WEB TECHNOLOGIES USING JAVA
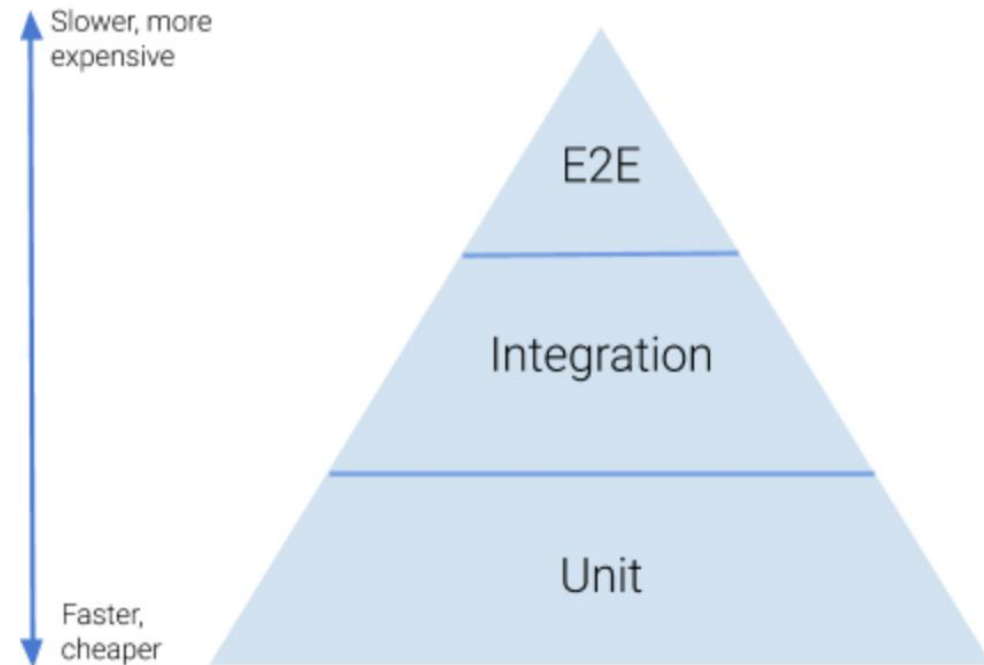## COURSE 12 – INTEGRATION TESTING WITH SPRING.

AGENDA

- **INTEGRATION TESTING**

- **SPRING BOOT TESTS**

- **TESTING SLICES WITH SPRING**

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INTEGRATION TESTING

- tests that cover multiple layers of an application in combination.

- integration tests launch the entire Spring context, including business and data components

- automated integration tests usually don't rely on external dependencies (for example, in-memory database are used or stubs for external services)

Slower, more expensive

E2E

Integration

Unit

Faster, cheaper

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SPRING BOOT TESTS

- Spring Boot provides a **@SpringBootTest** annotation that can be used to quickly launch an integration test

- integration tests may start from the controller layer or the service layer

- to configure a web environment to be used in the test:
    - MOCK: To unit test controllers in a mock web environment.
    - RANDOM_PORT: Launch the entire web context, including other layers, in an embedded server on an available random port.
    - DEFINED_PORT: Similar to RANDOM_PORT, except that you hardcode a port number. May lead to port conflicts.
    - NONE: Loads up a Spring context without a web context.

TESTING SLICES WITH SPRING

- slice = a particular layer / domain of an application (controller, repository etc)

- testing slices of application allows for focused, fast, light testing and facilitate targeting specific functionality

- Spring Boot test slice annotations load an ApplicationContext and select components that make sense for the specified slice

- **@WebMvcTest**
  - used with tests that focus just on the Spring MVC components
  - will disable all auto configuration that is unrelated to web MVCs (for example, @Service, @Repository)
  - MockMvc bean is used to make requests
  - @MockitoBean is used to mock service beans or other beans, if needed (@MockBean was used with Spring Boot < 3.4.0)

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BIBLIOGRAPHY

- Spring in Action, by Craig Walls

- Java Unit Testing with Junit 5, by Shekhar Gulati, RahulSharma

- Pragmatic Unit testing in Java 8 with Junit, by Jeff Langr

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Q&A

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THANK YOU

DANIELA SPILCĂ