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Module 1

Q1 :What is software? What is software engineering?

Ans- Software is a set of instructions, data or programs used to operate computers and execute specific tasks. It is the opposite of hardware, which describes the physical aspects of a computer. Software is a generic term used to refer to applications, scripts and programs that run on a device. It can be thought of as the variable part of a computer, while hardware is the invariable part.

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

Q2 :Explain types of software ?

Ans - **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. Examples of modern applications include office suites, graphics software, databases and database management programs, web browsers, word processors, software development tools, image editors and communication platforms.

- **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. The OS is the best example of system software; it manages all the other computer

programs. Other examples of system software include the firmware, computer language translators and system utilities .

- **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. Examples include software that comes with any nonstandard hardware, including special game controllers, as well as the software that enables standard hardware, such as USB storage devices, keyboards, headphones and printers.

- **Middleware.** The term *middleware* describes software that mediates between application and system software or between two different kinds of application software. For example, middleware enables Microsoft Windows to talk to Excel and Word. 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. Examples of programming software include assemblers, compilers, debuggers and interpreters.

Q3 What is SDLC? Explain each phase of SDLC ?

Ans - The Software Development Life Cycle (SDLC) refers to a methodology with clearly defined processes for creating high quality software. SDLC is divided into following phases:

1: Planning and Analysis

The first phase of the SDLC is the project planning stage where you are gathering business requirements from your client or stakeholders. This phase is when you evaluate the feasibility of creating the product, revenue potential, the cost of production, the needs of the end-users, etc.

2 : Requirements

This phase is critical for converting the information gathered during the planning and analysis phase into clear requirements for the development team. This process guides the development of several important documents: a software requirement specification (SRS) or product specification, a Use Case document, and a Requirement Traceability Matrix document.

3 : Design

The design phase is where you put pen to paper—so to speak. The original plan and vision are elaborated into a software design document (SDD) that includes the system design, programming language, templates, platform to use, and application security measures. This is also where you can flowchart how the software responds to user actions.

4 : Development

The actual development phase is where the development team members divide the project into software modules and turn the software requirement into code that makes the product.

5 : Testing

Before getting the software product out the door to the production environment, it's important to have your quality assurance team perform validation testing to make sure it is functioning properly and does what it's meant to do. The testing process can also help hash out any major user experience issues and security issues.

6 : Deployment

During the deployment phase, your final product is delivered to your intended user. You can automate this process and schedule your deployment depending on the type. For example, if you are only deploying a feature update, you can do so with a small number of users (canary release). If you are creating brand-new software, you can learn more about the different stages of the software release life cycle (SRLC).
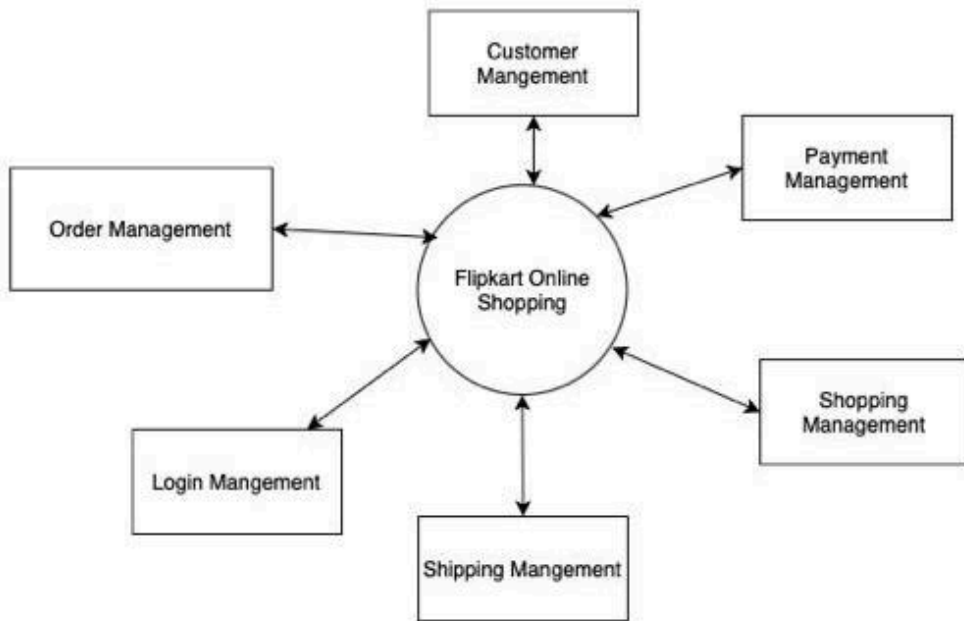
7 : Maintenance

The maintenance phase is the final stage of the SDLC if you're following the waterfall structure of the software development process. However, the industry is moving towards a more agile software development approach where maintenance is only a stage for further improvement.
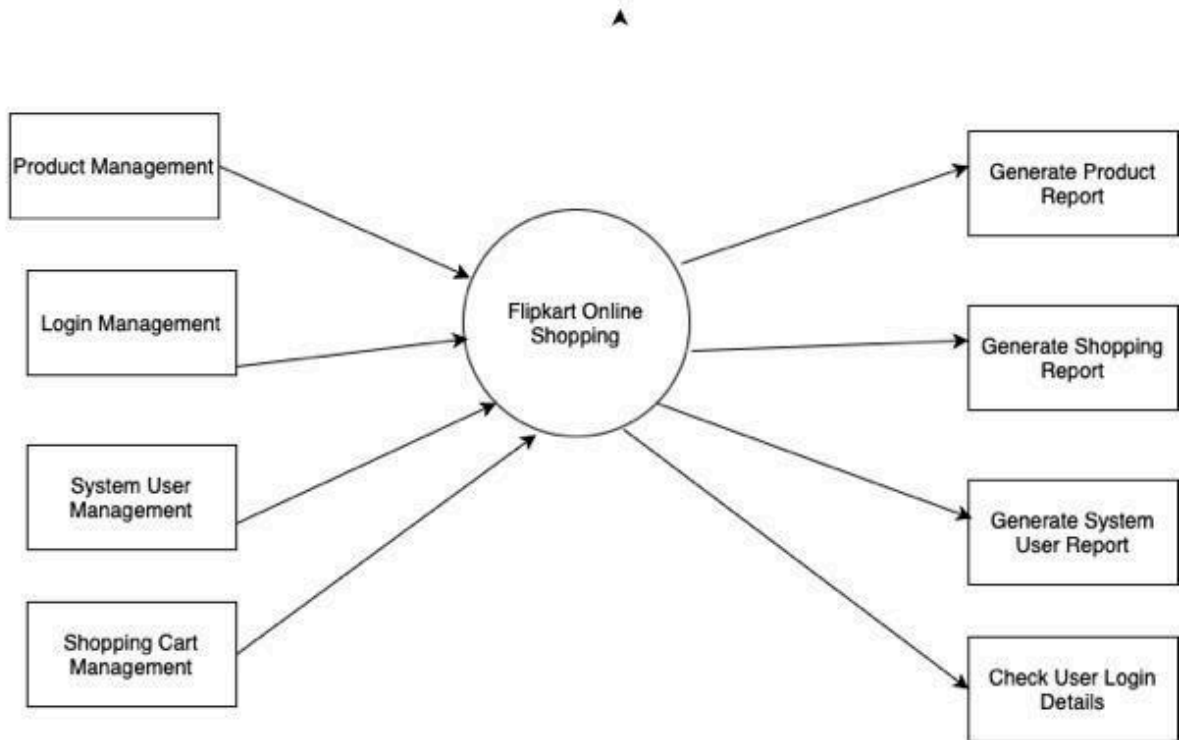
Q4: What is DFD? Create a DFD diagram on Flipkart?

Ans - A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It can be manual, automated, or a combination of both.

level 0

level 1

Product Management → Flipkart Online Shopping → Generate Product Report

Login Management → Flipkart Online Shopping → Generate Shopping Report

System User Management → Flipkart Online Shopping → Generate System User Report

Shopping Cart Management → Flipkart Online Shopping → Check User Login Details
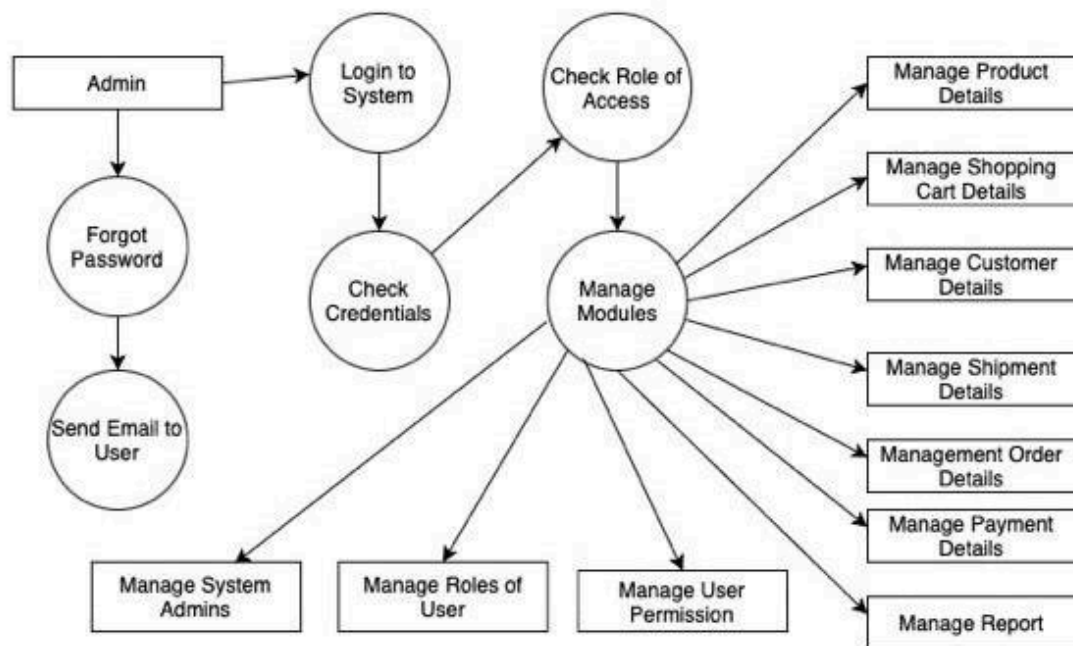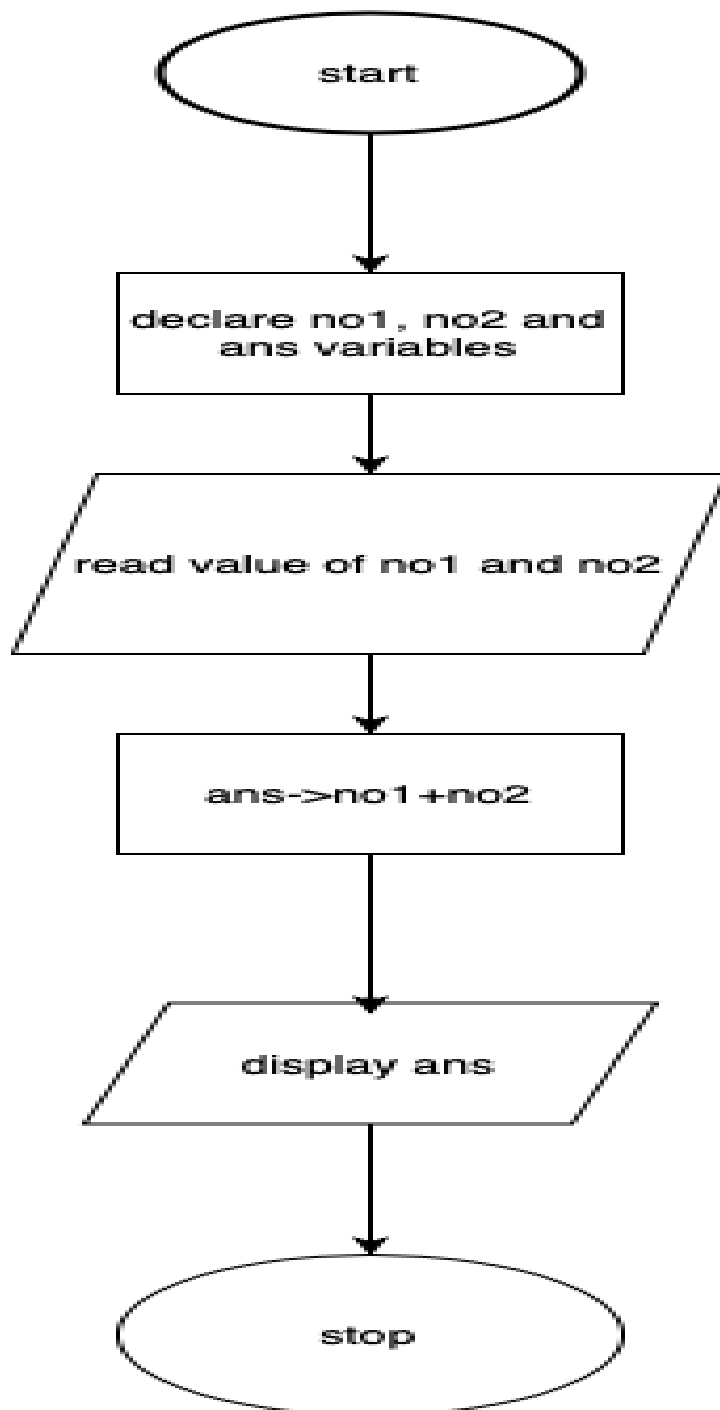
level 2

Q5 :What is Flow chart? Create a flowchart to make addition of two numbers ?

Ans – A flow chart is a graphical or symbolic representation of a process. Each step in the process is represented by a different symbol and contains a short description of the process step. The flow chart symbols are linked together with arrows showing the process flow direction.

```
        ┌───────────────┐
        │     start     │
        └───────┬───────┘
                │
                ▼
     ┌────────────────────┐
     │ declare no1, no2 and│
     │    ans variables   │
     └──────────┬─────────┘
                │
                ▼
     ╱────────────────────────╱
    ╱ read value of no1 and no2╱
   ╱────────────────────────╱
                │
                ▼
     ┌────────────────────┐
     │    ans->no1+no2    │
     └──────────┬─────────┘
                │
                ▼
      ╱──────────────────╱
     ╱   display ans     ╱
    ╱──────────────────╱
                │
                ▼
        ┌───────────────┐
        │     stop      │
        └───────────────┘
```

Q6 :What is a Use case Diagram? Create a use-case on bill payment on paytm ?

Ans-A use case diagram is a way to summarize details of a system and the users within that system. It is generally shown as a graphic depiction of interactions among different elements in a system.