Assignment 1:

Create an infographic illustrating the Test-Driven Development (TDD) process. Highlight steps like writing tests before code, benefits such as bug reduction, and how it fosters software reliability.

Test Driven Development :

Test Driven Development is a kind of modern development technique. In this technique, tests are written before the actual code.

The main goal of TDD is to ensure the code is thoroughly tested and meets the customer requirements.

It’s a “inside-out” process.

Flow chart of TDD :

Start

|

Write a test

|

Run the test

|

Write a code

|

Run the test

|

Refractor the code

|

Repeat until all test cases are passed

Steps in TDD :

1. **Write a Test:** Write a test for a new functionality or an improvement to an existing one.
2. **Run the Test (It should fail):** Run the test to ensure it fails, verifying that the functionality is not yet implemented.
3. **Write the Code:** Write the minimal code necessary to pass the test.
4. **Run the Test (It should pass):** Run the test again to see if the new code passes.
5. **Refractor the Code:** Refractor the code to improve its structure and readability while ensuring the test still passes.
6. **Repeat:** Repeat the process for the next piece of functionality.

Advantages:

It improves the code quality.

It reduces the bugs.

It helps in better designing.

Disadvantages:

The process is time consuming.

Tests need to be maintained alongside the code.

Developing test cases for all the scenarios is difficult.

Test-Driven Development (TDD) fosters software reliability through:

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Early bug detection: Bugs are identified and resolved early in the development process, reducing the likelihood of defects in the final product.

Refractoring the code again and again: Code quality is continuously improved without sacrificing reliability, as tests provide a safety net that verifies the correctness of refractored code.