1. What is software? What is software engineering?

Ans. Software is a program or set of programs containing instructions that provide desired functionality. And Engineering is the process of designing and building something that serves a particular purpose and finds a cost-effective solution to problems.

Software Engineering is the process of designing, developing, testing, and maintaining software. It is a systematic and disciplined approach to software development that aims to create high-quality, reliable, and maintainable software. Software engineering includes a variety of techniques, tools, and methodologies, including requirements analysis, design, testing, and maintenance.

2. Explain types of software.

Ans.   Types of Application Software

1) 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.

   Example:
   Microsoft Office, Paint, Powerpoint etc..

2) 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.
    - 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..

Example:
Notepad ,Calculator etc..

3) 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

. Example:
 Audio Driver,Video Driver etc..

4) 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.

Example:
 database middleware,application server middleware

5) 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.

Examples :

Turbo c,Eclipse,Sublime etc..

3. 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.

1) Planning:

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) Analysis:

This phase formally defines the detailed functional user requirements using high-level requirements identified in the Initiation and Feasibility Phases. The requirements are defined in this phase to a level of detail sufficient for systems design to proceed.

3) Design:

In SDLC, the design phase is a stage where software developers define the technical details of the product. Depending on the project, these details can include screen designs, databases, sketches, system interfaces, and prototypes. Clients use these details to make final product design choices.

4) Implementation:

This phase is initiated after the system has been tested and accepted by the user. In this phase, the system is installed to support the intended business functions. System performance is compared to performance objectives established during the planning phase.

5) Testing and integration:

Integration testing verifies the compatibility, reliability, and performance of the integrated system, and identifies any integration issues or defects. System testing evaluates the compliance, functionality, usability, and security of the system to ensure that it meets specifications and requirements.

6) Maintenance:

The maintenance phase in the software development process is where the software is monitored to ensure it continues to function as it was designed to, and repairs or upgrades are performed as needed. After the software is released into production, updates or upgrades will need to be made.
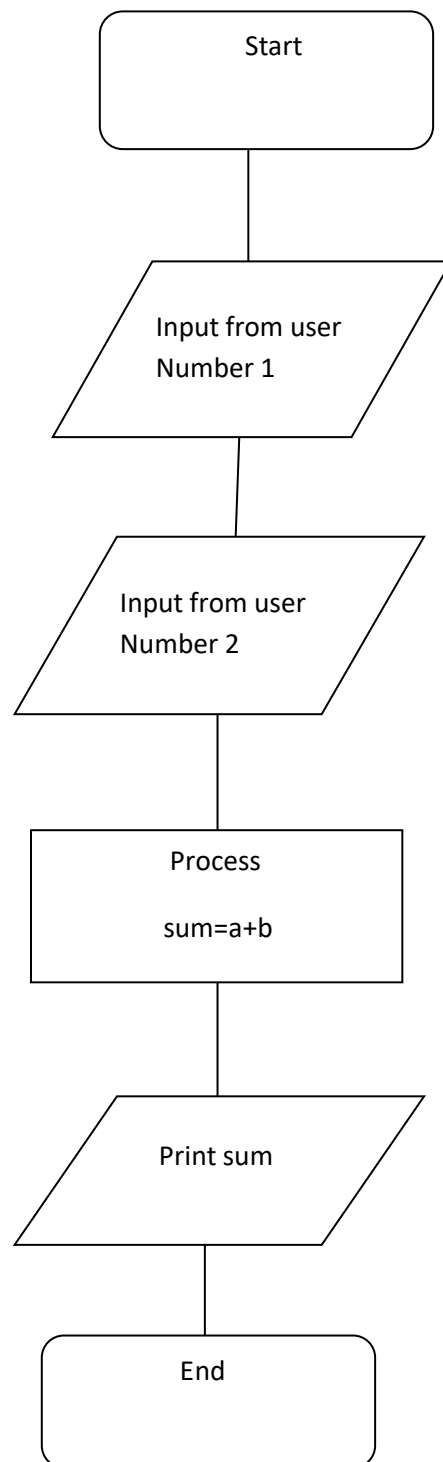
Q.4 What is DFD? Create a DFD diagram on Flipkart

Ans. A data flow diagram (DFD) maps out the flow of information for any process or system. It uses defined symbols like rectangles, circles and arrows, plus short text labels, to show data inputs, outputs, storage points and the routes between each destination.

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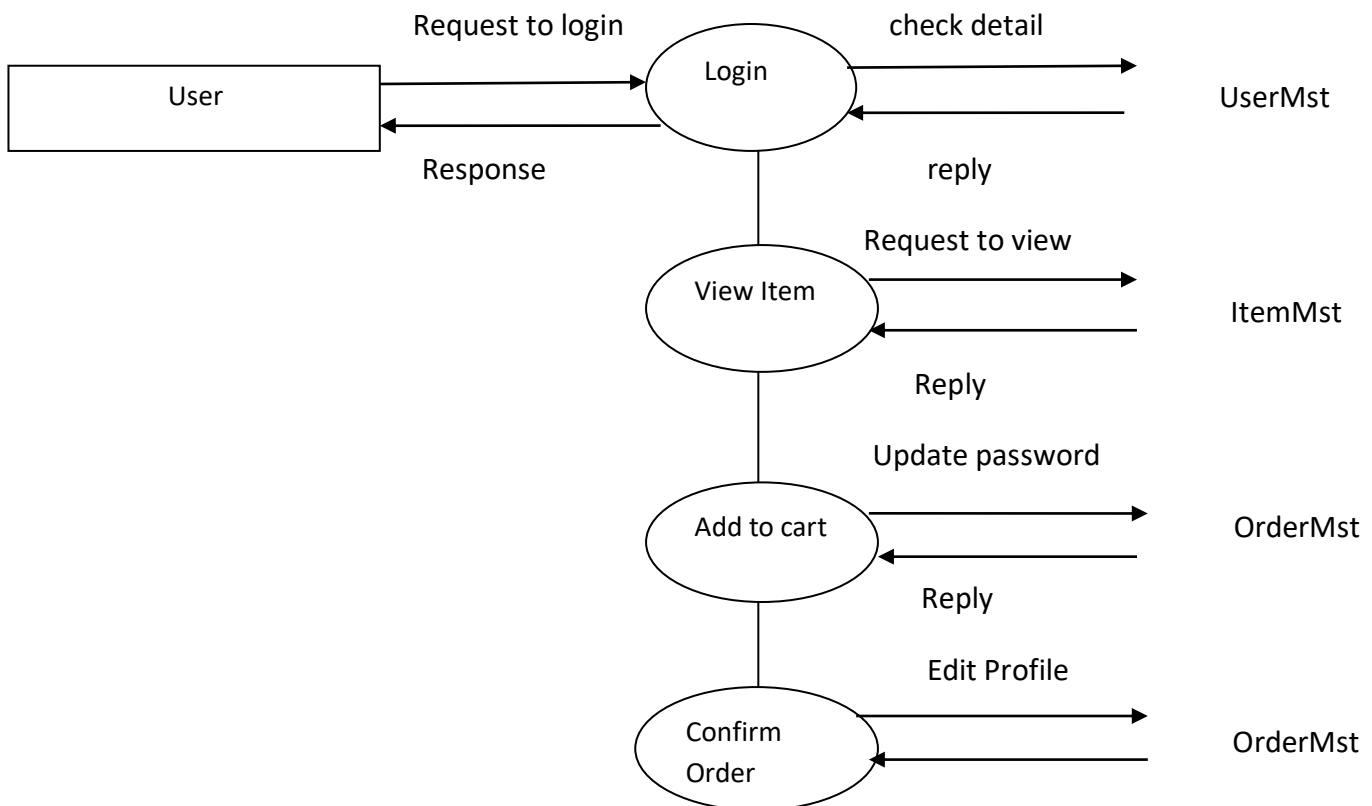
Q.5   What is Flow chart? Create a flowchart to make addition of two numbers

Ans.   A flowchart is a diagram depicting a process, a system or a computer algorithm. It is a diagrammatic representation of the solution to a given problem but, more importantly, it provides a breakdown of the essential steps to solving the problem.

```
        +-------------------+
        |      Start        |
        +-------------------+
                 |
           /------------------/
          /  Input from user /
         /    Number 1       /
        /------------------/
                 |
           /------------------/
          /  Input from user /
         /    Number 2       /
        /------------------/
                 |
        +-------------------+
        |     Process       |
        |                   |
        |     sum=a+b       |
        +-------------------+
                 |
           /------------------/
          /    Print sum     /
         /------------------/
                 |
        +-------------------+
        |       End         |
        +-------------------+
```

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

Ans. Class diagrams are the blueprints of your system or subsystem. You can use class diagrams to model the objects that make up the system, to display the relationships between the objects, and to describe what those objects do and the services that they provide. Class diagrams are useful in many stages of system design.