Assignment :1

Task 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.

TDD:

- A software development process where tests are written before the code.
- Ensures that the software works as expected from the beginning.

The TDD Cycle

1. Write a Test
   - Write a simple test for a new function or feature.
   - The test should be clear and focused on a single aspect of the functionality.

2. Run the Test
   - Run the test to see it fail.
   - This confirms that the test is working correctly and the feature isn't already implemented.

3. Write the Code
   - Write the minimum amount of code required to pass the test.
   - Keep the implementation as simple as possible.

4. Run All Tests
   - Run all the tests to ensure the new code doesn't break existing functionality.
   - This step confirms that the new code integrates well with the existing codebase.

5. Refactor the Code
   - Refactor the code to improve its structure and readability without changing its behavior.
   - Ensure that all tests still pass after refactoring.

6. Repeat
   - Continue this cycle for each new feature or improvement.

Benefits of TDD

Bug Reduction

- Early detection and fixing of bugs.
- Each new piece of functionality is thoroughly tested before integration.

-Improved Code Quality

- Encourages writing simpler, more modular, and cleaner code.
- Continuous refactoring leads to better software design.

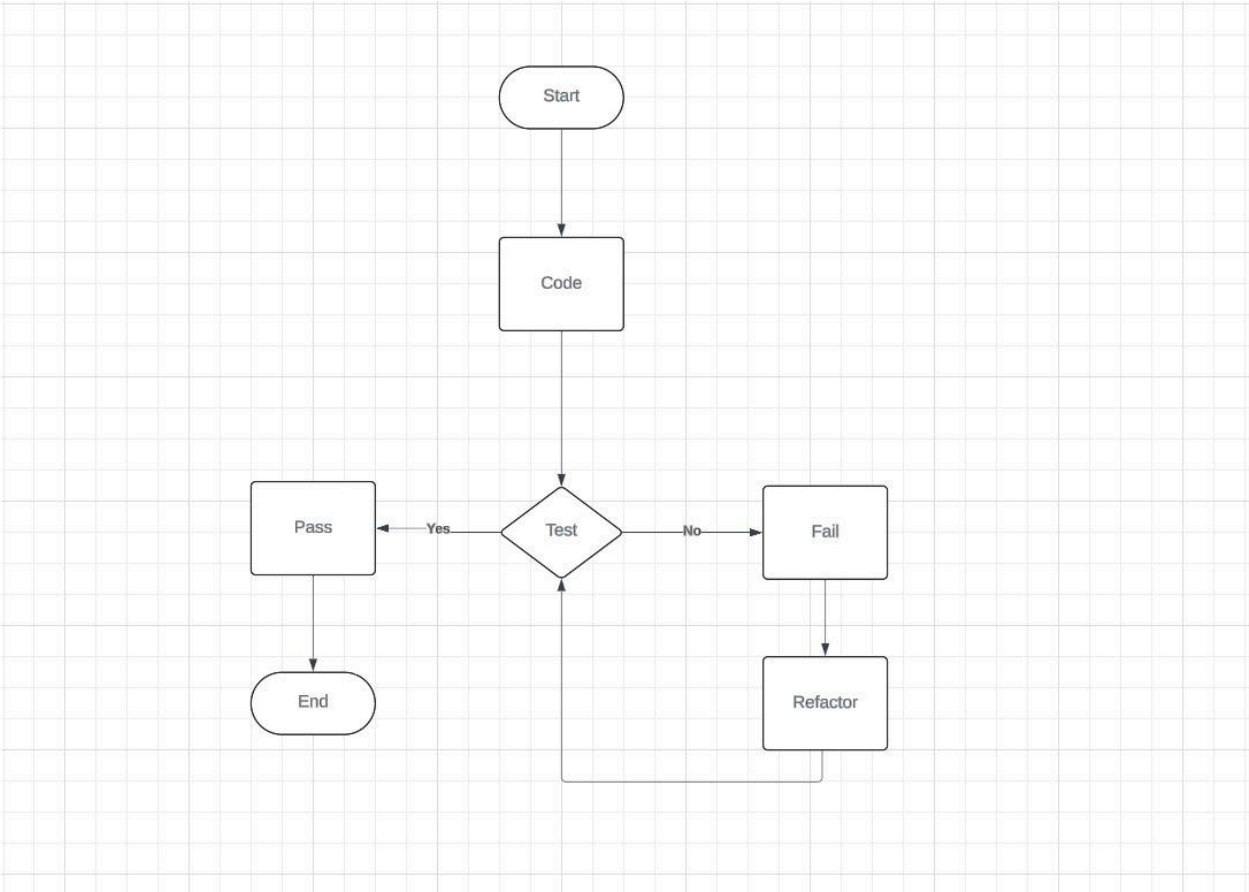
Faster Development
- Reduces the time spent on debugging.
- Clear test cases provide a clear understanding of requirements and functionality.

Fosters Reliability
- Provides a safety net that ensures changes don't introduce new bugs.
- Confidence in the software's behavior under various scenarios.

Documentation
- Tests serve as living documentation for the code.
- Easy to understand what the code is supposed to do.

Visual Representation

Flowchart:
- Test > Fail > Code > Pass > Refactor > Repeat



Graphs/Charts:

- Bug Reduction: A line graph showing a decrease in bugs over time.
- Development Speed: A bar chart showing faster development phases.
- Code Quality: A quality rating scale improving over iterations.