



*Effective Unit Test*

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# UNIT TEST

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# CONTENT

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- Why unit testing
- What is a unit test
- How to unit test
- Best practice

## WHY UNIT TESTING

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- You just finished coding a feature and want to ensure that it **works as you expect**.
- You want to **document** a change so that you and others later understand the choices you coded into the system.
- You need to change code and want to make sure your forthcoming changes **don't break any existing behavior**.
- You want to **understand** the current behavior of the system.
- You want to know when third-party code **no longer behaves as you expect**.

# WHAT IS A UNIT TEST

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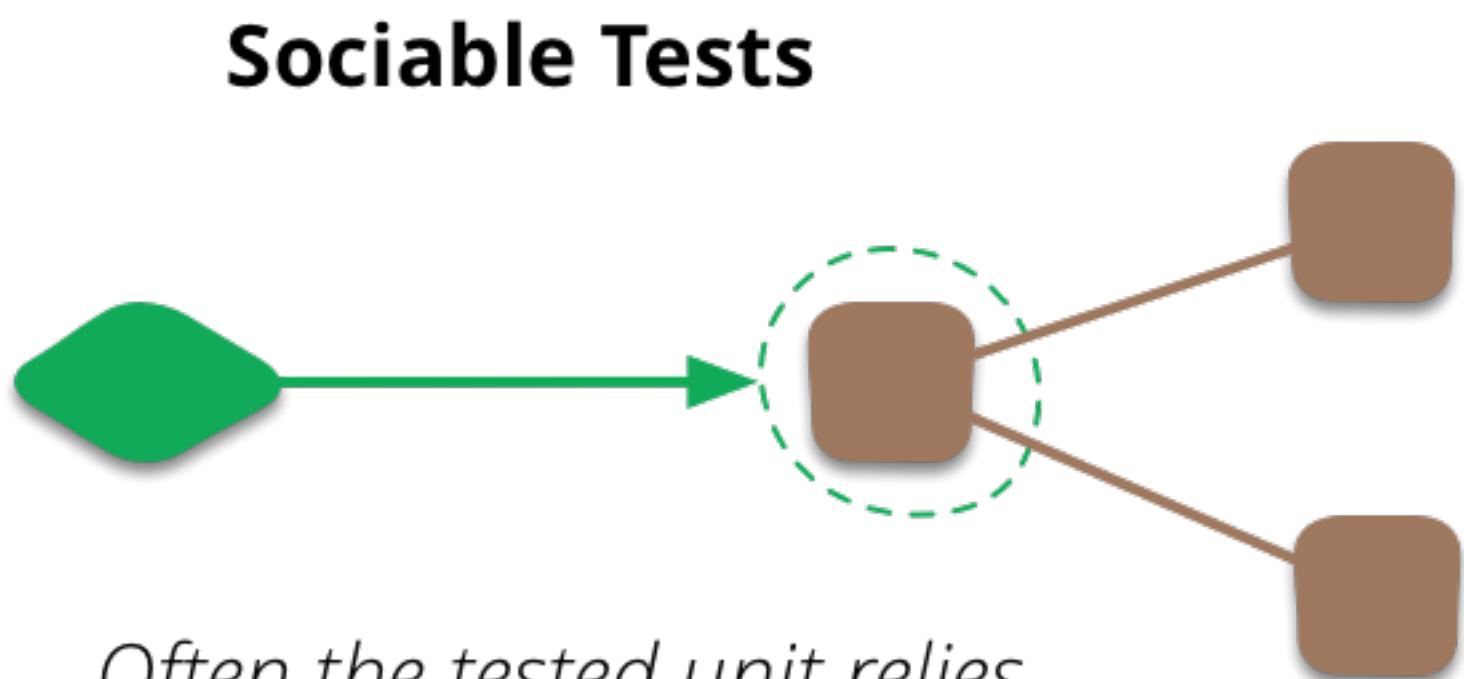
```
@Test
public void should_return_6_results_when_given_3_characters() throws Exception {
    anagrams = new Anagrams();

    List<String> result = anagrams.from( value: "ABC");

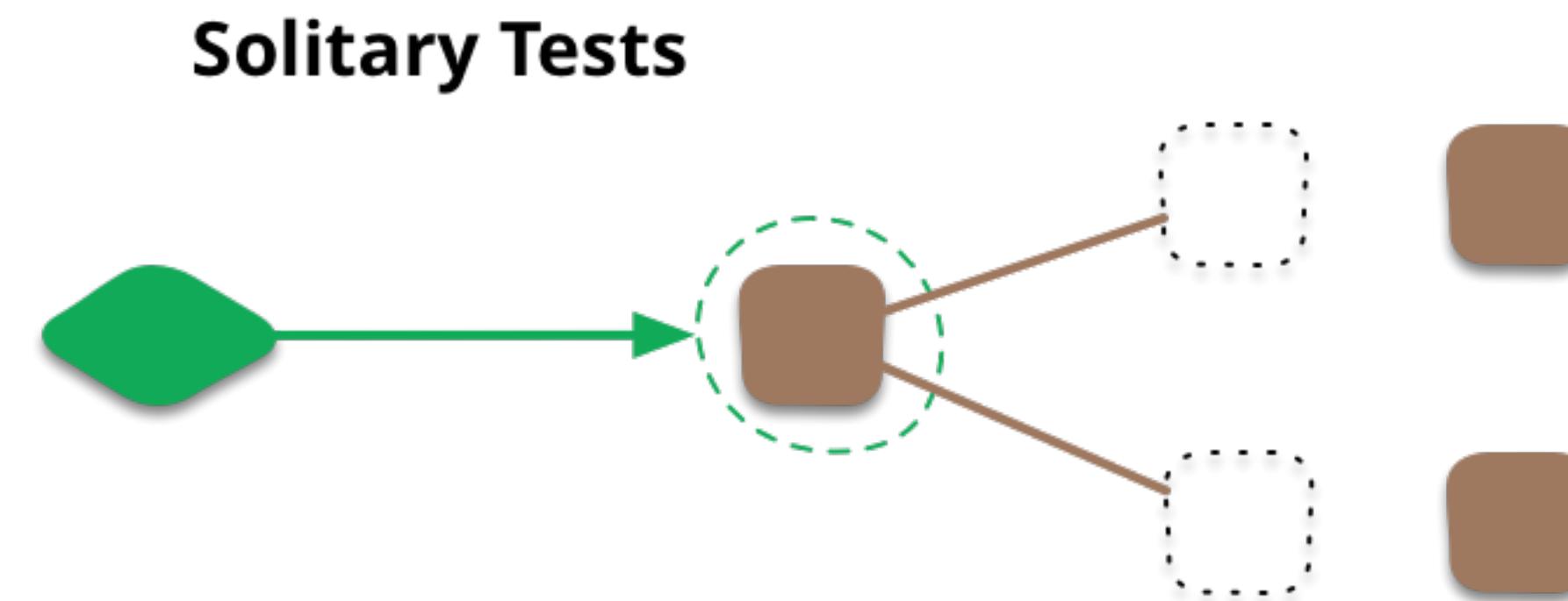
    assertThat(result).containsExactlyInAnyOrder("ABC", "ACB", "BAC", "BCA", "CAB", "CBA");
}
```

# WHAT IS A UNIT

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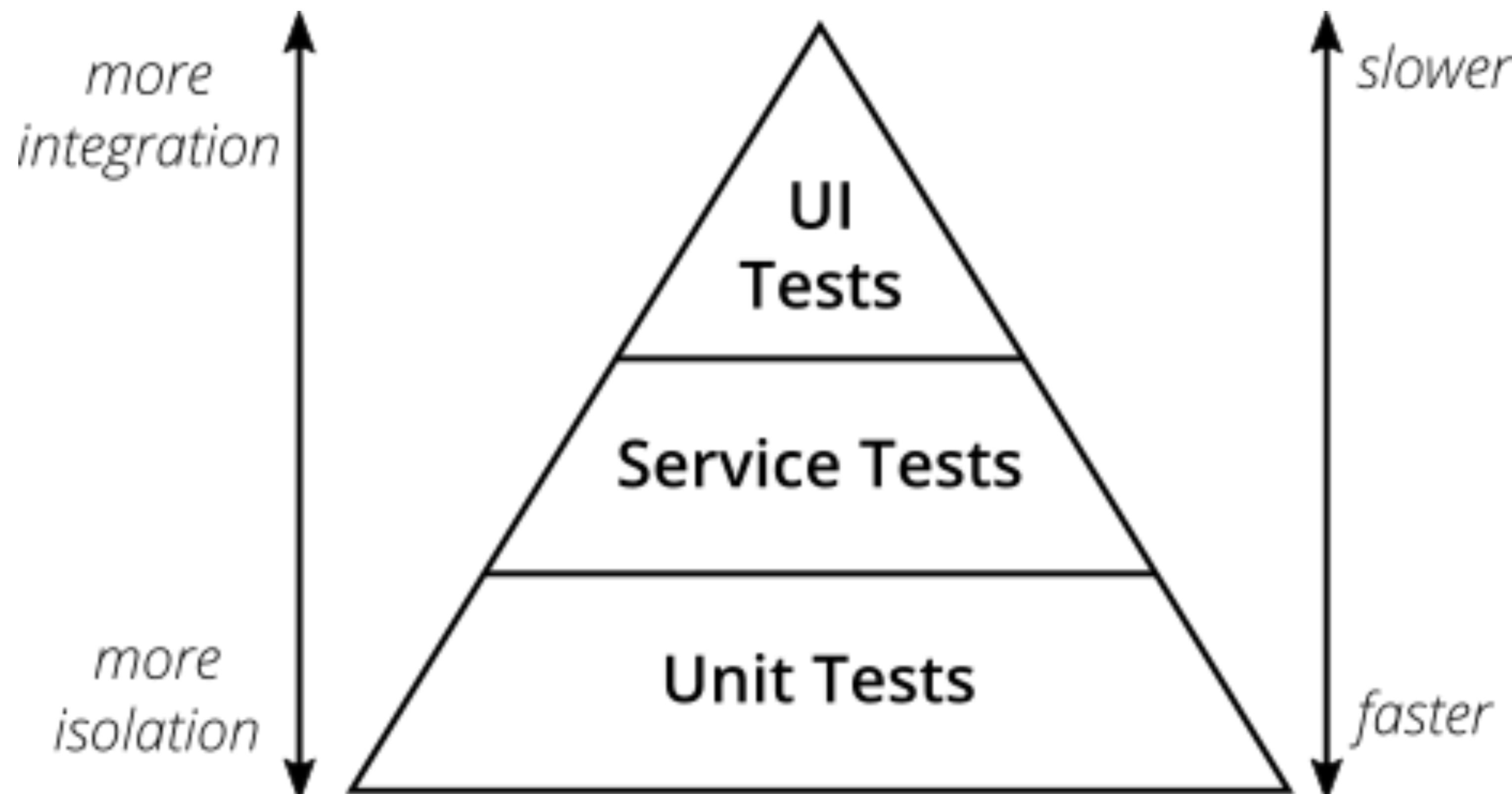
*Often the tested unit relies  
on other units to fulfill its  
behavior*



*Some unit testers prefer to  
isolate the tested unit*

# THE TEST PYRAMID

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# KEEPING TESTS CONSISTENT WITH ARRANGE ACT ASSERT/GIVEN WHEN THEN

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```
@Test
public void answersArithmeticMeanOfTwoNumbers() {
    //Given
    ScoreCollection collection = new ScoreCollection();
    collection.add(() -> 5);
    collection.add(() -> 7);

    //When
    int actualResult = collection.arithmeticMean();

    //Then
    assertThat(actualResult, equalTo(6));
}
```

# THE VALUE OF FOCUSED, SINGLE-PURPOSE TESTS

```
@Test
public void matches() {
    Profile profile = new Profile("Bull Hockey, Inc.");
    Question question = new BooleanQuestion(1, "Got milk?");

    // answers false when must-match criteria not met
    profile.add(new Answer(question, Bool.FALSE));
    Criteria criteria = new Criteria();
    criteria.add(
        new Criterion(new Answer(question, Bool.TRUE), Weight.MustMatch));

    assertFalse(profile.matches(criteria));

    // answers true for any don't care criteria
    profile.add(new Answer(question, Bool.FALSE));
    criteria = new Criteria();
    criteria.add(
        new Criterion(new Answer(question, Bool.TRUE), Weight.DontCare));

    assertTrue(profile.matches(criteria));
}
```



## FIRST

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- [F]ast
- [I]solated
- [R]epeatable
- [S]elf-validating
- [T]imely

# FAST

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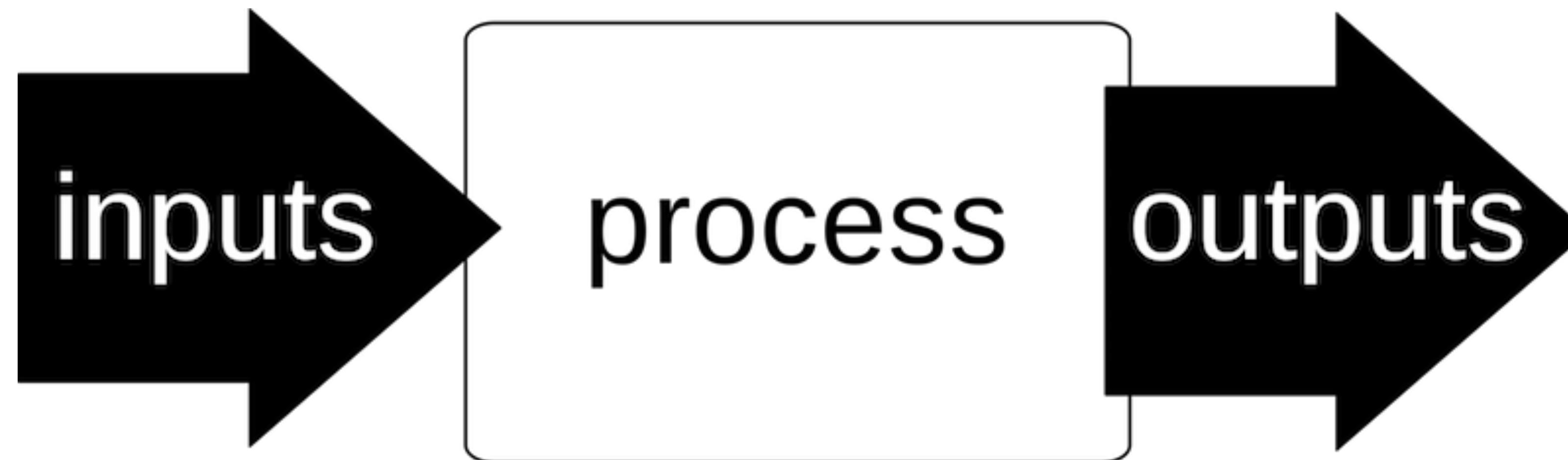
# ISOLATED

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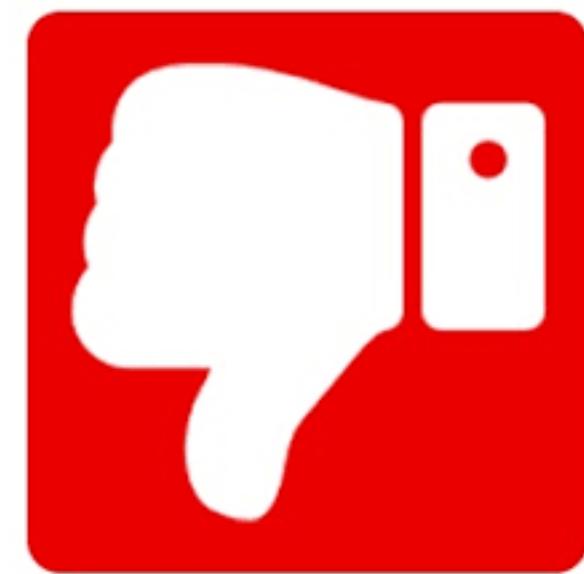
## REPEATABLE

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# SELF-VALIDATING

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```
@Test
public void should_return_6_results_when_given_3_characters() throws Exception {
    //Given
    anagrams = new Anagrams();

    //When
    List<String> result = anagrams.from("ABC");

    //Then
    System.out.println(result);
}
```

# TIMELY

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## RIGHT-BICEP

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- Right – Are the results right? 结果是否正确?
- B – Are all the boundary conditions correct? 所有边界条件都是正确的么?
- I – Can you check the inverse relationships? 能否检查一下反向关联?
- C – Can you cross-check results using other means? 能够使用其他手段交叉检查一下结果?
- E – Can you force error conditions to happen? 是否可以强制错误条件产生?
- P – Are performance characteristics within bounds? 是否满足性能要求?

# THE BIGGEST PITFALL

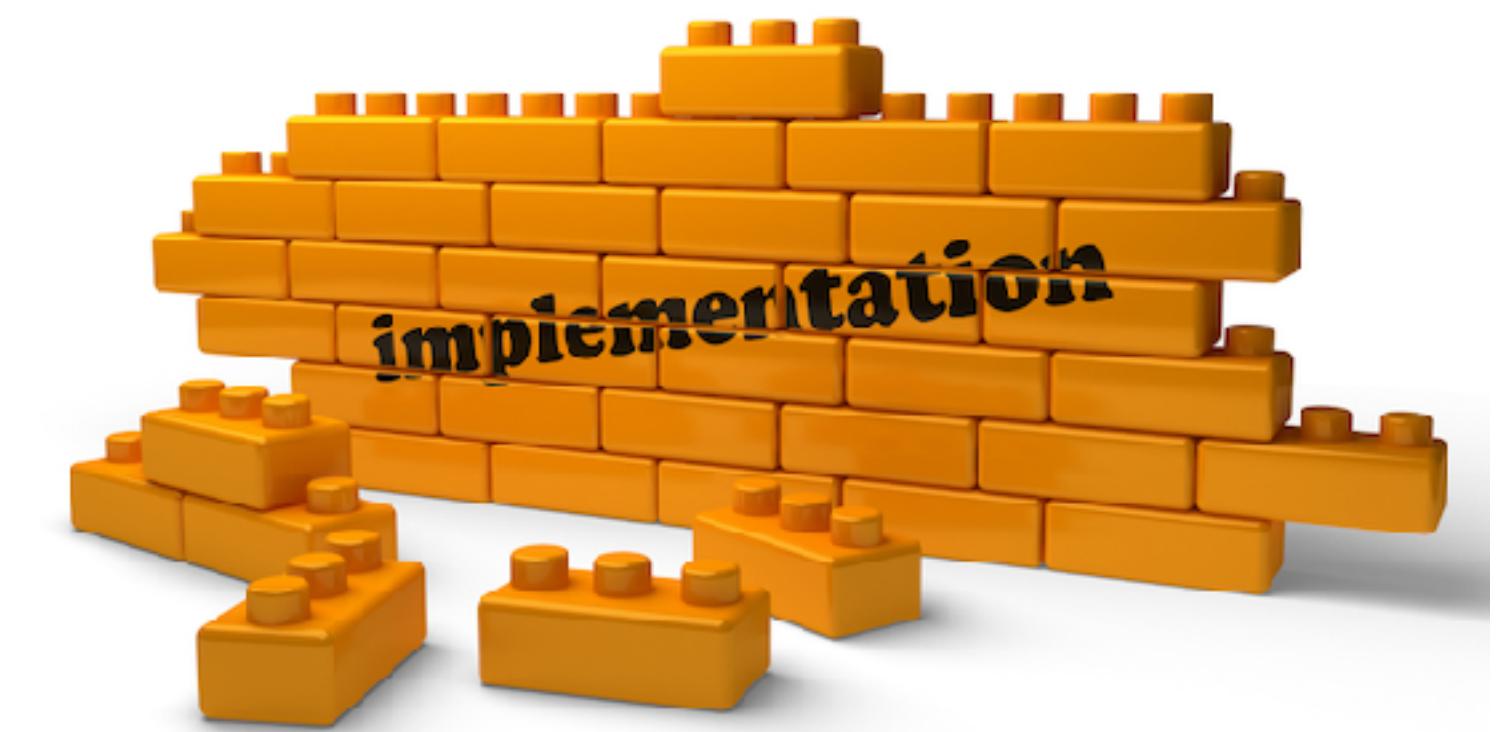
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# FOCUS THE VALUE

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VALUE OVER  
implementation



# THANK YOU

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