**Software Development Life Cycle**

1. Explain SDLC at a high level

SDLC simply means Software Development Lifecycle.

SDLC ideally has 7 steps:

1. **Planning:**

The planning phase involves aspects of project and product management. This may include:

* Resource allocation (both human and materials)
* Capacity planning
* Project scheduling
* Cost estimation
* Provisioning

The outputs of the planning phase include: project plans, schedules, cost estimations, and procurement requirements. Ideally, Project Managers and Development staff collaborate with Operations and Security teams to ensure all perspectives are represented.

1. **Requirements**

Once the requirement analysis is done the next step is to clearly define and document the product requirements and get them approved from the customer or the market analysts. This is done through an **SRS (Software Requirement Specification)** document which consists of all the product requirements to be designed and developed during the project life cycle.

1. **Software development**

This phase produces the software under development. Depending on the methodology, this phase may be conducted in time-boxed “sprints,” (Agile) or may proceed as a single block of effort (Waterfall.) Regardless of methodology, development teams should produce working software as quickly as possible. Business stakeholders should be engaged regularly, to ensure that their expectations are being met. The output of this phase is testable, functional software.

1. **Testing**

The testing phase of the SDLC is arguably one of the most important. It is impossible to deliver quality software without testing. There is a wide variety of testing necessary to measure quality:

* Code quality
* Unit testing (functional tests)
* Integration testing
* Performance testing
* Security testing

The best way to ensure that tests are run regularly, and never skipped for expediency, is to automate them. Tests can be automated using Continuous Integration tools, like Codeship, for example. The output of the testing phase is functional software, ready for deployment to a production environment.

1. **Deployment**

The deployment phase is, ideally, a highly automated phase. In high-maturity enterprises, this phase is almost invisible; software is deployed the instant it is ready. Once the product is tested and ready to be deployed it is released formally in the appropriate market. Sometimes product deployment happens in stages as per the business strategy of that organization. The product may first be released in a limited segment and tested in the real business environment (UAT- User acceptance testing).

1. **Operations and maintenance**

Then based on the feedback, the product may be released as it is or with suggested enhancements in the targeting market segment. After the product is released in the market, its maintenance is done for the existing customer base.

1. What is waterfall and why it is still relevant?

Waterfall model also known as the linear sequential life cycle model; this methodology follows a contiguous approach. Only after the completion of one task, the next one is started. The most obvious question that arises is why adopt this when an iterative effort gives both developers and the client so much more freedom. In reality most projects are not that complicated. The application developers and client start out with an extremely clear idea of what they want to achieve with the application. Most projects are small with very low chance of any unpredictability. In such a situation, the Waterfall methodology presents as a cheaper and quicker alternative and also requires less resources and effort. This approach comes up with a part of the output at each stage contributing towards higher satisfaction for employees and clients alike. The project is carried out with a fixed schedule and stringent deadlines.

1. Explain Agile Model with a use case and the role of SCRUM in that.

Agile project management was developed as an alternative to traditional project management, which is directed towards a major final deliverable. Agile instead breaks goals down into several independent products that can be developed, released, and iterated upon quickly.

With short task spans and demanding schedules, an Agile workflow requires a coordinated team. A Scrum team is small, lean, and results driven. The ideal Scrum team is 5-6 people.

1. Who is Scrum Master?

A scrum master is the facilitator for an agile development team. Scrum is a methodology that allows a team to self-organize and make changes quickly, in accordance with agile principles. The scrum master manages the process for how information is exchanged.

1. Differentiate between Product/Sprint Backlog

A product backlog is a list of the new features, changes to existing features, bug fixes, infrastructure changes or other activities that a team may deliver in order to achieve a specific outcome.

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.

1. What is Epic & Story?

EPIC- An epic is a large user story that cannot be delivered as defined within a single iteration or is large enough that it can be split into smaller user stories.

USER STORY- After the discussion with the customer or product owner, the team divides up the work to be done into functional increments called “user stories.”

Each user story is expected to yield, once implemented, a contribution to the value of the overall product, irrespective of the order of implementation

1. What is called Velocity in SCRUM?

At the end of each iteration, the team adds up effort estimates associated with user stories that were completed during that iteration. This total is called velocity.

1. Explain the SCRUM ceremonies

* Organic backlog
* Sprint Planning
* Sprints- Short spans in which products are planned, developed, reviewed, and released. They are projects within the projects.
* Sprint Execution
* Stand up/Daily Scrum- A daily meeting in which contributors and managers discuss what work was done yesterday, what they’re working on today, and any questions that come up.
* Sprint Review
* Sprint Retrospective- An Agile team manages itself, but there are built-in measures to make sure work is being delivered at a consistent quality. Peer review and reviews by managers occur before tasks get completed and after the sprint is over.

1. What is grooming?

Backlog refinement (formerly known as backlog grooming) is when the product owner and some, or all, of the rest of the team review items on the backlog to ensure the backlog contains the appropriate items, that they are prioritized, and that the items at the top of the backlog are ready for delivery. This activity occurs on a regular basis and may be an officially scheduled meeting or an ongoing activity.

1. How Jira board is effective in SCRUM?

Jira board helps us point the epics and the scrum master and the team will have a clear idea of which all user stories are to be completed in the present sprint and which all are in progress.

1. Differentiate between SCRUM & Waterfall

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| **Scrum SDLC** | **Waterfall SDLC** |
| It includes customers and stakeholders at each phase. | This keeps the customer at bay.  By the time the result is near. |
| Scrum development saves time and money by reviewing regular sprints in the development process. | It may take extra time as reviewing is done at the result only, if found inappropriate then the process is back to level 1. |
| Work is divided into teams as an individual responsibility. | Work is divided into phases. The team works closely. |
| Scrum takes feedback from the product owner and stakeholders. The customer is kept in the loop and constantly taken his word throughout the process of development. | The required documentation is done at the initial stage. Proper documentation takes place during the requirement phase only. |
| Scrum development process works well for difficult and complex projects. | Waterfall model works well with smaller projects. |
| It has no defined stages. | Waterfall model has clear and defined stages to work on the project. |
| Scrum welcome changes at an early and late stage during development. | It welcomes changes only at the requirement phase. There is not the liberty of making changes at later stages. |
| The development process is divided among the team as an individual, it does not wait for the previous stage to get completed. | Phases and processes are completed one at a time. |
| It divides its work into sprints and then assigned according to team members. | It divides its work into stages and process continues one after the other. |
| Working software is shown to the customer at an early stage. Which is why changes are welcomed. | Working software is produced at the delivery time only to the customer. |
| The customer is kept informed about every step taking place in project development. | The customer will contact only at the delivery date. |

1. Explain the responsibilities of Product Owner

He is responsible for the development life cycle. A Product Owner role is to represent the customer to the development team and break it into stories. A key activity is to manage and make visible the product backlog, or the prioritized list of requirements for future product development.