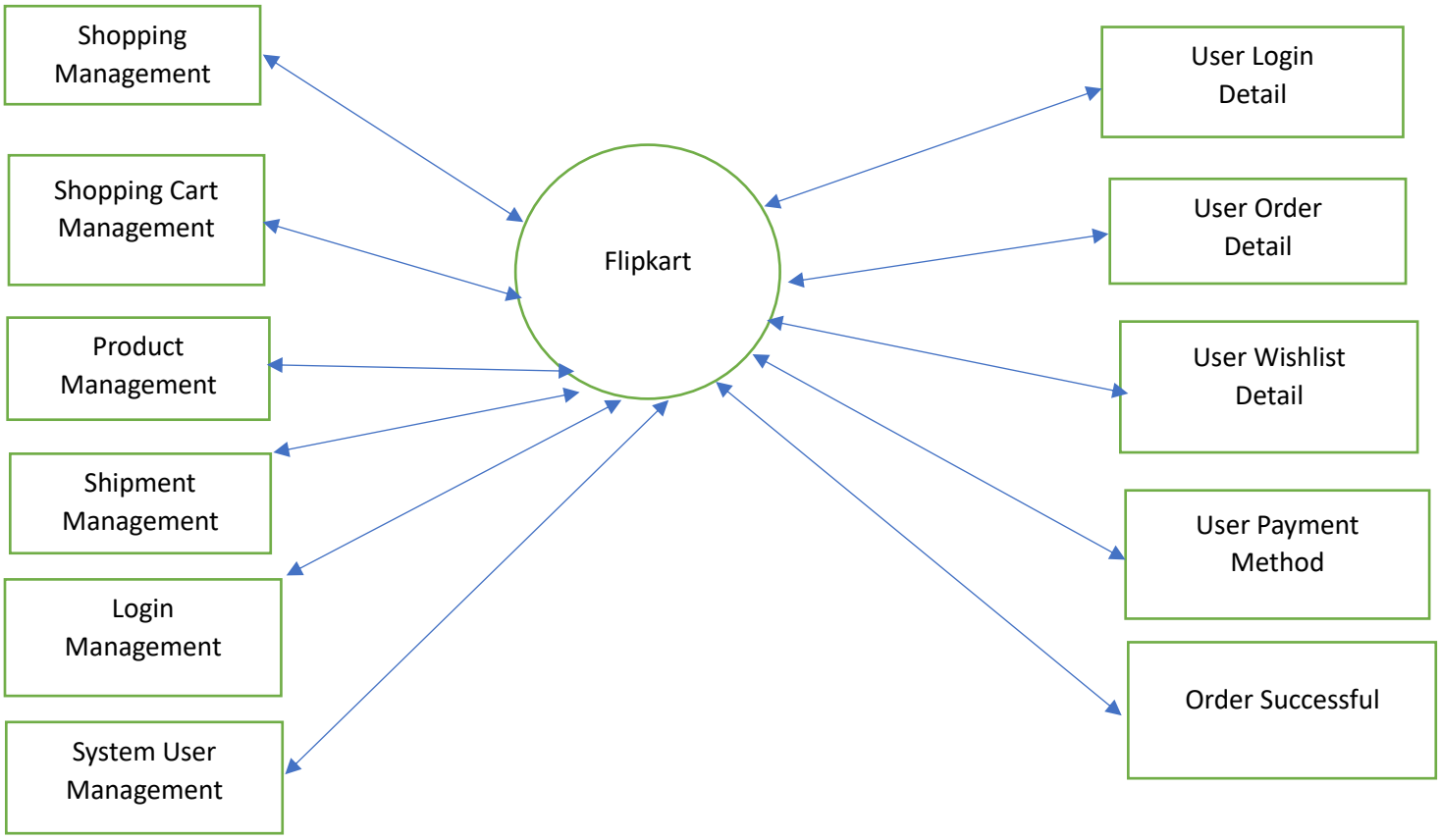
These phases in the SDLC framework help ensure a systematic approach to software development, leading to the creation of reliable, high-quality software that meets user needs and business requirements. Different methodologies, such as Waterfall, Agile, and DevOps, adapt and iterate on these phases to suit various project requirements and organizational contexts.

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

DFD stands for Data Flow Diagram. It's a graphical representation of how data flows within a system.

DFD:

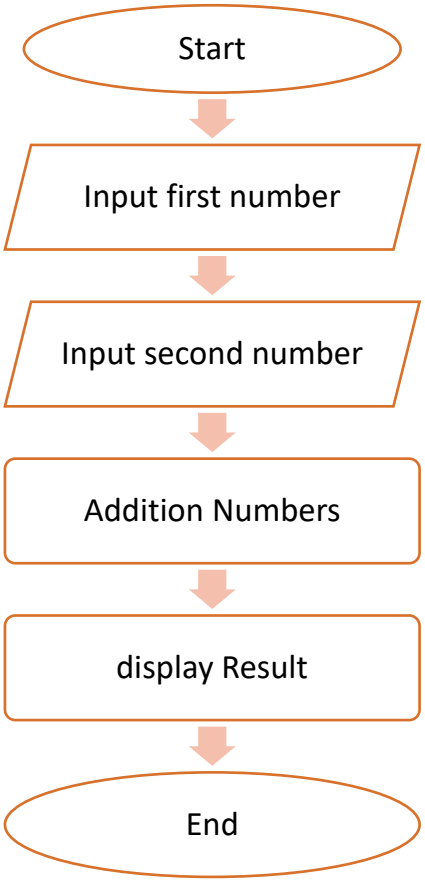




First Level DFD - Flipkart

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

A flowchart is a graphical representation of a process or algorithm using symbols and arrows to show the flow of steps.



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

A use case diagram visually represents interactions between users and a system.

Use Case Diagram: