**1)What is SDLC?**

- SDLC (Software Development Life Cycle) It’s a structured process used for developing software application.

-It consists of different phases that ensure the software meets customer requirements, is of high quality and is delivered on time.

1)Requirement Gathering

2)Analysis

3)Design

4)Implementation

5)Testing

6)Maintenance

**2)What is Software testing?**

-Software testing is a process used to identify the completeness, correctness and quality of developed computer software.

* **Key Objectives of Software Testing**:

1)Identify Defects

2)Ensure Quality

3)Prevent Issues

4)Validate Functionality

**3)What is Agile methodology?**

-Agile methodology is an approach to software development that point out the flexibility, collaboration and customer satisfaction. In this method, instead of delivering the entire product at once, the work is divided into small parts. Agile allows teams to adapt to changes quickly, deliver working software frequently, and continuously improve the product based on feedback.

* **Pros**
* Is a very realistic approach to software development
* Promotes teamwork and cross training
* Functionality can be developed rapidly and demonstrated.
* Resource requirements are minimum
* Suitable for fixed and changing requirement
* Minimal rules, documentation easily employed.
* Little or no planning requirement
* Easy to manage
* Gives flexibility to developers
* **Cons**

- Not suitable for handling complex dependencies.

- More risk of suitability, maintainability and extensibility.

- Needs Strong Leadership

- Strict Deadlines

- High Customer Dependency

- Less Documentation

- Difficult Knowledge Transfer

**4)What is SRS**

A Software Requirements Specification (SRS) is a complete description of the behavior of the system to be developed.

It includes a set of use case that describe all of the interactions that the users will have with the software.

**5)What is oops**

OOPs (Object-Oriented Programming System) is a programming approach based on objects and classes. It follows four main principals: Encapsulation, Abstraction, Inheritance and polymorphism, making code more reusable, scalable, and maintainable.

**6)Write a basic concept of OOPs**

1) Class

2)Object

3)Encapsulation

4)Abstraction

5)Inheritance

6)Polymorphism

**7)What is Object**

An object is an instance of a class in Object-Oriented Programming. It represents a real-word entity with attributes (Data) and behaviours (Methods).

**8)What is Class**

A class is a blueprint or template for creating objects in Object-Oriented Programming. It defines attributes and behaviours that its objects will have.

**9)What is Encapsulation**

To Wrap in Data into Single Unit it’s called Encapsulation.

**10)What is Inheritance**

To Access Property to of one class to another class that is inheritance.

1) Single 2) Multiple 3) Multilevel 4) Hierarchical

5) Hybrid

**11)What is Polymorphism**

Same function name but having different functionality it called polymorphism. There are two types of polymorphism.

1. Overloading
2. Overriding

**12)Draw use case of Online Book Shopping.**

**[“Click Here”](https://drive.google.com/file/d/1Rka34-IbVNpTds8AMIJQe8zU68B-z_W2/view?usp=sharing)**

**13)Draw use case of Online Bill Payment System (Paytm).**

**[“Click Here”](https://drive.google.com/file/d/1PRfEEz3Ly-nMn-6LrgtqRM6bMXZ1c6fP/view?usp=sharing)**

**14)Write SDLC phases with basic introduction**

**1)Requirement Gathering**

* Collect and understand the needs of the client or end-user
* Document the functional and non-functional requirements in the SRS (Software Requirement Specification) documents.

**2)Analysis**

* In this phase, the requirements are analysed to define “what” the system needs to achieve.
* Feasibility studies are conducted to assess technical and financial visibility.
* A Software Requirement Specification (SRS) document is prepared.

**3)Design**

* The systems architecture and design are planned based on requirements.
* This includes defining the system structure, database design, UI/UX design, and technical components.
* High level design (HLD) and Low-level design (LLD) documents and created.

**4)Implementation**

* Developers write the actual code based on the design specifications.
* This phase involves front-end, back-end and database development.
* Version control and coding best practices are followed.

**5)Testing**

* This Testing Phase ensures the software works correctly and meets requirements.
* A separate team tests the system to find and fix errors. It includes different types of testing, such as:

1. Regression Testing
2. Internal Testing
3. Unit Testing
4. Application Testing
5. Stress Testing

**6)Maintenance**

* After deployment, the software is monitored for issues, bugs, and performance improvements.
* Updates, patches, and enhancements are made to adapt the system to new requirements and ensure smooth operation.

**15)Explain Phases of Waterfall Model.**

The Waterfall model is linear and sequential approach to software development. It is step-by-step process, where each phase must be completed before moving to the next.

**1)Requirement Gathering**

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**16)Write Phase of Spiral Model.**

Spiral Model is very widely used in the software industry as it is in synch with the natural development process of any product i.e. learning with maturity and also involves minimum risk for the customer as well as the development firms.

**1)Planning Phase**

* Requirements are gathered from the customer.
* Objectives, alternatives, and constraints are identified.
* A plan is created for the next phases.

**2)Risk Analysis Phase**

* Identify potential risks and uncertainties.
* Analyse and evaluate each risk.
* Purpose solutions or alternatives to reduce or eliminate risks.
* A prototype may be built to clarify requirements and reduce risk.

**3)Engineering**

* Actual development and testing of the product happens in this phase.
* Depending on the iteration, this can include designing, coding, testing, and integrating the software.

**4)Evaluation Phase**

* The customer evaluates the progress.
* Feedback is gathered.
* Decisions are made regarding the next iteration or necessary changes.

**17)Write agile manifesto principles**

**1)Individual and Interaction**

* People are more important than tools and processes.
* Teamwork, communication, and motivation matter a lot.
* Things like pair programming and working in the same place help better teamwork.

**2)Working Software**

* A running, working version of the software is the best way to show progress.
* Instead of only writing long documents, showing real software helps the customer understand better.

**3)Customer Collaboration**

* Its hard to know all the requirements at the beginning.
* So, keep talking to the customer regularly to understand what they want as the project moves forward.

**4)Responding to Change**

* In Agile, change is normal and welcome.
* If customer needs or market trends change, the team adjusts quickly and keeps improving the product.

**18)Explain working methodology of agile model and also write pros and cons.**

Agile model works in small, repeatable cycle called iterations or sprints. In each cycle, a small part of the software is planned, designed, developed, tested, and delivered.

**1)Requirement gathering:**

Client gives initial requirement (Not full, just the basic ideal)

**2)Planning:**

The team breaks down work into small tasks and created a sprint plan.

**3)Design and Development:**

Team design and codes the selected features for that sprint

**4)Testing:**

The software is tested during or right after development.

**5)Delivery and Review:**

A working part of the product is delivered. The customer gives feedback.

**6)Next Iteration:**

Based on feedback, the next sprint starts with changes or new features.

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* Needs Strong Leadership
* Strict Deadlines
* High Customer Dependency
* Less Documentation
* Difficult Knowledge Transfer

**19)Draw Use case on Online shopping product using COD.**

**[“Click Here”](https://drive.google.com/file/d/1lLxMYUgn7Lf9QeML5WMSHsS7jivdeOsD/view?usp=sharing)**

**20)Draw Use case on Online shopping product using Payment Gateway.**

**[“Click Here”](https://drive.google.com/file/d/1j1PSFSaVk49kyXvGxNuzEqnNQfl4K8se/view?usp=sharing)**