**Assignment : Module - 1**

**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 is the opposite of hardware, which describes the physical aspects of a computer. Software is a generic term used to refer to applications, scripts and programs that run on a device.
* Software engineering is the process of developing, testing and deploying computer applications to solve real-world problems by adhering to a set of engineering principles and best practices. The field of software engineering applies a disciplined and organized approach to software development with the stated goal of improving quality, time and budget efficiency, along with the assurance of structured testing and engineer Certification.

**2. Explain types of software.**

* There are five types of 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.

Examples :- 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.

Examples :- 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.

Examples :- 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.

Examples :- 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.**

* 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:

**1. Requirement Gathering** :- Requirements gathering is the process of identifying your project's exact requirements from start to finish. This process occurs during the project initiation phase, but you'll continue to manage your project requirements throughout the entire project timeline.

**2. Analysis :-** During this software development lifecycle phase, the specialists meticulously collect precise requirements from the customer to present a solution fine-tuned to their needs. Any unclarities must be elucidated in this stage only.

The analysis phase also gathers business requirements and identifies any potential risks. This step in SDLC also includes a feasibility study, which defines all fortes and weak points of the project to assess the overall project viability.

**3. Designing :-** In the design phase, one or more designs are developed, with which the project result can apparently be achieved. Depending on the subject of the project, the products of the design phase can include dioramas, sketches, flow charts, site trees, HTML screen designs, prototypes, photo impressions and UML schemas.

**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. Implementation includes user notification, user training, installation of hardware, installation of software onto production computers, and integration of the system into daily work processes. This phase continues until the system is operating in production in accordance with the defined user requirements.

**5. 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.

**6. 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.**

* 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. Data flow diagrams are well suited for analysis or modeling of various types of systems in different fields.

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

* A flowchart is a type of [diagram](https://en.wikipedia.org/wiki/Diagram) that represents a [workflow](https://en.wikipedia.org/wiki/Workflow) or [process](https://en.wikipedia.org/wiki/Process). A flowchart can also be defined as a diagrammatic representation of an [algorithm](https://en.wikipedia.org/wiki/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. This diagrammatic representation illustrates a solution model to a given [problem](https://en.wikipedia.org/wiki/Problem_solving). Flowcharts are used in analyzing, designing, documenting or managing a process or program.

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

* 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.