

## PHASE 1 -Q & A

### 1) Explain SDLC ?

Ans: SDLC provides a well-structured flow of phases that help an organization to quickly produce high-quality software which is well-tested and ready for production use.

The SDLC phases explained below:

Requirement analysis: Gathering all the requirements needed for the project.

Planning: The team determines the cost and resources required for implementing the analyzed requirements.

Architectural Design: In this phase the system and software design are prepared from the requirement specifications. These designs will be reviewed by various department for approval.

Software Development(Coding): Based on system design documents, the work is divided in modules/units and actual coding is started.

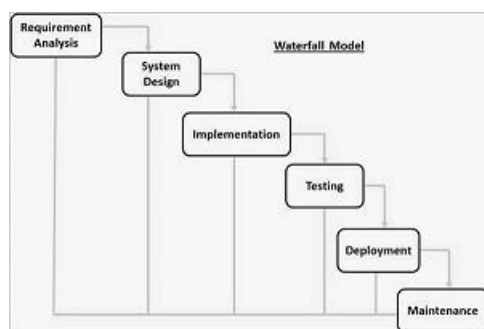
Testing: After the code is developed it is tested against the requirements to make sure that the product is actually solving the needs addressed

Deployment: After successful testing the product is delivered / deployed to the customer for their use.

Maintenance: Once the customers starts using the developed system then the actual problems comes up and needs to be solved from time to time.

### 2) What is waterfall and why it is still relevant?

Ans: Waterfall approach was first SDLC Model to be used widely in Software Engineering to ensure success of the project. In "The Waterfall" approach, the whole process of software development is divided into separate phases. In this Waterfall model, typically, the outcome of one phase acts as the input for the next phase sequentially.



Some situations where the use of Waterfall model is most appropriate/relevant are when:

- Requirements are very well documented, clear and fixed.
- Product definition is stable.
- Technology is understood and is not dynamic.
- There are no ambiguous requirements.
- Ample resources with required expertise are available to support the product.
- The project is short.
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### 3) Explain Agile Model with a use case and the role of SCRUM in that?

Ans: Agile model is a combination of iterative and incremental process models with focus on process adaptability and customer satisfaction. Its value based, iterative, adaptive & easy to understand.

With Agile development methodology –

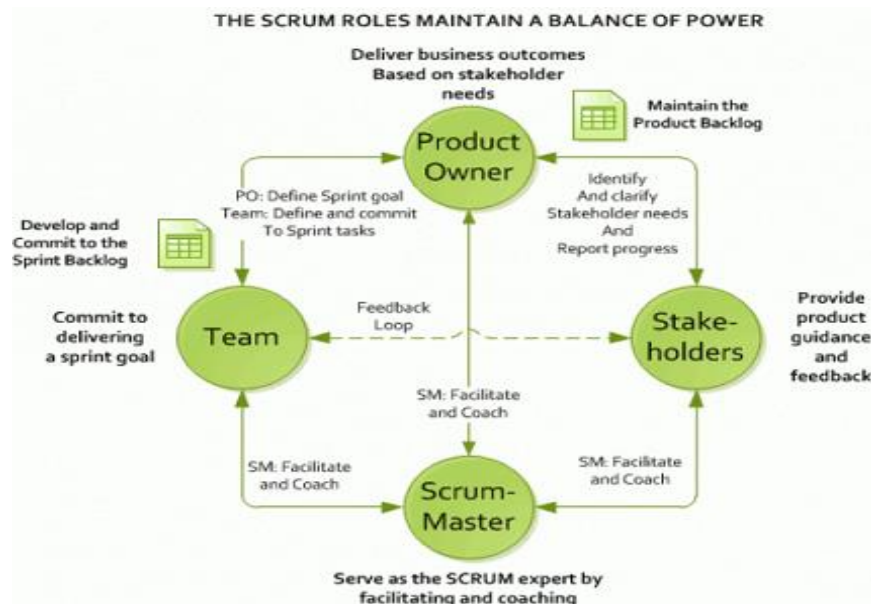
- In this, each project is broken up into several 'Iterations'.
- All Iterations should be of the same time duration (between 2 to 8 weeks).
- At the end of each iteration, a working product should be delivered.
- In simple terms, in the Agile approach the project will be broken up into 10 releases (assuming each iteration is set to last 4 weeks).
- Rather than spending 1.5 months on requirements gathering, in Agile software development, the team will decide the basic core features that are required in the product and decide which of these features can be developed in the first iteration.
- Any remaining features that cannot be delivered in the first iteration will be taken up in the next iteration or subsequent iterations, based on priority.
- At the end of the first iterations, the team will deliver a working software with the features that were finalized for that iteration.
- There will be 10 iterations and at the end of each iteration the customer is delivered a working software that is incrementally enhanced and updated with the features that were shortlisted for that iteration.

SCRUM: It's a agile software methodology, it's a iterative project management process.

It is a very specific framework that focuses on the following roles.

- Scrum Master
- Product Owner
- Team
- Stake holders

Scrum Master: The Scrum Master is a facilitator of the Scrum framework and process.



**Team:** The Team works with the Product Manager to determine what items from the Product Backlog they can deliver in a Sprint. Work with the Product Owner to analyze and decompose the Product Backlog items

**Product owner:** The Product Owner is responsible for delivering product value

**Stake holders:** Stakeholders are responsible for communicating their needs, and providing feedback on the product.

#### 4) Who is Scrum Master?

**Ans:** Scrum Master is a facilitator for scrum framework. The scrum master is responsible for ensuring a true scrum process over the course of a project. They hold together the scrum framework, facilitating the process for the organization, product owner and scrum team.

#### 5) Differentiate between Product/Sprint Backlog?

Ans: **Product Backlog:** The product backlog is compiled of all the things that must be done to complete the whole project. An effective product backlog breaks down each of the items on the list into a series of steps that helps the development team.

**Sprint Backlog:** The sprint backlog is like a subset of the product backlog. The sprint backlog comes from the product backlog, but it contains only that item, or those items, that can be completed during each sprint.

#### 6) What is Epic & Story?

Ans: Epic: It's a high level description of the client wants and have some value attach to it. usually broad in scope .

Story: Epic is broken down to smaller user stories. It contains just enough information to give the Scrum team proper context as to what the final product should be like, and for them to calculate an estimation for the completion.

#### 7) What is called Velocity in SCRUM?

Ans. Velocity is a measure of the amount of work a Team can tackle during a single Sprint and is the key metric in Scrum. Velocity is calculated at the end of the Sprint by summing up the Points for all fully completed User Stories.

#### 8) Explain the SCRUM ceremonies?

Ans: The four scrum ceremonies are:

- Sprint Planning: Sprint Planning is the scrum ceremony designed to make sure the team is prepared to get the right things done every sprint.
- Daily Scrum: This scrum ceremony provides a frequent opportunity for the team to get together and communicate individual progress toward the sprint goal
- Sprint Review: The Sprint Review is the scrum ceremony where all work completed during the sprint can be showcased the stakeholder
- Sprint Retrospective: The Sprint Retrospective is the final scrum ceremony in the sequence that allows the team to look back on the work that was just completed and identify items that could be improved.

#### 8) What is grooming?

Ans. It is the activity where the PO and the team members discuss the items lying in the backlog.

**10) How Jira board is effective in SCRUM?**

Ans. The Jira scrum Board is the tool that unites teams around a single goal and promotes iterative, incremental delivery.

**11) Differentiate between SCRUM & Waterfall?**

	SCRUM	WATERFALL
1.	It includes customer and stake holder in each phase	This keeps customer at bay. By the time the result is near
2	It saves time and money by regular sprints	It might take extra time as reviewing is done at result only.
3	Work is divided in teams as an individual responsibility	Work divided into phases as team work closely.
4.	It works well for difficult and complex projects	It works well for smaller projects

**12) Explain the responsibilities of Product Owner?**

Ans: Responsibilities:

- Maximize business value by the Team
- Maintain and prioritize the Product Backlog sequentially
- Help the Scrum Master organize Sprint Review Meetings
- Attend Scrum Meetings
- Clearly communicate the business case to the Team and Stakeholders
- Build and maintain a relationship with the Stakeholders
- Report progress to the Stakeholders regularly

**13) Tell us about the features of client/server.**

**Ans.** An important characteristic of client-server systems is scalability. They can be scaled horizontally or vertically. Combination of a client **or** front-end portion that interacts with the user, and a server or back-end portion that interacts with the shared resource

**14) What is a Web server in a client server environment?**

**Ans:** A web server returns documents when clients ask for them by name. The clients and server communicate using an RPC-like protocol called HTTP.

**15) What is the role of the presentation layer?**

**Ans:** Presentation layer translates, encrypts and compresses data. presentation layer is primarily responsible for two networking characteristics protocol & architecture. Presentation layer takes care that the data is sent in such a way that the receiver will understand the information(data) and will be able to use the data.

**16) What is a Database Server in a client server environment?**

**Ans.** With a database server, the client passes SQL requests as messages to the database server. The results of each SQL command are returned over the network. The server uses its own processing power to find the request data instead of passing all the records back to the client and then getting it find its own data.

**17) What are Super servers in client server environments?**

**Ans.** These are fully-loaded machines which includes multiprocessors, high-speed disk arrays for intensive I/O and fault tolerant features.

**18) Explain 2-Tier and 3-Tier architecture Client server?**

**Ans.** 2-tier architecture is useful where a client talks directly to a server. There is no intervening server. It is typically used in small environments. Here, the user interface is placed at user's desktop environment and the DBMS services are usually placed in a server

3-tier architecture: In this kind of client server environment an additional middle-ware is used that means client request goes to server through that middle layer and the response of server is firstly accepted by middle-ware then to client. This architecture overcomes all the drawbacks of 2-tier architecture and gives best performance.

**19) What is a File server?**

**Ans.** A file server is a computer on a network that is used to provide users on a network with access to files.

## **20) What are the main benefits of SOA?**

**Ans.** Language Neutral Integration, Component Reuse, Data confidentiality and integrity, Organizational flexibility.

- SOA helps create greater alignment between IT and line of business while generating more flexibility – IT flexibility to support greater business flexibility. Your business processes are changing faster and faster and global competition requires the flexibility that SOA can provide.
- SOA can help you get better reuse out of your existing IT investments as well as the new services you're developing today. SOA makes integration of your IT investments easier by making use of well-defined interfaces between services. SOA also provides an architectural model for integrating business partners', customers' and suppliers' services into an enterprise's business processes. This reduces cost and improves customer satisfaction.

## **21) How can you achieve loose coupling in SOA?**

**Ans.** One strategy for achieving loose coupling is to use the service interface (the WSDL for a SOAP Web Service) to limit this dependency, hiding the service implementation from the consumer. Loose coupling can be addressed by encapsulating the service functionalities in a manner that limits the impact of changes to the implementation on the service interface.

## **22) Are web services and SOA the same?**

**Ans.** SOA is an architectural concept while web services are used to complete them. Web services are the preferred standards that are satisfied to achieve the architectural specifications of SOA

## **23) What is a reusable service?**

**Ans:** Using existing software modules rather than writing new ones. It is an autonomous, reusable, discoverable, stateless functionality that has the necessary granularity, and can be part of a composite application or a composite service. A reusable service should be identified with a business activity described by the service specifications

## **24) What are the disadvantages of SOA?**

**Ans.** Trying to solve multiple problems at once, rather than solving small pieces of the problem.

**25)What is ESB and where does it fit in?**

**Ans.** ESB stands for Enterprise Service Bus. Unlike other relationships, it provided any to any connectivity between different companies. Also, you may need to consider deployment services, IT services, etc. The ESB is part of this reference architecture and provides the backbone of an SOA.

**26)In SOA do we need to build a system from scratch?**

**Ans.** No, if we need to integrate any existing system you just can loosely couple wrappers which help in wrapping all customer services and expose all functionalities in a generic manner.

**27)What is the most important skill needed to adopt SOA ?technical or cultural?**

**Ans.** Its cultural. SOA does require people to think of business and technology differently. Instead of thinking of technology first.

**28)List down the advantages of Microservices Architecture.**

1. All microservices can be easily developed based on their individual functionality
2. Even if one service of the application does not work, the system still continues to function
3. Based on their services, they can be individually deployed in any application

**29)What are the best practices to design Microservices?**

**Ans.** Runtime Processes, Team/ Cultural, Data

**30)How does Microservice Architecture work?**

- **Clients** – Different users from various devices send requests.
- **Identity Providers** – Authenticates user or clients identities and issues security tokens.
- **API Gateway** – Handles client requests.
- **Static Content** – Houses all the content of the system.
- **Management** – Balances services on nodes and identifies failures.
- **Service Discovery** – A guide to find the route of communication between microservices.
- **Content Delivery Networks** – Distributed network of proxy servers and their data centers.



- **Remote Service** – Enables the remote access information that resides on a network of IT devices.

### 31)What are the pros and cons of Microservice Architecture?

Pros of Microservice Architecture	Cons of Microservice Architecture
Freedom to use different technologies	Increases troubleshooting challenges
Each microservices focuses on single capability	Increases delay due to remote calls
Supports individual deployable units	Increased efforts for configuration and other operations
Allow frequent software releases	Difficult to maintain transaction safety
Ensures security of each service	Tough to track data across various boundaries
Multitple services are parallely developed and deployed	Difficult to code between service

### 32)What is the difference between Monolithic, SOA and Microservices Architecture?

- **Ans. Monolithic Architecture** is similar to a big container wherein all the software components of an application are assembled together and tightly packaged.
- A **Service-Oriented Architecture** is a collection of services which communicate with each other. The communication can involve either simple data passing or it could involve two or more services coordinating some activity.
- **Microservice Architecture** is an architectural style that structures an application as a collection of small autonomous services, modeled around a business domain.

### 33)What are the challenges you face while working Microservice Architectures?

**Ans. Challenges:**

- **Automate the Components:** Difficult to automate because there are a number of smaller components. So for each component, we have to follow the stages of Build, Deploy and, Monitor.
- **Perceptibility:** Maintaining a large number of components together becomes difficult to deploy, maintain, monitor and identify problems. It requires great perceptibility around all the components.
- **Configuration Management:** Maintaining the configurations for the components across the various environments becomes tough sometimes.
- **Debugging:** Difficult to find out each and every service for an error. It is essential to maintain centralized logging and dashboards to debug problems.

### 34)What are the characteristics of Microservices?

**Ans. Characteristics:**

- Services are split up and organized around business capability
- The team which handles a particular product should own it forever
- Teams are responsible for all aspects of the software they build
- They are completely independently deployable