**MODULE: 1 (SDLC)**

1. What is software? What is software engineering?

* **Software Engineering** is the process of designing, developing, testing, and maintaining software. It is a systematic and disciplined approach to software development that aims to create high-quality, reliable, and maintainable software.

1. Software engineering includes a variety of techniques, tools, and methodologies, including requirements analysis, design, testing, and maintenance.
2. It is a rapidly evolving field, and new tools and technologies are constantly being developed to improve the software development process.
3. By following the principles of software engineering and using the appropriate tools and methodologies, software developers can create high-quality, reliable, and maintainable software that meets the needs of its users.
4. Software Engineering is mainly used for large projects based on software systems rather than single programs or applications.
5. The main goal of Software Engineering is to develop software applications for improving quality,  budget, and time efficiency.
6. Software Engineering ensures that the software that has to be built should be consistent, correct, also on budget, on time, and within the required requirements.
7. Explain types of software.

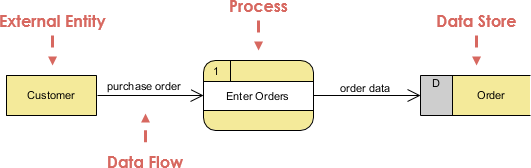
* **System Software**
* [System software](https://www.geeksforgeeks.org/system-software/)is software that directly operates the [computer hardware](https://www.geeksforgeeks.org/computer-hardware/) and provides the basic functionality to the users as well as to the other software to operate smoothly. Or in other words, system software basically controls a computer’s internal functioning and also controls hardware devices such as monitors, printers, and storage devices, etc. It is like an interface between hardware and user applications, it helps them to communicate with each other because hardware understands machine language(i.e. 1 or 0) whereas user applications are work in human-readable languages like English, Hindi, German, etc. so system software converts the human-readable language into machine language and vice versa.
* **Types of System Software**
* It has two subtypes which are:
* **Operating System:** It is the main program of a computer system. When the computer system ON it is the first software that loads into the computer’s memory. Basically, it manages all the resources such as [computer memory](https://www.geeksforgeeks.org/computer-memory/), [CPU](https://www.geeksforgeeks.org/central-processing-unit-cpu/), [printer](https://www.geeksforgeeks.org/what-is-a-printer/), hard disk, etc., and provides an interface to the user, which helps the user to interact with the computer system. It also provides various services to other computer software. Examples of operating systems are [Linux](https://www.geeksforgeeks.org/introduction-to-linux-operating-system/), Apple macOS, [Microsoft Windows](https://www.geeksforgeeks.org/interesting-facts-about-windows/), etc.
* **Language Processor:**As we know that system software converts the human-readable language into a machine language and vice versa. So, the conversion is done by the language processor. It converts programs written in high-level [programming languages](https://www.geeksforgeeks.org/introduction-to-programming-languages/) like[Java](https://www.geeksforgeeks.org/introduction-to-java/), [C](https://www.geeksforgeeks.org/c-plus-plus/),[C++](https://www.geeksforgeeks.org/c-plus-plus/), [Python](https://www.geeksforgeeks.org/history-of-python/), etc(known as source code), into sets of instructions that are easily readable by machines(known as object code or machine code).
* **Device Driver:**A [device driver](https://www.geeksforgeeks.org/device-driver-and-its-purpose/)is a program or software that controls a device and helps that device to perform its functions. Every device like a printer, mouse, [modem](https://www.geeksforgeeks.org/how-to-install-a-modem/), etc. needs a driver to connect with the computer system eternally. So, when you connect a new device with your computer system, first you need to install the driver of that device so that your operating system knows how to control or manage that device.
* **Application Software**
* Software that performs special functions or provides functions that are much more than the basic operation of the computer is known as [application software](https://www.geeksforgeeks.org/what-is-application-software/). Or in other words, application software is designed to perform a specific task for end-users. It is a product or a program that is designed only to fulfill end-users’ requirements. It includes word processors, [spreadsheets](https://www.geeksforgeeks.org/introduction-to-excel-spreadsheet/), database management, inventory, payroll programs, etc.
* **Types of Application Software**
* There are different types of application software and those are:
* **General Purpose Software:**This type of application software is used for a variety of tasks and it is not limited to performing a specific task only. For example, MS-Word, MS-Excel, PowerPoint, etc.
* **Customized Software:**This type of application software is used or designed to perform specific tasks or functions or designed for specific organizations. For example, [railway reservation system](https://www.geeksforgeeks.org/railway-reservation-system-in-c/), airline reservation system, invoice management system, etc.
* **Utility Software:**This type of application software is used to support the computer infrastructure. It is designed to analyze, configure, optimize and maintains the system, and take care of its requirements as well. For example, [antivirus](https://www.geeksforgeeks.org/how-an-antivirus-works/), disk fragmenter, memory tester, disk repair, disk cleaners, registry cleaners, disk space analyzer, etc.

1. What is SDLC? Explain each phase of SDLC

* SDLC (Software Development Life Cycle) is used in Every Software Development Company because it is the root of the Development Cycle, if that model would not exist in the world, firstly no software can build secondly if any how it would be made, it’s not going to succeed it has no use, because of no maintenance, but Luckily SDLC model exist in Tech world But why we need it Actually!
* There are several reasons why organizations use the Software Development Life Cycle (SDLC) when developing software applications:
* To provide a structured and organized approach to software development: The SDLC provides a framework for managing the software development process, which helps to ensure that all necessary steps are taken and that the final product meets the requirements. **To ensure that the software is of high quality:**The SDLC includes testing and quality assurance phases, which help to ensure that the software is free of bugs and that it meets the requirements.
* **2.**[**To manage risks and costs:**](https://www.geeksforgeeks.org/software-risk-analysis/)The SDLC helps organizations to identify and manage risks early in the development process, which can help to reduce costs and minimize the impact of any issues that do arise.
* **3.To improve communication and collaboration:**The SDLC helps to ensure that all stakeholders, including customers, end-users, and developers, are involved in the development process and that their needs are taken into account.
* **4.To improve efficiency and productivity:**The SDLC helps organizations to optimize the use of resources and to streamline the development process, which can improve efficiency and productivity.
* **5.To increase the likelihood of a successful project outcome:** Following a well-defined SDLC process can greatly increase the chances of success of the project, as the process guides the team towards the goal in a systematic and efficient way.

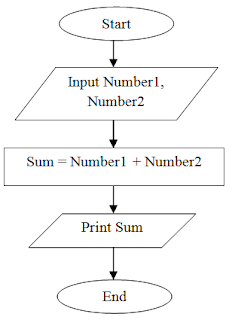
1. What is DFD? Create a DFD diagram on Flipkart

* DFD is the abbreviation for Data Flow Diagram. The flow of data of a system or a process is represented by DFD. It also gives insight into the inputs and outputs of each entity and the process itself. DFD does not have control flow and no loops or decision rules are present.



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

* A flowchart is a picture of the separate steps of a process in sequential order. It is a generic tool that can be adapted for a wide variety of purposes, and can be used to describe various processes, such as a manufacturing process, an administrative or service process, or a project plan.



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

* 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. Use-case diagrams illustrate and define the context and requirements of either an entire system or the important parts of the system.

