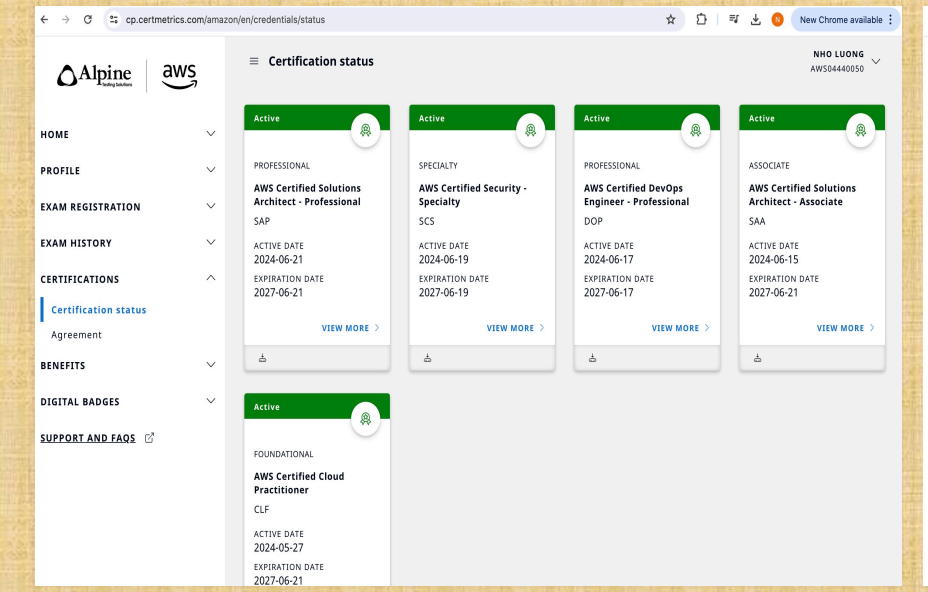
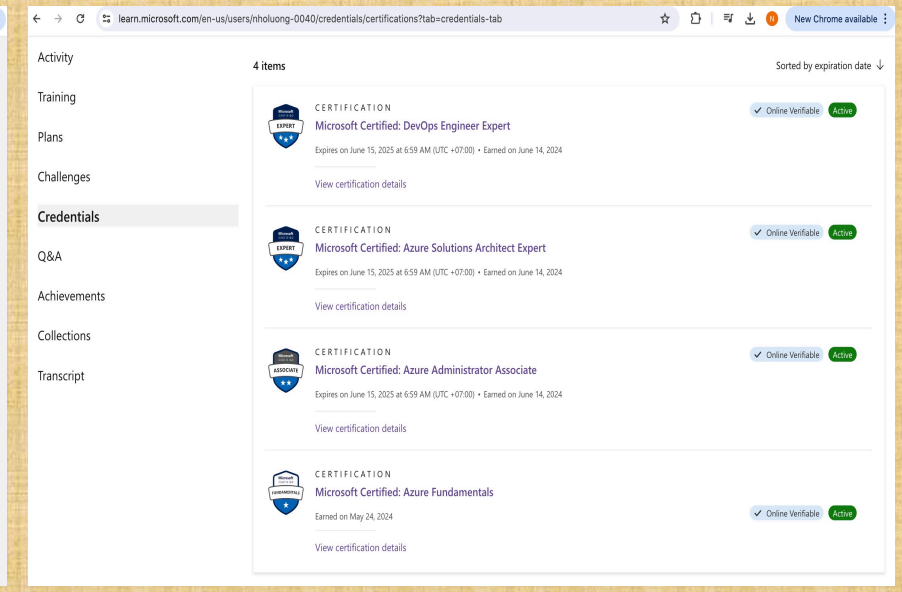
Test Driven Development

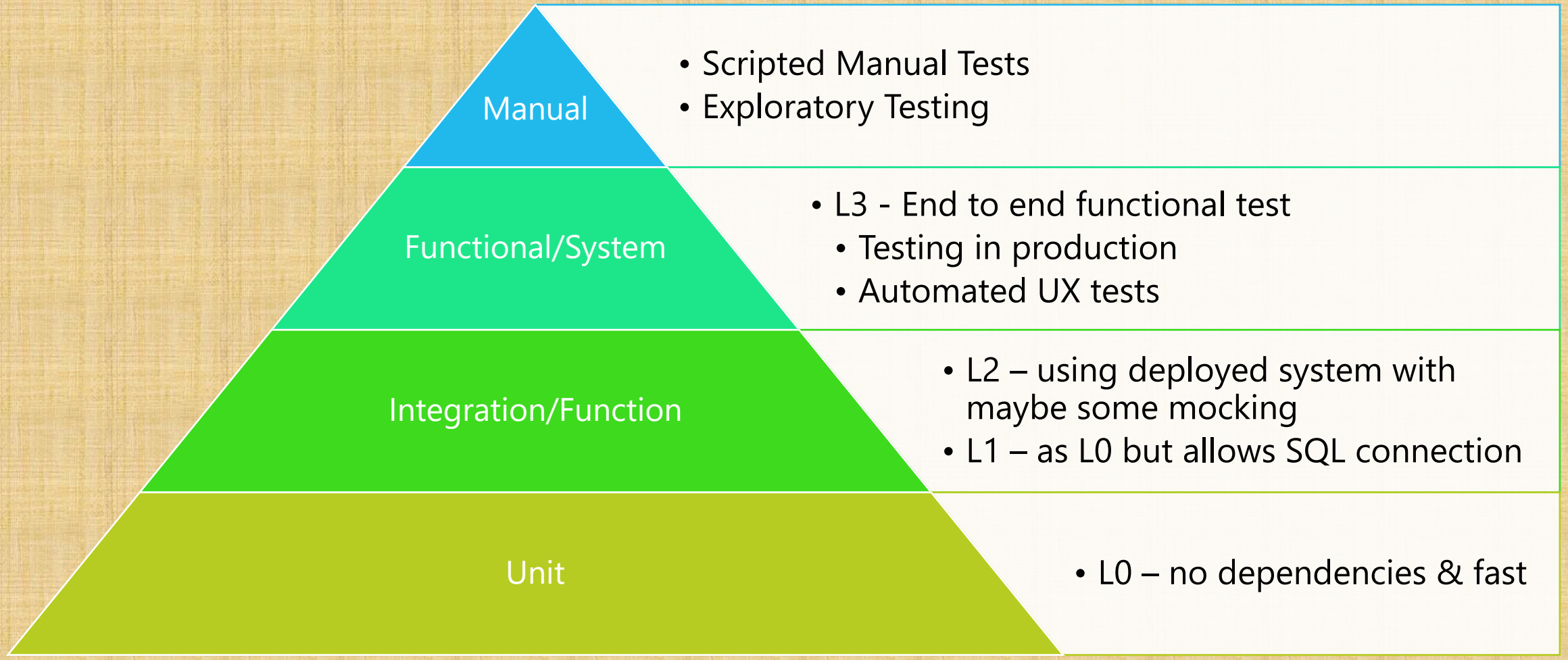
Author: Nho Luong

Skill: DevOps Engineer Lead





Testing Pyramid



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Test Principles

- Tests should be written at the lowest level possible
- Tests written once, run anywhere including production system
- Product is designed for testability
- Test code is product code, only reliable tests survive
- Testing infrastructure is a shared Service
- Test ownership follows product ownership

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How do I created my Unit Tests?

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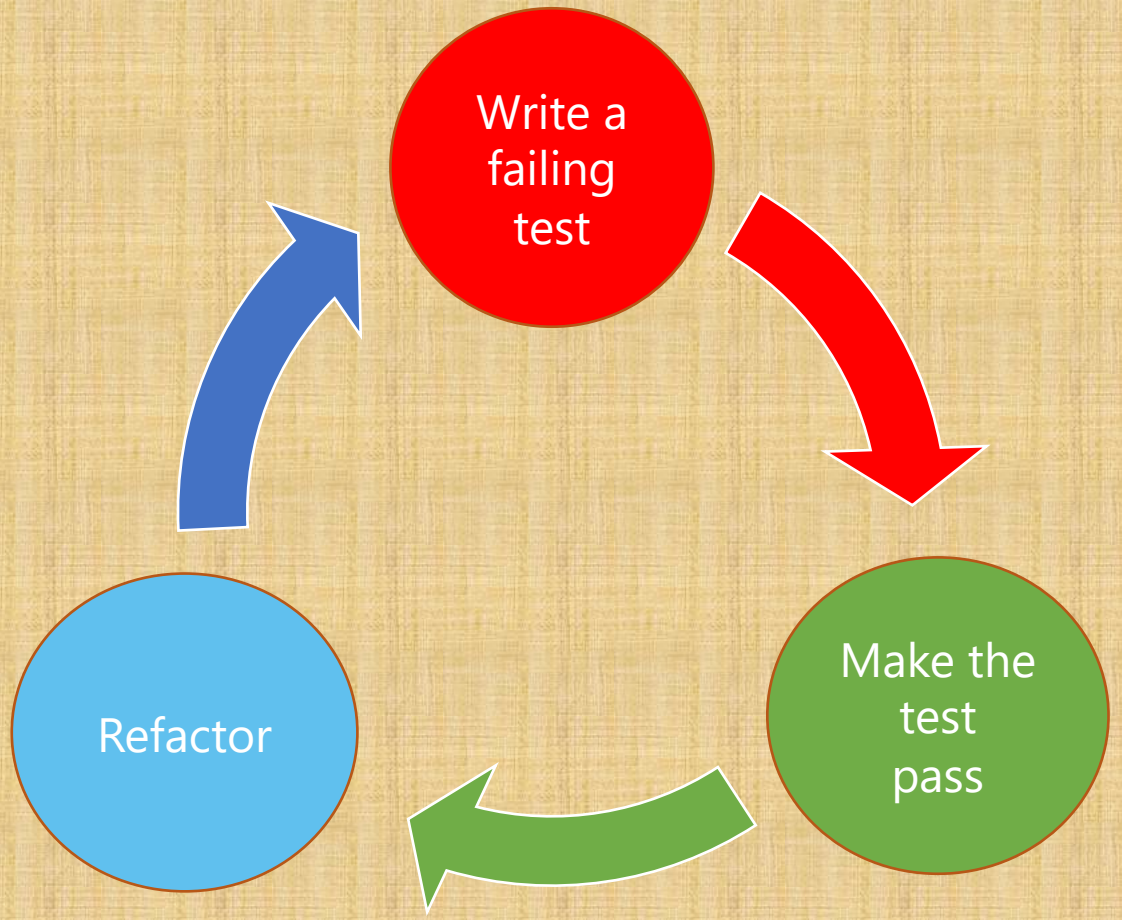
The Test Driven Development Cycle



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Demo
TDD Kata

https://osherove.com/tdd-kata-1

1. An empty string returns zero
2. A single number returns the value
3. Two numbers, comma delimited, returns the sum
4. Two numbers, newline delimited, returns the sum
5. Three numbers, delimited either way, returns the sum
6. Negative numbers throw an exception

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So with TDD we get…

- To write the test before the code
- Emergent design of architecture
- Excellent test coverage

But what happens when we need systems that are not available to the developer?

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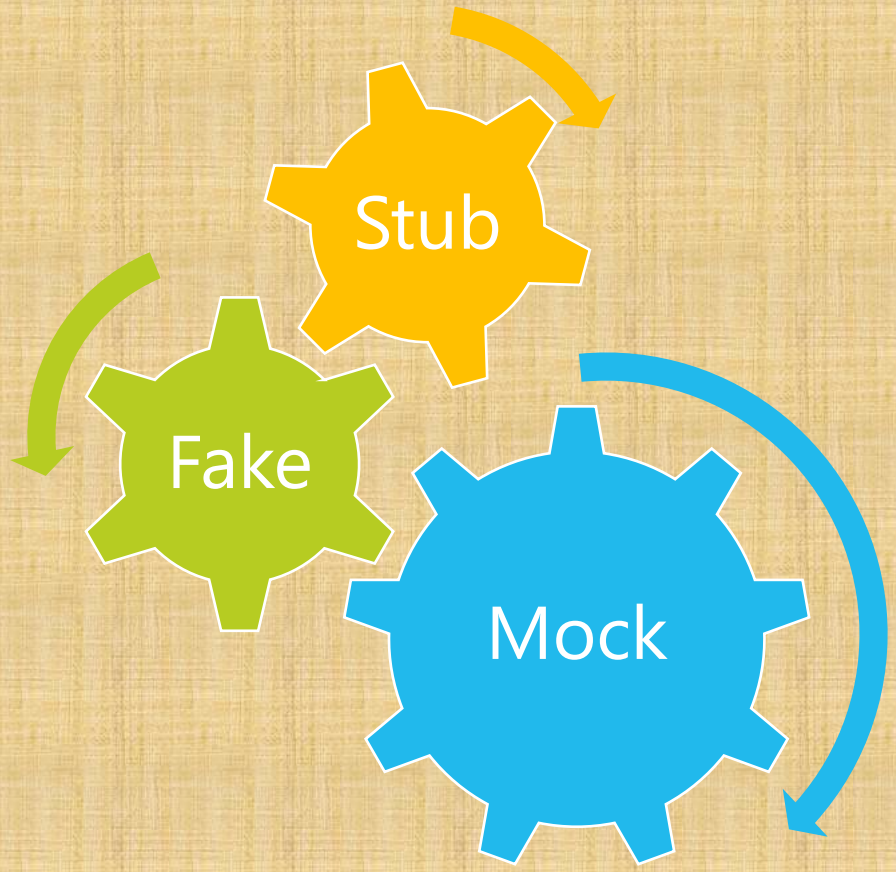
What is Mocking



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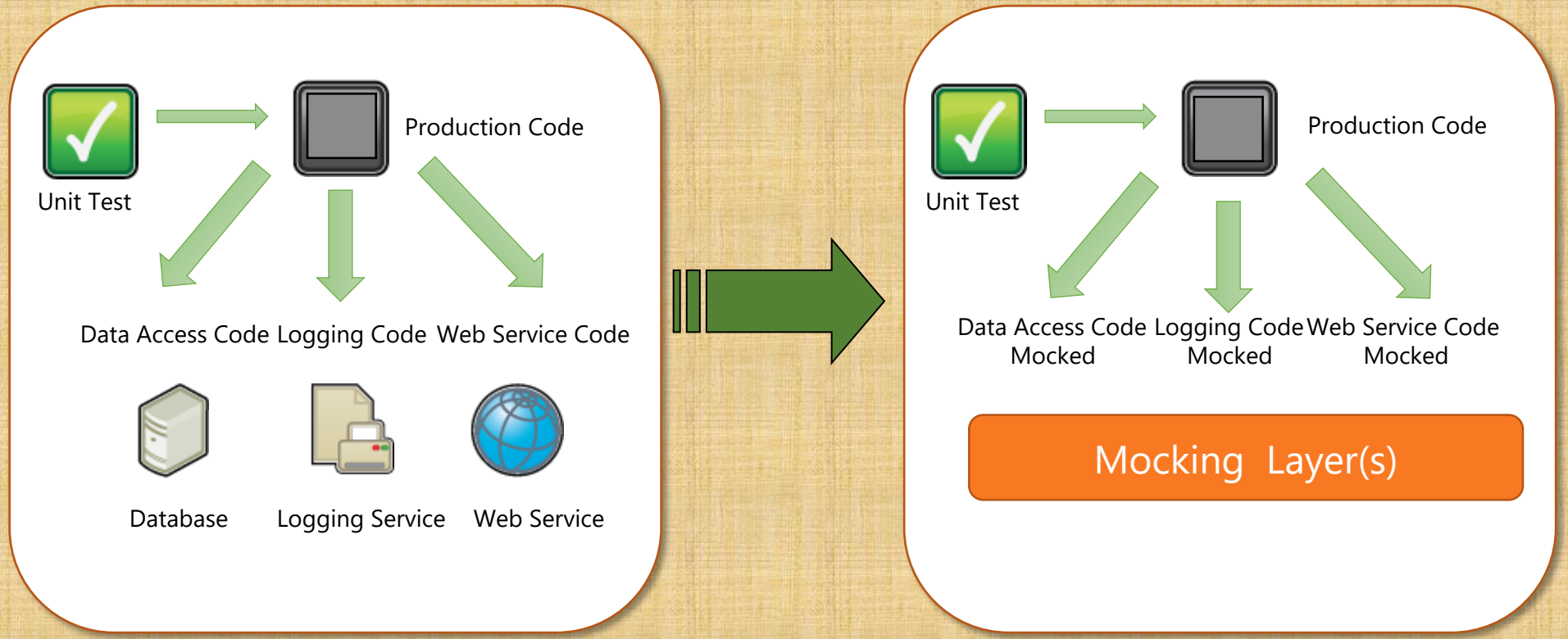
Mocking the 'Principal of Isolation'



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Demo
Mocking with Moq

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Frameworks for common languages*

Language	Testing Framework	Mocking Framework
.NET	MSTest, xUnit, NUnit	Moq, NMock
Java	JUnit	Mockito, EasyMock
JavaScript, TypeScript, Node.JS	Jest, Mocha, Jasmine	Mocha, Jasmine
C++	CppUnit, Google Test, Boost	CppUnit, Cmock
Python	PyTest, PyUnit	PSBoundParameters

* a far from exhaustive list

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But what is the argument against TDD?

Pros.

- Only write code needed
- Easier to maintain/refactor
- High test coverage
- Tests are the documentation

Cons.

- Not a silver bullet
- Can be slow to develop
- Usually needs a lot of mocking
- All the team has to adopt
- Tests must be maintained

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Summary

- TDD is a way to get high code coverage
- High code coverage makes refactoring safer
- Mocking is a key tool to enable TDD
- Practice your skills with Coding Katas

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Azure

Azure DevOps

Azure Integration Services

android

GitHub

Windows

Microsoft HoloLens

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Thank You

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