

**## Test-Driven Development (TDD)**

**### The TDD Process**

1. \*Write a failing test\* for the new functionality you want to add

2. \*Write the minimum amount of code\* to make the test pass

3. \*Refactor the code\* to improve its design and structure

4. \*Repeat steps 1-3\* until all functionality is implemented

**### Benefits of TDD**

- \*Reduces bugs\* by catching issues early in the development process

- \*Improves code quality\* through refactoring and modular design

- \*Provides clear documentation\* of what the code is supposed to do

- \*Enables faster development\* by providing a safety net for changes

- \*Fosters a test-first mindset\* that leads to more reliable software

**### How TDD Improves Software Reliability**

- \*Tests act as a safety net\* for changes, allowing you to refactor with confidence

- \*Modular, testable code\* is easier to maintain and extend over time

- \*Automated tests ensure regressions\* are caught before they reach production

- \*Focusing on testability\* leads to better software design and architecture

- \*Developers gain confidence\* that the software works as intended