Software Testing

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Introduction

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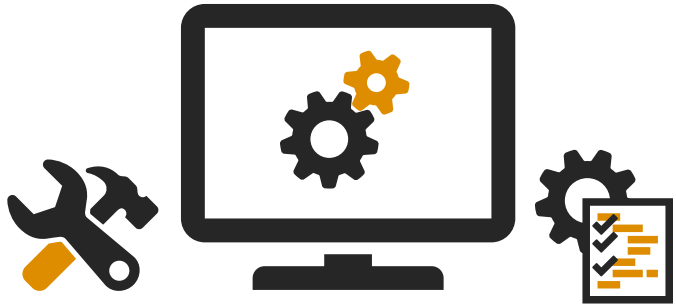
Types of Testing



Manual Testing

Automated Testing

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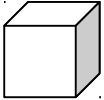
Testing Methods

Black Box Testing

Gray Box Testing



White Box Testing

Advantages

- Handles large Code Segments
- Code not required

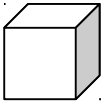
Disadvantages

- Limited coverage
- Inefficient testing
- Difficult to design

Testing Methods

Black Box Testing

Gray Box Testing



White Box Testing

Advantages

- Combined benefits of Black and White box testing
- Relies on Contracts
- User-centric

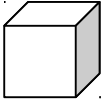
Disadvantages

- Limited coverage
- Tests may be redundant

Testing Methods

Black Box Testing

Gray Box Testing



White Box Testing

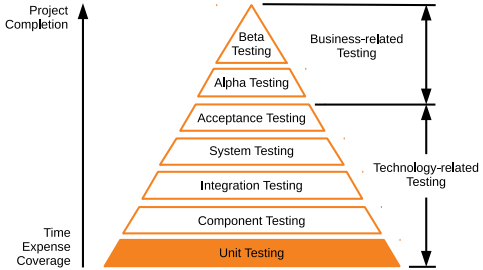
Advantages

- Helps to optimize code
- Can find hidden defects
- Maximizes coverage

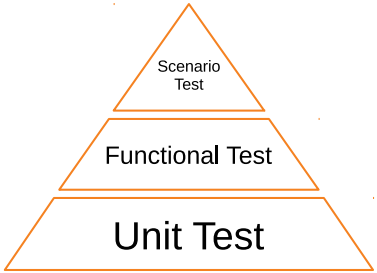
Disadvantages

- High cost for high skill
- Difficult to maintain

Typical Levels of Testing



Developer Testing Levels



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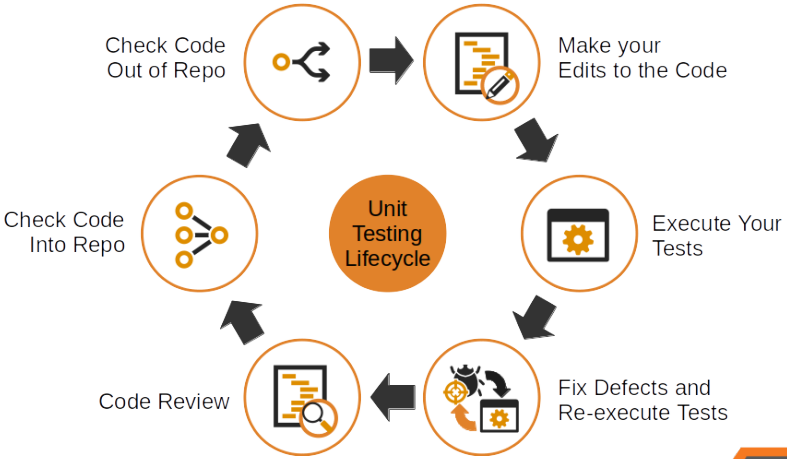
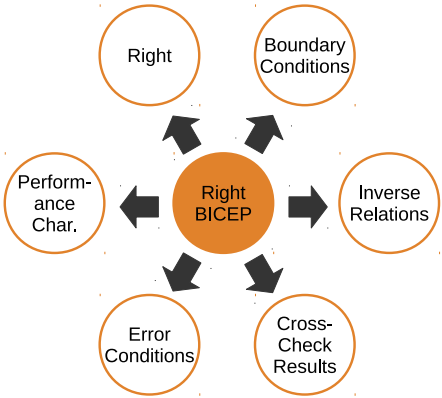
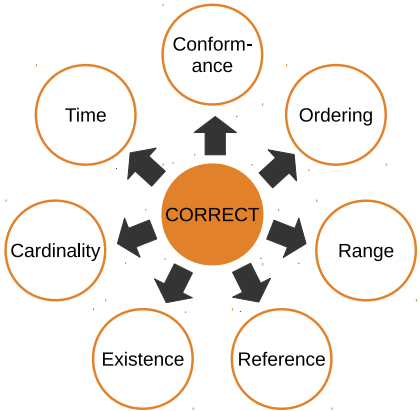
Unit Testing



Unit Testing Strategies





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Creating Unit Tests

1. From the code editor window, right-click and choose Create Unit Tests from the context menu.
2. Click OK to accept the defaults to create your unit tests, or change the values used to create and name the unit test project and the unit tests.
3. The unit test stubs are created in a new unit test project for all the methods in the class.

The AAA Method

Arrange

Act

Assert

Unit Testing C#

```
[TestMethod]
public void Withdraw_ValidAmount_ChangesBalance()
{
  // arrange
  double currentBalance = 10.0;
  double withdrawal = 1.0;
  double expected = 9.0;
  var account = new CheckingAccount("JohnDoe", currentBalance);
  // act
  account.Withdraw(withdrawal);
  double actual = account.Balance;
  // assert
  Assert.AreEqual(expected, actual);
}
```


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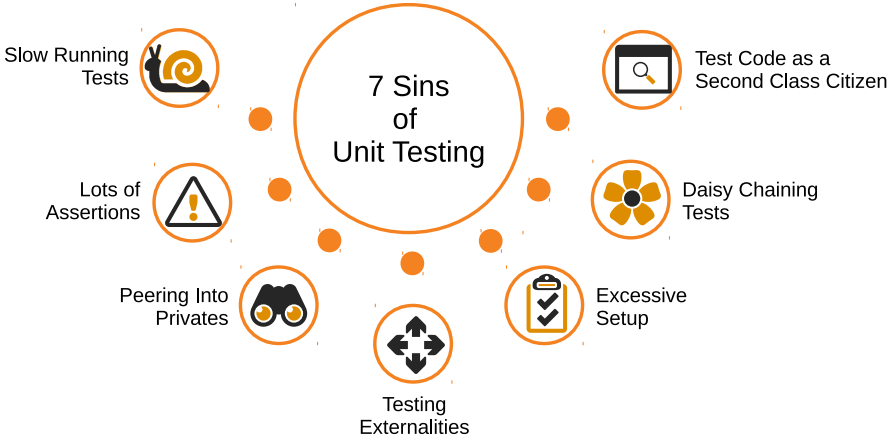
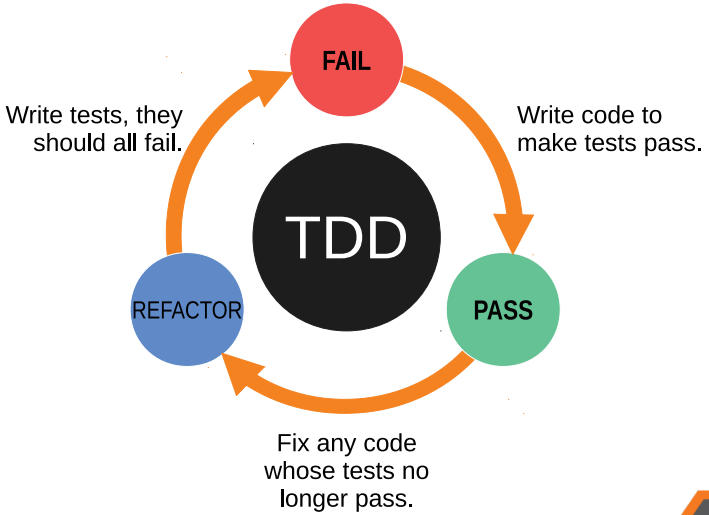
Demo

7 Deadly Sins of Unit Testing

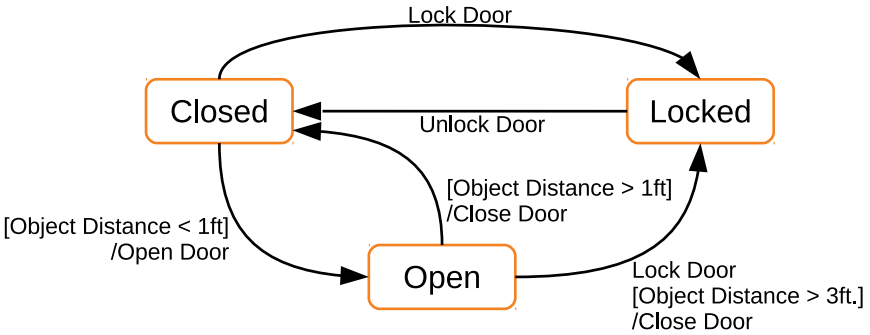


Test Driven Development



Demo

Active Learning



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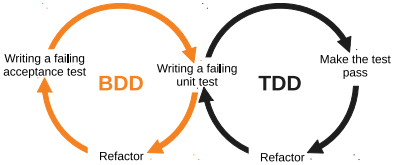
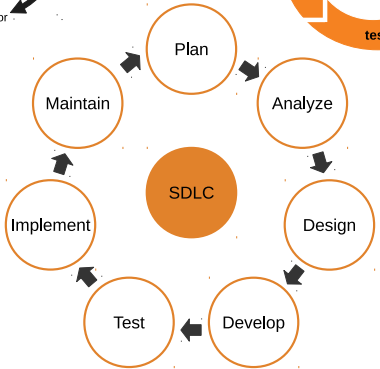
Connections





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Are there any questions?