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| SQA 110-Agile & Manual Testing |

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TEK School

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## What is Agile Testing?

Agile testing is a software testing practice that follows the principles of agile software development. It is an iterative software development methodology where requirements keep changing as per the customer needs.  Testing is done in parallel to the development of an iterative model. Test team receives frequent code changes from the development team for testing an application.

What is Agile Manifesto?Agile manifesto defines 4 key points:  
i. Individuals and interactions over process and tools  
ii. Working software over comprehensive documentation  
iii. Customer collaboration over contract negotiation  
iv. Responding to change over following a plan

What are the principles of Agile Software Development?  
1. Highest priority is to satisfy the customer through early and continuous delivery of business valuable software  
2. Welcome changing requirements, even late in development  
3. Deliver working software frequently  
4. Business people and developers must work together with transparency on daily basis throughout the project  
5. Build projects around motivated individuals  
6. The best form of communication is to do face-to-face conversation  
7. Working software is the primary measure of progress  
8. Able to maintain a constant pace  
9. Continuous attention to technical excellence  
10. Simplicity – the art of maximizing the amount of work not done – is essential  
11. Self-organizing teams  
12. At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly

## What are the main roles in Scrum?

Scrum consists of three main roles:

Product Owner: Product Owner usually represents the Client and acts as a point of contact from the Client side. The one who prioritizes the list of Product Backlogs which Scrum Team should finish and release.

Scrum Master: Scrum Master acts as a facilitator to the Scrum Development Team. Clarifies the queries and organizes the team from distractions and teach the team how to use scrum and also concentrates on Return on Investment (ROI). Responsible for managing the sprint.

Scrum Development Team:Developer’s, QA’s. Who develops the product. Scrum development team decides the effort estimation to complete a Product Backlog Item.

Scrum Team:A cross-functional, self-organizing group of dedicated people (Group of Product Owner, Business Analyst, Developer’s and QA’s). Recommended size of a scrum team is 7 plus or minus 2 (i.e, between 5 to 9 members in a team).

## What approach do you follow when requirements change continuously?

In Agile methodology, change in requirement is possible. It’s not like other traditional methodologies where the requirements are locked down at the requirement phase. Every team member should be ready to handle the changes in the project.

The team should work closely with the Product Owner to understand the scope of requirement change and to negotiate to keep the requirement changes to a minimum or to adopt those changes in the next sprint. Based on the requirement changes Test Team could update the Test Plan and Test Cases to achieve the deadlines. The team should understand the risk in the requirement change and prepare a contingency plan. It is a best practice not to go for the automation process until requirements are finalized.

## How is Agile Testing different from other traditional Software Development Models?

It is one of the common Agile Testing Interview Questions.

In Agile Methodology, testing is not a phase like other traditional models. It is an activity parallel to development in the Agile. The time slot for the testing is less in the Agile compared to the traditional models. The testing team works on small features in Agile whereas the test team works on a complete application after development in the traditional models.

## In what way does agile development methodology differ from other development methodologies?

In Agile methodology, the code is broken down into small branches and only one branch is developed and tested at a time. At one particular time, only one particular branch is developed and tested. Agile teams follow several processes in the agile methodology like continuous communication with the team, frequent changes to get the optimal results etc. This makes the agile process more flexible and focused. This is not the case with other development methodologies.

## When do we use Agile Scrum Methodology?

i. When the client is not so clear on requirements  
ii. When the client expects quick releases  
iii. When the client doesn’t give all the requirements at a time

## What is a Sprint?

In Scrum, the project is divided into Sprints. Each Sprint has a specified timeline (2 weeks to 1 month). This timeline will be agreed by a Scrum Team during the Sprint Planning Meeting. Here, User Stories are split into different modules. The end result of every Sprint should be a potentially shippable product.

## What are Product Backlog and Sprint Backlog?

Product Backlog**:**Product Backlog is a repository where the list of Product Backlog Items stored and maintained by the Product Owner. The list of Product Backlog Items are prioritized by the Product Owner as high and low and also could re-prioritize the product backlog constantly.

Sprint Backlog:Group of user stories which scrum development team agreed to do during the current sprint (Committed Product Backlog items). It is a subset of the product backlog.

## What is the difference between Burn-up and Burn-down chart?

Burn Down Charts provide proof that the project is on track or not. Both the burn-up and burn-down charts are graphs used to track the progress of a project.

Burn-up charts represent how much work has been completed in a project whereas Burn-down chart represents the remaining work left in a project.

## What are the types of burn-down charts?

There are four popularly used burn down charts in Agile.

i. Product burndown chart  
ii. Sprint burndown chart  
iii. Release burndown chart  
iv. Defect burndown chart

## What is Product Burndown Chart?

A graph which shows how many Product Backlog Items (User Stories) implemented/not implemented.

## What is Sprint Burndown Chart?

A graph which shows how many Sprints implemented/not implemented by the Scrum Team.

## What is Release Burndown Chart?

A graph which shows List of releases still pending, which Scrum Team have planned.

## What is Defect Burndown Chart?

A graph which shows how many defects identified and fixed.

## What is a Daily Stand-up Meeting?

Daily Stand-up Meeting is a daily routine meeting. It brings everyone up to date on the information and helps the team to stay organized.  
Each team member reports to the peers the following:

1. What did you complete yesterday?
2. What do you do today?
3. Any impediments in your way?

In general, it’s not a recorded meeting. Reporting will be between peers not to Scrum Master or Product Owner. It is normally timeboxed to a maximum of 15 minutes. It is aka 15 Minute Stand-up Meeting.

Here is a screenshot from Slack Application on daily standup meeting.

## What is a Sprint Planning Meeting?

The first step of Scrum is the Sprint Planning Meeting where the entire Scrum Team attends. Here the Product Owner selects the Product Backlog Items (User Stories) from the Product Backlog.  
Most important User Stories at the top of the list and least important User Stories at the bottom. Scrum Development Team decides and provides effort estimation.

## What is a Sprint Review Meeting?

In the Sprint Review Meeting, Scrum Development Team presents a demonstration of a potentially shippable product. Product Owner declares which items are completed and not completed. Product Owner adds the additional items to the product backlog based on the stakeholder’s feedback.

## What is a Sprint Retrospective Meeting?

Scrum Team meets again after the Sprint Review Meeting and documents the lessons learned in the earlier sprint such as “What went well”, “What could be improved”. It helps the Scrum Team to avoid the mistakes in the next Sprints.

## What is a Task Board?

A task board is a dashboard which illustrates the progress that an agile team is making in achieving their sprint goals.

In general, the columns used in a task board are as follows

i. User Story: Actual Business Requirement (Description)  
ii. To Do: All the tasks of current sprint  
iii. In Progress: Any task being worked on  
iv. To Verify: Tasks pending for verification  
v. Done: Tasks which are completed

## What is DevOps?

The term DevOps was formed by combining “Development” and “Operations”. DevOps is an operational philosophy that promotes collaboration between development and operation teams. DevOps focuses on bringing development and operations team together in order to build, test, and release software faster and more reliably.

## What is the differenceS between Agile and Waterfall model?

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| AGILE | WATERFALL |
| Testing is done in parallel with the development activity which means that as the development progresses so does the testing | Testing is generally done at the end of the development |
| Agile is an incremental approach | It is a sequential design process where design, development, testing and other phases happens one after another in a sequential way |
| Testing is performed concurrently with software development | "Testing" phase comes after the "Build" phase |
| Agile methodology is known for its flexibility | Waterfall is a structured software development methodology, and often times can be quite rigid |
| It believes in constant feedback and accepts changes to requirements | Customer feedback is usually not collected until the very end of the project, and changes are discouraged |
| Agile focuses on collaboration, small releases and customer feedback | Team coordination is very limited |
| Self-motivated and self-organizing teams drive the project | Project manager drives the project as a central controlling authority |

## How long were your sprints?

An ideal sprint length is anywhere between 1 week to 4 weeks. 2 week-long Sprints are most common for IT and software product development.

## What are the disadvantages of the agile model?

Some of the disadvantages of using the agile model are as follows:

* It is not easy to predict. When you encounter a large project, it becomes more problematic to estimate the amount of effort needed in the project
* In case the guidelines given by the customers is not understood properly, then the final outcome of the project will not meet the customer requirements. It leads to the customer dissatisfaction
* It is not possible to properly focus on the design and documentation of a project sometimes
* Basically, High-level decision making is in the hands of the higher authorities. The team members with little or no experience are not involved in decision-making, thus they don’t get a chance to advance their knowledge

## What is an impediment in Scrum?

Impediments are the obstacles faced by the scrum team. Any obstacle that keeps the team from getting work done and that slows velocity is known as Impediment. Scrum Master is responsible for removing impediments.

In Agile Scrum interviews, you may be asked to give some examples of impediments.

## What are the examples of impediments?

Impediments come in many forms. Some of the impediments are mentioned below

* Resource unavailability (Sick team member)
* Lack of management support
* Business issues
* Lack of skill
* Technical, operational issues
* Even external issues such as weather

## What kind of impediments should a scrum master remove?

Scrum Master’s main responsibility is to identify, track and help remove impediments. Scrum Master shouldn’t remove impediments initially even though Scrum Master can remove impediments on behalf of the Scrum team. The Scrum Master should not pamper nor overrule the Scrum Team. Scrum Master should motivate the Scrum team to become independent enough to face problems and take a decision and perform every task by themselves. The Scrum team should be able to make their own decisions. The Scrum master supports and guides the Scrum Team to operate as efficiently as possible. Sometimes, impediments are beyond the ability of the Scrum Team to remove. In such cases, the Scrum Master may get support from outside of the Scrum Team.

## What is Velocity?

Velocity is a key metric that is calculated at the end of each sprint by addition of all effort estimates associated with user stories completed in a sprint. It predicts how much work an agile software development team can successfully complete within a sprint and how much time will it need to finish a project. Points from partially-completed or incomplete user stories should not be counted in calculating velocity.

What is traceability matrix?  
The relationship between test cases and requirements is shown with the help of a document. This document is known as traceability matrix.

What is Verification in software testing?  
Verification is the process, to ensure that whether we are building the product right

What is Validation in software testing?  
Validation is the process, whether we are building the right product i.e., to validate the product which we have developed is right or not.

What is White Box Testing?  
It is based on applications internal code structure (you work with the code too). In white-box testing, an internal perspective of the system, as well as programming skills, are used to design test cases.

What is Black Box Testing?  
Black Box Testing is a software testing method in which testers evaluate the functionality of the software under test without looking at the internal code structure.

What is Grey Box Testing?  
Grey box is the combination of both White Box and Black Box Testing.

What is Positive and Negative Testing?  
Positive Testing: It is to determine what system supposed to do. It helps to check whether the application is justifying the requirements or not.  
Negative Testing: It is to determine what system not supposed to do. It helps to find the defects from the software.

What is Test Suite?  
Test Suite is a collection of test cases.

What is Test Scenario?  
Test Scenario gives the idea of what we have to test.

What is Test Case?  
Test cases are the set of positive and negative executable steps of a test scenario which has a set of pre-conditions, test data, expected result, post-conditions and actual results.

What is Test Environment?  
Test Environment is the combination of hardware and software on which Test Team performs testing.

What is Test Data?  
Test data is the data that is used by the testers to run the test cases.

What is Test Harness?  
A test harness is the collection of software and test data configured to test a program unit by running it under varying conditions which involves monitoring the output with expected output.

What is Unit Testing?  
Unit Testing is also called as Module Testing or Component Testing. It is done to check whether the individual unit or module of the source code is working properly. It is done by the developers in the developer’s environment.

What is Integration Testing?  
Integration Testing is the process of testing the interface between the two software units. Integration testing is done by three ways. Big Bang Approach, Top-Down Approach, Bottom-Up Approach

What is Functional Testing?  
To verify that each function of the software application behaves as specified in the requirement document.

What is Non-Functional Testing?  
Non-functional testing refers to various aspects of the software such as performance, load, stress, scalability, security, compatibility etc., Main focus is to improve the user experience on how fast the system responds to a request.

## Homework

In short responses reply to the following questions:

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| --- | --- |
| *Question* | Answers |
| *Scrum* | Scrum is an agile process for managing SDLC |
| *Scrum Team* | A Scrum Team is usually 8 or nine members working together to deliver the required products |
| *Product Owner (PO)* | is the key stakeholder in the project and is responsible for maintaining the product backlog. |
| *Scrum Master (SM)* | is the facilitator for an agile development team. |
| *Tester* | software tester is responsible to ensure the quality of application |
| *Developer* | is responsible for writing code to create the software |
| *Business Analyst* |  |
| *Project Manager* |  |
| *Task Board* |  |
| *Product Backlog - (PB)* |  |
| *Sprint Backlog – (SB)* |  |
| *Burndown Chart – (BC)* |  |
| *Release Backlog – (RB)* |  |
| *Sprint Planning* |  |
| *Daily Scrum/Meeting* |  |
| *Three Questions* |  |
| *Sprint Review* |  |
| *Sprint Retrospective* |  |
| *Sprint Demo* |  |
| *Time Box* |  |
| *Epic* |  |
| *User Stories* |  |
| *Story Points* |  |
| *Team Capacity* |  |
| *Team Velocity* |  |
| *Scrum of Scrums* |  |
| *Backlog Grooming* |  |
| *Planning Poker* |  |
| *Relative Estimation* |  |
| *Iteration* |  |
| *Definition of Done (DoD)* |  |
| *Kanban Method* |  |
| *Kanban Board* |  |
| *API testing* |  |
| *alpha testing* |  |
| *Agile testing* |  |
| *acceptance testing* |  |
| *accessibility testing* |  |
| *accuracy testing* |  |
| *ad hoc testing* |  |
| *analytical testing* |  |
| *big-bang testing* |  |
| *bottom-up testing* |  |
| *Exploratory testing* |  |
| *branch testing* |  |
| *component integration testing* |  |
| *component testing* |  |
| *code coverage* |  |
| *commercial off-the-shelf (COTS)* |  |
| *Usability Testing* |  |
| *Continuous deployment* |  |
| *Continuous Integration* |  |
| *Refactoring* |  |
| *Extreme Programming (XP)* |  |
| *Test-driven development* |  |
| *Unit Test* |  |
| *actual result* |  |
| *Agile Manifesto* |  |
| *black-box testing* |  |
| *white-box testing* |  |
| *gray-box testing* |  |