Test Driven Development

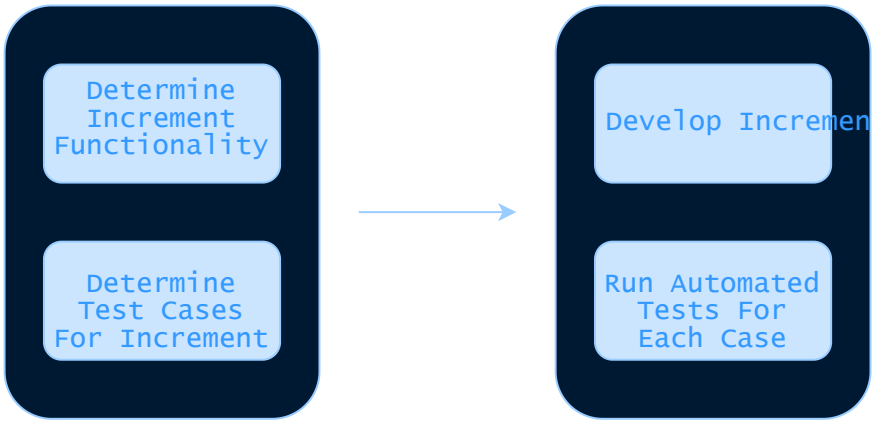
Approaches to testing software to ensure quality.

We'll cover the following

In the previous lessons, we looked into various approaches to software development, and while choosing a well-structured development process is essential to developing high-quality software, it is equally important to have an effective testing process that can ensure that all software requirements are being met. While there are multiple approaches to software testing, the most prominent is *test driven development*, and that is what we will be discussing in this lesson.

Test driven development

Test-driven development is an approach to program development in which you interleave both testing and code development. Essentially, you develop your code incrementally and also simultaneously develop a test for each increment. You don't move on to the next increment until the code that you have developed passes its test.



Test Driven Development

Automated testing

The core idea in test-driven development is to simultaneously develop automated tests with each increment and ensure the tests are passed. Tests are automated using APIs that automate browsers and execute test cases without human intervention. **Test cases** refer to the multiple features a web application intends to cater to, and testing requires a test to be developed for each test case. In the rest of the lesson, we will be discussing some popular testing tools that may be helpful.

Selenium

Selenium is one of the most commonly used tools for web application testing. Its primary purpose is to automate browsers, which means that Selenium allows for tests that can automatically access the application being developed and check if the intended functionality has been implemented correctly. The gist of Selenium is that it allows users to define a set of activities for a web browser to carry out so applications can automatically be opened and tested through the tool, just like a human would test functionality manually.

Jest

Jest is an integrated, “zero-configuration” JavaScript testing tool that is often used by Facebook to test all of its JavaScript code, including React

applications. Jest works with every compile-to-JavaScript language and

integrates seamlessly with Babel which means you can write React, TypeScript, and much more without configuration.

PyUnit

PyUnit refers to the Python unit testing framework. A **unit test** targets a small unit of code, such as a method that implements a particular functionality. Also known as `unittest`, PyUnit supports test automation, the ability to share setup and shutdown code for tests, aggregation of tests into collections, as well as the ability to keep tests independent from the reporting framework. PyUnit is, therefore, an essential tool in testing the intended functionality of a given web application.

JUnit

JUnit is the Java equivalent of PyUnit, and it enables users to write unit test cases in the Java programming language.

JUnit, like PyUnit, has been important in the development of test-driven development and is one of a family of unit testing frameworks collectively known as xUnit.

Quick quiz on software testing!

Test your understanding!

Q

Which of the following is a characteristic of test driven development?

A) Running tests for each increment of a program before moving on to develop the next one.

B) Testing the whole program once before deploying it.

C) Randomly testing units of a program.

COMPLETED 0%

1 of 1

This concludes the discussion on the principles of Software Engineering that may be helpful in developing your first website. While many of the approaches discussed here may seem intuitive, it is important to have a plan and a specific approach in mind before delving into developing an application to keep things systematic and manageable!