



Test Driven Development

.NET

Test-driven development (TDD) is a software development process that relies on the repetition of a very short development cycle. Requirements are turned into very specific test cases. Then the code is improved so that the tests pass. The cycle repeats.

[HTTPS://EN.WIKIPEDIA.ORG/WIKI/TEST-DRIVEN_DEVELOPMENT](https://en.wikipedia.org/wiki/Test-driven_development)

WHY WE FIGHT

TEST

A SERIES OF SEVEN
INFORMATION FILMS

Testing – Traditional Model

<https://docs.microsoft.com/en-us/visualstudio/cross-platform/tools-for-cordova/debug-test/test-driven-development?view=toolsforcordova-2017#test-driven-development>

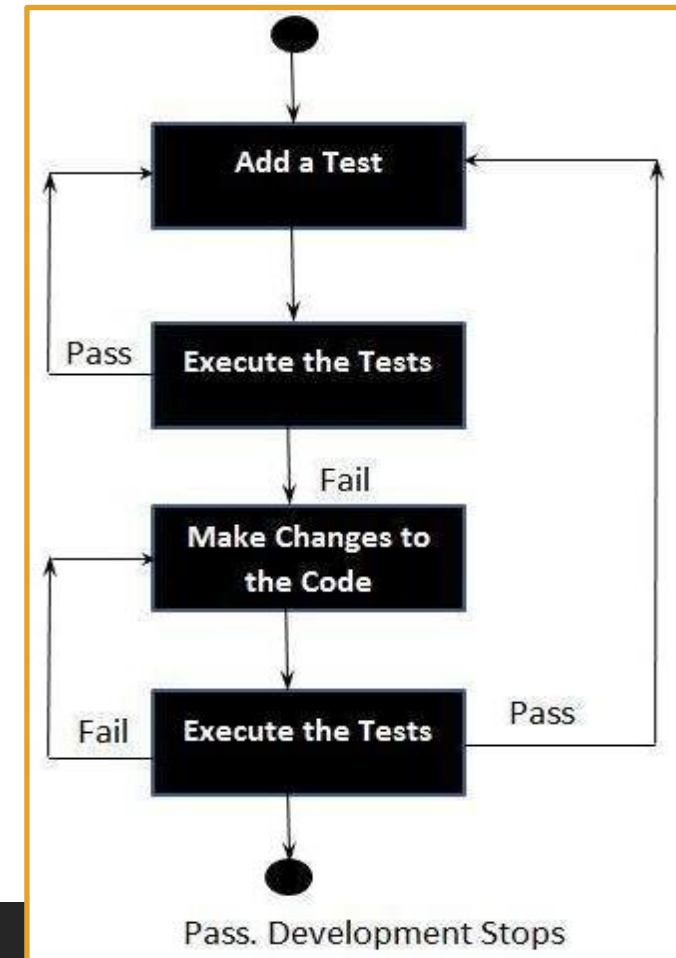
https://www.tutorialspoint.com/software_testing_dictionary/code_driven_testing.htm

Developers who define their role as “writing code” usually jump right into writing methods that handle different kinds of data that might get thrown at them. Then they write tests.

After writing a few tests, they’ll see that some of those tests fail because their methods can’t handle certain code cases. They improve those methods to handle those cases, and write a few more tests, which then reveal additional issues in the unit code.

This puts them into a pattern of bouncing back and forth between thinking about coding and thinking about data for test cases.

This results in missed test cases and faulty code.



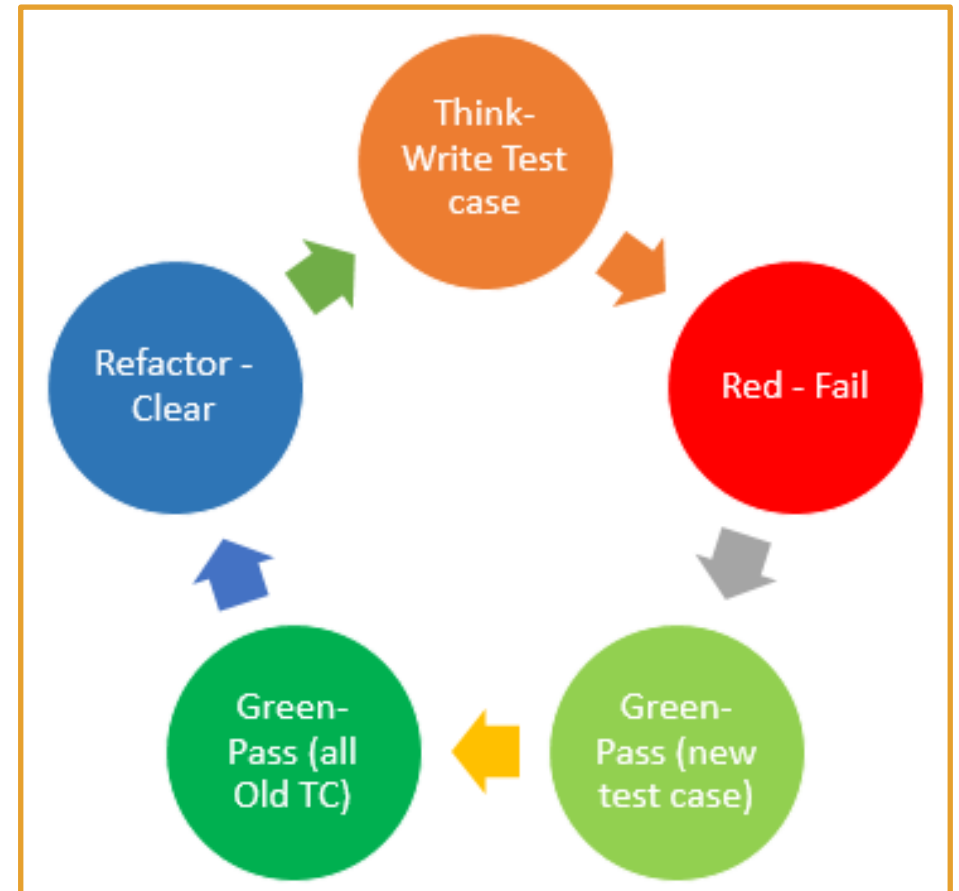
TDD – Test Driven Development

<https://docs.microsoft.com/en-us/visualstudio/cross-platform/tools-for-cordova/debug-test/test-driven-development?view=toolsforcordova-2017#test-driven-development>

Testing is just as important as coding.

Thinking through variations of good and bad data is a different mental process than thinking about how to handle those variations in code.

- TTD asks, “How do I challenge the unit-under-test to fail?”
- “Coding” asks “How do I write this method to work properly?”

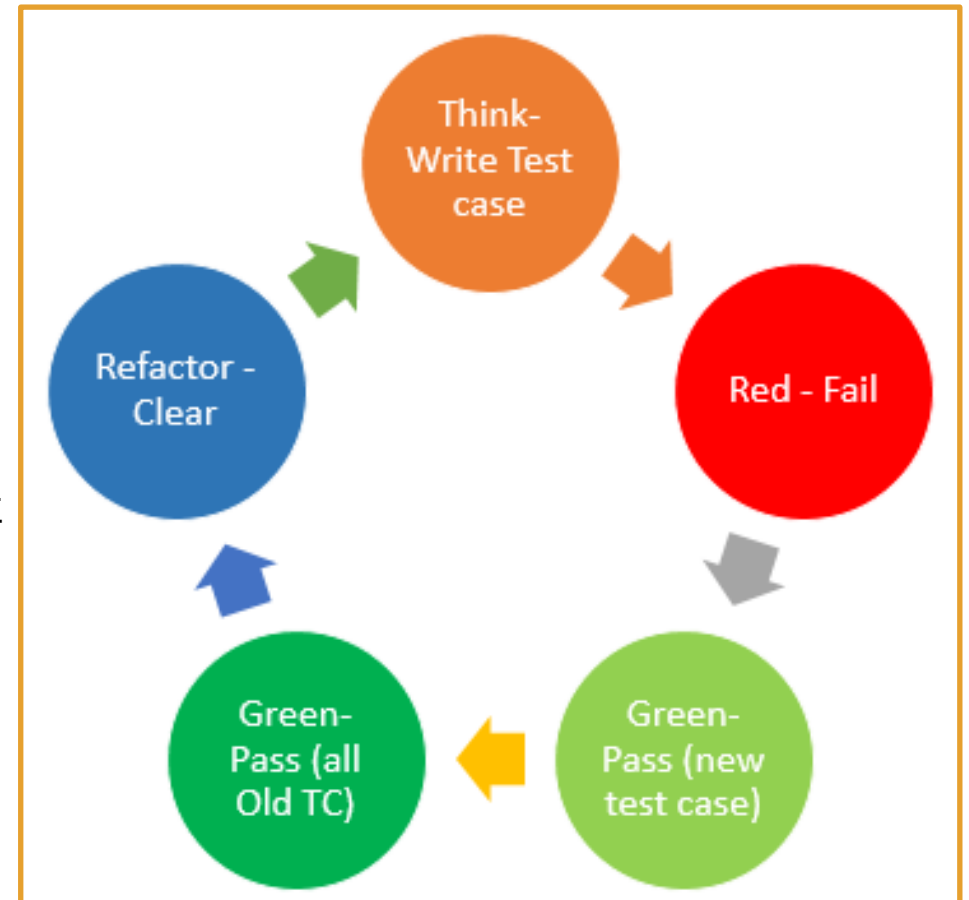


TDD – “Red, Green, Refactor”

<https://www.whizlabs.com/blog/what-is-tdd-and-its-phases/>
<https://www.codecademy.com/articles/tdd-red-green-refactor>

1. Create a test case - Write a test case before writing any code. This ensures you write the test to a methods' expected functionality and the test case is not biased to show code merely works.
2. Red - Failure of test case. There's no code. You get a compile error.
3. Green - Write code so the new test case passes. Write only the minimum required to pass the test case. The “just enough” concept helps ensure that no extra code goes in.
4. Green - Ensure all old test cases still pass.
5. Refactor the code to clean it - Ensure that all functionality is intact, and the code is refined.

Repeat the cycle.



Unit Testing

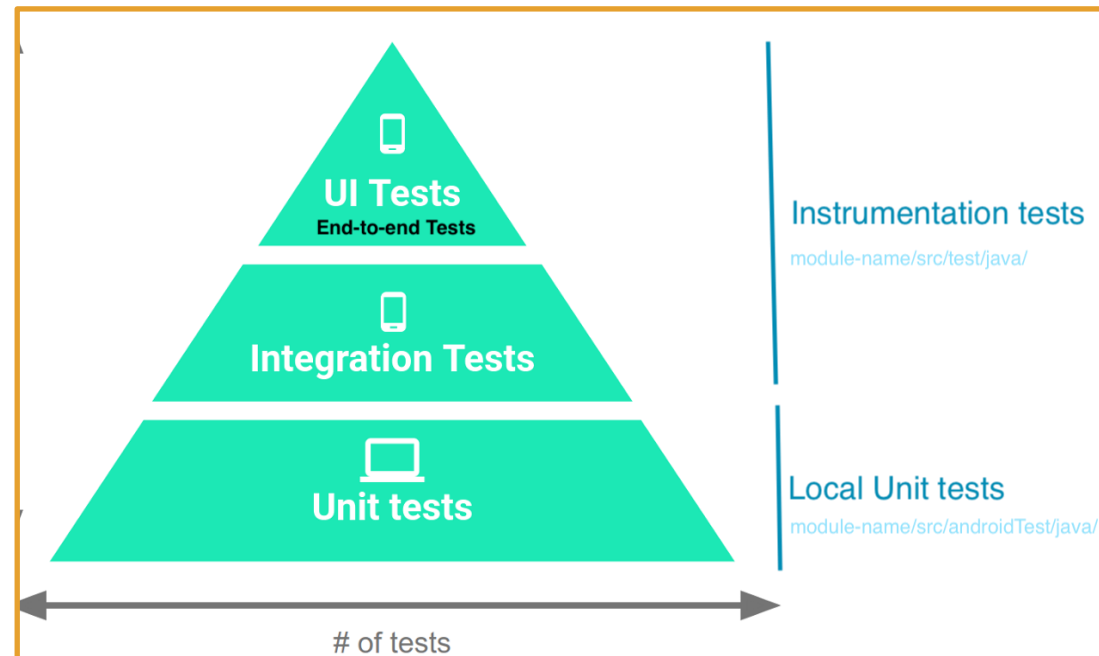
<https://docs.microsoft.com/en-us/visualstudio/test/unit-test-basics?view=vs-2019>

Unit testing because you break down the functionality of your program into discrete testable behaviors that you can test as individual **units**.

Use a **unit** testing framework to create **unit** tests, run them, and report the results of these tests.

Rerun **unit** tests when you make changes to test that your code is still working correctly.

Unit testing has the greatest effect on the quality of your code when it's an integral part of your software development workflow.



Unit Testing

<https://docs.microsoft.com/en-us/dotnet/core/testing/>

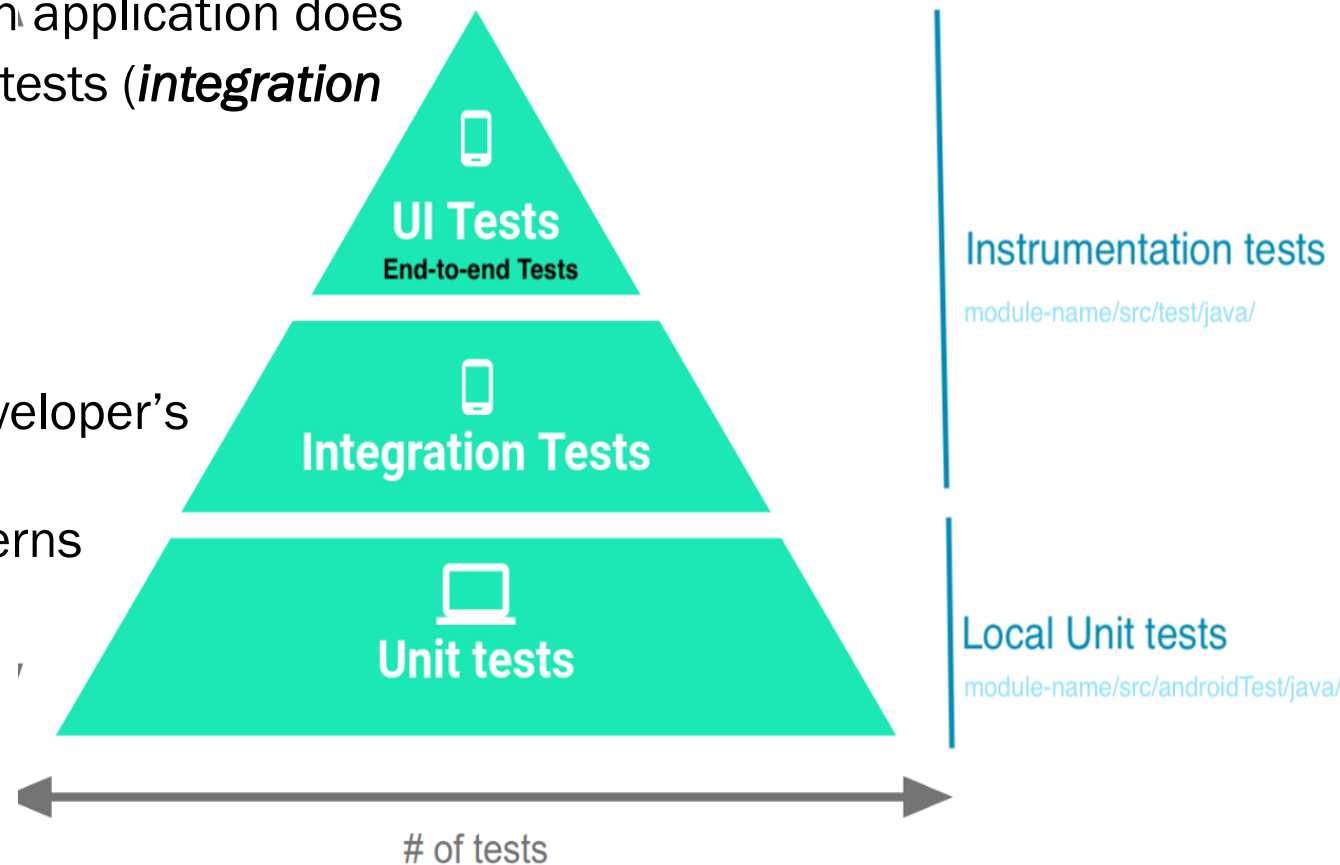
<https://docs.microsoft.com/en-us/dotnet/core/testing/#what-are-unit-tests>

<https://docs.microsoft.com/en-us/visualstudio/test/unit-test-basics?view=vs-2019>

Automated tests are a great way to ensure an application does what's intended. There are multiple types of tests (*integration* tests, *web* tests, *load* tests).

Unit tests:

- primarily test methods.
- should only test code within the developer's control.
- should not test infrastructure concerns (databases, file systems, network resources).



.NET/Coverlet Code Coverage Reporting.

<https://docs.microsoft.com/en-us/dotnet/core/testing/unit-testing-code-coverage?tabs=windows>

-p:CollectCoverage=true

Give a step-by-step on this.

**More
Pressure you
feel**

**Less Tests
You Write**

**Less Stable
your code
becomes**

**Less
Productive
and accurate
you are**

