**ASSIGNMENT 1**

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

**ANS1.** 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.

The two main categories of software are application software and system software.

* An application is software that fulfils a specific need or performs tasks.
* System software is designed to run a computer's hardware and provides a platform for applications to run on top of.

Software Engineering is an engineering branch related to the evolution of software product using well-defined scientific principles, techniques, and procedures. The result of software engineering is an effective and reliable software product.

Importance of Software engineering are as follows:

* Reduces complexity
* To minimize software cost
* To decrease time.
* Handling big projects
* Reliable software
* Effectiveness

1. **Explain types of software ?**

**ANS2.** Types of software

**Application Software**

* The most common type of 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.

**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.

**Driver 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.

**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.

**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.

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

ANS3.It is a systematic approach followed by software development teams to design,

develop, test & maintain high quality software. It consists of several phases or stages that guide the entire software development process.

SDLC methodology focuses on the following phases of software development:

* Requirement Gathering
* Analysis
* Designing
* Implementation
* Testing
* Maintenance
* Requirement Gathering

This stage involves gathering of information about your needs, system functionality & project constraints.

* Analysis

Once the requirements are gathered, the development team analyses the to determine the software’s architecture, components & system design.

* Designing

This phase focuses on creating a blueprint for the software solution.

* Implementation

In this phase, development team writes code according to design specifications.

* Testing

In this phase the software is tested to identify defects, bugs & ensure it meets the specified requirements.

* Maintenance

After the software is tested, it enter the maintenance phase, it provides ongoing support, bug fixes, updates & enhancements user feedback, monitoring performance & ensuring the software remains up to date.

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

ANS4. 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.

Levels in DFD are numbered 0, 1, 2 or beyond.

It is also known as fundamental system model, or context diagram represents the entire software requirement as a single bubble with input and output data denoted by incoming and outgoing arrows.

In 1-level DFD, a context diagram is decomposed into multiple processes. In this level, we highlight the main objectives of the system and breakdown the high-level process of 0-level DFD into subprocesses.

2-level DFD goes one process deeper into parts of 1-level DFD. It can be used to project or record the specific/necessary detail about the system's functioning.

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

ANS5. The graphical representation of the data or the algorithm for a better understanding

of the code visually. It displays step-by-step solutions to a problem, algorithm, or process. It is a pictorial way of representing steps that are preferred by most beginner-level programmers to understand algorithms of computer science, thus it contributes to troubleshooting the issues in the algorithm.

Flowchart help us visualize complex processes, or make explicit the structure of problems and tasks. A flowchart can also be used to define a process or project to be implemented.

1. **What is use case diagram? Create a use case on bill payment on Paytm.**

ANS6. A use case diagram is used to represent the dynamic behaviour of a system. It

encapsulates the system's functionality by incorporating use cases, actors, and their relationships. It models the tasks, services, and functions required by a system of an application. It depicts the high-level functionality of a system and also tells how the user handles a system.

Importance of use case diagram

* It gathers the system's needs.
* It depicts the external view of the system.
* It recognizes the internal as well as external factors that influence the system.
* It represents the interaction between the actors.