MODULE: 1

SE – Overview of IT Industry

1. What is software? What is software engineering?

Software is a set of instructions, data or programs used to operate computers and execute specific tasks.
It can also be called as set of commands.

Software Engineering:
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.

Software Engineering is required due to the following reasons:

- To manage large software
- For more Scalability
- Cost Management
- To manage the dynamic nature of software
- For better quality Management

2. Explain types of software.

There are 5 types of software:

- **Application software:**
  Application software is a computer software package that performs a specific function for a user, or in some cases, for another application.

As an example: chrome, WhatsApp, etc

- **System software:**
  These software programs are inbuilt software. These software programs are designed to run a computer's application programs and hardware.
  As an example: Notepad, calc, etc

- **Driver software:**
  It is 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 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.

- **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.
  As an example: vscode, turbo c++, etc**.**

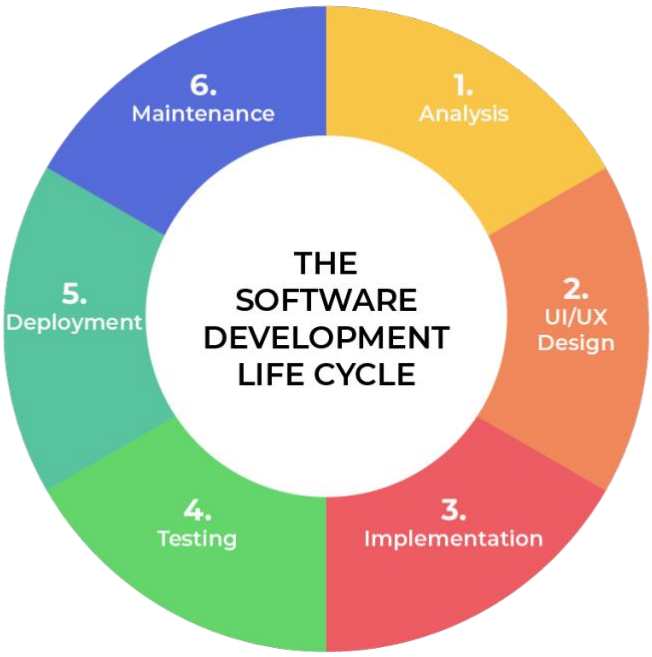
3. What is SDLC? Explain each phase of SDLC.

SDLC stands for Software Development Life Cycle.

A life cycle model represents all the methods required to make a software product transit through its life cycle stages.

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

SDLC is a process followed for software building within a software organization.



Stage1: Planning and requirement analysis

- Requirement Analysis is the most important and necessary stage in SDLC.
- Planning is a crucial step in everything, just as in software development. In this same stage, requirement analysis is also performed by the developers of the organization.
- This is attained from customer inputs, and sales department/market surveys.

Stage2:Designing the Software

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

Stage3:Implementation/developing the software

- In this phase of SDLC, the actual development begins, and the programming is built.

Stage4:Testing

- After the code is generated, it is tested against the requirements to make sure that the products are solving the needs addressed and gathered during the requirements stage.
- During this stage, unit testing, integration testing, system testing, acceptance testing are done.

Stage5:Deployment

- Once the software is certified, and no bugs or errors are stated, then it is deployed.
- Then based on the assessment, the software may be released as it is or with suggested enhancement in the object segment.

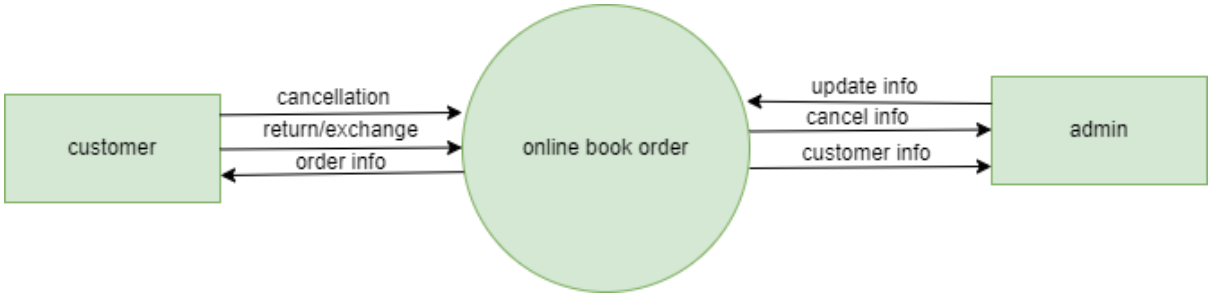
Stage6:Maintanance

- Once when the client starts using the developed systems, then the real issues come up and requirements to be solved from time to time.
- This procedure where the care is taken for the developed product is known as maintenance.

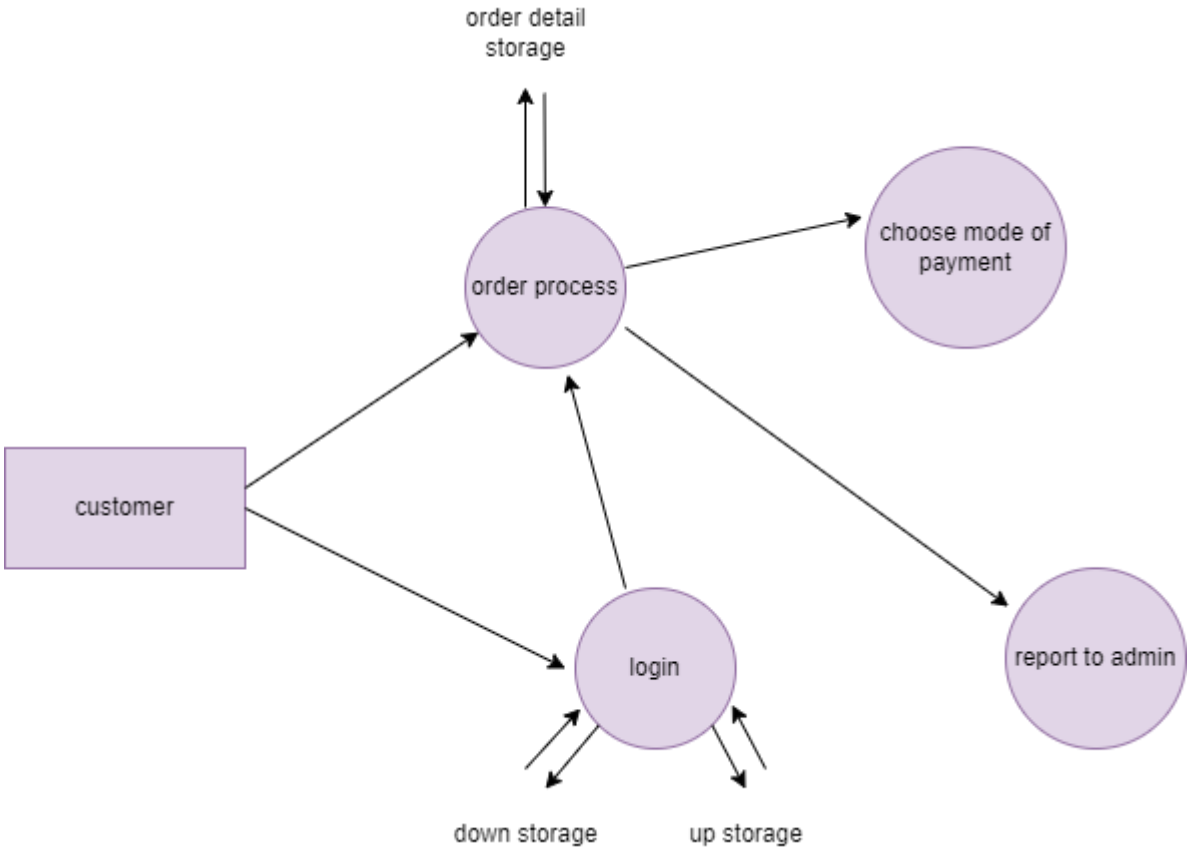
4. What is DFD? Create a DFD diagram on Flipkart.

A data-flow diagram is a way of representing a flow of data through a process or a system.

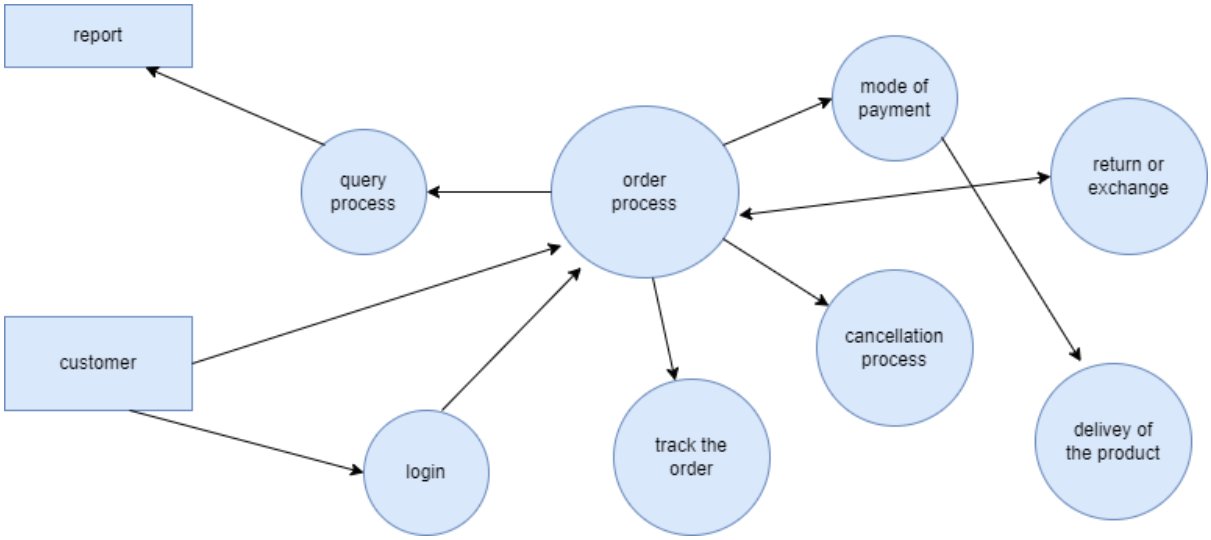
The DFD also provides information about the outputs and inputs of each entity and the process itself.



[0 Level DFD]



[1 Level DFD]



[2 Level DFD]

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.
- A flowchart can also be defined as a diagrammatic representation of an algorithm, a step-by-step approach to solving a task.

- The flowchart shows the steps as boxes of various kinds, and their order by connecting the boxes with arrows.

- **Algorithm:** An algorithm is a set of commands that must be followed for a computer to perform calculations or other problem-solving operations.

```
#include<stdio.h>
int main(){
    int n1,n2,ans;

    printf("Enter 2 values: ");
    scanf("%d%d",&n1,&n2);
```

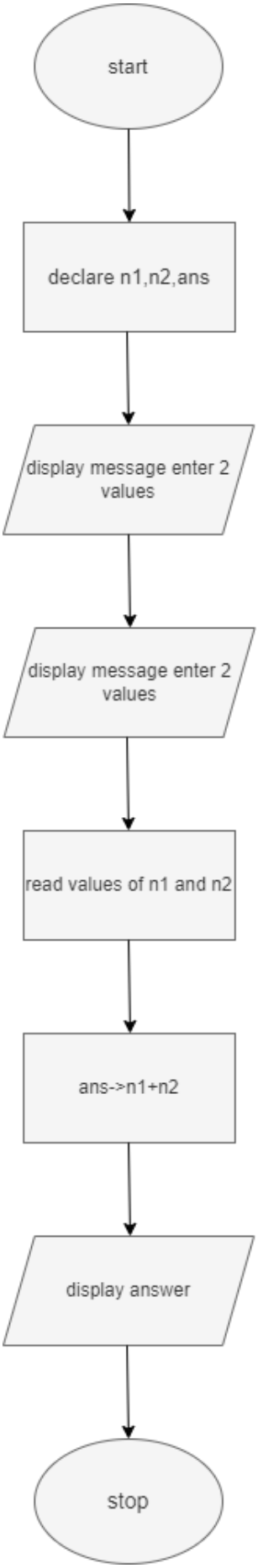
```
    ans=n1+n2;
    printf("Answer is %d",ans);

return 0;
}
```

Algorithm:

1) start
2) declare n1,n2,ans
3) display message enter 2 values
4) read values of n1 and n2
5) ans->n1+n2
6) display answer
7) stop

Flowchart:


start
declare n1,n2,ans
display message enter 2 values
display message enter 2 values
read values of n1 and n2
ans->n1+n2
display answer
stop

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

- A use case diagram is a graphical depiction of a user's possible interactions with a system.

- Use-case diagrams illustrate and define the context and requirements of either an entire system or the important parts of the system.