Software quality and testing
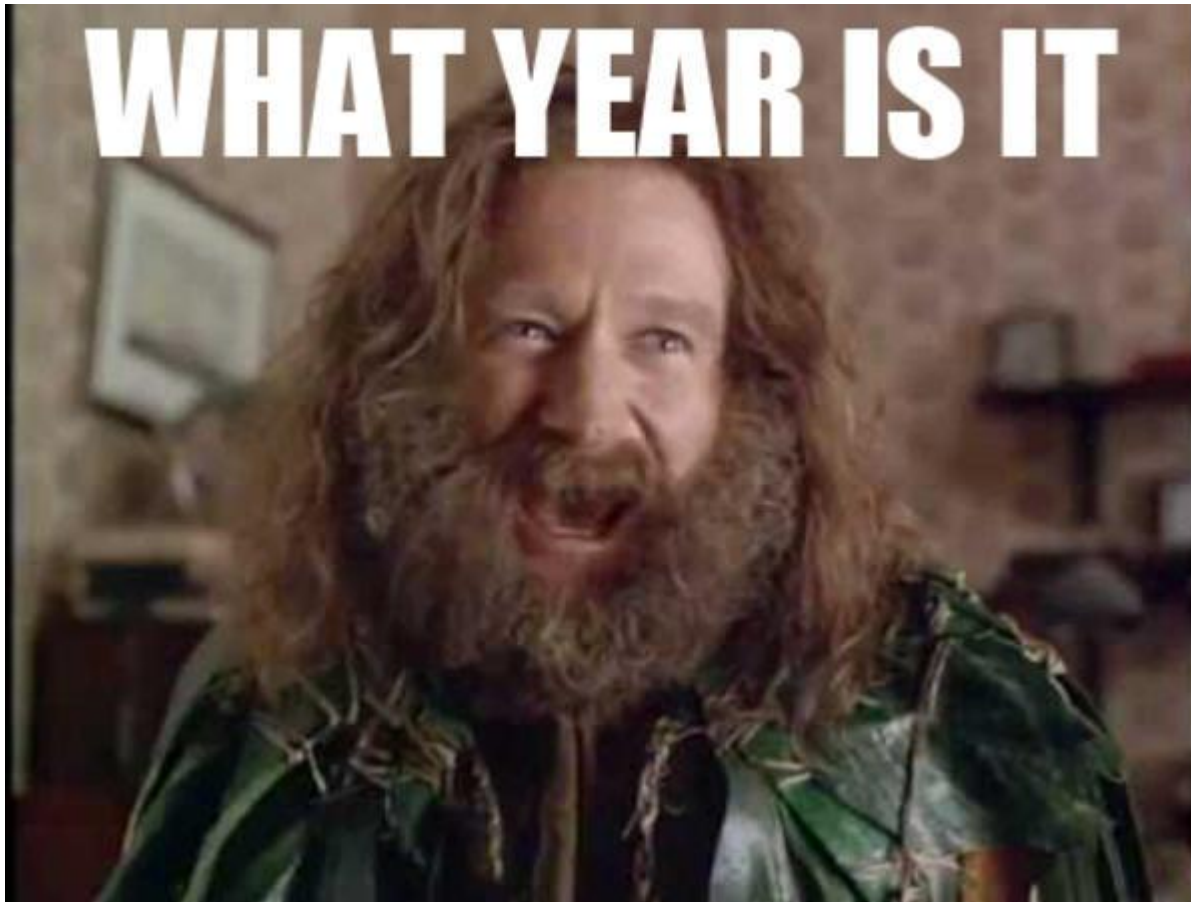## - 2ⁿᵈ and 3ʳᵈ course

Ádám István Szűcs | Budapest | February, 2017

Unit testing frameworks

- **Junit**
- **TestNG**
- *Spock*

Unit testing in general
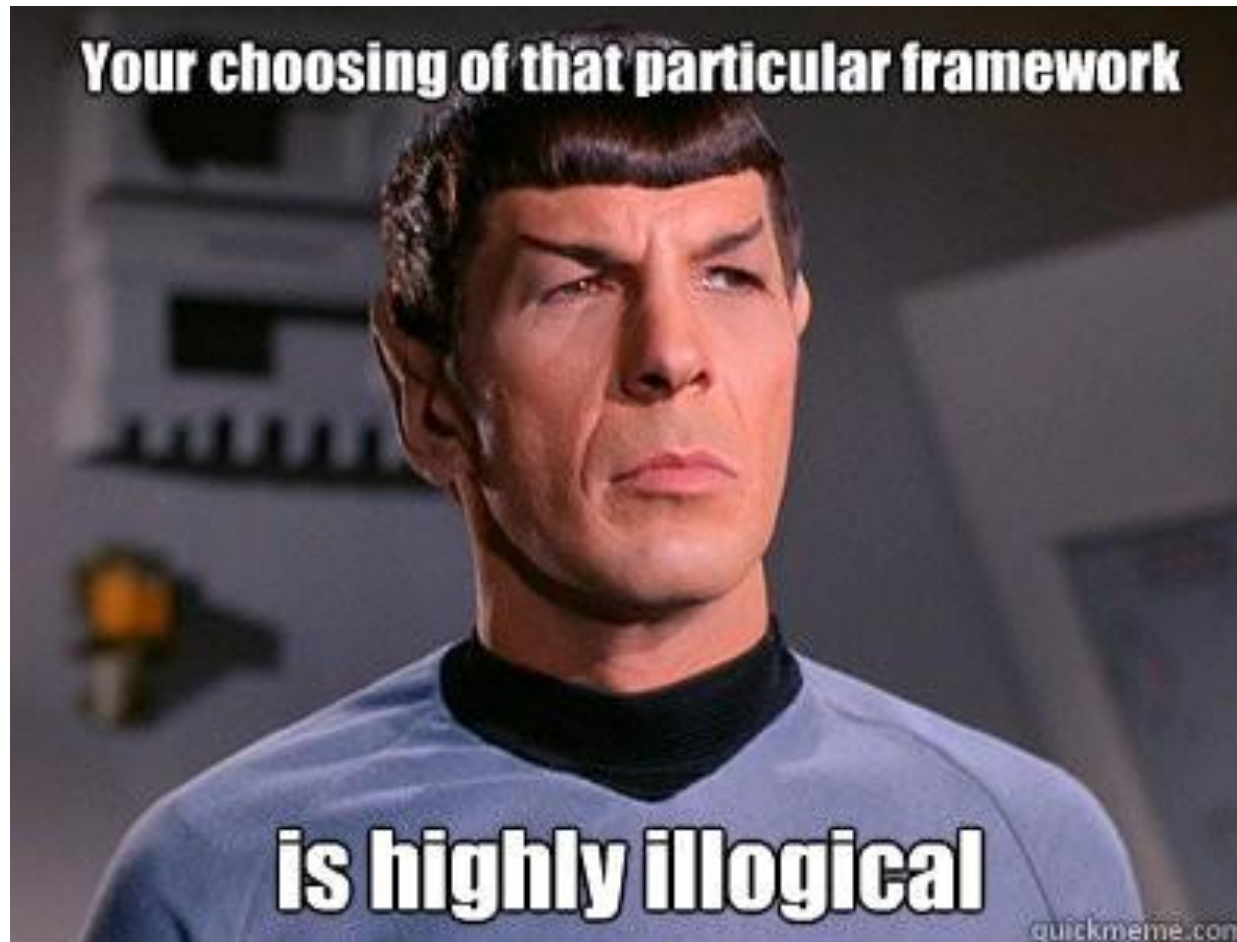
Junit

- Support in the IDEA

- Simple generation of unit tests in the IDEA (ALT + ENTER)

- Annotations :

    - @Test

    - @Disabled

    - @DisplayName

    - @BeforeEach, @BeforAll

    - @AfterEach, @AfterAll

    - @Nested

    - @TestFactory

    - @Tag

    - @ExtendWith

TestNG

- Focusing on multithreaded testing

- Good annotation system

- Support for data-driven testing

- Annotations:

  - @{Before,After}{Suite, Test, Groups, Class, Method}

  - @DataProvider

  - @Factory

  - @Listeners

  - @Test

- **To run tests in parallel make sure you have a XML file with the necessary parameters**
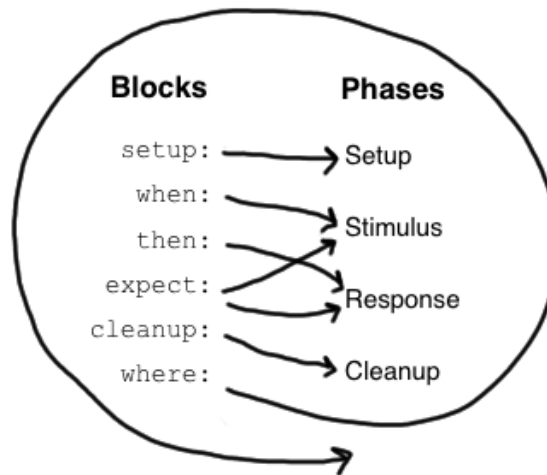
Spock

Spock vs. JUnit

Spock	JUnit
Specification	Test class
setup()	@Before
cleanup()	@After
setupSpec()	@BeforeClass
cleanupSpec()	@AfterClass
Feature	Test
Feature method	Test method
Data-driven feature	Theory
Condition	Assertion
Exception condition	@Test(expected=…)
Interaction	Mock expectation (e.g. in Mockito)

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Spock cont.

- Groovy scripts

- Lot more expressive than the ones before

- Spocking: http://webconsole.spockframework.org/

- SU{S,T}, CU{S,T}

- Actually it's Junit but

  - Much more expressive

  - Def, when, then, setup, cleanup, expect, where, with, and, …
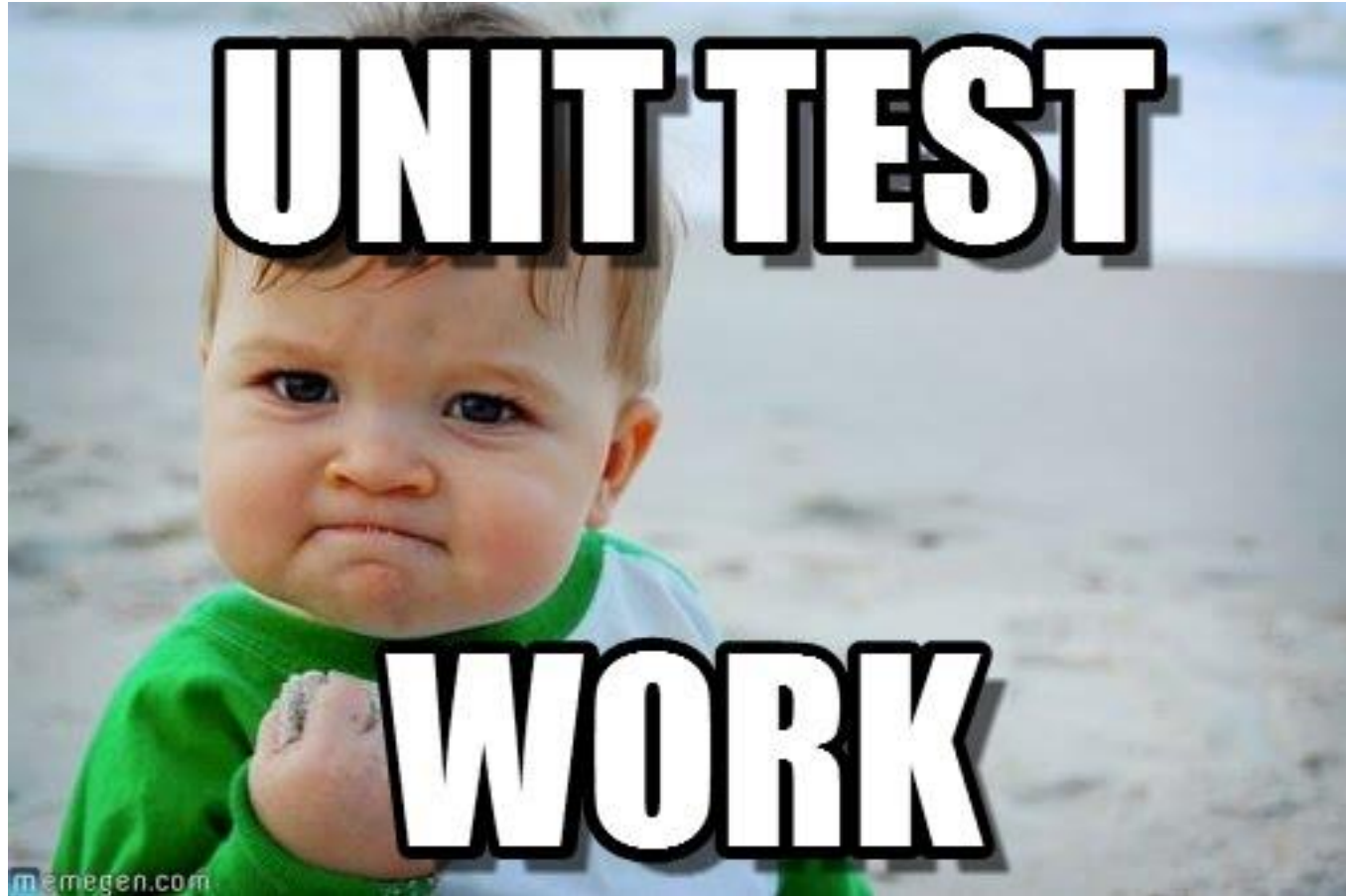
  - Live long and Spock!

Coverage metrics and tools

Coverage criteria

- Function coverage

- Statement coverage

- Branch coverage

- Condition coverage

    - If a and b then

    - Does not imply branch coverage

    - Modified condition/decision coverage

    - Multiple condition coverage

- Parameter value coverage

The most important

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