**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:**

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

* **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.