

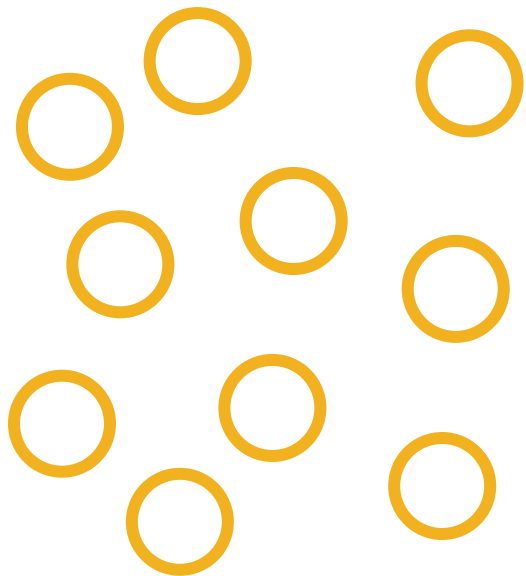
Software Testing

Unit Testing in JUnit

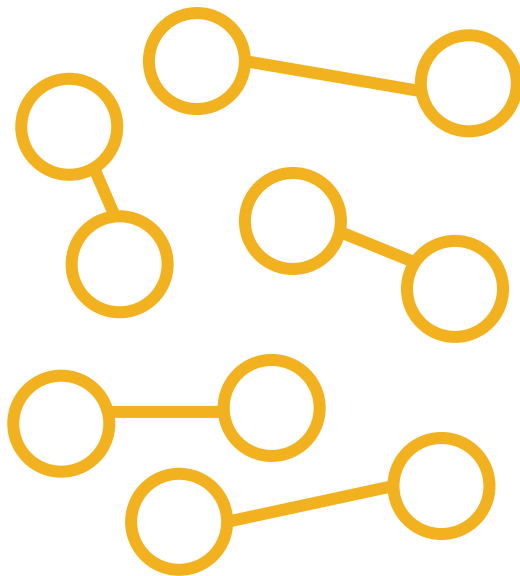


What level are you testing?

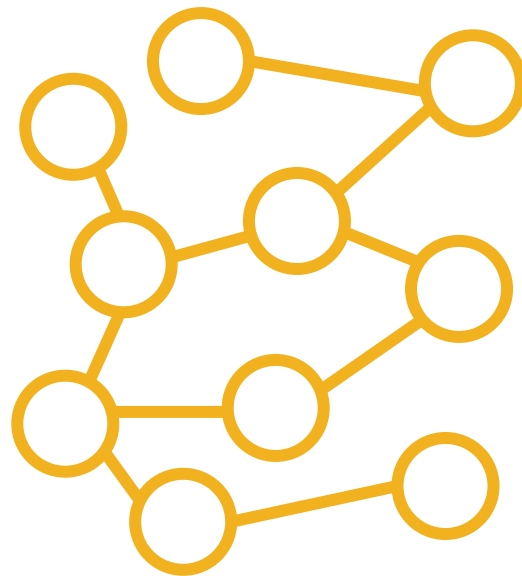
Unit Testing



Integration Testing



System Testing



Unit Testing

- Tests individual methods
- Improves software correctness
- Automatable and manageable
- Performed by developers
- Often part of continuous testing



JUnit Framework

- Used for both unit and integration testing
- Built into Eclipse IDE
- Uses custom assertion methods
 - Different from **assert** statements in Java
- Latest version 4.x uses annotations
 - @Test, @Before, @After

<http://junit.org/>



JUnit Assertion Methods

- `assertTrue()`
- `assertNull()`
- `assertSame()`
- `assertEquals()`
- `assertFalse()`
- `assertNotNull()`
- `assertNotSame()`
- `assertArrayEquals()`

<https://github.com/junit-team/junit/wiki/Assertions> • <http://junit.org/javadoc/4.8/org/junit/Assert.html>



JUnit Annotations

- Use **@Before** for code to be called before every test
 - Used to setup environment before test
- Use **@Test** to indicate a method is a unit test
 - Should contain one assertion method
- Use **@After** for code to be called after every test
 - Used to clean up environment after test

<http://junit.org/javadoc/4.8/org/junit/package-summary.html>



JUnit `@Test` Annotation

- Able to indicate an exception is expected in a unit test
 - `@Test(expected=IOException.class)`
- Able to indicate a timeout if necessary
 - `@Test(timeout=1000)`
- Using `System.exit()` will break unit tests

<http://junit.org/javadoc/4.8/org/junit/Test.html>



Advanced JUnit Tests

- Able to create **parameterized tests**
<https://github.com/junit-team/junit/wiki/Parameterized-tests>
 - Create single test that expects parameters
 - Create specific list of parameters to test
- Able to create **test suites**
<https://github.com/junit-team/junit/wiki/Aggregating-tests-in-suites>
 - Create multiple classes of test cases
 - Group together test cases into test suite

<https://github.com/junit-team/junit/wiki>





CHANGE THE WORLD FROM HERE