

Lab 2: Test Driven Development and Behavior Driven Development

Objective

To understand and implement the principles of **Test-Driven Development (TDD)** and **Behavior Driven Development (BDD)** by writing tests before writing functional code and ensuring behavior-focused development through examples and scenarios.

Tools & Technologies Used

- Programming Language: e.g., Python
- TDD Framework: e.g., PyTest, JUnit
- BDD Framework: e.g., behave (Python), Cucumber
- IDE: e.g., VS Code, IntelliJ
- Version Control: Git

Introduction

Test Driven Development (TDD) is an Agile software development practice where test cases are written **before** the actual code. The TDD cycle typically follows:

1. **Red** – Write a failing test.
2. **Green** – Write the minimum code to pass the test.
3. **Refactor** – Improve the code while keeping tests green.

Behavior Driven Development (BDD) builds on TDD by focusing on the **behavior of the application from the end-user's perspective**, using **plain language scenarios** (e.g., Given-When-Then).

Implementation

- **Test case 1: Addition**

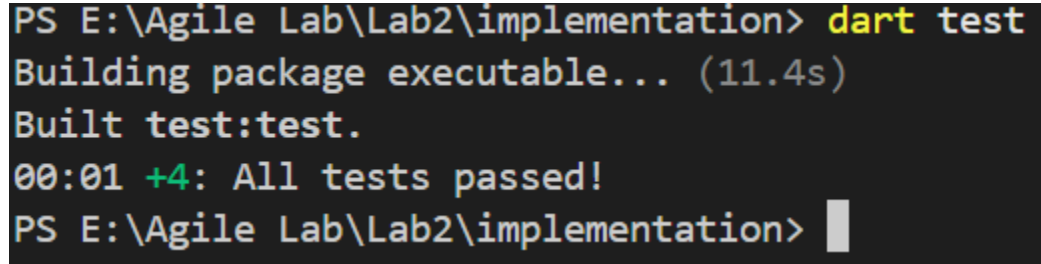
```
test('Add two numbers', () {  
    expect(add(2, 3), equals(5));  
});
```
- **Code to pass the test**

```
int add(int a, int b) => a + b;
```

Note: The full implementation and test cases are provided under the [implementation](#) folder of this repository.

Observations

- Writing tests before code helps define clear objectives.
- BDD makes communication easier between developers, testers, and stakeholders.
- Both methods promote clean, reliable, and testable code.

A terminal window screenshot with a dark background and light-colored text. The text shows the command 'dart test' being executed in the directory 'E:\Agile Lab\Lab2\implementation'. The output indicates that the package was built successfully in 11.4 seconds, the test suite 'test:test' was built, and all 4 tests passed in 00:01. The prompt returns to 'PS E:\Agile Lab\Lab2\implementation>' with a cursor.

```
PS E:\Agile Lab\Lab2\implementation> dart test  
Building package executable... (11.4s)  
Built test:test.  
00:01 +4: All tests passed!  
PS E:\Agile Lab\Lab2\implementation> 
```

Conclusion

In this lab, we developed a basic calculator program and learned Agile testing practices like TDD and BDD.