Roland Weisleder
Softwareentwicklung & Beratung

Unit Test Your Java Architecture With ArchUnit

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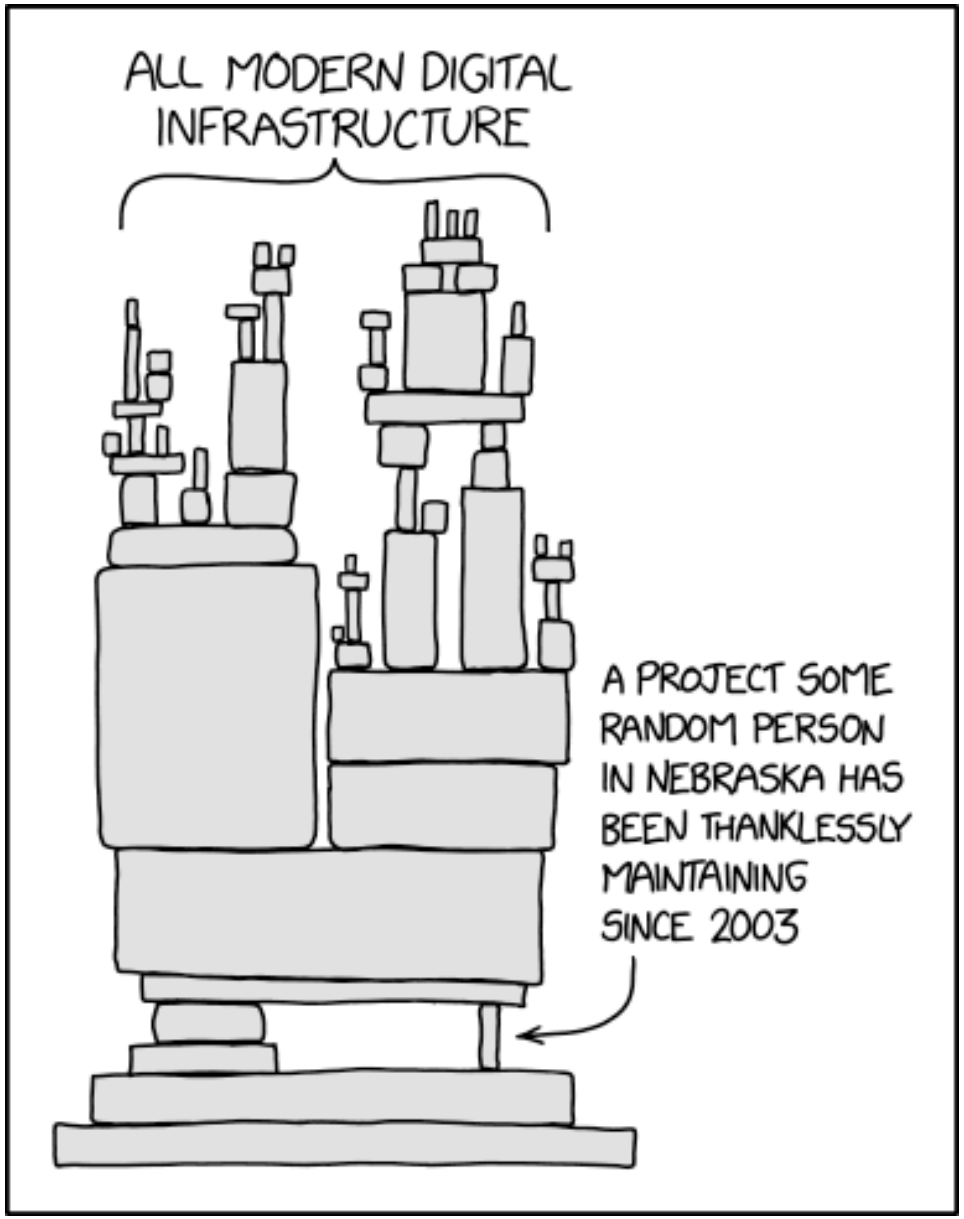
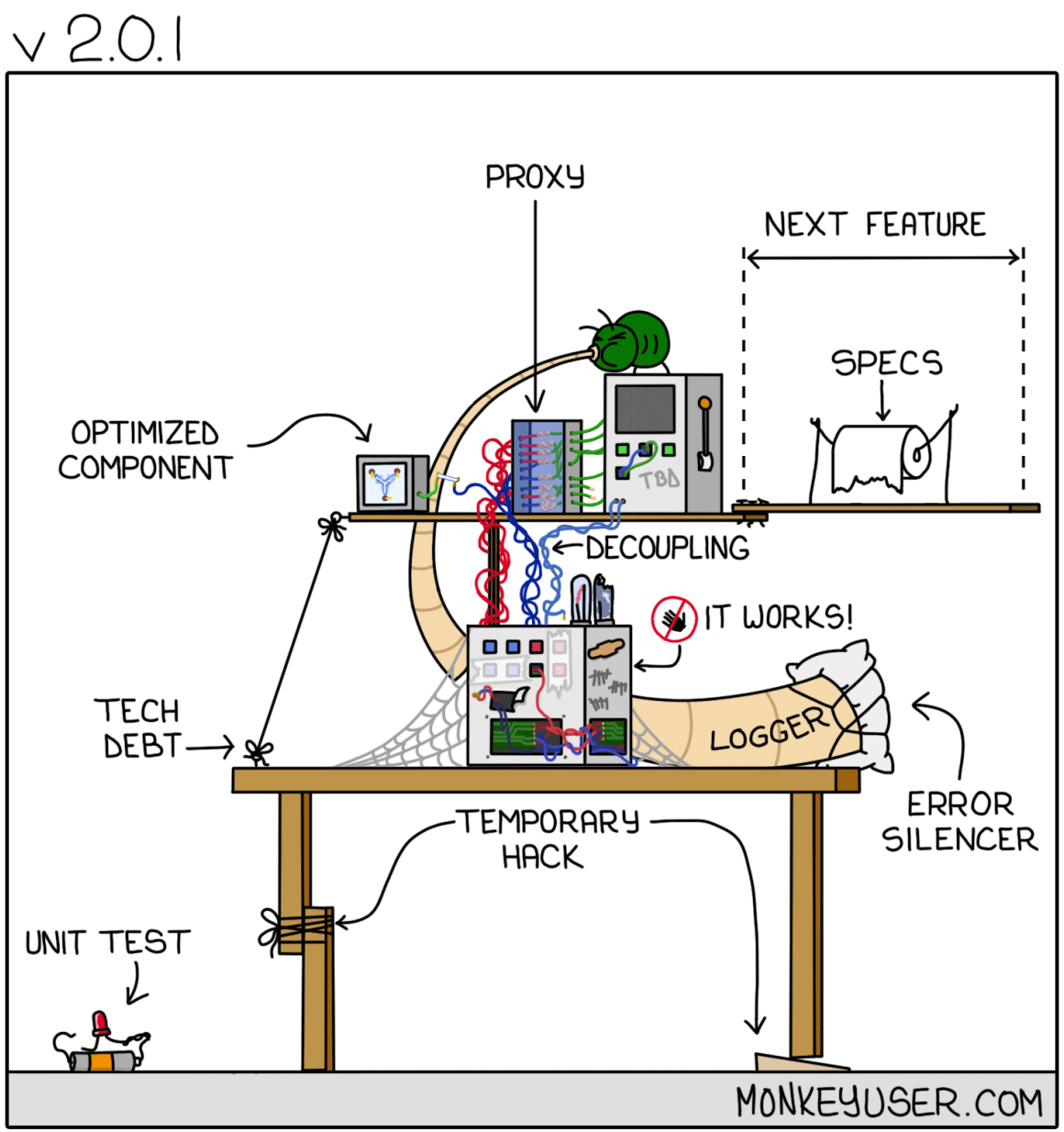
Whoever wishes to build high towers
must spend much time
near the foundation.

Anton Bruckner

Source: https://unsplash.com/photos/AF36q06J8fQ



Source: https://xkcd.com/2347/

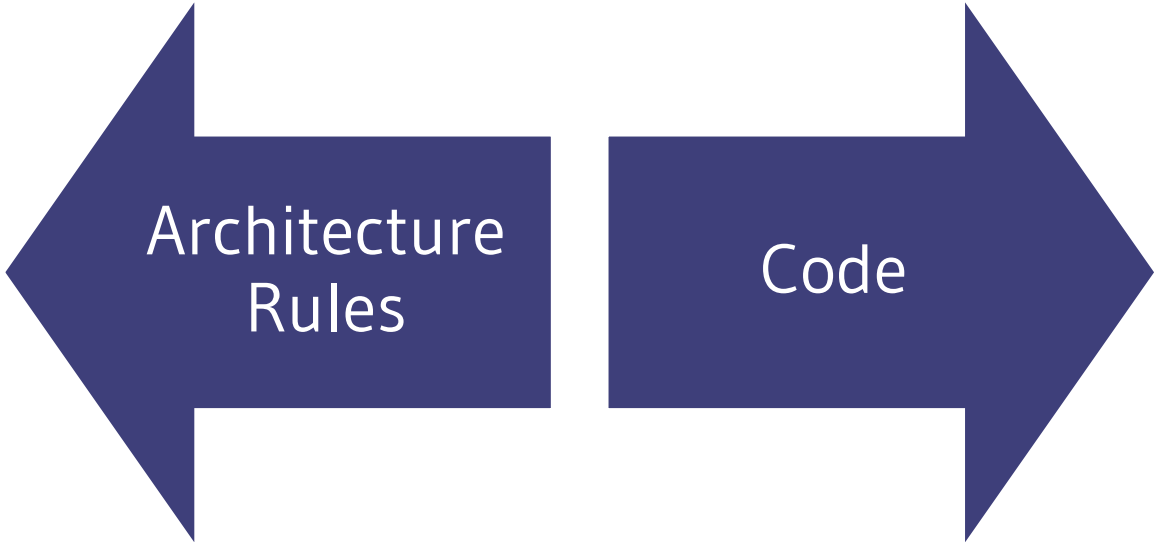


Source: https://www.monkeyuser.com/2019/v-201/

Source: https://unsplash.com/photos/snNHKZ-mGfE

Your usual Challenges

Reading Documentation?



Reviewing adherence to architecture?

Architecture and Code will diverge

"ArchUnit is a free, simple and extensible library for checking the architecture of your Java code using any plain Java unit test framework. That is, ArchUnit can check dependencies between packages and classes, layers and slices, check for cyclic dependencies and more. It does so by analyzing given Java bytecode, importing all classes into a Java code structure."

https://www.archunit.org/

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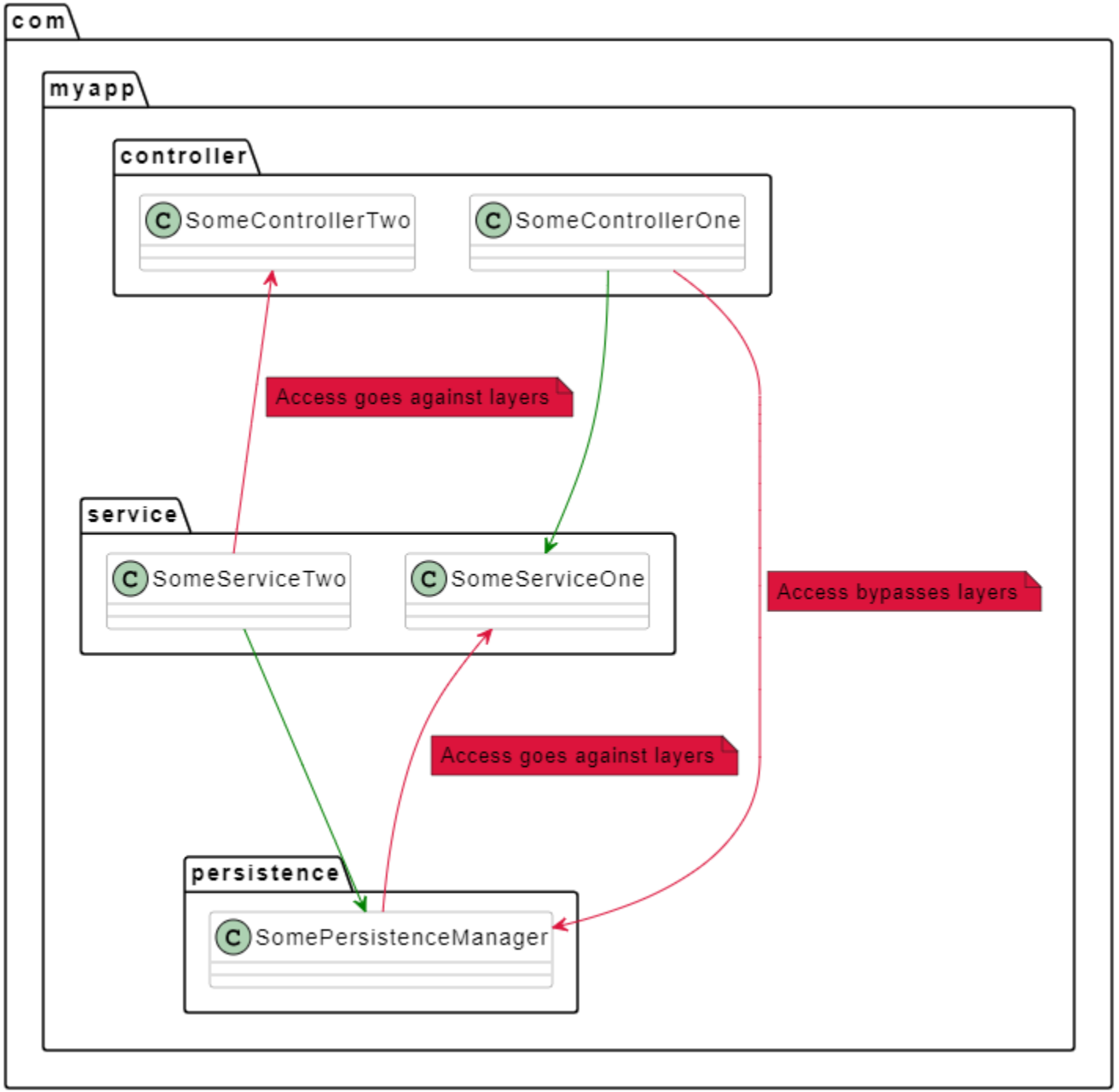
com
myapp
controller
SomeControllerTwo
SomeControllerOne
Access goes against layers
service
SomeServiceTwo
SomeServiceOne
Access bypasses layers
Access goes against layers
persistence
SomePersistenceManager

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https://www.archunit.org/

```java
@AnalyzeClasses(packages = "com.myapp")
public class ArchitectureTest {

    // ArchRules can just be declared as static fields and will be evaluated
    no usages
    @ArchTest
    public static final ArchRule rule1 = classes().should()...

    no usages
    @ArchTest
    public static final ArchRule rule2 = classes().should()...

    no usages
    @ArchTest
    public static void rule3(JavaClasses classes) {
        // The runner also understands static methods with a single JavaClasses argument
        // reusing the cached classes
    }

}
```

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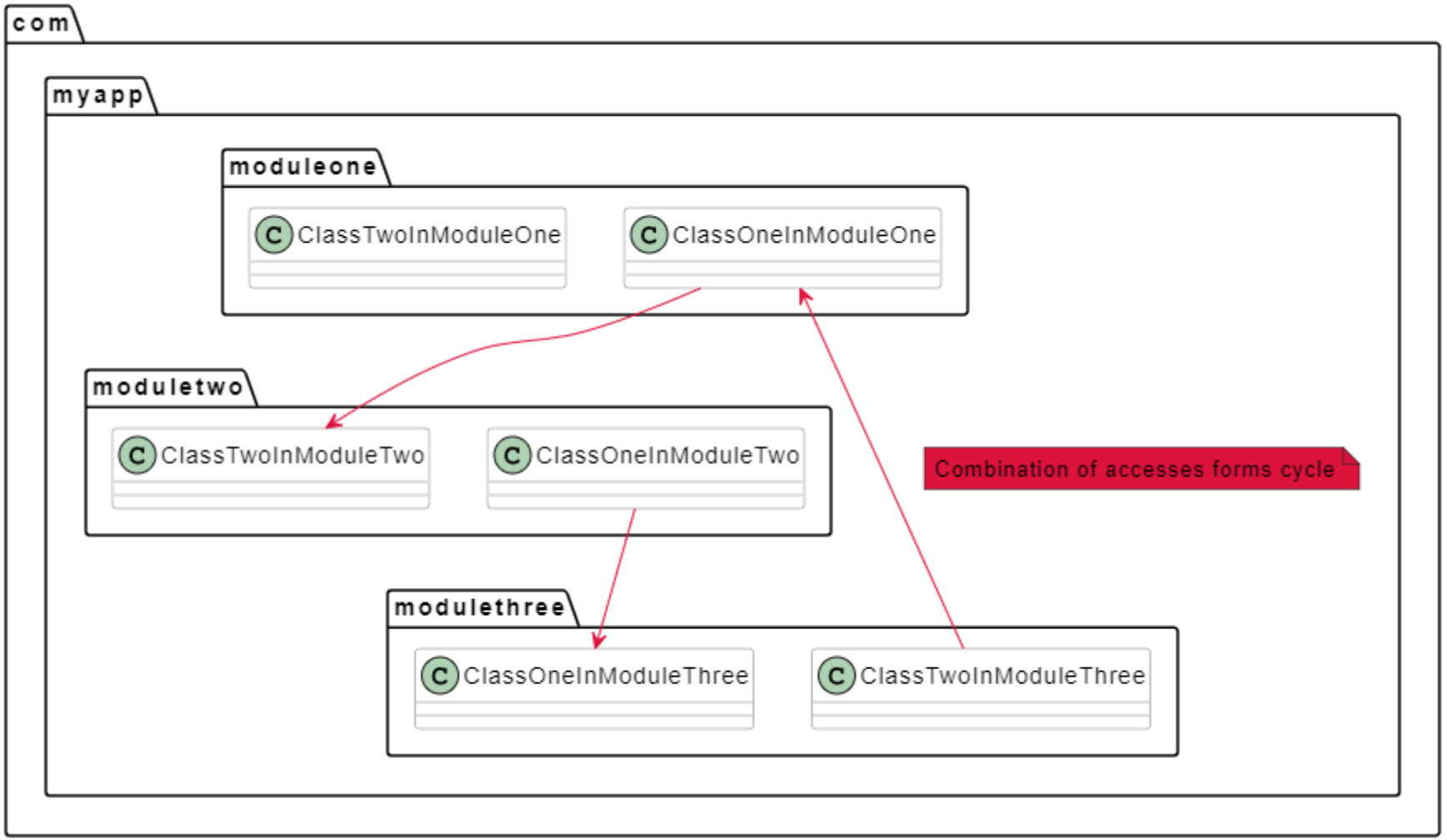
com
myapp
moduleone
ClassTwoInModuleOne
ClassOneInModuleOne
moduletwo
ClassTwoInModuleTwo
ClassOneInModuleTwo
Combination of accesses forms cycle
modulethree
ClassOneInModuleThree
ClassTwoInModuleThree

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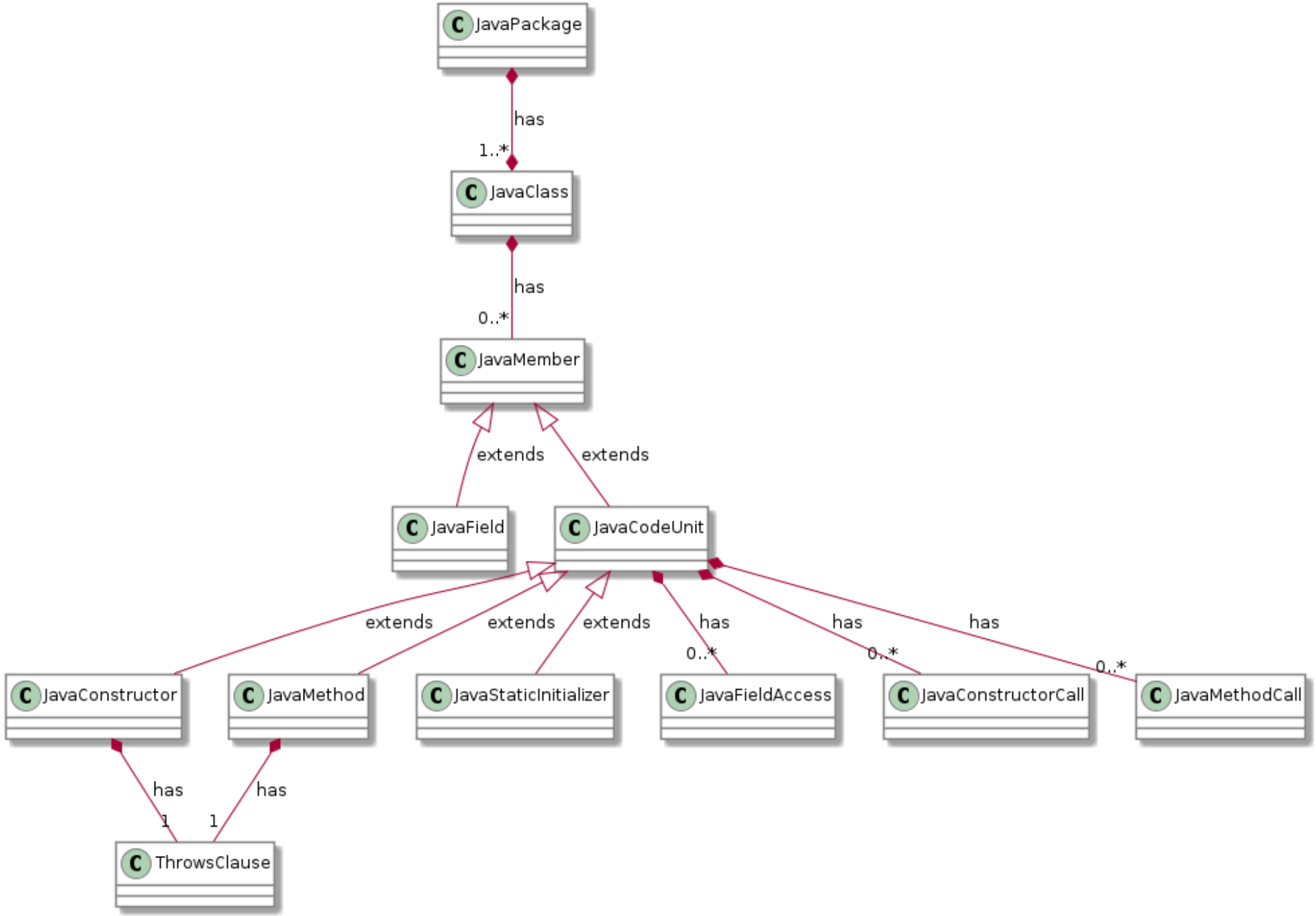
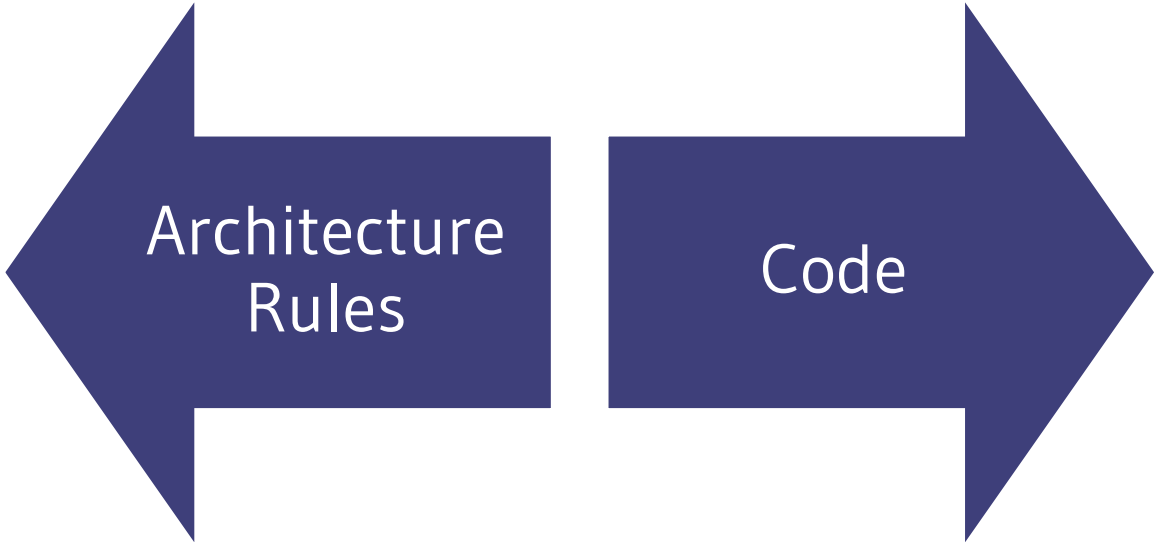

JavaPackage
has
1..*
JavaClass
has
0..*
JavaMember
extends
extends
JavaField
JavaCodeUnit
extends
extends
extends
has
0..*
has
0..*
has
0..*
JavaConstructor
JavaMethod
JavaStaticInitializer
JavaFieldAccess
JavaConstructorCall
JavaMethodCall
has
1
has
1
ThrowsClause

Demo

Your usual Challenges

Reading Documentation?



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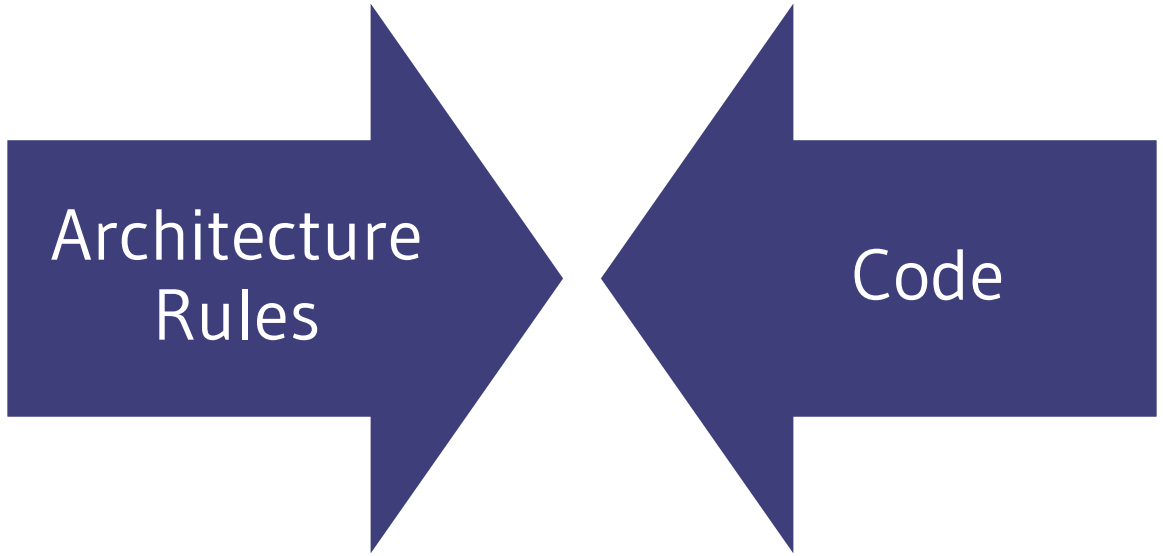
Benefits of using ArchUnit

Automatically executed



Failing Unit Tests on violations

Easy to use in legacy projects ☺

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Testing can detect only
the presence of errors,
not their absence.

Unit Test Your Java Architecture With ArchUnit

Roland Weisleder
Softwareentwicklung & Beratung

Code

github.com/rweisleder/archunit-talk-examples

github.com/TNG/ArchUnit-Examples

Docs

archunit.org

jmolecules.org

Slides

speakerdeck.com/rweisleder/unit-test-your-java-architecture-with-archunit

Bringing Legacy Java Systems Into the Future

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