
Introduction to JUnit

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Content

- Platform-independent
- Object-oriented
- Exception-handling

JUnit Framework

- **JUnit** is an open source framework that has been designed for the purpose of **writing** and **running** tests in the **Java** programming language.
- JUnit is a **regression-testing** framework for **unit testing**.

Test Classes and Test Methods

- For each class **C** under test, define a test class **CTest**.
 - Test classes inherit class **TestCase** in package **junit.framework**.
 - For each method **m** under test, define a test method **testM**.
 - **Return type** of a test method must be **void**.
 - Test method **must not throw any exception**.
 - Test method **must not have any parameter**.
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An Example

```
class Calculator
{
    public int sum(int n1, int n2) { return n1+n2; }
}
```

```
import junit.framework.TestCase;
class CalculatorTest extends TestCase {
    public void testSum() {
        Calculator cal = new Calculator();
        assertEquals(2, cal.sum(1,1));
    }
}
```

Assert Methods

- assertEquals(expected, actual)
If actual equals expected then does nothing; otherwise, fails.
- assertEquals(message, expected, actual)
If actual equals expected then does nothing; otherwise, fails and prints out message.
- assertEquals(expected, actual, delta)
If actual equals expected within delta then does nothing; otherwise, fails.
- assertEquals(message, expected, actual, delta)

Assert Methods

- `assertFalse(condition)`
If `condition` is `false` then does nothing; otherwise, `fails`.
- `assertFalse(message, condition)`
- `assertTrue(condition)`
If `condition` is `true` then does nothing; otherwise, `fails`.
- `assertTrue(message, condition)`

Assert Methods

- AssertNull(object)
If **object** **does not exist** then does nothing; otherwise, **fails**.
- AssertNull(message, object)
- AssertNotNull(object)
If **object** **exists** then does nothing; otherwise, **fails**.
- AssertNotNull(message, object)

Assert Methods

- AssertSame(expected, actual)
If **actual** and **expected** refer to the **same object** then does nothing; otherwise, **fails**.
- AssertSame(message, expected, actual)
- AssertNotSame(expected, actual)
If **actual** and **expected** don't refer to the **same object** then does nothing; otherwise, **fails**.
- AssertNotSame(message, expected, actual)

Test Driven Development

- The **test class** is developed **before** the **class** under test.
- The development of the class under test **terminates** if **all** test methods in the test class **succeed**.