

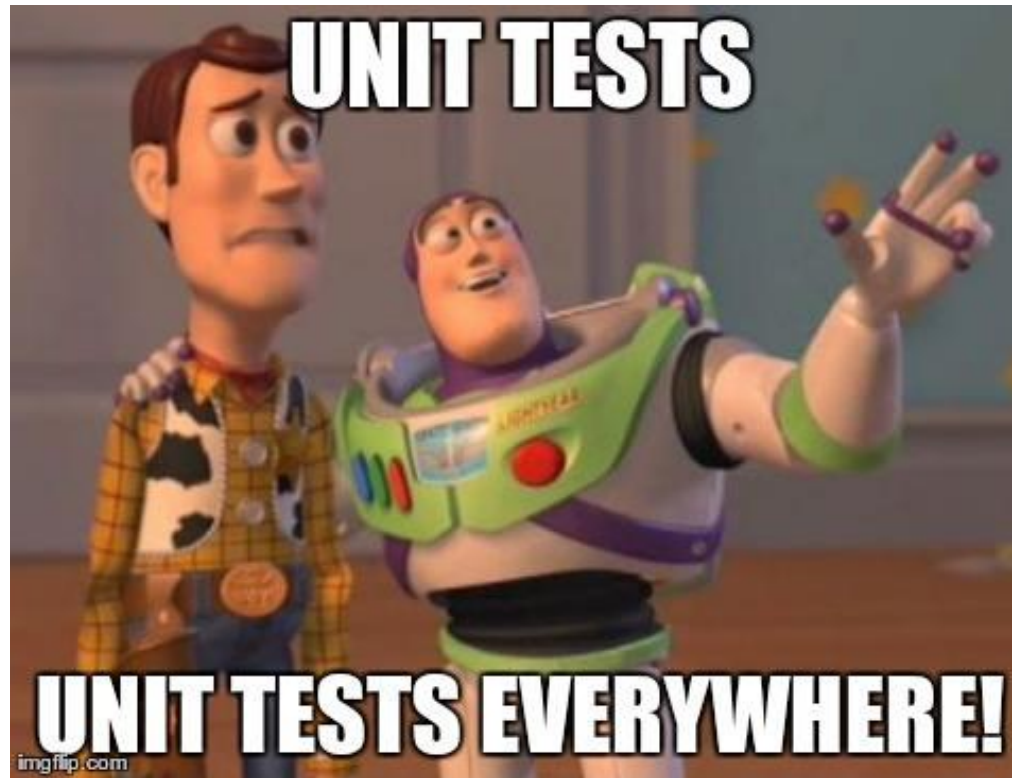


Software quality and testing

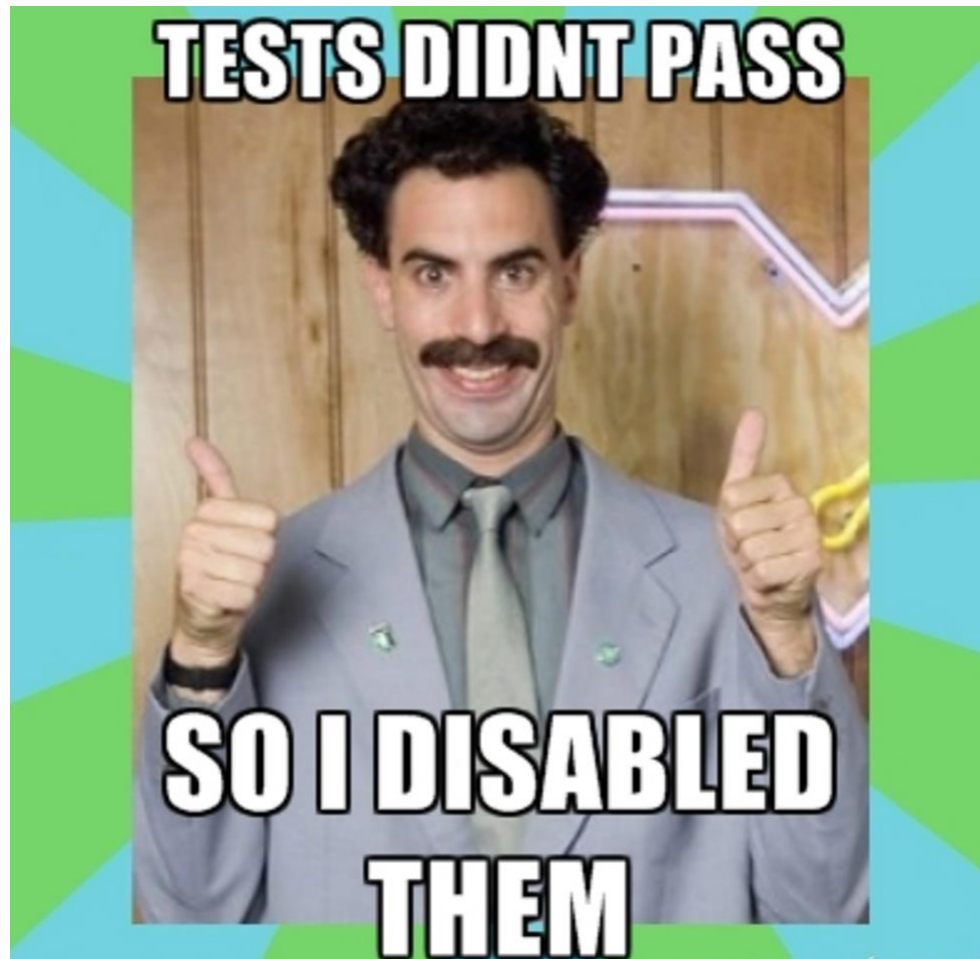
- 2nd and 3rd course

Unit testing frameworks

- Junit
- TestNG
- *Spock*



Unit testing in general



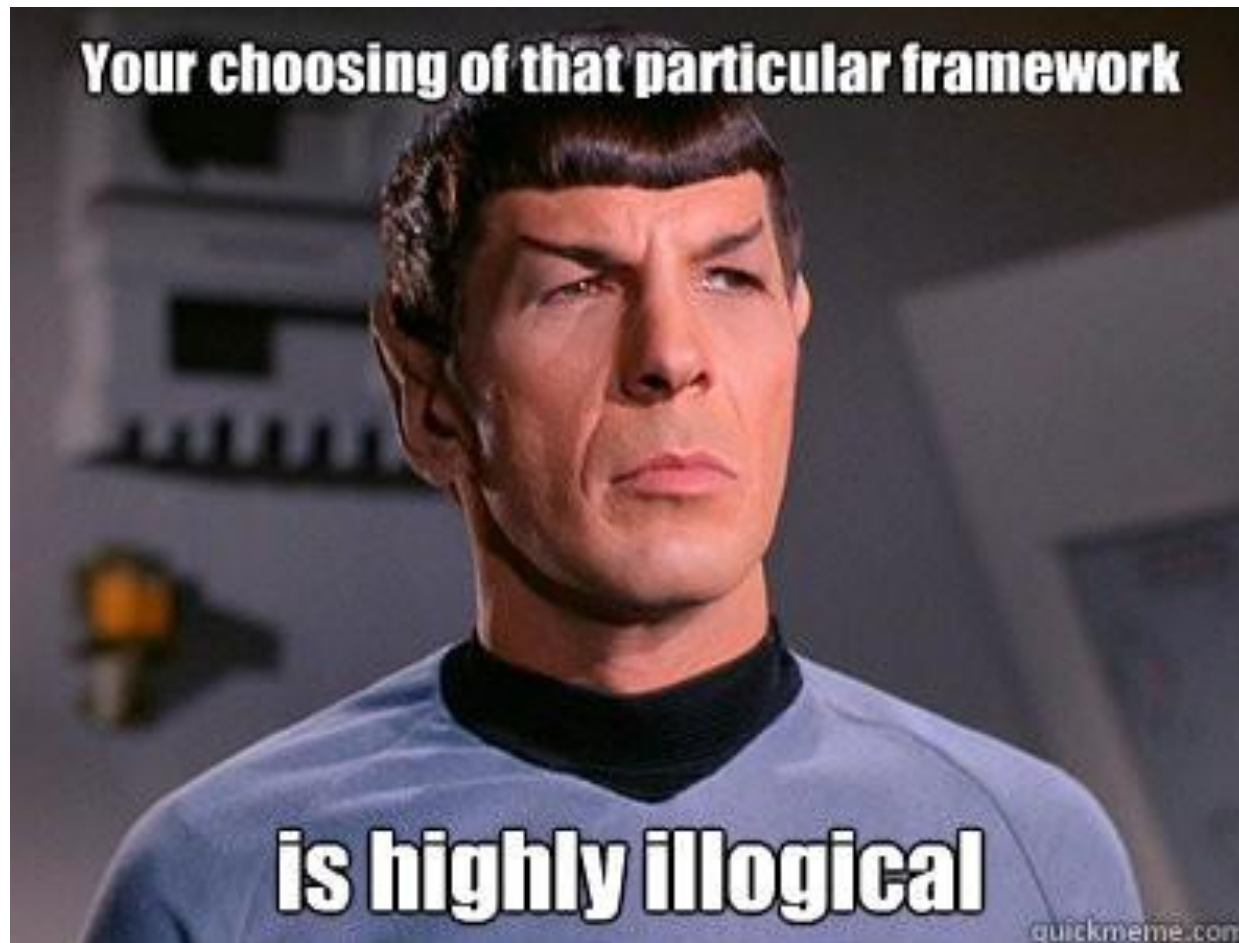
Junit

- Support in the IDEA
- Simple generation of unit tests in the IDEA (ALT + ENTER)
- Annotations :
 - @Test
 - @Disabled
 - @DisplayName
 - @BeforeEach, @BeforeAll
 - @AfterEach, @AfterAll
 - @Nested
 - @TestFactory
 - @Tag
 - @ExtendWith

TestNG

- Focusing on multithreaded testing
- Good annotation system
- Support for data-driven testing
- Annotations:
 - @Before, @After, @BeforeSuite, @BeforeTest, @AfterSuite, @AfterTest
 - @DataProvider
 - @Factory
 - @Listeners
 - @Test
- **To run tests in parallel make sure you have a XML file with the necessary parameters**

Spock

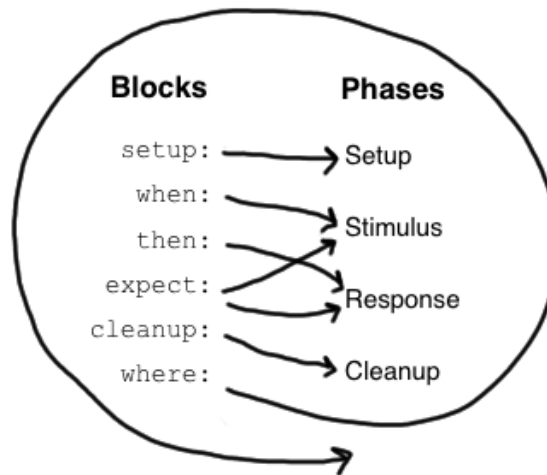


Spock vs. JUnit

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)

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!



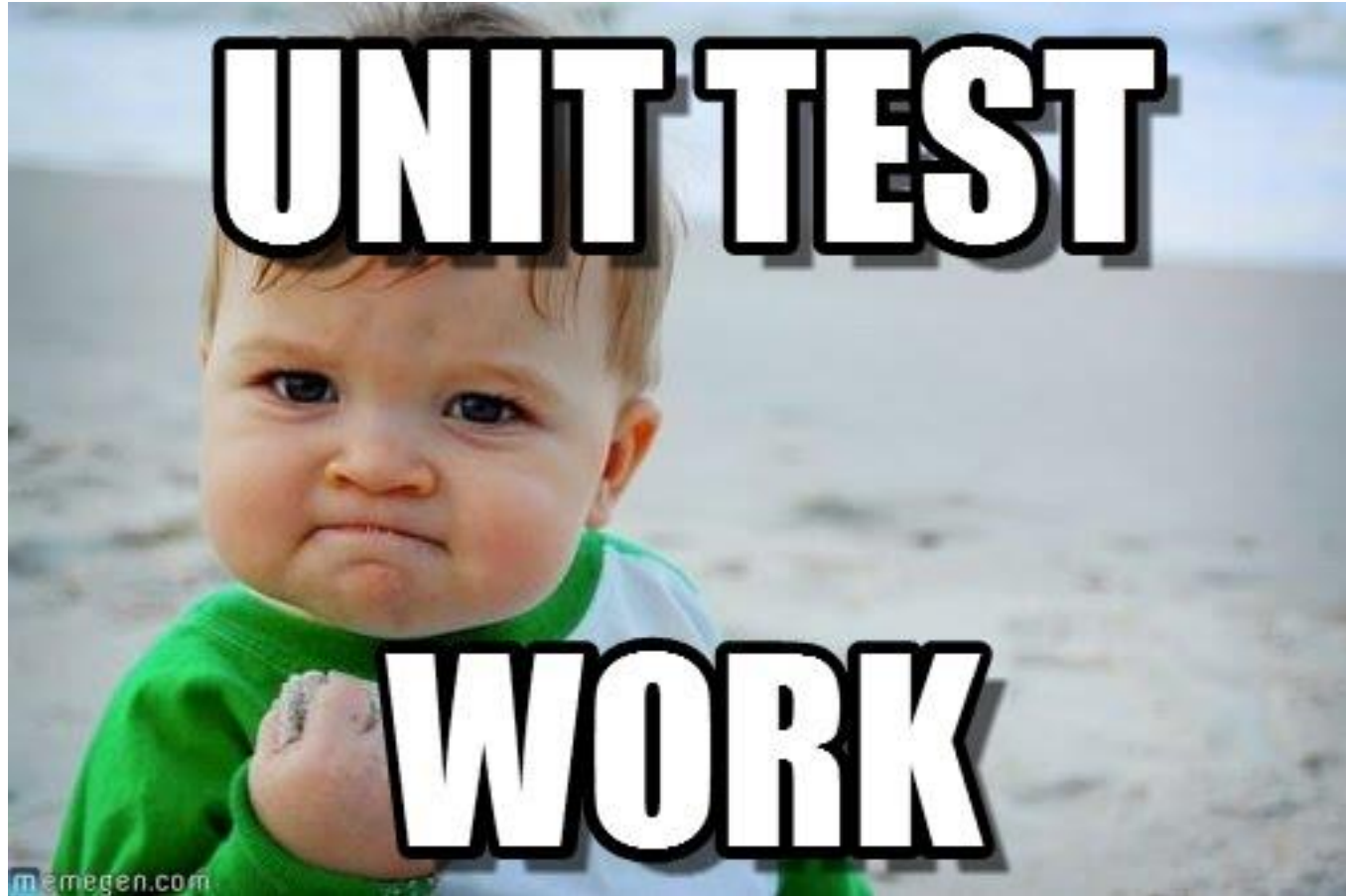
Coverage metrics and tools



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



Any questions?





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