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Test Driven Development

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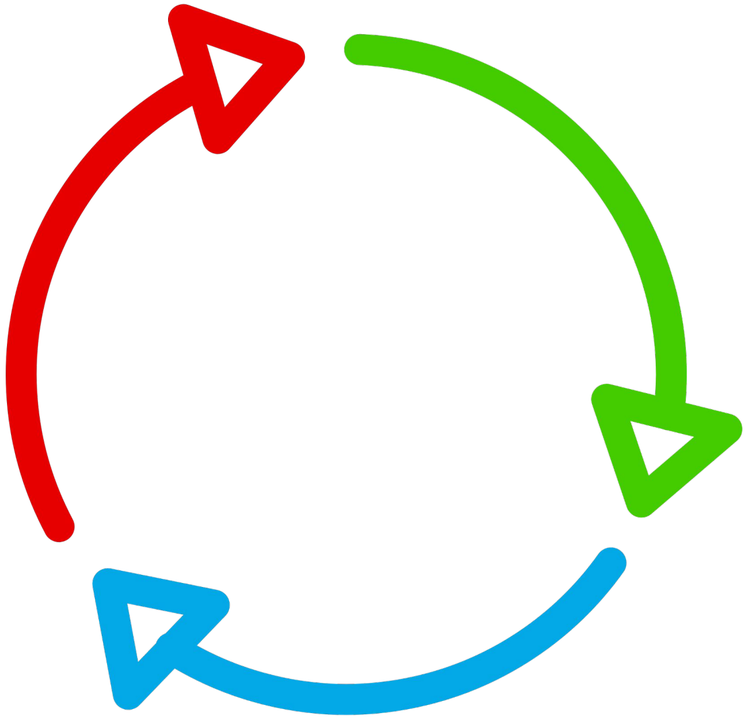
Learning Objectives

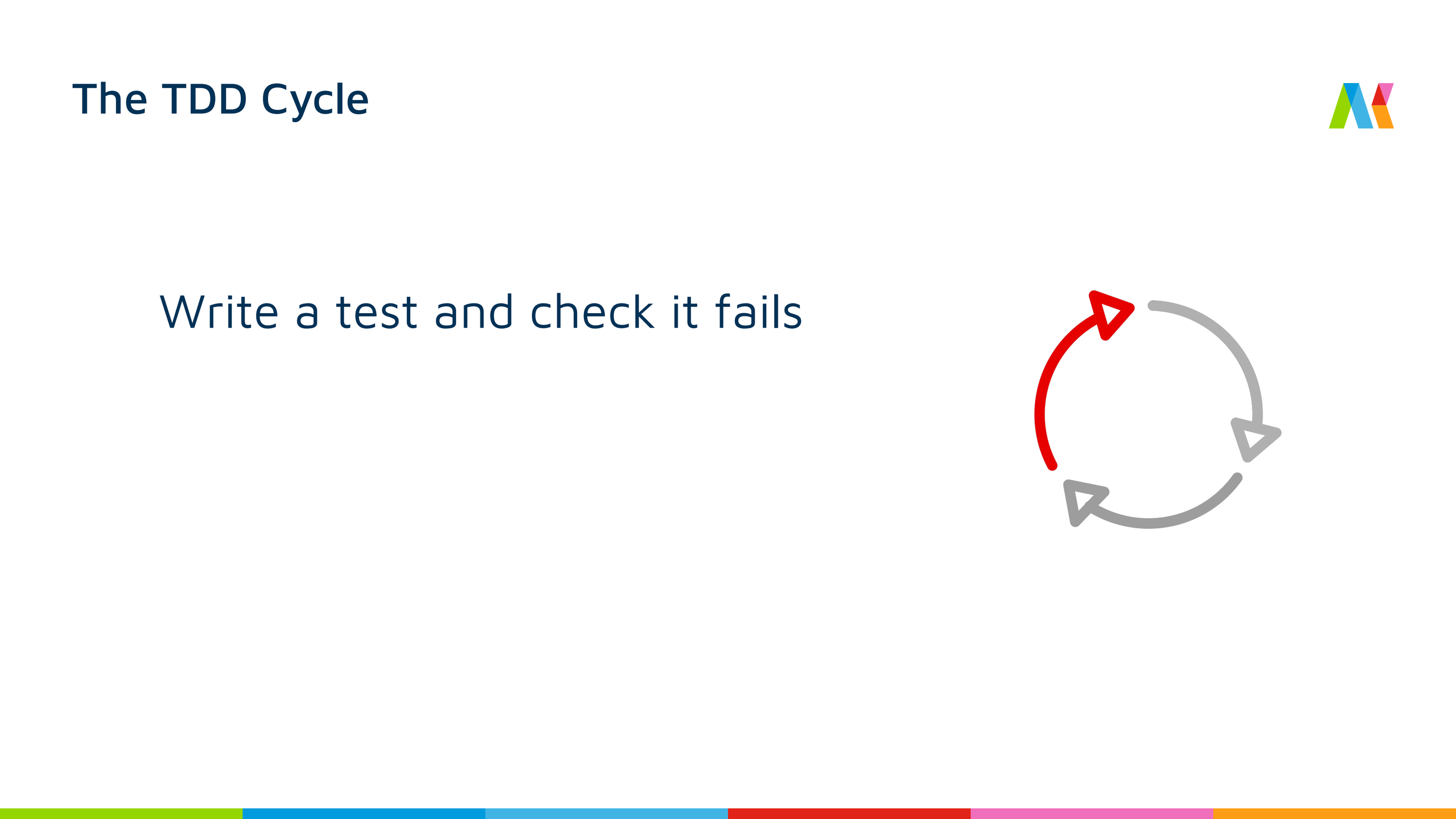
- Describe concept & benefits of Test Driven Development (TDD)
- Describe **red**, **green**, **refactor** cycle
- Use pytest to unit test a Python app

What is TDD?

Red, Green, Refactor Cycle

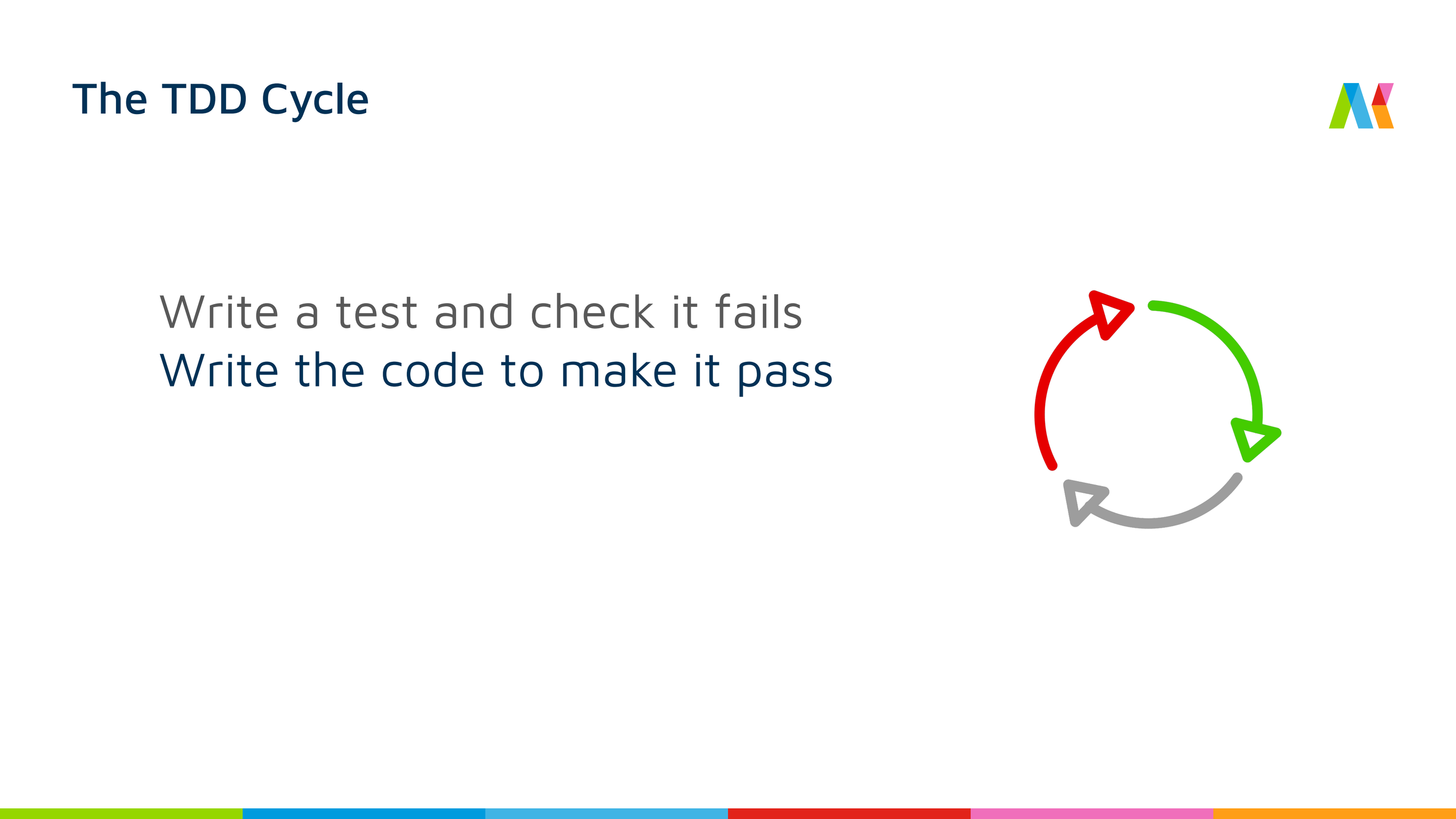


The TDD Cycle



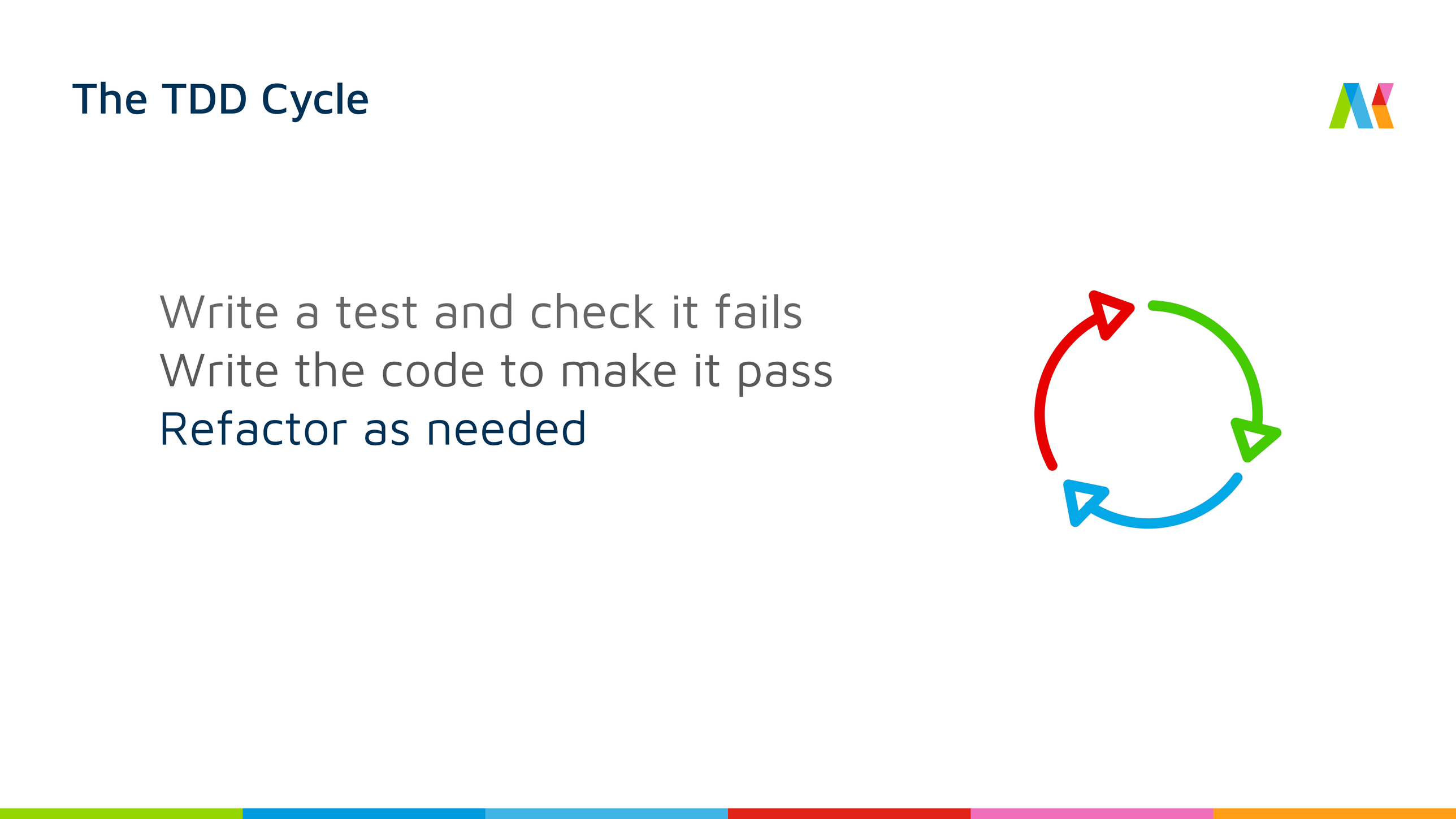
Write a test and check it fails

The TDD Cycle



Write a test and check it fails
Write the code to make it pass

The TDD Cycle



Write a test and check it fails
Write the code to make it pass
Refactor as needed

Intro: Pytest with Hello World

Pytest

```python
# src/hello.py
def hello():
    return "Hello, World!"

# test/test_hello.py
def test_hello():
    expected = "Hello, World!"
    actual = hello()

    assert expected == actual

```

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Exercise: The OmniThingyParser™

OmniThingyParser™

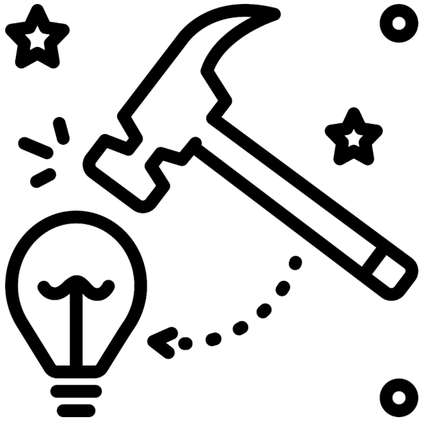
- I want it to read a JSON file
- I now want it to read YAML
- Read from `CompanyDbConnecter`*
- Read from `unstableDataProcessor`

* companyDbConnecter is under development. Mock the responses as it’s not finished

Benefits of TDD

Benefits

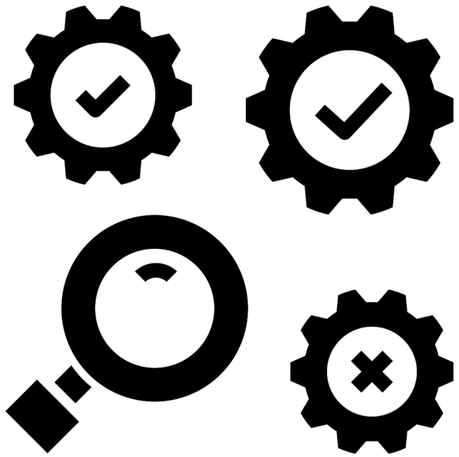
Remove fear of breaking something and not knowing



Benefits

Remove fear of breaking something and not knowing

Creates a simpler, iterative, more resilient design

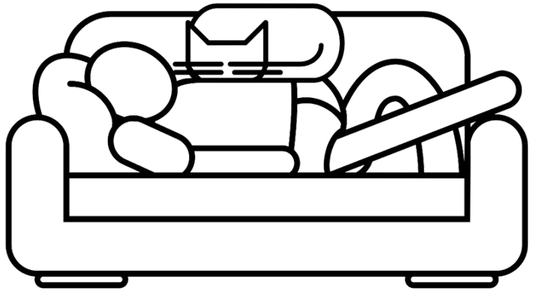


Benefits

Remove fear of breaking something and not knowing

Creates a simpler, iterative, more resilient design

Self-documenting code



Cheat Sheet: Testing

Why Test

- Know when you've broken something
- Improve design
- Document the code and behaviour

Tricks and Tips

- Hard to write unit tests are telling you your code is bad
- Don't add special "test only" functions
- Test inputs and outputs
- Make sure you have seen your tests fail at least once

The Words You Use Matter

Your tests are part of the documentation for the next developer. Make sure it explains the functionality of the code with clear examples of behaviour and good test naming

Key Terms

- Unit Test
- Assertion
- Expectation

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