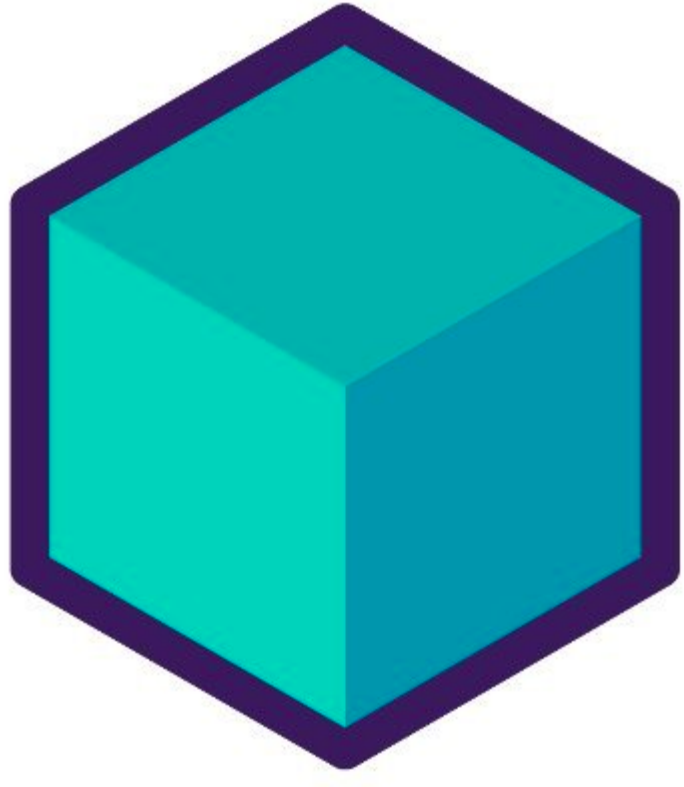
HOW TO USE TESTCONTAINERS WITH INTEGRATION TESTS

HOW TO USE TESTCONTAINERS WITH INTEGRATION TESTS



TESTING

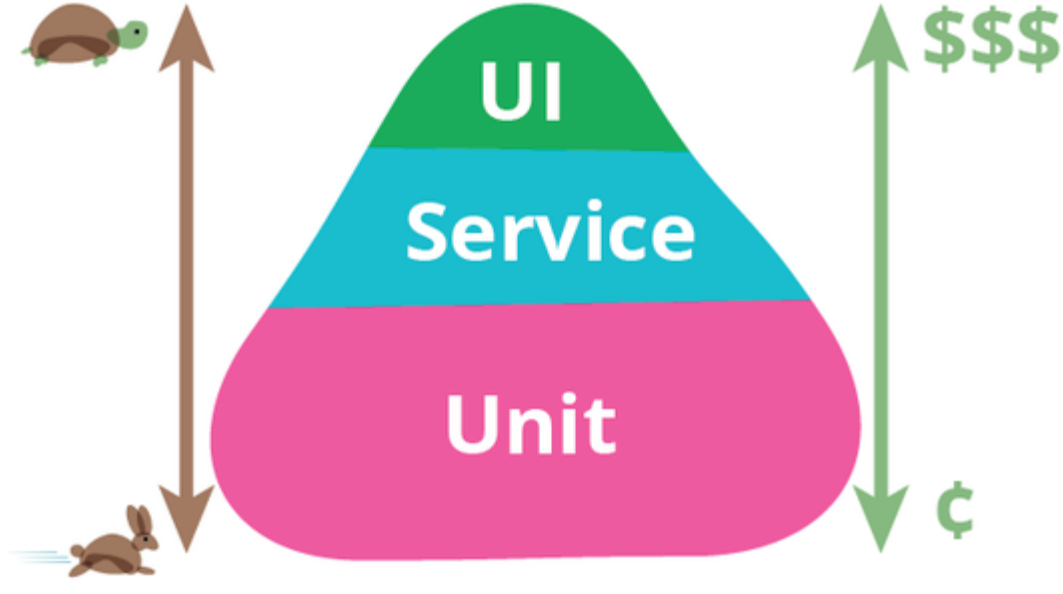
One of the key tasks in software development is testing.

TEST LEVELS

According to the test levels pyramid of Mike Cohn; there are 3 main levels:

1. Unit Test
2. Integration Test
3. UI Test

TEST PYRAMID



https://martinfowler.com/bliki/TestPyramid.html

INTEGRATION TEST

Unit tests as a basis, and integration tests to verify interaction with external components outside the business logic.

TESTCONTAINERS

Testcontainers is a java library that we can use to run different testing frameworks (as JUnit or Spock) with docker containers. Docker as a developer tool, allows us to create easily environments with all its dependencies; they are light and run quickly and, also are portable.

NOT ONLY JAVA

There are implementations for Go, dotNet, Python, Node, and Rust.

MODULES

- Databases (SQL, NoSQL)
- Cloud (AWS using localstack, Azure, GCloud)
- Kafka, MockServer, Solr, Vault…
- GenericContainers

REQUIREMENTS FOR COMMON JVM APPLICATIONS

- Docker
- junit-jupiter for JUnit 5.

@NNOTATIONS

- `@Testcontainers`: This annotation handles automatically the container's lifecycle. It is in charge of start-up and closing up every container in our tests.
- `@Container`: Marks containers to be managed by the Testcontainers extension.

DEMO TIME!

CONCLUSIONS 1/2

- Working with Testcontainers doesn’t require a lot of setup.
- The `withTmpFs` option allows us to map the container volume to our host memory.
- If we want to speed up our integration tests we can declare containers as static fields to share between tests. In our case, our test runs on an average below 150ms.

CONCLUSIONS 2/2

- Testcontainers provides the benefit of 100% database compatibility (since it runs a real database inside a container).
- The database always starts in a known state, without contamination between test runs.

MORE INFO

- https://testcontainers.org
- @testcontainers

JUAN MORENO

- Blog: https://proitcsolution.com.ve
- Twitter: @JuanMorenoDev
- Presentation link: https://bit.ly/testcontainers-careerday-2023

Figure 2. QR