## Software Engineering Assignment

### Module: 1

## SE-Overview of IT Industry

## 1.What is software? What is software engineering?

Ans. Software refers to a set of instructions, programs, and data that enable a computer or a computing device to perform specific tasks. It encompasses a wide range of applications, from simple scripts to complex operating systems, and it plays a crucial role in the functionality of computers, smartphones, tablets, and other electronic devices.

Software engineering is a systematic approach to the design, development, testing, and maintenance of software. It involves applying engineering principles to the entire software development process to ensure the creation of high-quality, reliable, and scalable software systems.

## 2.Explain types of software.

Ans. The two main categories of software are application software and system software. An application is software that fulfills 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 other types of software include programming software, which provides the programming tools software developers need; middleware software, which sits between system software and applications; and driver software, which operates computer devices and peripheral.

### 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, Power-point etc.

### 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.

### 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.

### 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.

### 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. The Software Development Life Cycle (SDLC) refers to a methodology with clearly defined processes for creating high-quality software. in detail, the SDLC methodology focuses on the following phases of software development:

### Requirement Gathering:

Requirements gathering is the process of identifying and defining what a software system needs to do to meet the needs of its users. It involves talking to stakeholders, analyzing user needs, and defining clear specifications that developers can use to build the system.

### Analysis:

The purpose of the Analysis Phase is to thoroughly examine and evaluate the viable options identified in the Feasibility Phase and to arrive at an optimum high-level solution that will satisfy the client's requirements and the project's constraints.

### Designing:

The design phase of the Software Development Life Cycle (SDLC) is a critical step in developing the conceptual blueprint of a software project. This phase involves transforming the software requirements gathered during the Requirements Analysis phase into a structured design document.

### Implementation:

During the implementation stage, developers complete the application per established specifications. Security activities in this stage focus on technology-specific secure coding guidelines as well (automated) code reviews.

### Testing:

Once the developers build the software, then it is deployed in the testing environment. Then the testing team tests the functionality of the entire system. In this fifth phase of SDLC, the testing is done to ensure that the entire application works according to the customer requirements.

### Maintenance:

The maintenance phase happens after the project team deploys the software and it's fully operational in the customer environment. During the maintenance phase, the customer monitors the software to ensure it continues to operate according to the coding specifications.

## 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. DFD diagram on Flipkart is in same folder as ‘Flipkartdfd.png’.

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

Ans.  A flowchart is a type of diagram that represents an algorithm, workflow or process. The flowchart shows the steps as boxes of various kinds, and their order by connecting the boxes with arrows. This diagrammatic representation illustrates a solution model to a given problem. Flowchart to make addition of two numbers is in same folder as ‘Flowchart.drawio.png’.

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

Ans. Use-case diagrams describe the high-level functions and scope of a system. These diagrams also identify the interactions between the system and its actors. The use cases and actors in use-case diagrams describe what the system does and how the actors use it, but not how the system operates internally. Find use-case diagram for bill payment on paytm in same folder as ‘paytmuc.png’.