**MODULE: 1 (SDLC)**

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

Software is language of computer. When computer is set with predefined instruction to perform in certain functions upon giving certain inputs or conditions.

It is a program or set of programs containing instructions to get expected outcome.

Software Engineering

SE is art of developing quality software. It is systematic approach to design, development, operation and maintenance of software system.

**2. Explain types of software**

There are mainly 3 types of software depending on their use and application:

1. System Software or Operating System

System software support basic functionality of computer and connected with computer hardware that helps to run computer smoothly. E.g. Window Operating System (13 is latest one), android and IOS for mobile.

1. Application Software

This includes software that support user to perform various tasks.

* Mobile Application like Facebook, Amazon, different Banking Applications, Netflix,etc
* Desktop Application like MS Office, Team, Chrome, Games like GTA, etc
* Web Application like MakeMyTrip, Google.com, Tops Career Centre, etc.

1. Programming Software

This is process of designing, writing, testing, debugging and maintaining the source code of computer program. This will be required to create new program or making changes in any existing program. E.g. C, C++, java, html, Python,etc

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

SDLC is series of phases that help in preparing model for development and lifecycle management for any applications or software. The development of software start from planning, implementation, testing, documentation, deployment, and ongoing maintenance and support.

**SDLC Phases**

Requirement Gathering :- Under this phase, we need to understand the requirement of Customer / User. Need to check with their usage scenario, any example can help to relate with expectation. We may have Feature/Story for the same. Need to keep in mind that documentation in written form may be incomplete and requirement may be change so we need to plan to accommodate such change. Constant validation will be required through out the life cycle not only at the end. Requirement can be Functional (describe system service or function) or Non-Functional (any constraints on system or process).

Analysis :- Post getting requirement, under this phase, need to analyze the requirement of the system and how it will be accomplished. At the end of this phase, we need to have requirement document which will clearly precise what is to be built. The architecture will define the component, their interfaces and behavior. It also include details study of programming languages, their environments, machines, packages, memory size, platforms, algorithms, date structure, interface and other engineering details need to be established.

Design :- Need to design Architecture document, implementation plan, priority analysis, performance analysis, test plan, all these will lead to higher quality product.

Implementation :- The team start building things either from scratch or by composition. Given Architecture document and Requirement document, team should build what have been requested and will check for any scope for innovation and flexibility. Team have to deal with several issues like quality, performance, baselines, libraries and debugging.

Testing :- Quality product will be key to build customer loyalty and can wait for new functionality in coming version. Quality can be improved through testing. It consisting Regression Testing, Internal Testing, Unit Testing, Application Testing, Stress testing. Post implementation, testing to be performed by different teams. It is hard to once own mistake and a fresh eye can discover obvious catch error much faster.

Maintenance :- Maintenance is the process of changing a system after it deployed.

Corrective Maintenance - identifying and repairing defects

Adaptive Maintenance – adapting the existing solution to the new platforms.

Perfective Maintenance – implementing the new requirement.

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

DFD represent the flow of data within information systems. It can be understood by both technical and non-technical users. It visually represents the flow of data throughout processes in a given system that can help to understand process quickly.

Customer

Give Order Details like Address

Search Product on Website

Sign Up

Payment Option

Login on Site

Confirm Product for Purchase

(Click on Buy Now)

Order Confirmation sent communication

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

A flow chart is a diagram that support the steps, sequences and decisions of a process or workflow. It is a graphical representation of the operations involved in a data processing system.

Start

Start

5, 6

Number1, Number 2

Sum=5+6

Sum=Number1+number2

11

Display Sum

End

End

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

A Use case diagram provide visual representation of how user interact with system. This diagram illustrates a set of use cases for a system, i.e. the actors and the relationships between the actors and use cases.