Scrum:

- Agile based methodology based on an iterative and incremental processes
- Executed in temporary blocks that are short and periodic, called Sprints, which usually range from 2 to 4 weeks
- It is adaptable and flexible

Manual testing:

- Process of manually testing software for defects
- Requires a tester to play the role of an end user whereby they use most of the application's features to ensure correct behavior
- The most primitive technique of all testing types and it helps to find critical bugs in the software application

Automation testing:

- Technique that performs using special automated testing software tools to execute test cases
- No human intervention is needed
- Best way to increase the effectiveness, test coverage, and execution speed in software testing

Why integration of manual and automated testing is necessary?

- Automated testing usually enhances testing speed and consistency
- Manual testing compliments the automatic testing process to discover issues from the user's perspective, or unexpected bugs from unscripted scenarios
- Delivery teams should automate as many test cases as possible and use manual testing as a way to randomly check the most critical scenarios
- Automation helps to save time and budget and manual testing helps to give an intermittent push to the quality assurance
- Manual testing lays the process down that can be automated subsequently. Both of the testing approaches are complementary to each other

How integration of manual and automated testing happens?

- Employ manual testing for:
  - Exploratory testing.
  - Testing from a user's perspective (simplicity, visual aspects).
  - A quick initial check of new features and UI changes.
  - Testing early in the project when UX and new features are rapidly evolving and automated tests are still being designed.
  - Non-repeatable test cases.
- And use automated tests in:
  - Regression testing.
  - Repeatable functional testing (relatively stable).
  - Performance testing.

- Testcases which takes time to check manually and don't pose any security threat can be automated

The integrated testing approach is ideally suited for the projects where builds are frequent and require fast verification, especially those with the established process of continuous integration and delivery.

Agile Principles That Can be Applied to Automation:

- Keep things simple.
- Doing simple things does not mean doing the easiest things.
- Apply the whole team approach.
- The framework is evolved in Agile.
- Take the time to do it right.
- Get frequent feedback.
- Apply proper coding standards and practice.

Challenges While Automating in Agile:

- We need to plan really well.
- Compromising on the quality of the code because we want to deliver fast.
- Team most of the time teams do not follow the "Whole-Team-Approach".
- Automating the functional tests is tougher than automating the UI.
- Upgrade the skills of testers.