How Unit Testing Saved My Career

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About Me

- Career Saved By Unit Tests

- BSc in Computer Science
- 8 years of programming experience

- Software Engineer, OpenValue Switzerland since May 2024

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JUnit

```
@Test
void deposit_validAmount() {
  // Given
  account = new BankAccount(new BigDecimal("100.00"));

  // When
  account.deposit(new BigDecimal("50.00"));

  // Then
  assertEquals(new BigDecimal("150.00"), account.getBalance());
}
```

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JUnit

```
@Test
void withdrawMoreThanBalance_expectException() {
  // Given
  account = new BankAccount(new BigDecimal("100.00"));

  // When, then
  assertThrows(IllegalArgumentException.class,
  () -> account.withdraw(new BigDecimal(“200.0”));
}
```

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Examples

Testable Code…

- … is understandable Code
- … is cleaner code
- … gives fast feedback
  → fail fast
- … is easier to maintain

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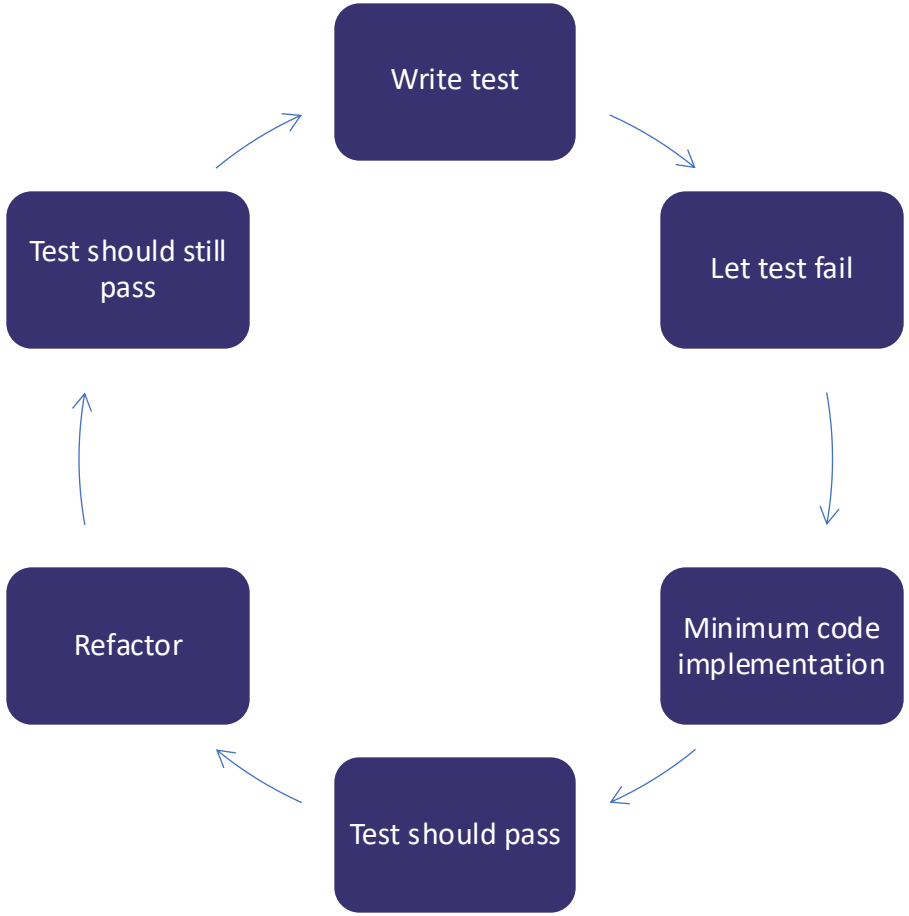
TDD



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Mockito

- Simplify test setups
- Creating unit tests that really only test the unit, as the other aspects can be mocked away

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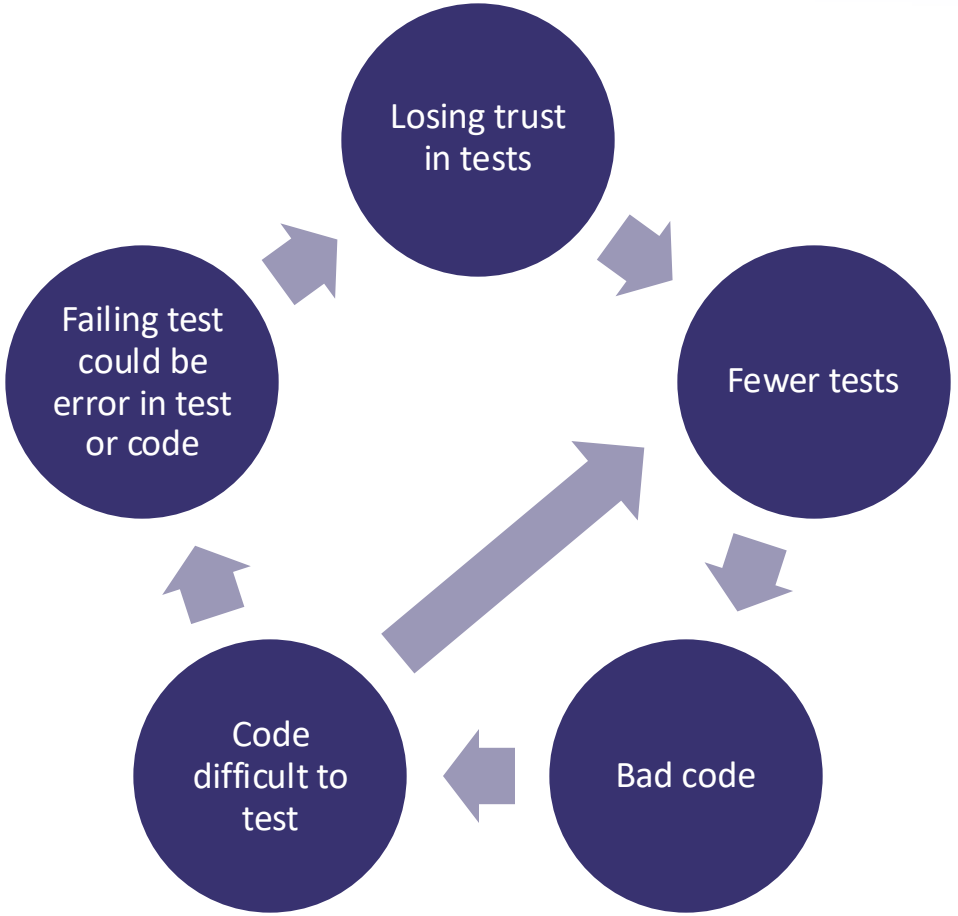
What happens if there are almost no tests



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Parametrized Tests

```
@ParameterizedTest
@CsvSource({
    "2, 4",
    "3, 9",
    "4, 16"
})
void testWithCsvSource(int input, int expected) {
    assertTrue(input * input == expected);
}
```

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Parametrized tests

- Seeing at one glance which cases were tested, and if some cases are missing
- Easier to cover all the cases
  - Boundary values
  - Negative and positive tests
- Developers rather add additional test cases

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Parametrized Tests

- Multiple possible sources make parametrized tests possible in all kinds of situations (e.g. `@ValueSource`, `@EnumSource`, `@MethodSource`)

- See Guide to JUnit 5 Parameterized Tests

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AM I TESTING MY CODE
OR IS IT TESTING ME?
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Challenging complex setup

- **NOT:** We shouldn’t do it like this!

  BUT: Why are we doing it like this?

- Is the code too complex?
- Could mocks be introduced to reduce complexity?
- Does the test setup only contain the necessary things?
- Is the test on the right level on the testing pyramid?

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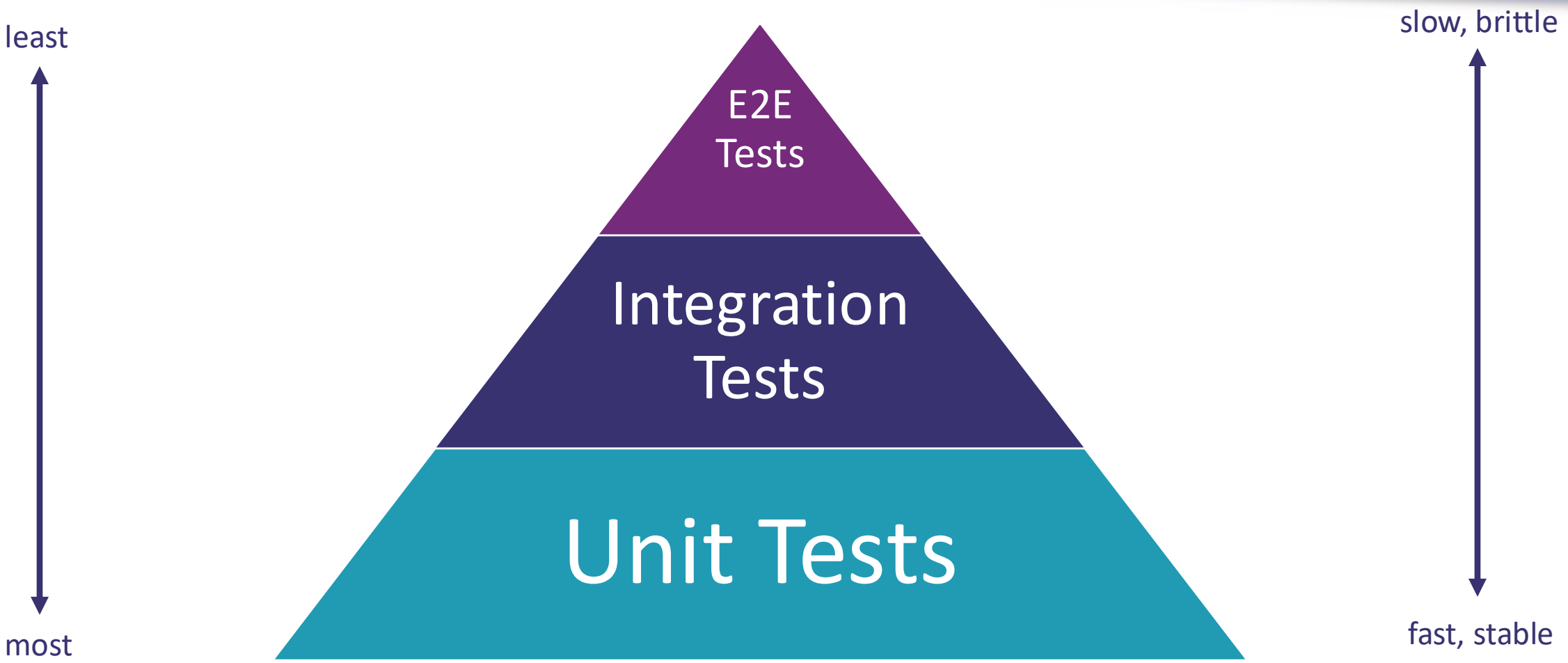
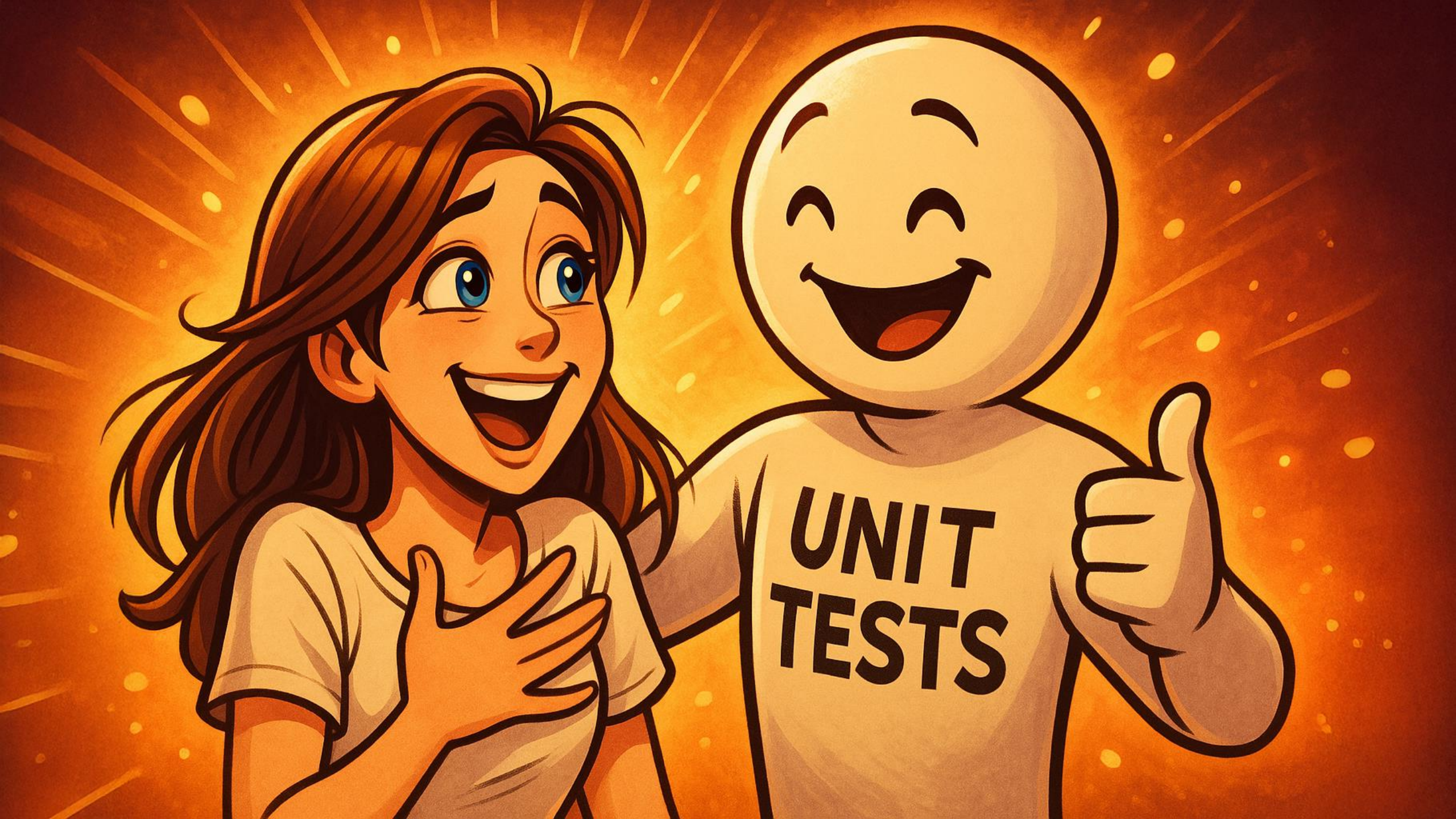
Testing pyramid




UNIT
TESTS

Thank you for your attention

Slides & Code

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Further Resources

- SRP(Single Responsibility Principle)
- The Practical Test Pyramid (Martin Fowler)

Sources

- ISTQB Glossary

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