Software Engineering Assignment

# module- 01

## SE – Overview of IT industry

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

Software is a computer program which is used to collect the information & data processing.

* It is designed to operate multiple work/ task between user and computer.
* It is a collection of instruction data or programs that tell a computer how to perform any specific tasks.
* It is not any physical component of a computer system.
* It is intangible (untouchable) component of computer is opposed to hardware.

**There are two types of software**

* **Application software**
* **System software**

**Software Engineering: -** Software Engineering is the branch of Software Development. It is disciplined and systematic Approach to develop, maintain, operate to any software. It Uses/applies engineering principle to create any software according to user requirements.

**Process of software engineering to create software:-**

**Planning Analysis**

**Maintenance Design**

**Testing Implementation**

1. **Explain types of software.**

**There are mainly two types of software**

* Application Software
* System Software

**Application software: -**

* A software which is used to perform any particular task on regular basis.
* Application software are programs and application designed to perform specific task & functions for end- users.
* The primary purpose is to enhance user productivity & efficiency.

**Types of Application Software:**

**4) Mobile Application:**

These applications run on smartphones and tablets and provide mobile-specific functionalities.

**EX.**

**Messaging Apps** (WhatsApp, Telegram)

**Social Media Apps** (Instagram, Snapchat)

**Navigation Apps** (Google Maps, Waze)

**Fitness Apps** (MyFitnessPal, Strava)

**5) Educational Application Software:**

**EX.**

**E-learning Plateform**(Moodle, Blackboard),

**Language Learning** (Duolingo, Rosetta Stone),

**Virtual Classroom Software** (Zoom, Google classroom)

**6) Multimedia Application Software:**

**EX.**

**Video Editing Software**

**Audio Editing Software**

**Media Players.**

**7) Productivity Application Software:**

**EX.**

**Note-Taking Apps,**

**Project Mgmt. Tools (Trello, Asana),**

**Time Management Tools (Todoist, Rescue Time)**

1. **General-Purpose Application Software**:

This software is meant to perform common, day-to-day tasks.

**EX.**

**Word processors (**Microsoft Word, Google Docs ),

**Spreadsheets** (Microsoft Excel, Google Sheets),

**Presentation Software (**Microsoft PowerPoint, Google Slides)

and **Email.**

**2)** **Special-Purpose Application Software**:

This software is designed to perform specific tasks and industry-specific functions.

**EX.**

**Graphics Design** (Adobe Photoshop, CorelDRAW)

**CAD Software** (AutoCAD, SolidWorks)

**Accounting Software** (QuickBooks, Tally)

**Medical Software** (Electronic Health Records (EHR) systems, Medical Imaging Software )

**3)** **Web Application Software**:

These applications are accessed through web browsers and run on web servers.

**EX.**

**Email Services** (Gmail, Yahoo mail)

**Social Media Plateform** (Facebook, Twitter)

**Online Storage Services** (Google Drive, Dropbox)

**E-commerce Plateform** (Amazon, eBay)

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**Project Mgmt. Tools (Trello, Asana),**

**Time Management Tools (Rescue Time)**

**System Software: -**

* System Software is the software that provides an interface between computer hardware **Software:**
* and application software and manages system resources.
* Its main objective is to make the computer system operate smoothly and efficiently and to facilitate the interaction between the user and the hardware

**Types of System Software:-**

**1) Operating System**: OS is the primary software of the computer system that performs basic functions.

* **User Interface (**Provides a command-line interface.),
* **Memory Management** (Allocates and uploads system memory.),
* **Process Management (**Manages running applications.)
* **File System Management (**Organizes and manages files and directories.)
* **Device Management (**Controls and coordinates hardware devices.)

**Ex.** **Window, iOS, Mac**

**2) Device Drivers**: Device drivers enable communication with specific hardware devices. This software provides Hardware Abstraction Layer (HAL).

* **Command Translation:** Translates the commands coming from the user and the operating system into the language understandable by the hardware.
* **Hardware Control:** Specific hardware controls the components and ensures their proper functioning.

Ex. Printer drivers, Graphic drivers, Network drivers.

**3) Utility Software**:

* The utility software performs system maintenance and optimization tasks.
* These software tools enhance system performance and provide security.
* **System Security:** Protects against viruses and malware.
* **File Management:** Organizes and manages files.
* **System Performance Monitoring:** Monitors and optimizes system performance.

**Ex.** **Antivirus software, Disk cleanup tools, Backup software.**

**4) Firmware**: Firmware is the built-in software of specific hardware devices that provides basic control and operational functions.

* **Hardware Initialization:** Initializes the basic hardware component when the device is power-on.
* **Hardware Control:** Performs device-specific control function.

Ex. BIOS in computers

Firmware in routers

embedded software in consumer electronics

**Driver Software:** Ex. Printer driver, Graphic driver, Network driver, Sound driver, USB driver.

**Middleware Software.**

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

SDLC: - System Development life cycle

* SDLC is a structured approach to developing software application.
* It provides a systematic process for planning creating testing and developing software.
* SDLC ensure That high quality software is delivered efficiently and cost effectively (Successfully).

**The main phases of SDLC are: -**

1. **Planning: -**

* In this phase the scope feasibility and objectives of the project are defined.
* Determine project requirements and goals.
* Estimate resource budget and timeline.
* Risk analysis is also the part of this phase.

1. **Requirement/ Analysis: -**

* Gather and analyze business and user requirements.
* Functional and nonfunctional requirement are documented.
* Create a system requirement specification (SRS) document.

1. **Design: -**

* Develop a blueprint for the system.
* In this phase low level and high-level design documents are prepare.
* Design database user interfaces and system interaction.

1. **Implementation: -**

* Developers write code based on the design document.
* Translate design document into executable code.
* Use control version system to manage code.
* Perform code reviews and unit testing to ensure quality.

1. **Testing: -**

* Verify that the software mix requirements and bug free.
* Testing injured did the software is working according to the specifications.
* Bug and defect are identified and fixed.
* Various test conduct as Unit testing, Integration testing, System Testing, Acceptance testing.

1. **Maintenance: -**

* Monitor the software performance
* Address bugs and issues reported by users
* Implement updates enhancement (improvement) and new features as needed.

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

**DFD: -** Data Flow Diagram

* Data flow diagram is a graphical representation of the data flow.
* It processed by a system in terms of input and output.
* Dataflow diagram are used to visualize the data processing within a system.
* It makes a process easier to understand and identify areas for improvement.
* We can take shapes according to our choice.
* It is used for system analyzing end to understand its working easily.

**Data Flow diagram for Flipkart:**

**Enter Mo. No.**

**Database**

**Enter password**

**Database**

**Product request**

**Database**

**View Product**

**WISHLIST**

**ADD into CART WISHLIST**

**BUY ADD into CART WISHLIST**

**`**

**Order Confirmed**

**Enter Address**

**COD/ Online Payment confirmed**

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

* A flow chart is a process to represent the flow of data through diagram
* To represent or illustrate the flow of process, it uses various such as over rectangle diamond and arrows.
* flow chart is useful for understanding & analyzing the steps
* Flowchart uses particular shapes for each process.

**Basic structure of flowchart representation**

**Start**

**Stop**

**Process**

**Input**

**Output**

(If output is

not process)

**Flowchart to addition of two numbers: -**

**Start**

**(Begin the process)**

**Stop/End**

**(End the process)**

**Process**

**(Addition of two numbers)**

**A+B**

**Input A**

**Output**

**(Display the result of addition**

**Input B**

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

Use case diagram is a type of UML. Which means Unified modeling language. It represents the functional requirement of a system and show that how user interact with the system to achieve specific goals.

* use case diagram are helpful in visualizing or imagination of system functionality.
* It makes easier to understand the interaction between the system and its external entities.

**Use case diagram for Paytm: -**

 