1. What is software?

"**Software is a set of programs (sequence of instructions) that allows the users to perform a well-defined function or some specified task.**"

1. What is software engineering?

**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.

1. Explain types of software

Software's are broadly classified into two types, i.e., **System Software and Application Software**.

1. **System Software : -**

System software **is a computer program that helps the user to run computer hardware or software and manages the interaction between them**. Essentially, it is software that **constantly runs in the computer background, maintaining the computer hardware and computer's basic functionalities, including the operating system, utility software, and interface**. In simple terms, you can say that the system acts as a middle man that checks and facilitates the operations flowing between the user and the computer hardware.

System software is not limited to the operating system. They also include the basic I/O system procedures, the boot program, assembler, computer device driver, etc. This software supports a high-speed platform to provide effective software for the other applications to work in effortlessly. Therefore system software is an essential part of your computer system. **They are the first thing that gets loaded in the system's memory wherever you turn on your computer**. **System software is also known as "low-level software**" because the end-users do not operate them. Companies usually employ the best software development programmers who can deploy efficient system software.

1. **Application Software**. :-

**Application programs or software applications are end-user computer programs developed primarily to provide specific functionality to the user.** The applications programs assist the user in accomplishing numerous tasks such as doing **online research, completing notes, designing graphics, managing the finances, watching a movie, writing documents, playing games, and many more**. Therefore, many software applications are designed and developed every year by companies as per the demand and requirements of the potential users. The application software can either be designed for a general-purpose or specially coded as per the requirements of business cooperation.

Today there are varieties of application software available in the market. Given below are some of the popular examples:

1. Word processor :-

Word processor applications are globally **used for documentation, making notes, and typing data.** It also helps the end-users store and format data. They also enable the users to print their documents.

Some examples of Word Processor software's are as follows:

* MS Word (Microsoft)
* iWork-Pages (Apple)
* Corel WordPerfect
* Google Docs

1. Database software :-

Database software is **used to create, manage, modify and organize a massive amount of data quickly retrieved.** Another name for database software **is Database Management System (DBMS).** Such software helps companies in their data organization. Common examples of Database Software's are:

* Oracle
* MS Access
* SQLite
* Microsoft SQL Server
* FileMaker
* dBase
* MariaDB
* MySQL

C . Multimedia software : -

This software **enables the users to play, create or record images, music, and video files.** Different graphic designing companies widely use multimedia software to make animation, images, posts, packaging, marketing creative, gif, or even video editing. Due to their popularity and increasing demand, every software product development corporation has massive avenues in creating and upgrading them.

Common examples of Database Software's are given below:

* Adobe Photoshop
* Windows Movie Maker
* Adobe Illustrator
* Picasa
* Windows Media Player
* Corel Draw

D . **Web browsers :-**

These are a type of software that is globally used to browse the Internet. **Web browsers help the users in positioning as well as fetching data across the web.** Common examples of web browsers are given below:

* Chrome
* Mozilla Firefox
* Microsoft Internet Explorer
* Opera
* Microsoft Edge
* UC Browser
* Apple Safar

1. What is SDLC?

A software life cycle model (also termed process model) is a pictorial and diagrammatic representation of the software life cycle. A life cycle model represents all the methods required to make a software product transit through its life cycle stages. It also captures the structure in which these methods are to be undertaken.

1. Explain each phase of SDLC

**Stage1: Planning and requirement analysis**

Requirement Analysis is the most important and necessary stage in SDLC.

The senior members of the team perform it with inputs from all the stakeholders and domain experts or SMEs in the industry.

Planning for the quality assurance requirements and identifications of the risks associated with the projects is also done at this stage.

Business analyst and Project organizer set up a meeting with the client to gather all the data like what the customer wants to build, who will be the end user, what is the objective of the product. Before creating a product, a core understanding or knowledge of the product is very necessary.

**For Example**, A client wants to have an application which concerns money transactions. In this method, the requirement has to be precise like what kind of operations will be done, how it will be done, in which currency it will be done, etc.

Once the required function is done, an analysis is complete with auditing the feasibility of the growth of a product. In case of any ambiguity, a signal is set up for further discussion.

Once the requirement is understood, the SRS (Software Requirement Specification) document is created. The developers should thoroughly follow this document and also should be reviewed by the customer for future reference.

**Stage2: Defining Requirements**

Once the requirement analysis is done, the next stage is to certainly represent and document the software requirements and get them accepted from the project stakeholders.

This is accomplished through "SRS"- Software Requirement Specification document which contains all the product requirements to be constructed and developed during the project life cycle.

**Stage3: Designing the Software**

The next phase is about to bring down all the knowledge of requirements, analysis, and design of the software project. This phase is the product of the last two, like inputs from the customer and requirement gathering.

**Stage4: Developing the project**

In this phase of SDLC, the actual development begins, and the programming is built. The implementation of design begins concerning writing code. Developers have to follow the coding guidelines described by their management and programming tools like compilers, interpreters, debuggers, etc. are used to develop and implement the code.

**Stage5: Testing**

After the code is generated, it is tested against the requirements to make sure that the products are solving the needs addressed and gathered during the requirements stage.

During this stage, unit testing, integration testing, system testing, acceptance testing are done.

**Stage6: Deployment**

Once the software is certified, and no bugs or errors are stated, then it is deployed.

Then based on the assessment, the software may be released as it is or with suggested enhancement in the object segment.

After the software is deployed, then its maintenance begins.

**Stage7: Maintenance**

Once when the client starts using the developed systems, then the real issues come up and requirements to be solved from time to time.

1. What is DFD?

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.

It shows how data enters and leaves the system, what changes the information, and where data is stored.

The objective of a DFD is to show the scope and boundaries of a system as a whole. It may be used as a communication tool between a system analyst and any person who plays a part in the order that acts as a starting point for redesigning a system. The DFD is also called as a data flow graph or bubble chart.

1. Create a DFD diagram on Flipkart

[LINK](https://drive.google.com/file/d/1pBRhFzYng4RB5Jo7yFoJk2OhEbEkeCka/view?usp=sharing)

1. What is a Flow Chart

The Flowchart is the most widely used graphical representation of an algorithm and procedural design workflows. It uses various symbols to show the operations and decisions to be followed in a program. It flows in sequential order.

1. Create a flowchart to make addition of two numbers

[Link](https://drive.google.com/file/d/1oBTER3rCQDR417qPO-_BNmv5kP305dwY/view?usp=sharing)

1. What is Use case Diagram?

A use case diagram is used to represent the dynamic behavior 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/subsystem of an application. It depicts the high-level functionality of a system and also tells how the user handles a system.

1. Create a use-case on bill payment on paytm.

[LINK](https://drive.google.com/file/d/1hh9o_0QJV3LYEwC1YBHXA62y1k7sm9ys/view?usp=sharing)