Unit, Integration, & Functional Testing

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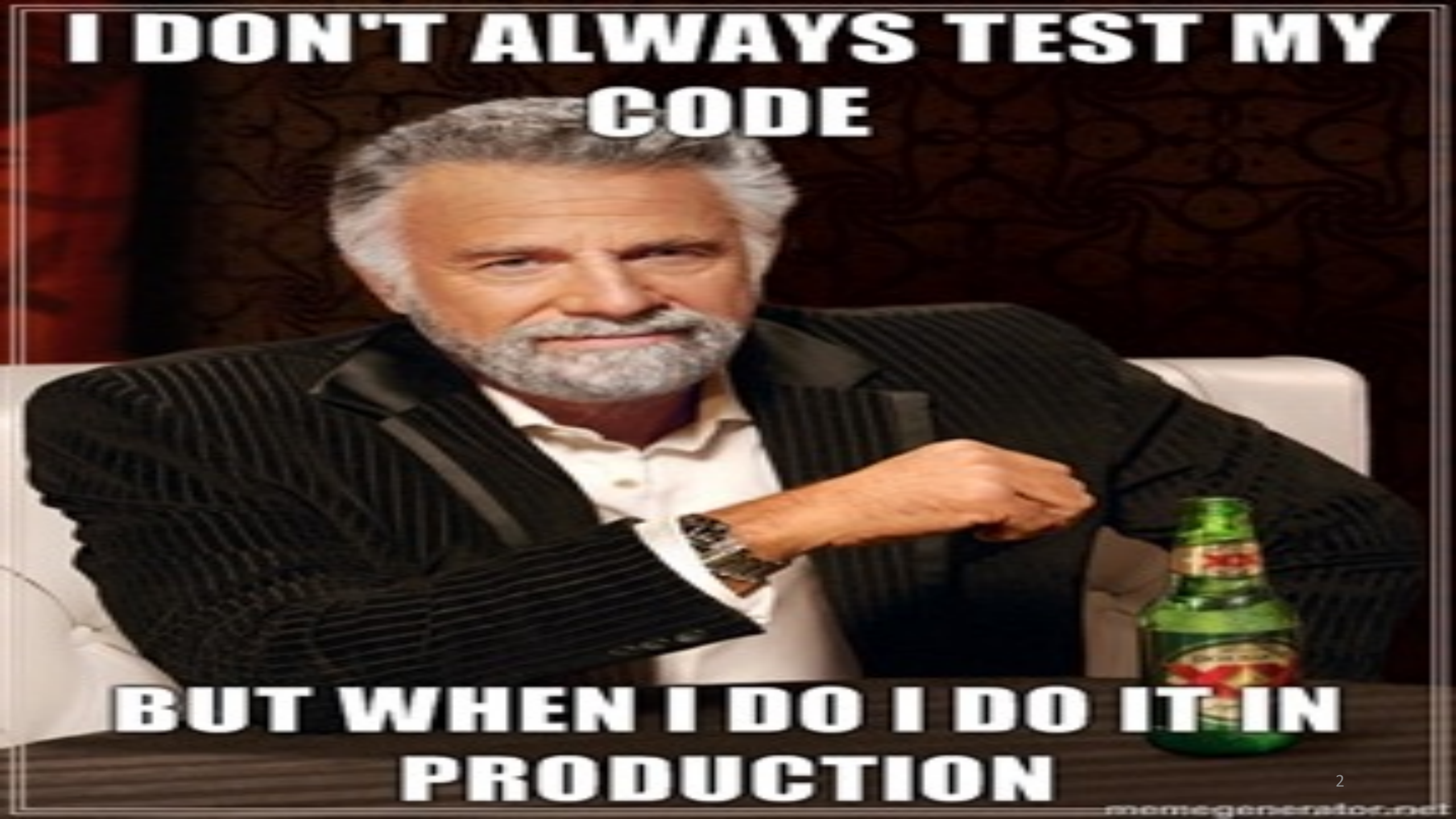
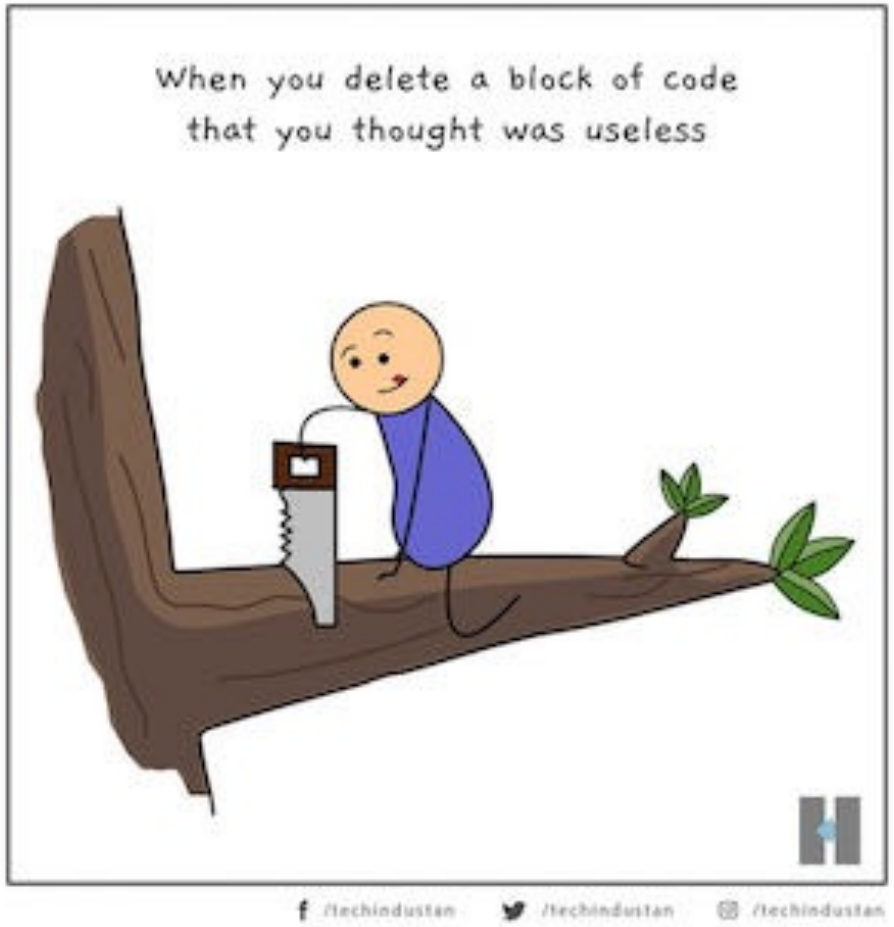

I DON'T ALWAYS TEST MY CODE
BUT WHEN I DO I DO IT IN PRODUCTION
memegenerator.net

Fixing a bug in production.

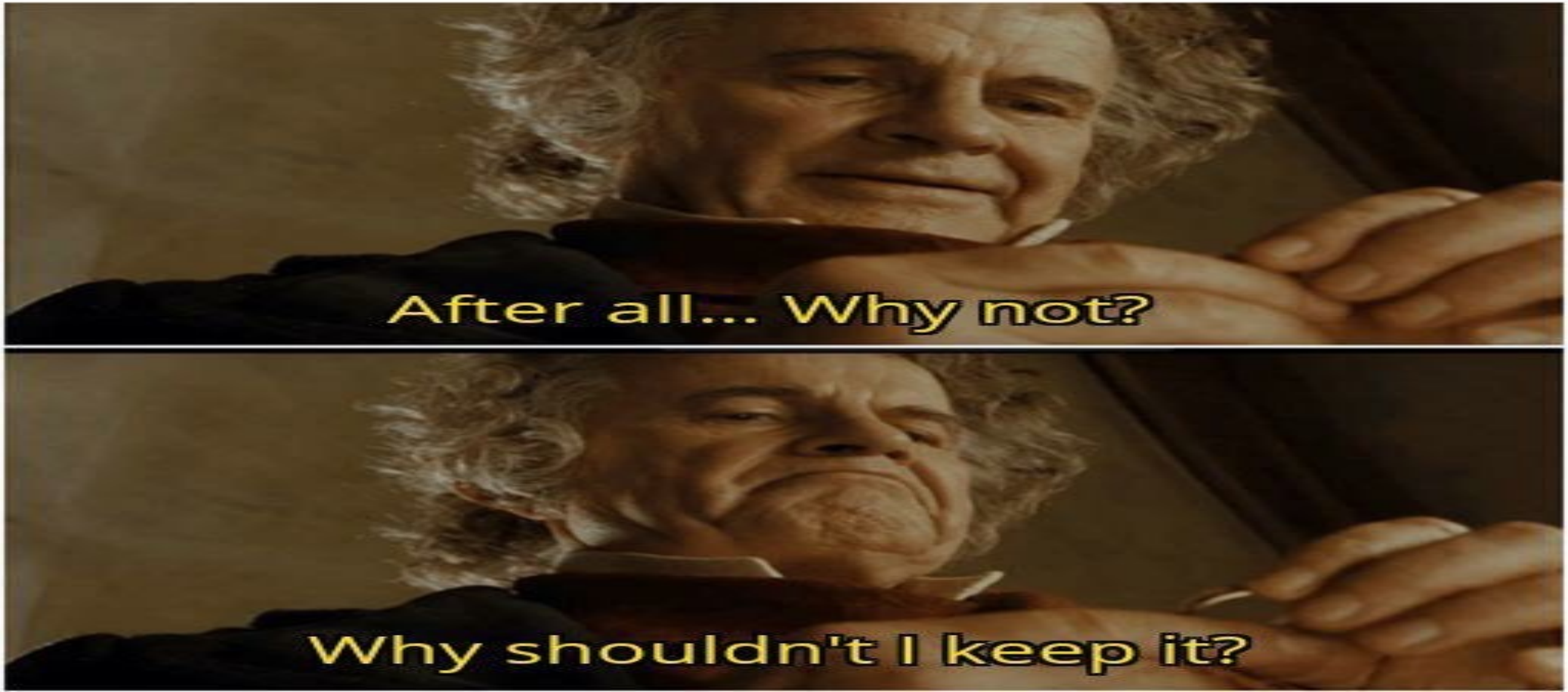
Why Test?

- Testing reduces bugs
- Tests serves as good documentation
- Tests allow for safe refactoring
- Tests reduce the cost of making code changes
- Tests allow you to deliver code with confidence

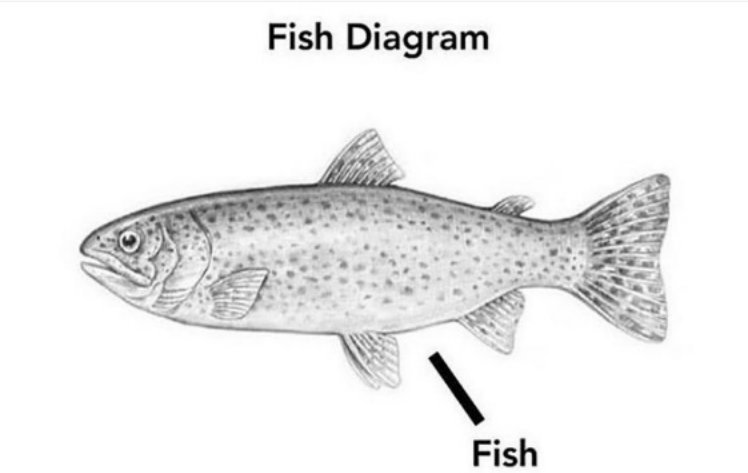


*whenever a programmer comes up with a new bug

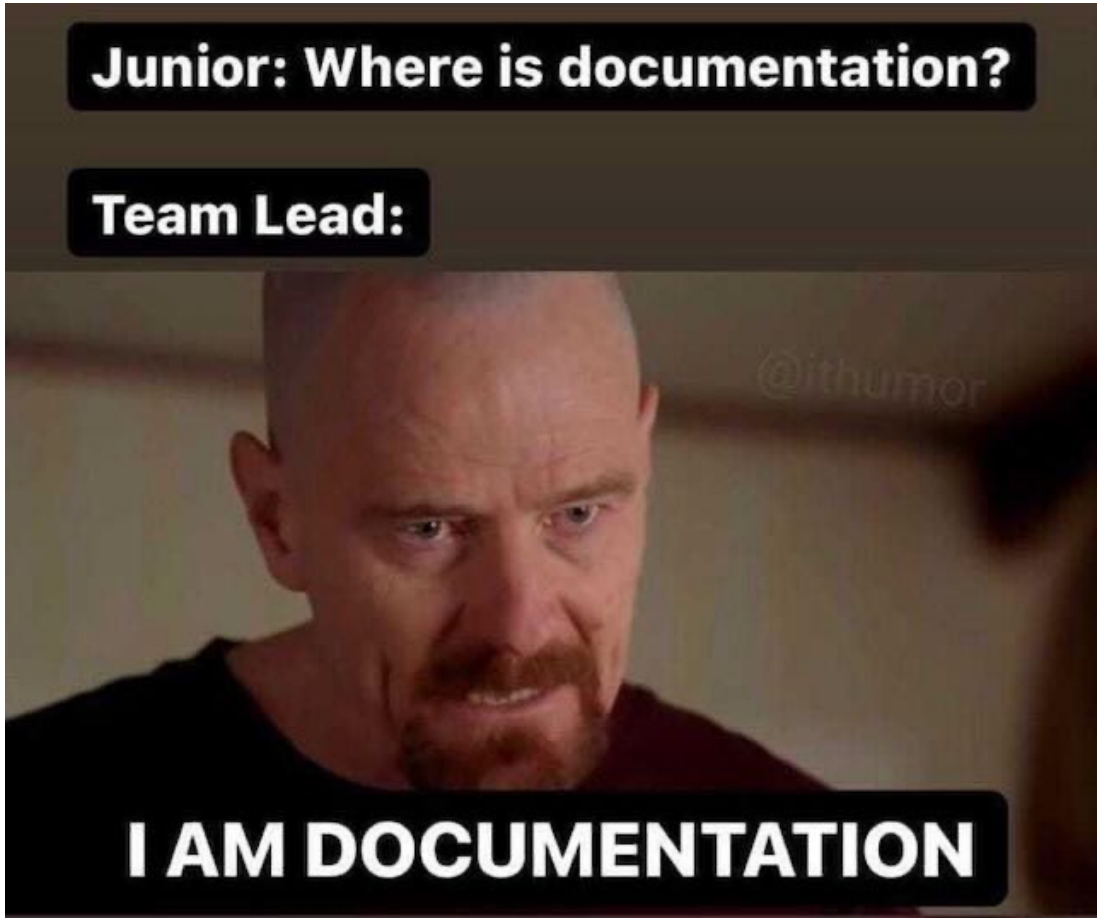
When the bug can be called a feature



Bad Code Comments



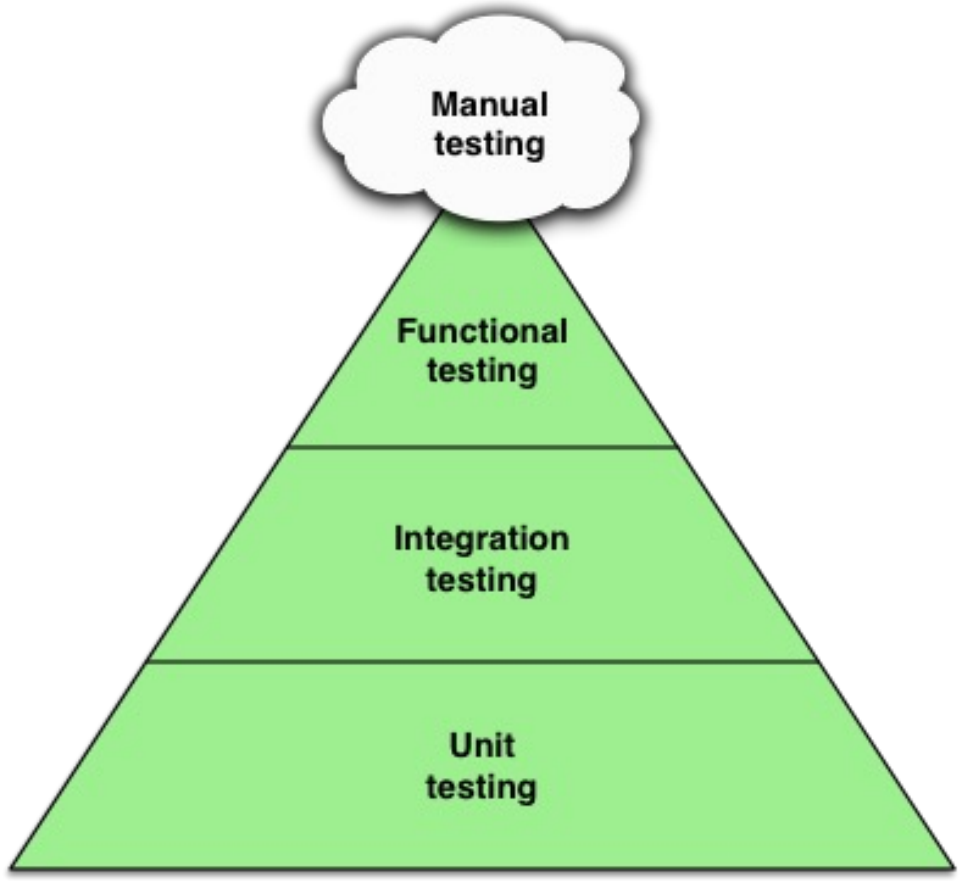
None/Poor Documentation



The entire code after I change a single letter in a comment

Types of Tests

- There are way too many testing level and types to list them here.
- We will focus on Unit and Integration tests.



What is Unit Test?

- Unit tests should not require access to any external systems such as network, databases, etc.
- All external systems such as database, file server, etc. are mocked out using specific test APIs and test data.

Unit Tests

- Isolate parts of programs
- Verify that independent part of programs are working correctly
- Unit tests are fast & reliable
- However, Unit tests
  - Take time to build
  - Require maintenance
- Both of these points require significant time and commitment. An incorrect unit test can let bug go thru unnoticed for long time.


Sometimes my code
is like this.....
Don't know, what it does.
But i am scared to delete.


I have an ongoing fear that all my unit tests pass, but they're meaningless.

What is Integration Test?

- Integration tests verify that interaction between multiple components (applications, services, modules, etc.) is working as expected.


Unit test vs. Integration test

Integration Test Challenges

- Difficult to test all critical paths
- Hard to find the source of errors
- Requires time and commitment from multiple component owners

Performance/Load/Stress Testing

- Simulate a heavy load on a server, network or object to test its strength or to analyze overall performance under different load types.
- Load testing is also a way to perform a functional test on websites, databases, LDAPs, webservices etc.

Test Impact Analysis

- Test Impact Analysis (TIA) is a modern way of speeding up the test automation phase of a build. It works by analyzing the call-graph of the source code to work out which tests should be run after a change to production code.

Why Test Impact Analysis?

- "Too Many" tests to run prior to check-in
- Developers may ignore tests if it takes too long to run.
- Test Impact Analysis (TIA) is a technique that helps determine which subset of tests for a given set of changes.

Cher

@cherthedev

Am I testing my code

or is it testing me

10:09 PM · 20 Oct 20 · Twitter Web App

Additional Resources

See Lecture Page