

JUNIT & MOCKITO INTRODUCTION

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Trainer's Profile

- Senior Corporate Trainer & Technical Consultant with 21+ years helping global engineering teams master Java, Spring Boot, Microservices, AWS Cloud, DevOps, and GenAI for Java.

I specialize in enabling teams to build scalable, observable, production-ready microservices using real-world architecture patterns, hands-on labs, and deep technical coaching.

Technical Expertise

- Java 8–25 — Streams, Concurrency, JVM Internals
- Spring Boot Ecosystem — Security, Data, Spring Cloud
- Microservices Architecture — API Design, SAGA, CQRS, resilience, observability
- Event Streaming — Kafka, RabbitMQ
- AWS Cloud-Native Development — Built & deployed Spring Boot microservices using ECS, EKS, API Gateway, SQS/SNS, with CI/CD via CodePipeline, CodeBuild, GitHub Actions, Terraform
- Containers & DevOps — Docker, Kubernetes (EKS), IaC, CI/CD pipelines
- GenAI for Java Developers — LangChain4J, Spring AI, RAG, Vector DBs, Java-based AI Agents

Corporate Client

- Bank Of America
- MakeMyTrip
- GreatLearning
- Deloitte
- Kronos
- Yamaha Moters
- IBM
- Sapient
- Accenture
- Airtel
- Gemalto
- Cyient Ltd
- Fidelity Investment Ltd
- Blackrock
- Mahindra Comviva
- Iris Software
- harman
- Infosys
- Espire
- Steria
- Incedo
- Capgemini
- HCL
- CenturyLink
- Nucleus
- Ericsson
- Ivy Global
- Avaya
- NEC Technologies
- A.T. Kearney
- UST Global
- TCS
- North Shore Technologies
- Incedo
- Genpact
- Torry Harris
- Indian Air force
- Indian railways



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Agenda

- **Introduction to Junit and Mockito**
- **What is Iterative Software development**
- **What is TDD?**
- **Getting started with Junit5 maven configuration**
- **Junit5 Architecture**
- **Junit 5 Annotations**
- **Junit 5 Assertions**
- **Simple calculator application,Junit 5 annotation examples**
- **Junit5 how to test method that throws exception**
- **Junit5 how to test slow Api**
- **Junit5 how to parameterized test reading from csv file**
- **Junit5 how to write test suite**
- **Junit5 and Mockito integration**

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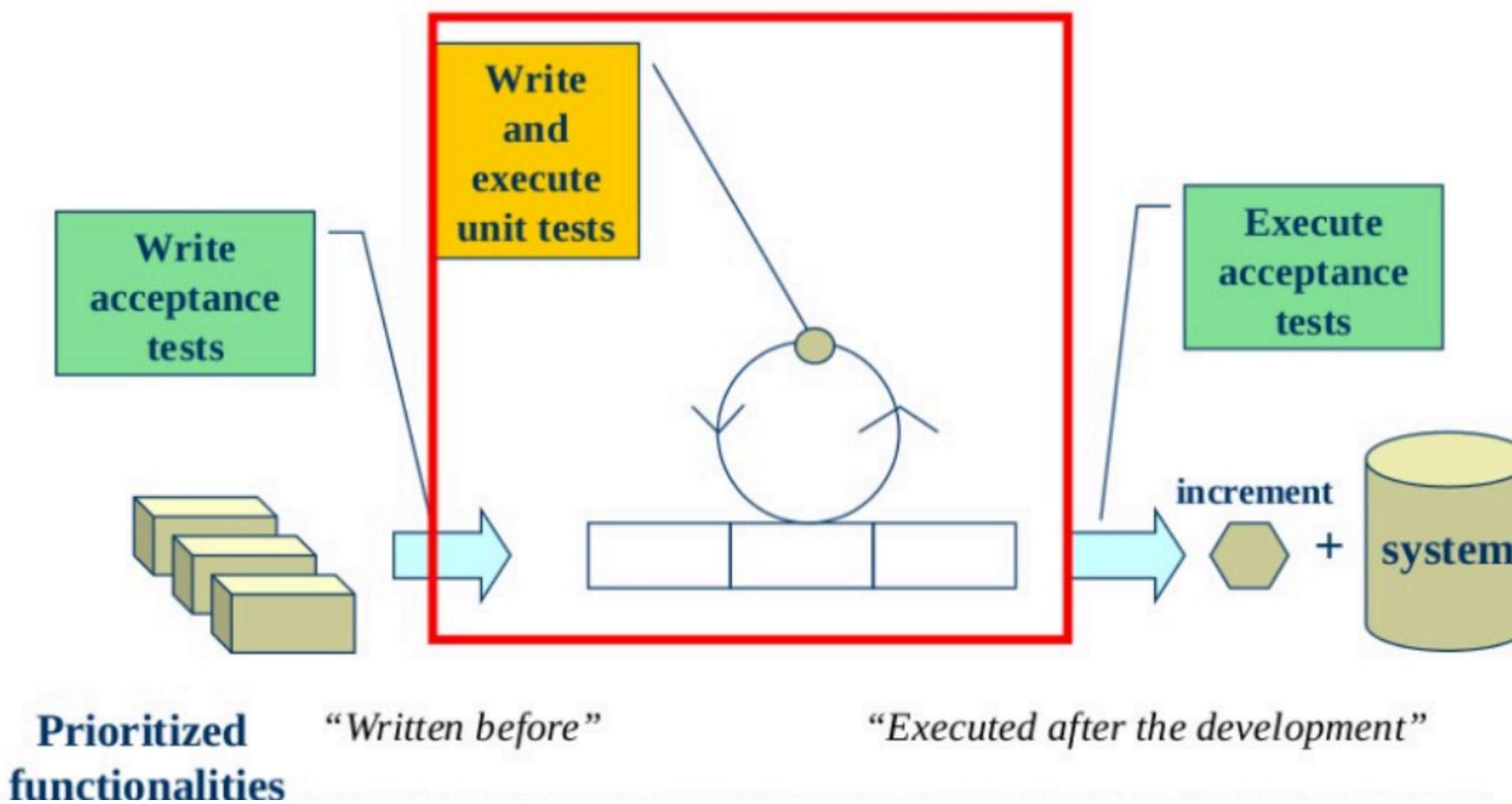
What is Junit?

JUnit is a unit testing open-source framework for the Java programming language. Java Developers use this framework to write and execute automated tests. In Java, there are test cases that have to be re-executed every time a new code is added. This is done to make sure that nothing in the code is broken.

What is Mockito?

Mockito is a mocking framework, JAVA-based library that is used for effective unit testing of JAVA applications. Mockito is used to mock interfaces so that a dummy functionality can be added to a mock interface that can be used in unit testing.

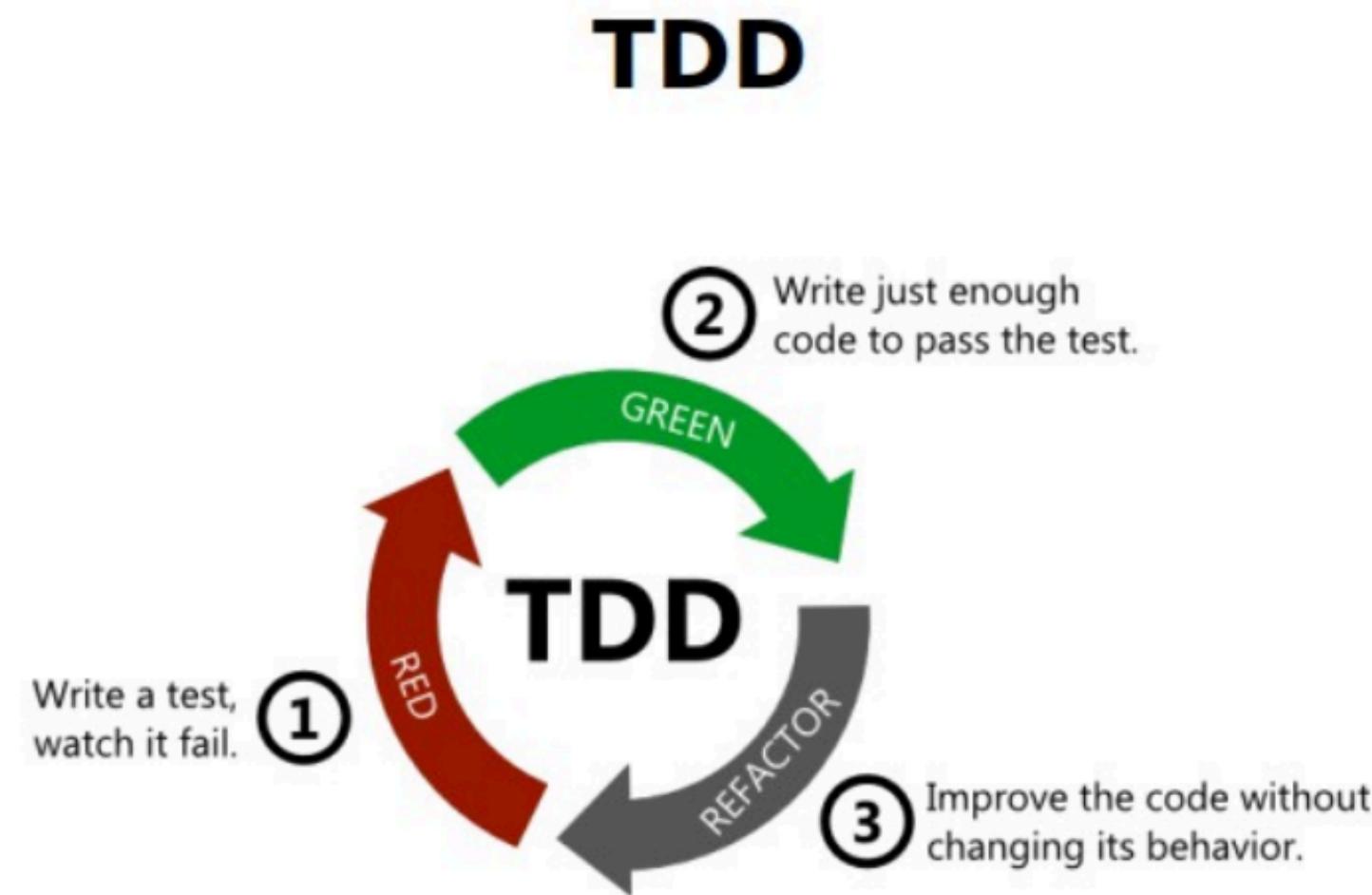
Iterative software development



Iterative development is a way of breaking down the software development of a large application into smaller chunks. In iterative development, feature code is designed, developed and tested in repeated cycles.

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What is TDD?



It is an iterative approach combining programming, unit test creation, and refactoring. The TDD approach originates from the Agile manifesto is TDD?

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junit 5 maven configuration

```
7   <groupId>org.example</groupId>
8   <artifactId>maven-test</artifactId>
9   <version>1.0-SNAPSHOT</version>
10  <dependencies>
11    <dependency>
12      <groupId>org.junit.jupiter</groupId>
13      <artifactId>junit-jupiter</artifactId>
14      <version>5.7.1</version>
15    </dependency>
16  </dependencies>
17
18  <properties>
19    <maven.compiler.source>8</maven.compiler.source>
20    <maven.compiler.target>8</maven.compiler.target>
21  </properties>
```



Junit 4 vs Junit 5

Junit4.x vs junit5.x Architecture level difference

- Minimum JDK version for **Junit4 -> Jdk5** but for **Junit5 -> Jdk8**
- Earlier it was single .jar
- Now it's 3 different .jar

JUnit 5 = *JUnit Platform + JUnit Jupiter + JUnit Vintage*

JUnit platform

- Launch testing frameworks
- Define test engines
- Console launcher
- Junit4 based runner
- Integration with 3rd party

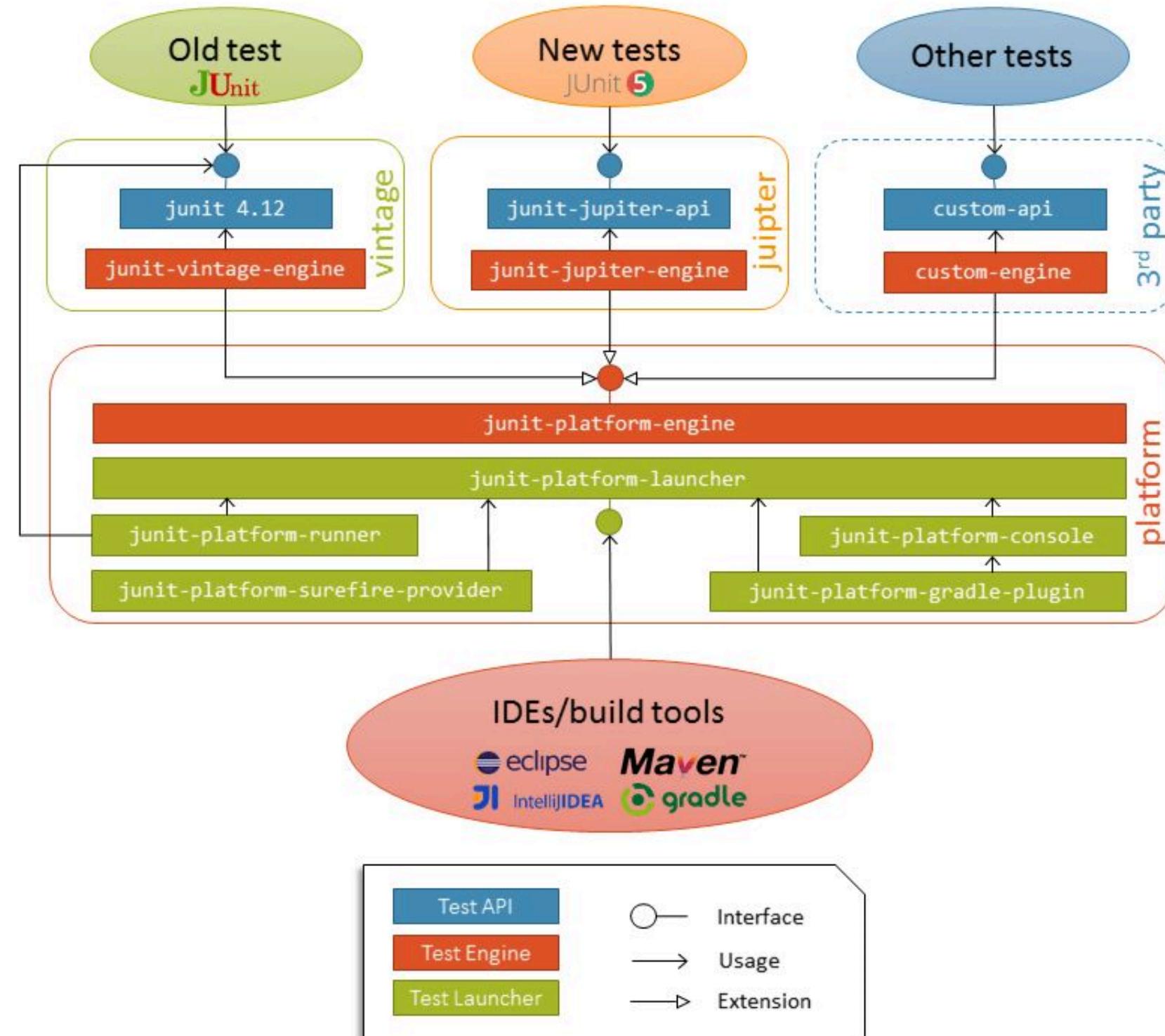
• JUnit Jupiter

- New programming model + extension to write test and extension
- It's subproject provides test engine to run the Jupiter based tests

• JUnit Vintage

- To run tests that are written in junit4 and junit3

Junit 5 Architecture



Junit 5 Annotations

JUnit 5 Annotations	Descriptions	JUnit 4 Annotations
<code>@Test</code>	Declares a test method	<code>@Test</code>
<code>@TestFactory</code>	Denotes a method is a test factory for dynamic tests in JUnit 5	N/A
<code>@DisplayName</code>	Define custom display name for a test class or test method	N/A
<code>@BeforeEach</code>	Denotes that the annotated method will be executed before each test method(annotated with <code>@Test</code>) in the current class.	<code>@Before</code>
<code>@AfterEach</code>	Denotes that the annotated method will be executed after each test method (annotated with <code>@Test</code>) in the current class.	<code>@After</code>
<code>@BeforeAll</code>	Denotes that the annotated method will be executed before all test methods in the current class.	<code>@BeforeClass</code>
<code>@AfterAll</code>	Denotes that the annotated method will be executed after all test methods in the current class.	<code>@AfterClass</code>
<code>@Nested</code>	Denotes that the annotated class is a nested, non-static test class	N/A
<code>@Tag</code>	Declare tags for filtering tests.	N/A
<code>@Disable</code>	Is used to disable a test class or method.	<code>@Ignore</code>
<code>@ExtendWith</code>	Is used to register custom extensions in JUnit 5	N/A

Junit 5 Assertions

JUnit 4	JUnit 5
<code>fail</code>	<code>fail</code>
<code>assertTrue</code>	<code>assertTrue</code>
<code>assertThat</code>	N/A
<code>assertSame</code>	<code>assertSame</code>
<code>assertNull</code>	<code>assertNull</code>
<code>assertNotSame</code>	<code>assertNotSame</code>
<code>assertNotEquals</code>	<code>assertNotEquals</code>
<code>assertNotNull</code>	<code>assertNotNull</code>
<code>assertFalse</code>	<code>assertFalse</code>
<code>assertEquals</code>	<code>assertEquals</code>
<code>assertArrayEquals</code>	<code>assertArrayEquals</code>
	<code>assertAll</code>
	<code>assertThrows</code>

Junit Mockito Integration

Mockito is a mocking framework for Java. Mockito allows convenient creation of substitutes of real objects for testing purposes.

