

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 Motors
- IBM
- Sapien
- 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

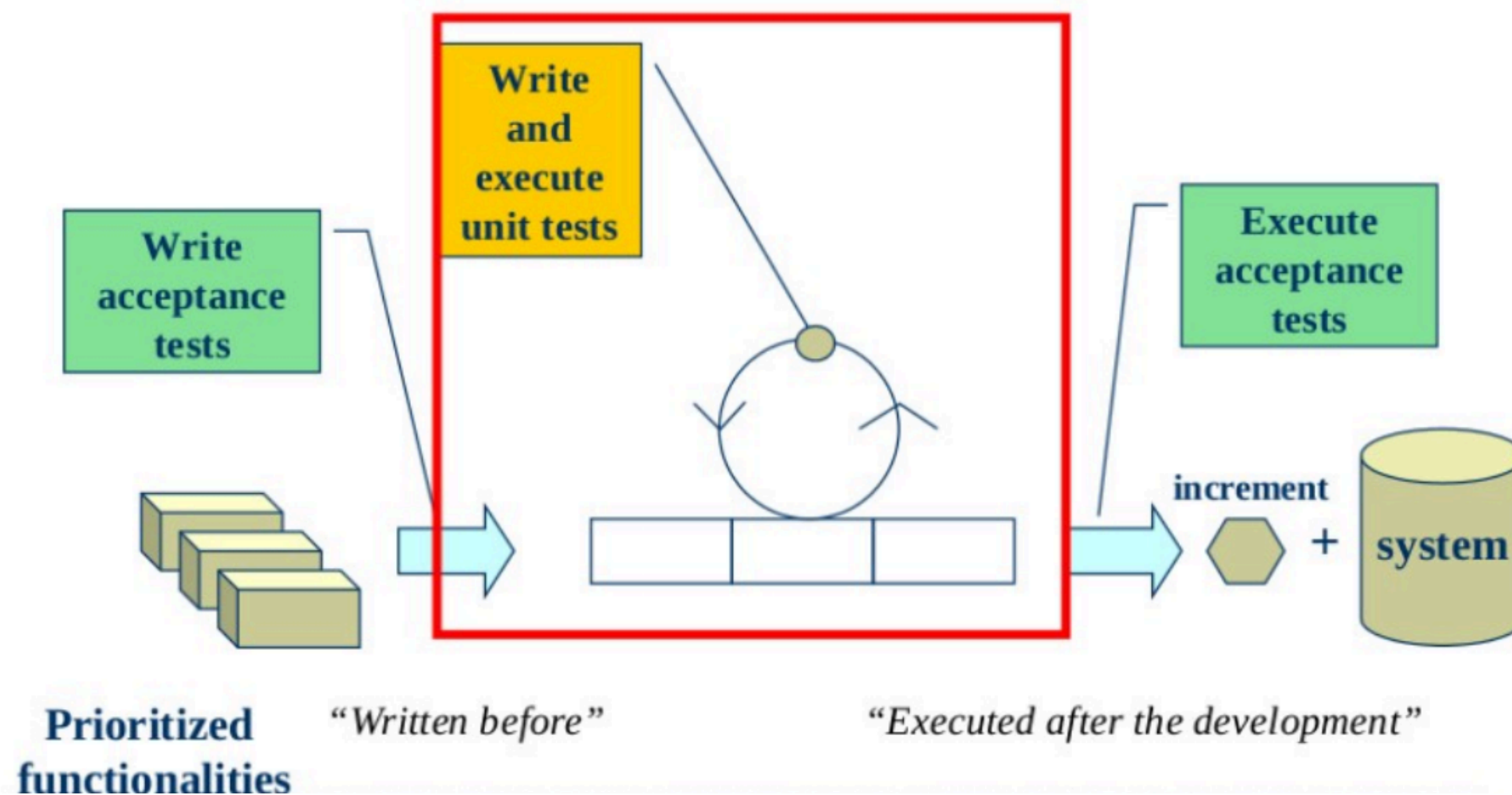
What is Junit?

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?

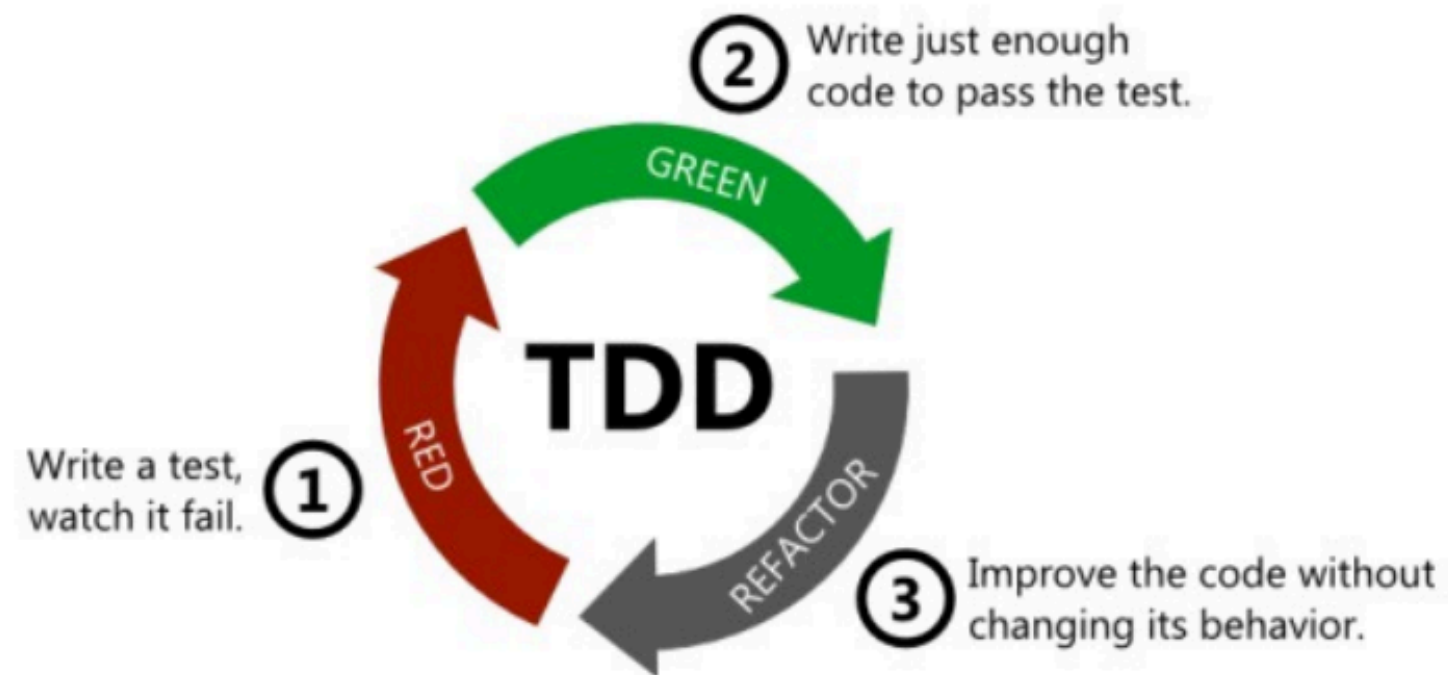
Mockito is a mocking framework, JAVA-based library that is used for effective unit testing of JAVA applications. Mockito is used to mock interfaces so that a dummy functionality can be added to a mock interface that can be used in unit testing.

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.

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?

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

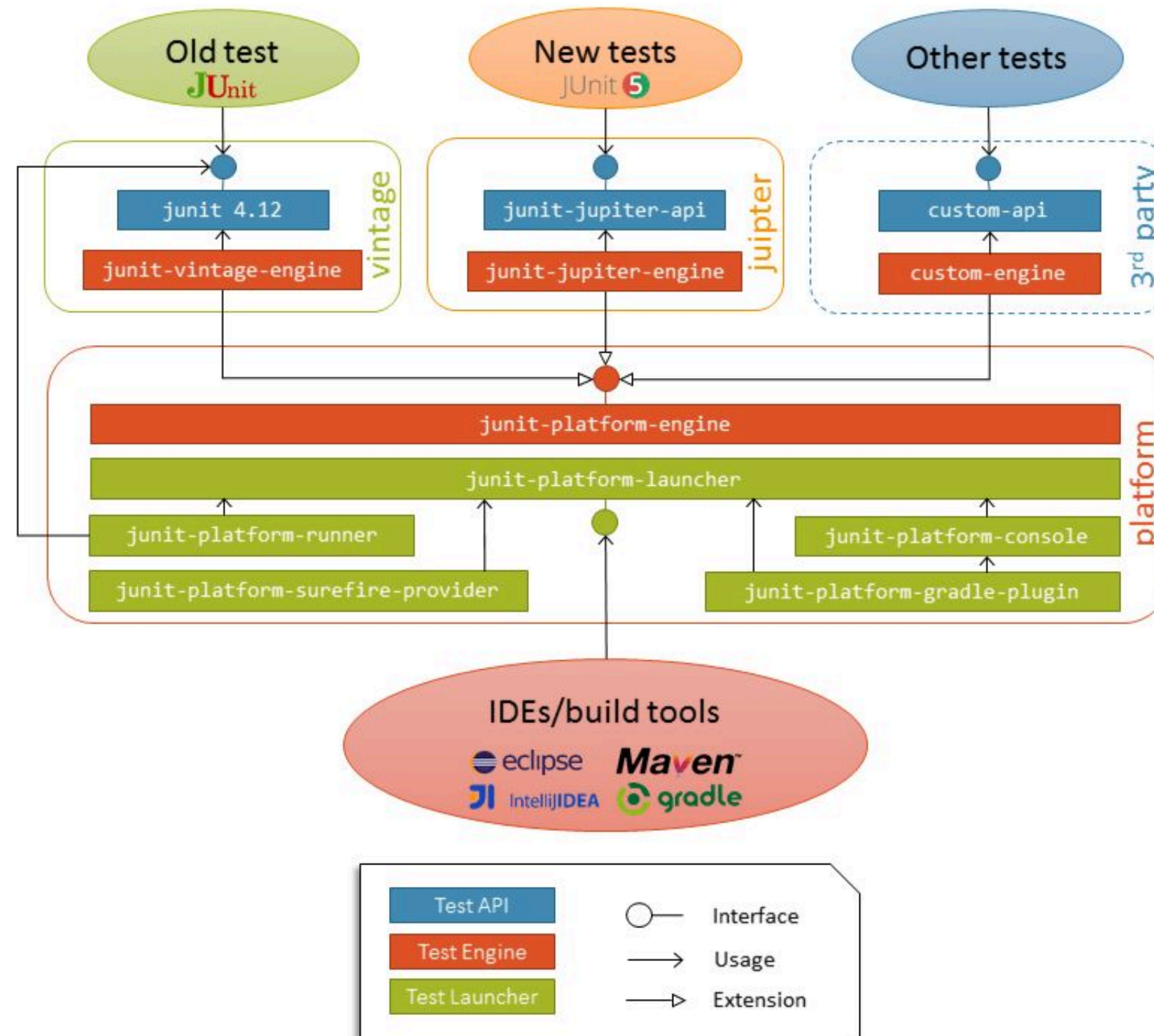
JUnit Jupiter

- 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
fail	fail
assertTrue	assertTrue
assertThat	N/A
assertSame	assertSame
assertNull	assertNull
assertNotSame	assertNotSame
assertNotEquals	assertNotEquals
assertNotNull	assertNotNull
assertFalse	assertFalse
assertEquals	assertEquals
assertArrayEquals	assertArrayEquals
	assertAll
	assertThrows

Junit Mockito Integration

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

