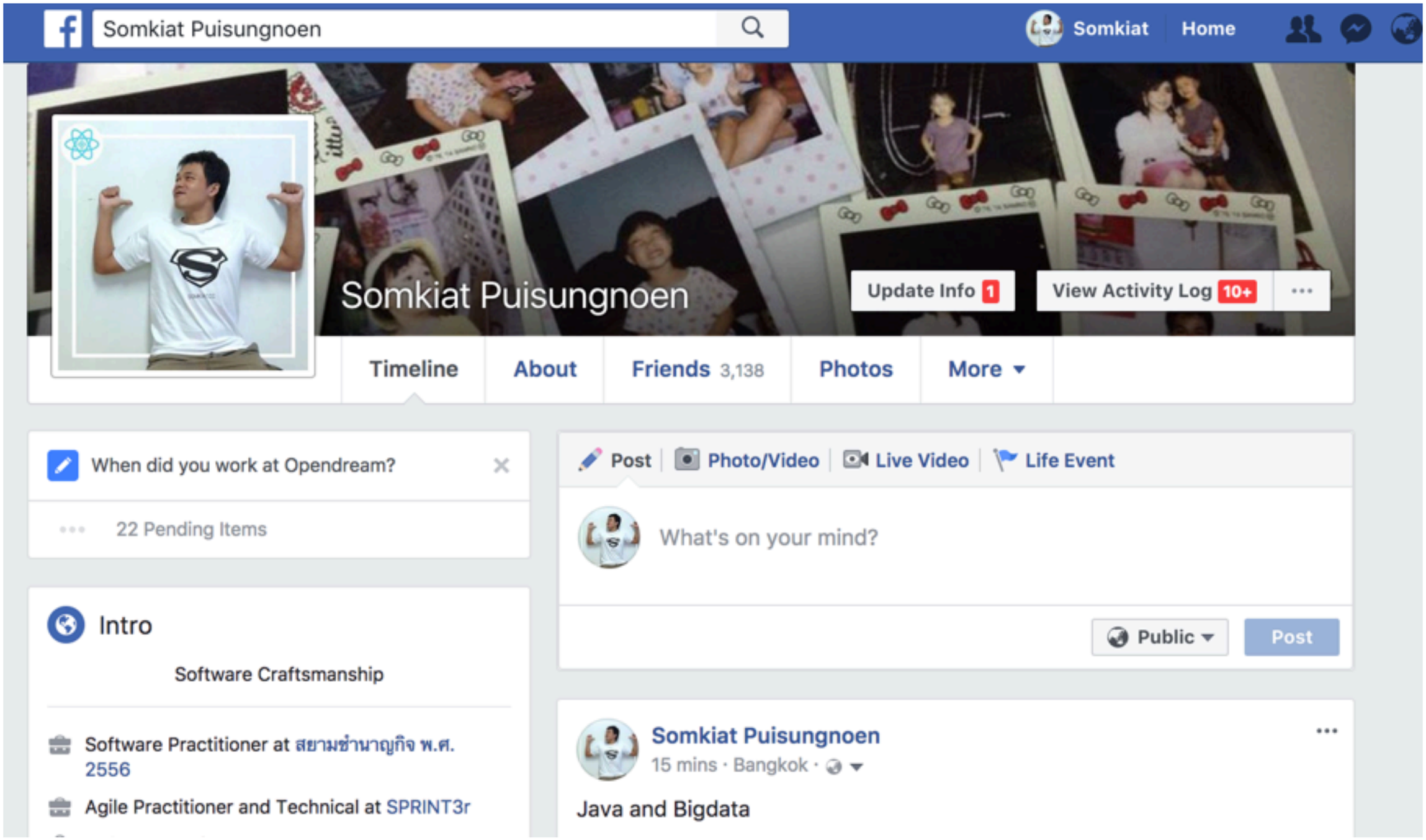
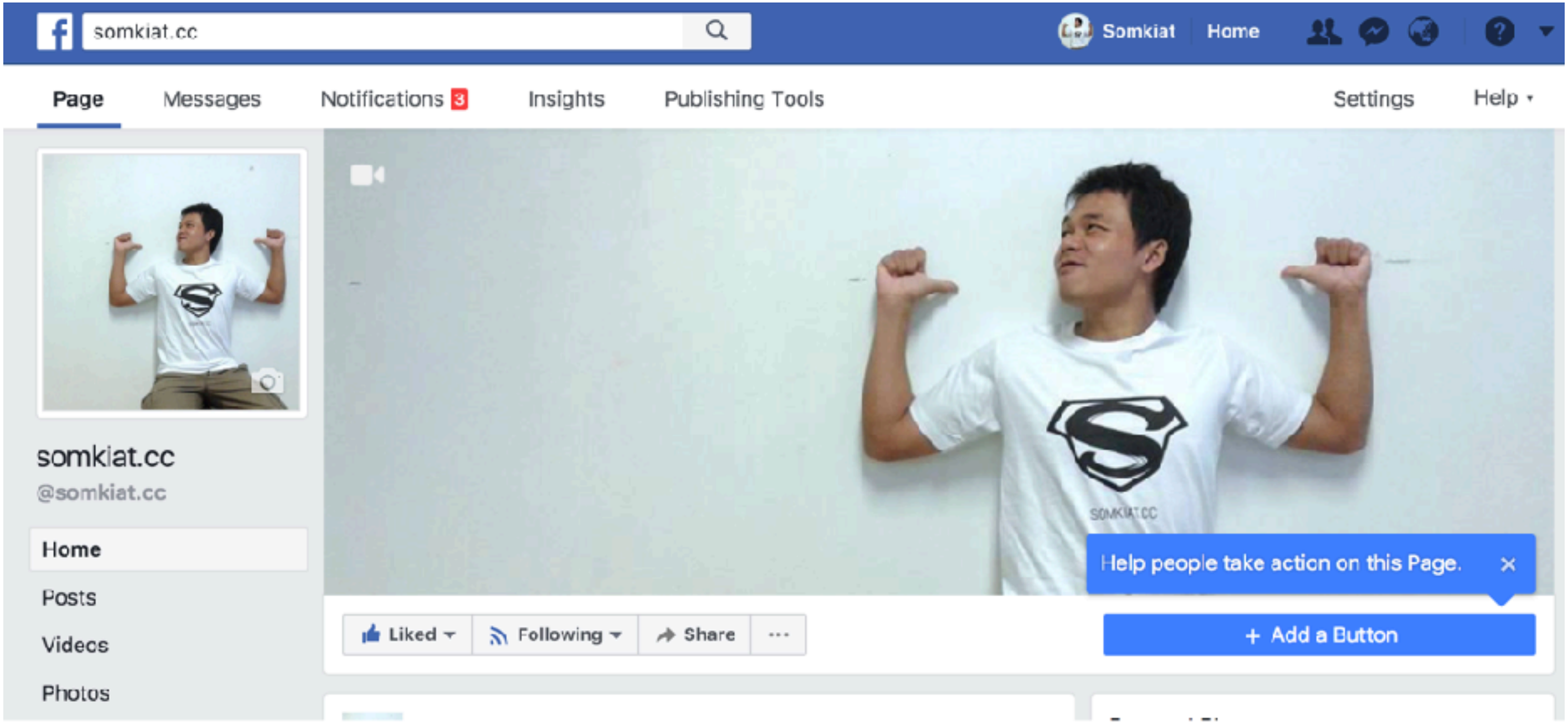
Automated Testing for Android with Kotlin





https://github.com/up1/course-automated-test-android-kotlin

Agenda

- Introduction of testing
- Why we need to test ?
- Types of tests
- Testing pyramid concept
- Android testing
- Workshop (step-by-step)

Agenda

- UI testing with Espresso and Kakao
- Expresso workshop
- Testable application
- Code coverage

Testing for Android app

"Program testing can be used to show the presence of bugs, but never their absence."

Edsger Dykstra, 1970, Notes on Structured Programming

Why we need to test ?

Help you to **catch bugs**
Develop features **faster**
Enforce **modularity** of your project

But,
It’s take time to learning and practice !!

Goals

How to **THINK** when and where you should test ?

What you need to know ?

Java/Android/Kotlin

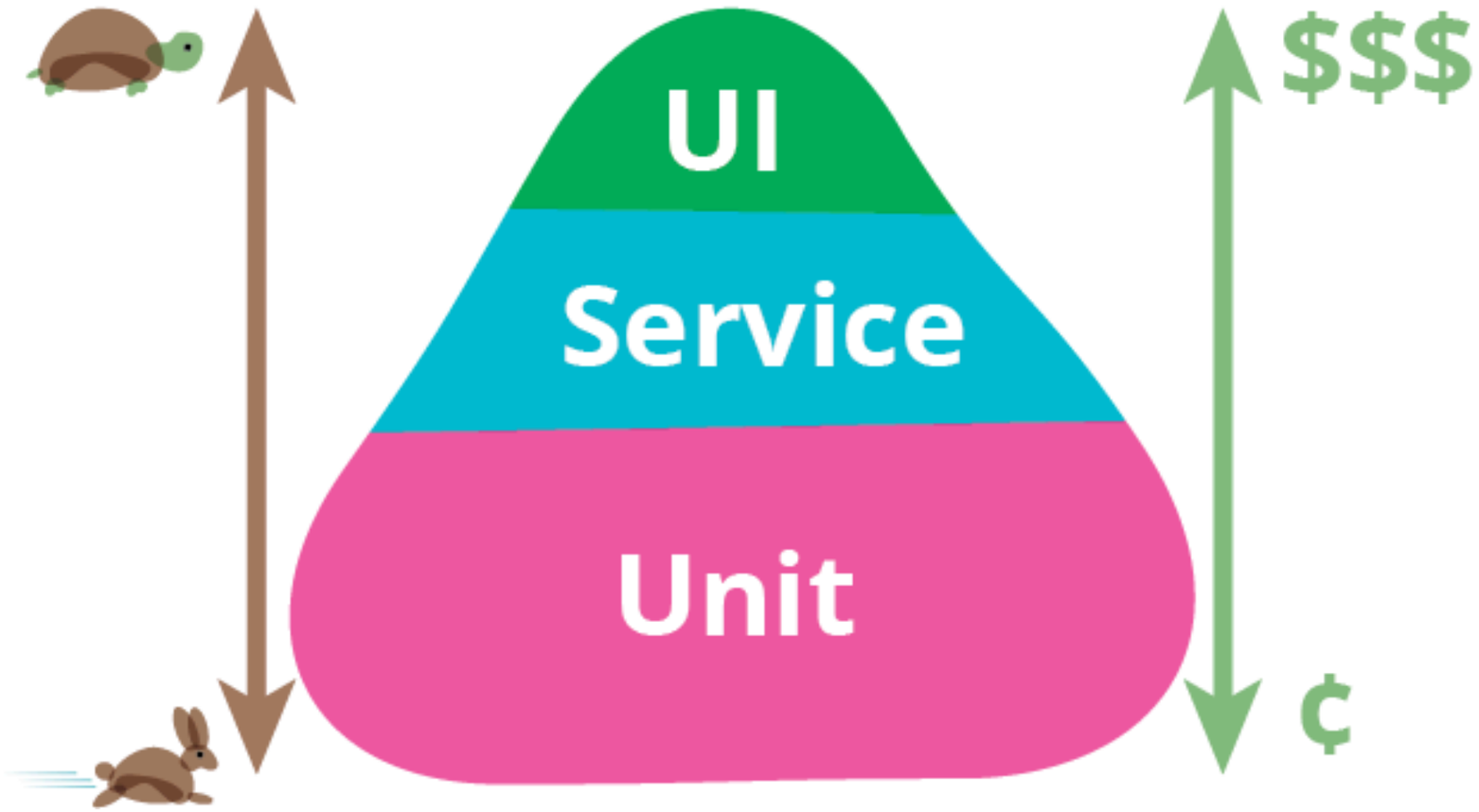
Android Studio

JUnit 4

Espresso/Kakao

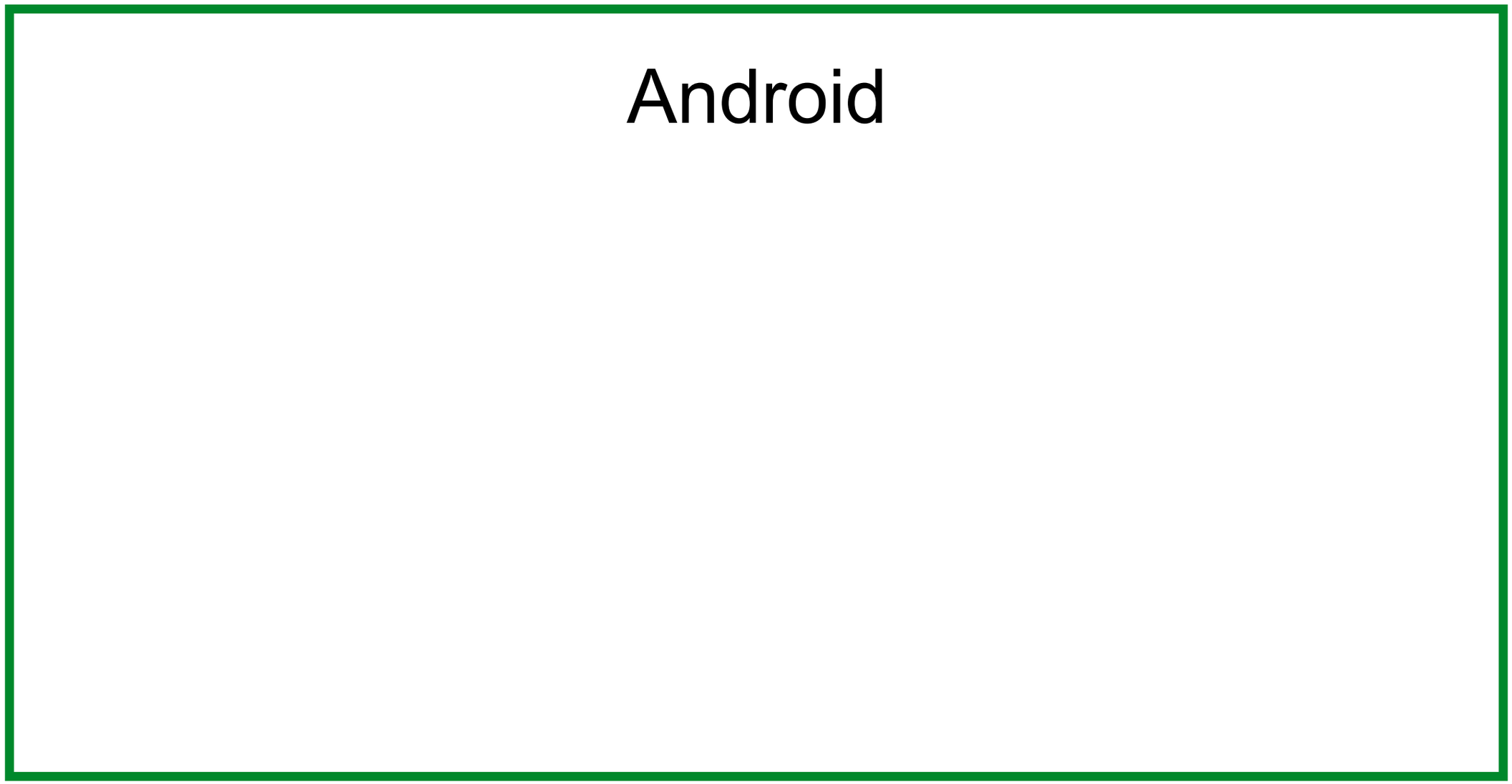
Type of testing

Testing Pyramid

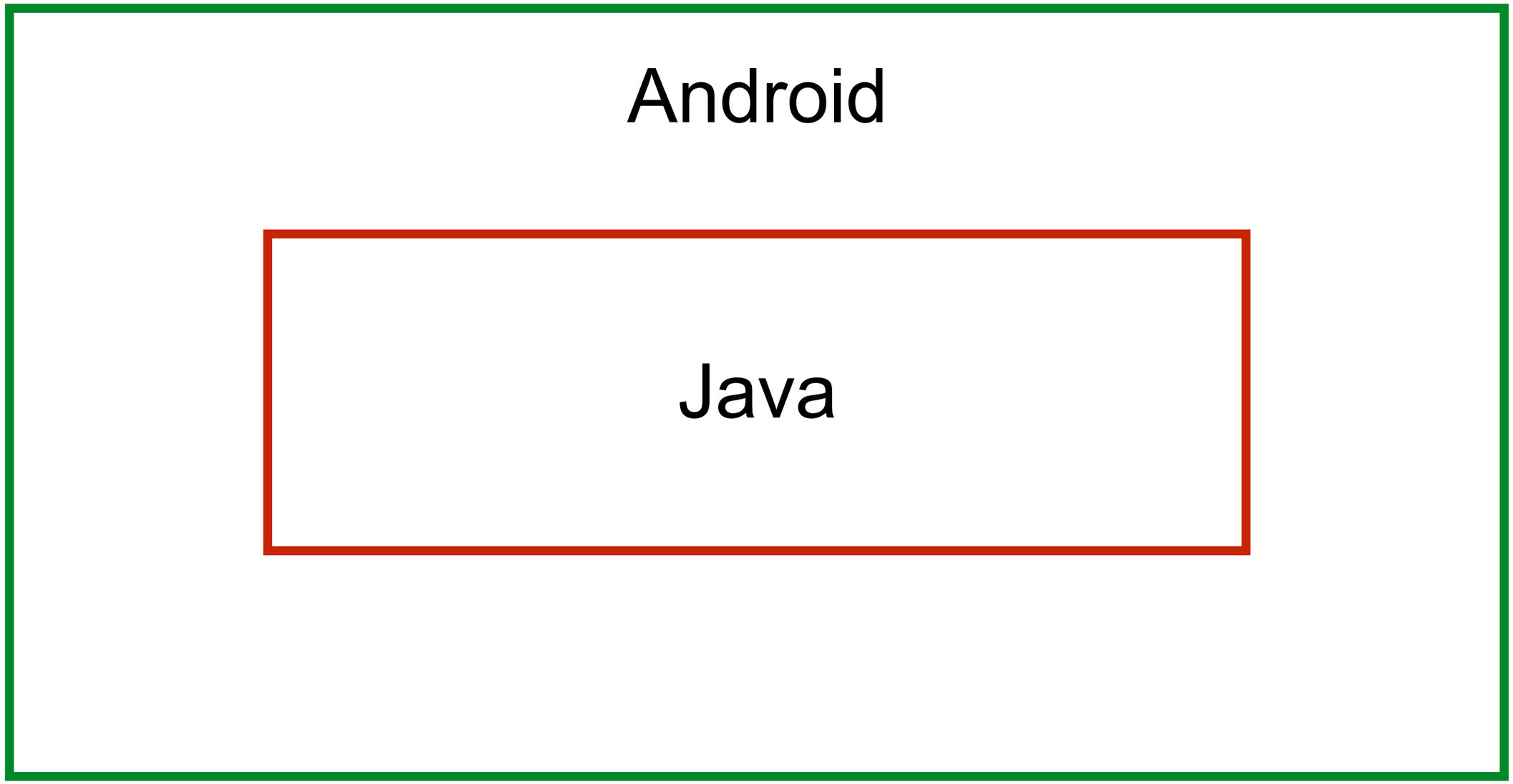


https://martinfowler.com/bliki/TestPyramid.html

Android Testing



Android Testing



Java run on JVM

JVM (Java Virtual Machine)

Run android need device

Build app -> Install to device -> Test

Android Testing

JVM

Device

/src/test

/src/androidTest

JVM unit test

JVM

Device

JVM unit test

/src/test

Business logic with pure java code

Instrumentation unit test

JVM	Device
JVM unit test	Instrumentation unit test
/src/test	/src/androidTest

Working with Android specific code, you need run on device such as AssetManager, SharedPreference

UI vs Non-UI

Android Testing

	JVM	Device
Non-UI	JVM unit test	Instrumentation unit test
UI		

/src/test /src/androidTest

Instrumentation UI test

	JVM	Device
Non-UI	JVM unit test	Instrumentation unit test
UI		Instrumentation UI test

/src/test /src/androidTest

Android Testing

	JVM	Device
Non-UI	JVM unit test	Instrumentation unit test
UI		Instrumentation UI test

UI TESTING FOR ANDROID
espresso

/src/test /src/androidTest

UI test on JVM ?

	JVM	Device
Non-UI	JVM unit test	Instrumentation unit test
UI	? ? ?	Instrumentation UI test

/src/test /src/androidTest

Android Testing

	JVM	Device
Non-UI	JVM unit test	Instrumentation unit test
UI	Robolectric	Instrumentation UI test

/src/test

/src/androidTest

Resources

https://developer.android.com/studio/test/index.html

https://developer.android.com/topic/libraries/testing-support-library/index.html#Espresso

http://robolectric.org/

Rule of thumb

Instrumentation tests are slower than JVM tests.

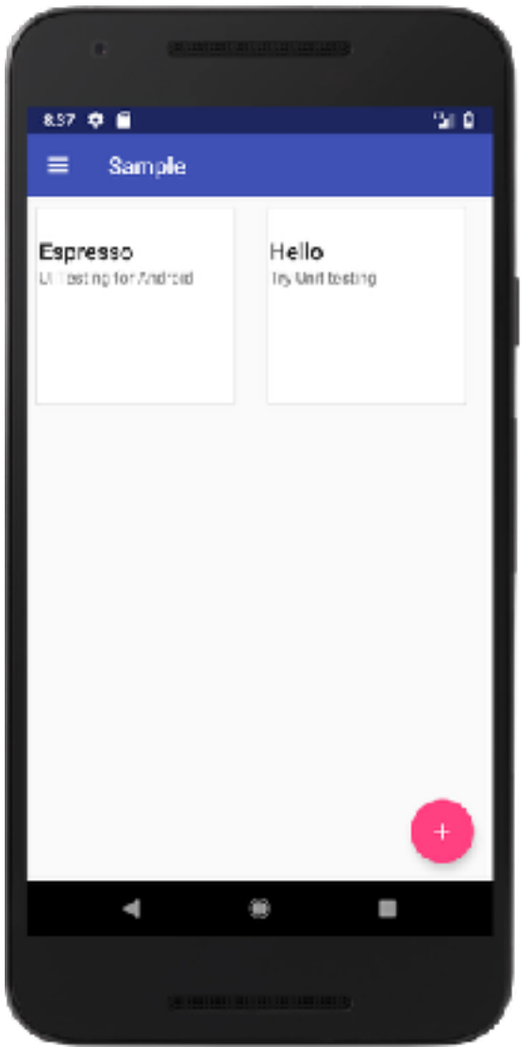
Try to separate the standard Java code from Android-dependent code.

Workshop with Testing

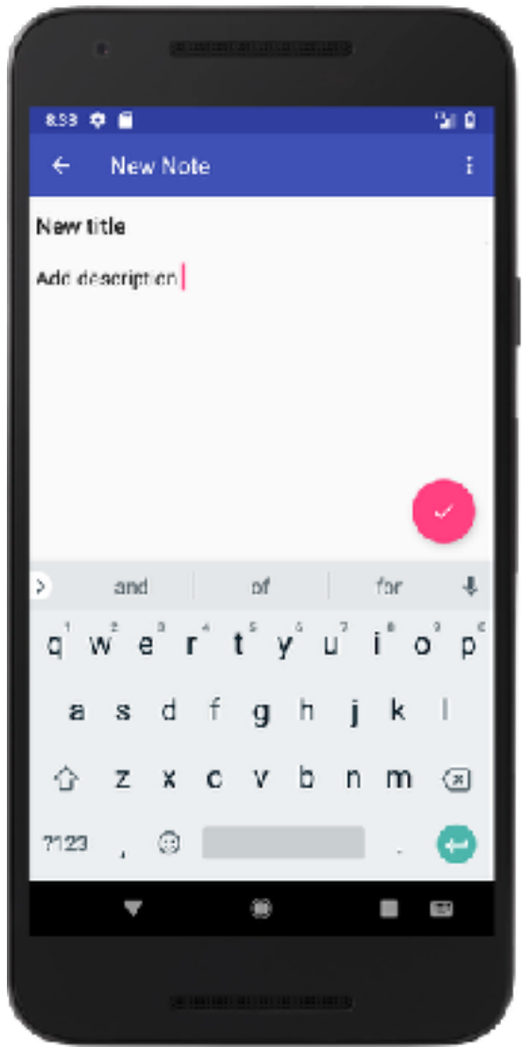
Hello Testing with Kotlin

https://github.com/up1/android-testing-workshop/archive/step01.zip

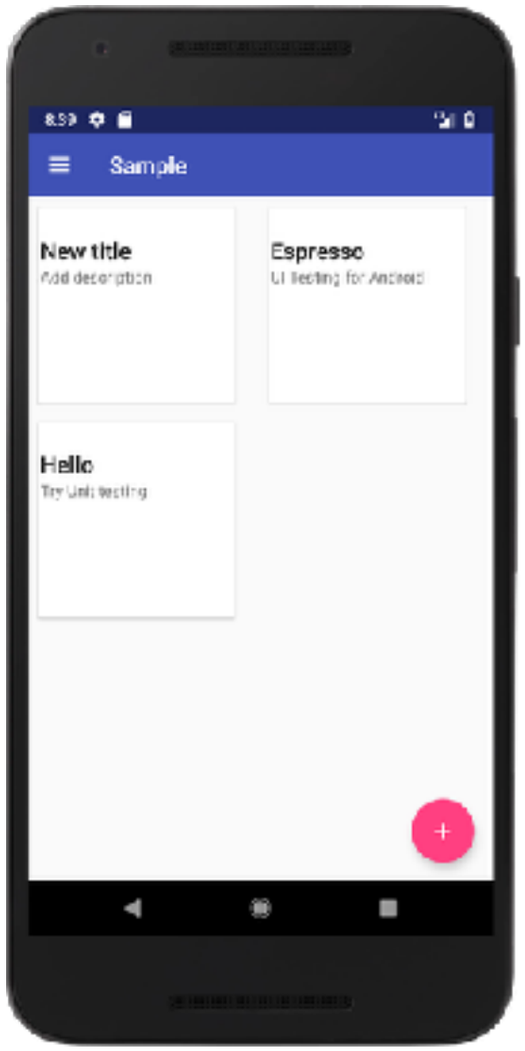
Main



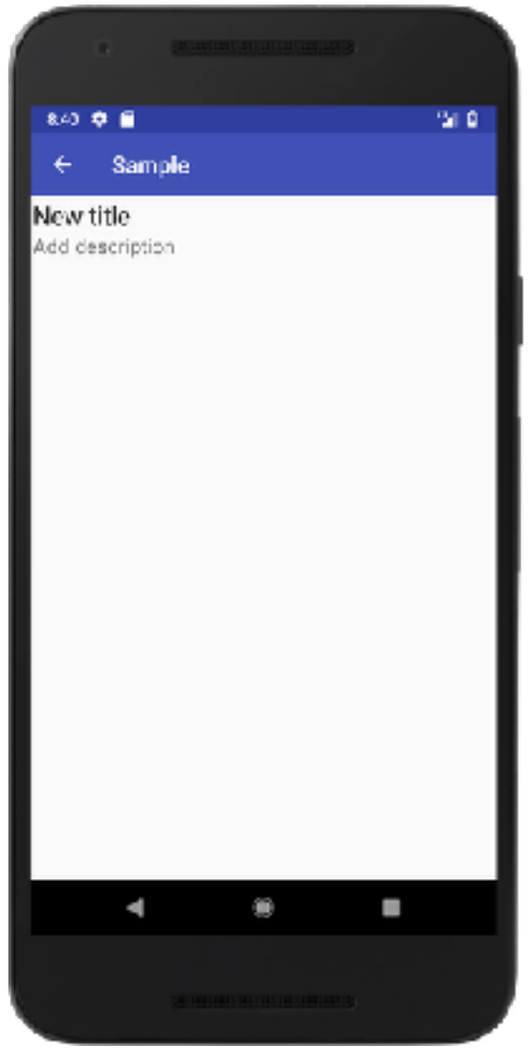
Add



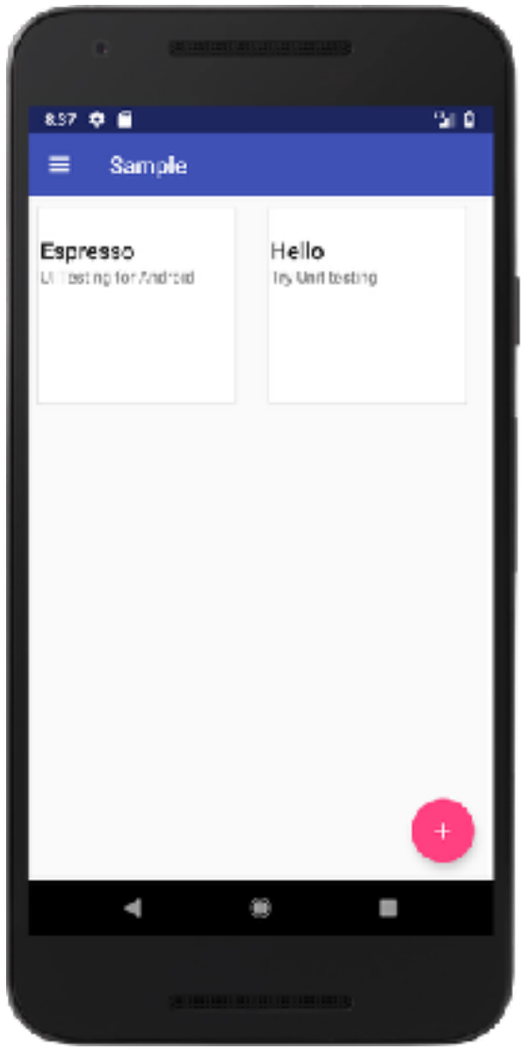
Main



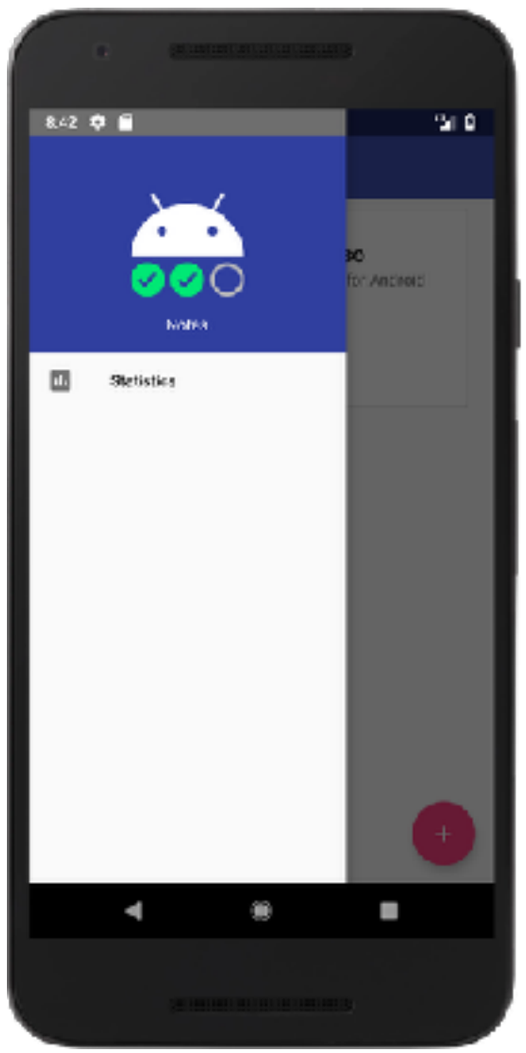
Detail



Main



Menu



Test cases ?

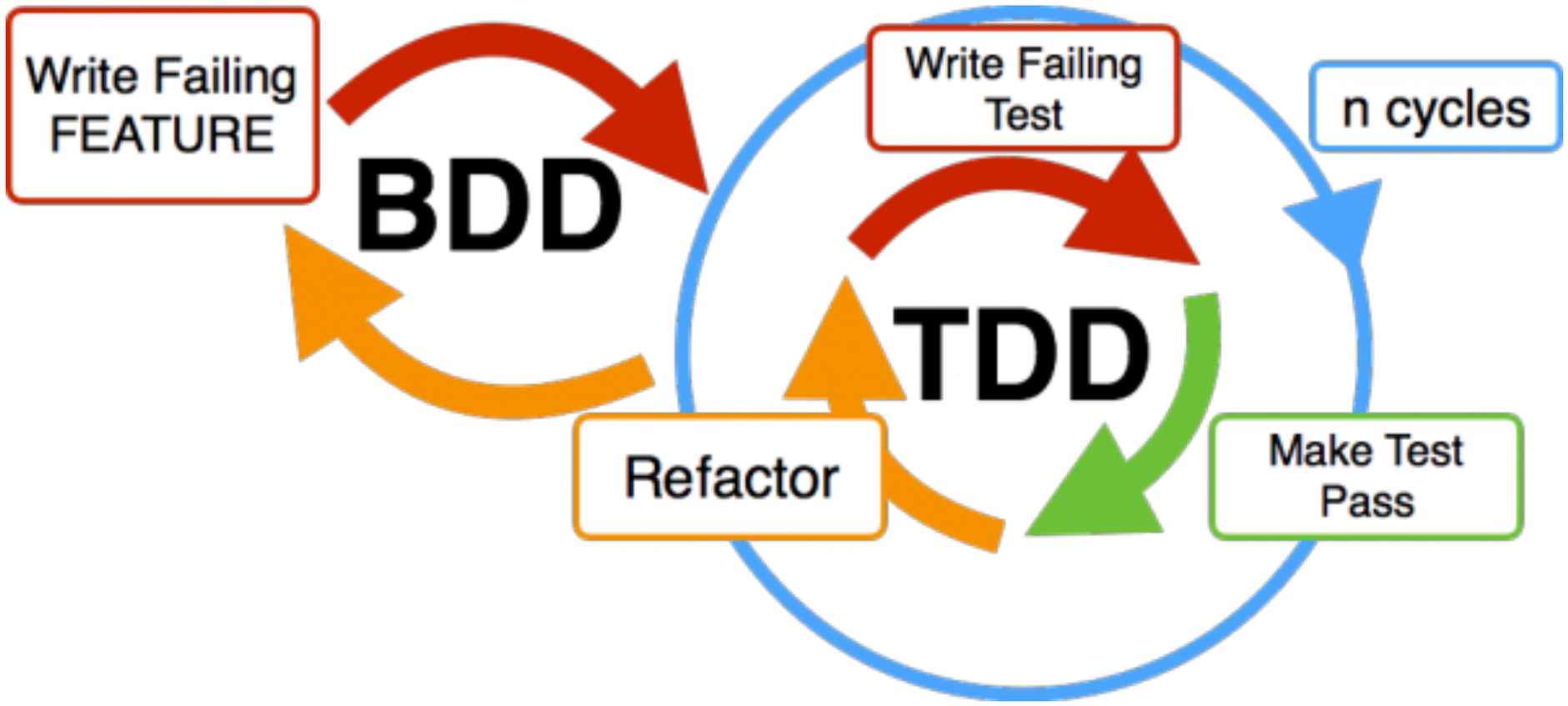
Test Case Name			Expected Result

Let’ start to write tests with Kotlin

Write test case ?

Start to write UI testing

Using espresso



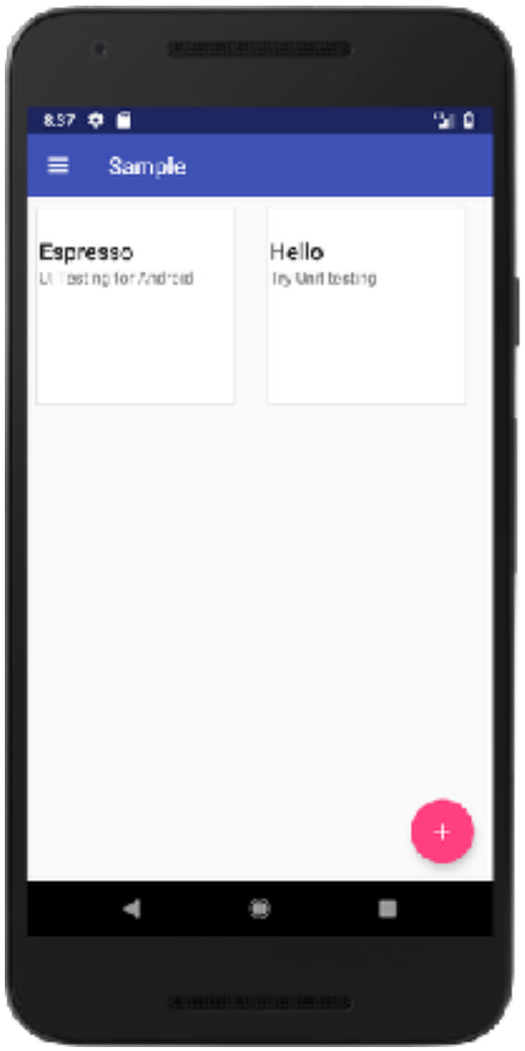
https://developer.android.com/training/testing/espresso/

How to write test case ?

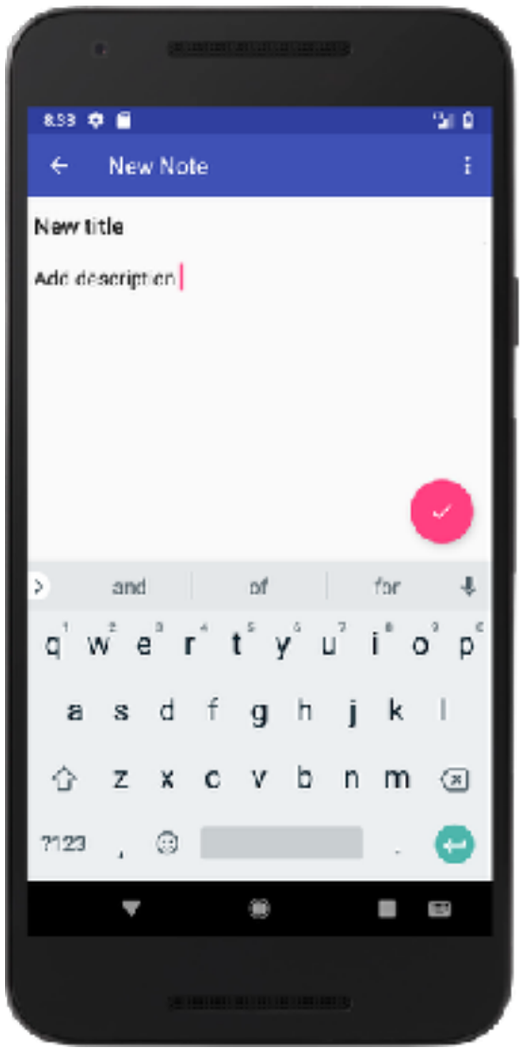
Add new note

Add new note

Main



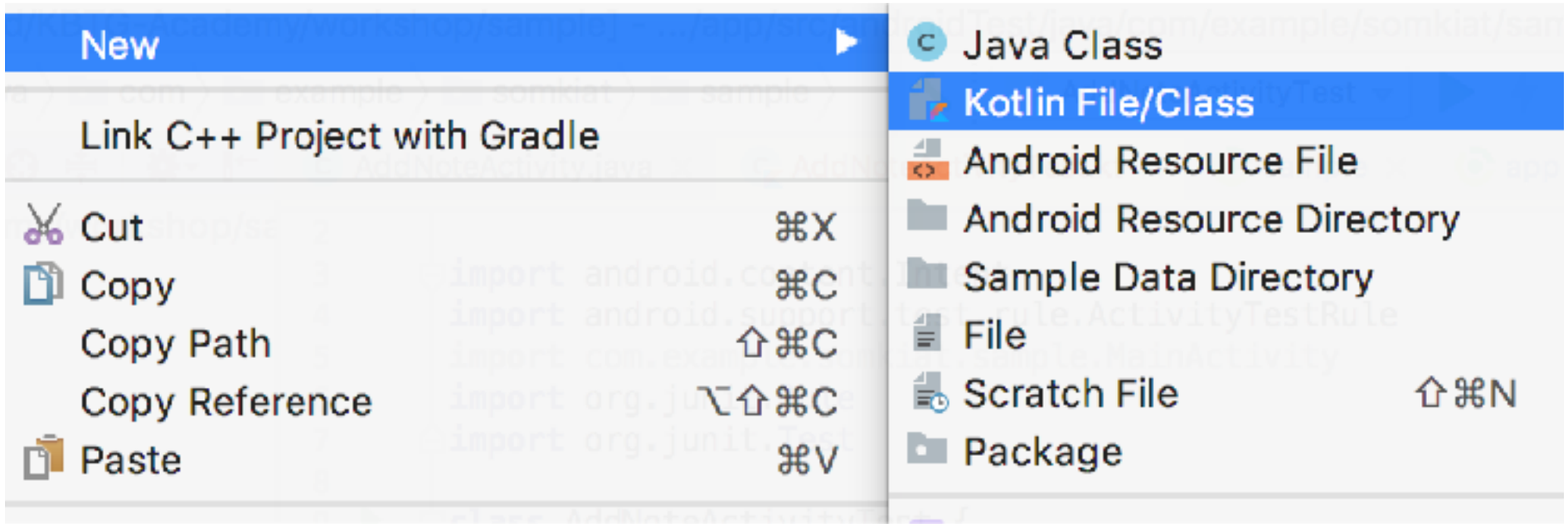
Add



Main

Add new test class (1)

In folder /app/src/androidTest/java



Try to config Kotlin in project (1)

check result in file /app/build.gradle

```
apply plugin: 'com.android.application'
apply plugin: 'kotlin-android'
```

Try to config Kotlin in project (2)

check result in file /app/build.gradle

```
dependencies {
    // Unit test
    testImplementation 'junit:junit:4.12'

    // UI test with Espresso
    androidTestImplementation 'com.android.support.test:runner:1.0.2'
    androidTestImplementation 'com.android.support.test:rules:1.0.2'
    androidTestImplementation
            'com.android.support.test.espresso:espresso-core:3.0.2'

    // Kotlin
    implementation "org.jetbrains.kotlin:kotlin-stdlib-jdk7:$kotlin_version"
}
```

Android Studio will error !!

Try to delete folder **.idea/** and
restart
Android Studio

Android Studio will error !!

1. File -> Invalidate Caches -> Invalidate
2. File -> Close Project
3. Remove the project from Android Studio
4. Quit from Android Studio
5. Open from existing project

Write first test with Kotlin

Class name :: AddNoteFlowTest.kt

```
class AddNoteFlowTest {
    @get:Rule
    val rule: ActivityTestRule<MainActivity> =
            ActivityTestRule(MainActivity::class.java)

    @Test
    fun click_add_not_button_should_open_add_note_screen() {
        onView(withId(R.id.fab_add_notes))
                .perform(click());
        onView(withId(R.id.add_note_title))
                .check(matches(isDisplayed()));
    }
}
```

Good test structure

```kotlin
@Test
fun click_add_not_button_should_open_add_note_screen() {
    // Act
    onView(withId(R.id.fab_add_notes))
            .perform(click())

    // Assert
    onView(withId(R.id.add_note_title))
            .check(matches(isDisplayed()))
    onView(withId(R.id.add_note_description))
            .check(matches(isDisplayed()))
}
```

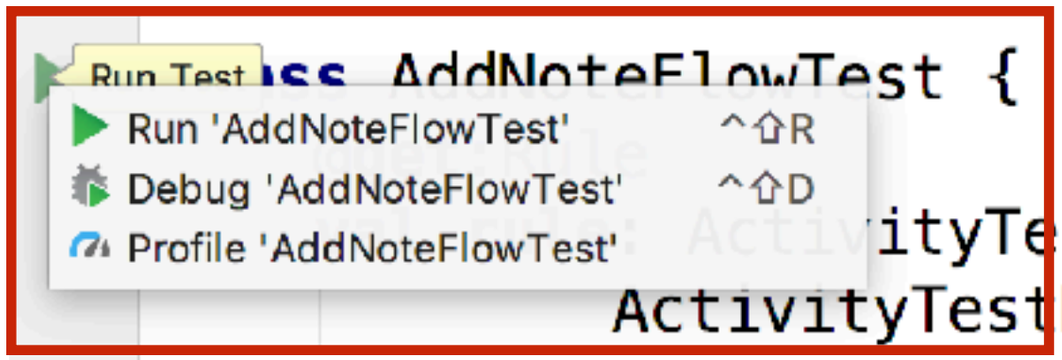
Add a new note (1)

Create new test case to add a new note

```
@Test
fun add_a_new_note_to_note_list() {
    val newTitle = "New title"
    val newDescription = "New description"

    // Click Add new note
    onView(withId(R.id.fab_add_notes))
            .perform(click())

// Fill in data
onView(withId(R.id.add_note_title))
            .perform(typeText(newTitle),
                    closeSoftKeyboard());
onView(withId(R.id.add_note_description))
            .perform(typeText(newDescription),
                    closeSoftKeyboard());
```

Run test in Android Studio (1)

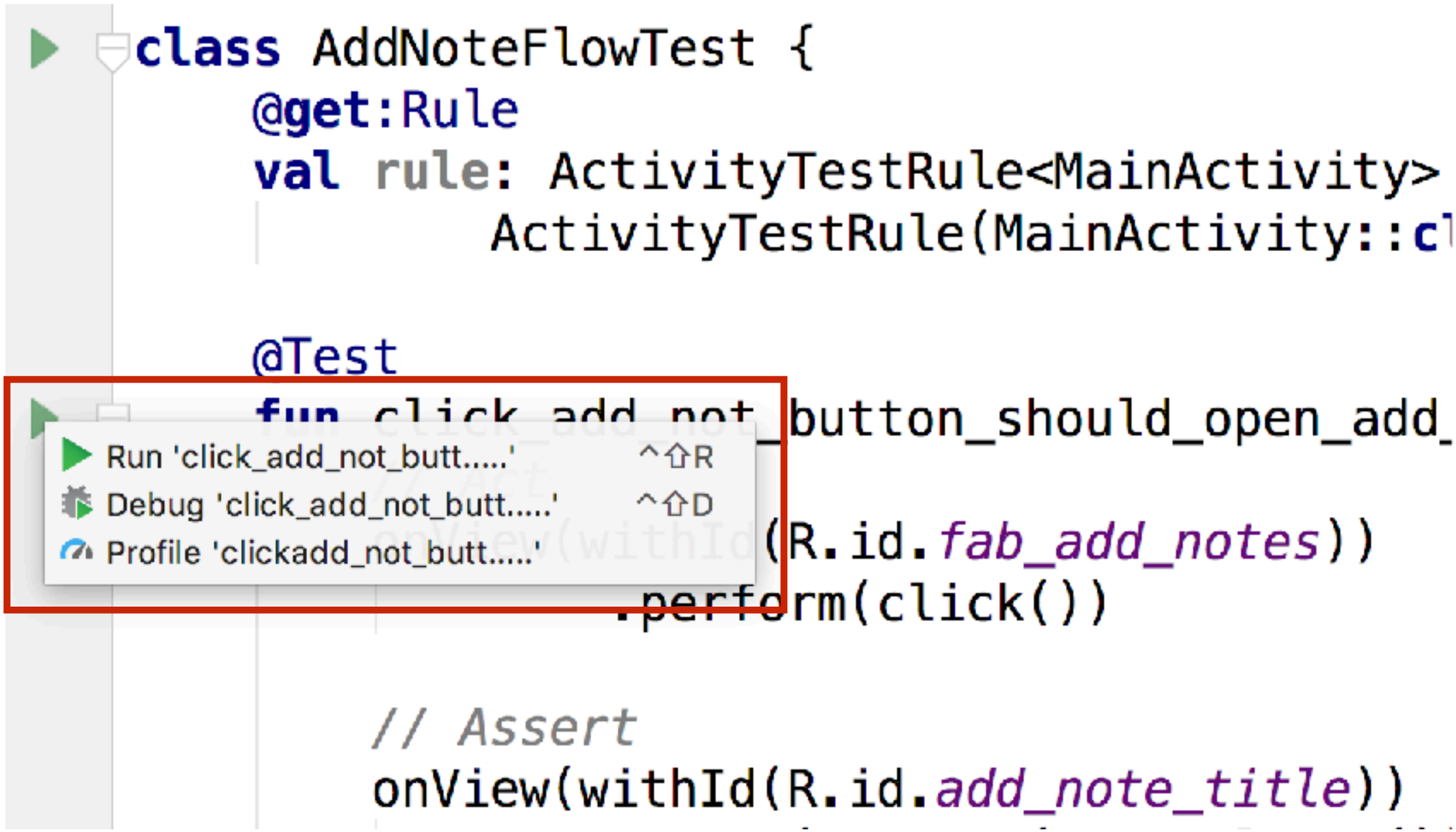
Run all test cases in class




```
@Test
fun click_add_not_button_should_open_add_note_screen() {
    // Act
    onView(withId(R.id.fab_add_notes))
            .perform(click())

    // Assert
    onView(withId(R.id.add_note_title))
            .check(matches(isDisplayed()))
```

Run test in Android Studio (2)

Run by test case



Run test in command line

$./gradlew clean cAT

See test result

In /app/build/reports/androidTests/connected

Test Summary

4	0	11.453s
tests	failures	duration

100% successful

Packages Classes

Package	Tests	Failures	Duration	Success rate
com.example.somkiat.sample	3	0	11.205s	100%
com.example.somkiat.sample.addnote	1	0	0.248s	100%

Generated by Gradle 4.4 at Jul 30, 2018 10:59:25 PM

See test result of AddNoteFlowTest

Class com.example.somkiat.sample.AddNoteFlowTest

all > com.example.somkiat.sample > AddNoteFlowTest

2	0	11.175s
tests	failures	duration

100%
successful

Tests

Test	SM-G360HU - 4.4.4
add_a_new_note_to_note_list	passed (9.726s)
click_add_not_button_should_open_add_note_screen	passed (1.449s)

Add a new note (2)

Save and check result

```
// Save note
onView(withId(R.id.fab_add_notes)).perform(click());

// Scroll to new note, by finding description
onView(withId(R.id.notes_list))
        .perform(scrollTo<RecyclerView.ViewHolder>(
                hasDescendant(withText(newDescription))));

// Check description displayed on screen
onView(withItemText(newDescription)).check(matches(isDisplayed()));
```

Add a new note (3)

Try to create a custom matcher **withItemText()**

```
// Save note
onView(withId(R.id.fab_add_notes)).perform(click());

// Scroll to new note, by finding description
onView(withId(R.id.notes_list))
        .perform(scrollTo<RecyclerView.ViewHolder>(
                hasDescendant(withText(newDescription))));
```

```
// Check description displayed on screen
onView(withItemText(newDescription)).check(matches(isDisplayed()));
```

Custom matcher

```kotlin
private fun withItemText(itemText: String): Matcher<View> {
    checkArgument(!TextUtils.isEmpty(itemText), "itemText cannot be null or empty")
    return object : TypeSafeMatcher<View>() {
        public override fun matchesSafely(item: View): Boolean {
            return allOf(
                    isDescendantOfA(isAssignableFrom(RecyclerView::class.java)),
                    withText(itemText)).matches(item)
        }

        override fun describeTo(description: Description) {
            description.appendText("is isDescendantOfA RV with text $itemText")
        }
    }
}
```

https://github.com/up1/android-testing-workshop/wiki

Try to add more note !!

Working with Data Parameterized

https://github.com/junit-team/junit4/wiki/parameterized-tests

Working with Parameterized

Class name ::
AddNoteFlowWithParameterizedTest.kt

```
@RunWith(Parameterized::class)
class AddNoteFlowWithParameterizedTest
                        (private val newTitle: String,
                         private val newDescription: String) {
    @get:Rule
    val rule: ActivityTestRule<MainActivity> =
            ActivityTestRule(MainActivity::class.java)
```

1. Run with Parameterized

```
@RunWith(Parameterized::class)
class AddNoteFlowWithParameterizedTest
                        (private val newTitle: String,
                         private val newDescription: String) {
    @get:Rule
    val rule: ActivityTestRule<MainActivity> =
            ActivityTestRule(MainActivity::class.java)
```

2. Define constructor of class

```
@RunWith(Parameterized::class)
class AddNoteFlowWithParameterizedTest
                        (private val newTitle: String,
                         private val newDescription: String) {

    @get:Rule
    val rule: ActivityTestRule<MainActivity> =
            ActivityTestRule(MainActivity::class.java)
```

3. Define your data for test

```kotlin
companion object {
    @JvmStatic
    @Parameterized.Parameters
    fun data() : List<Array<String>> {
        return listOf(
                arrayOf("Title 1", "Description 1"),
                arrayOf("Title 2", "Description 2")
        )
    }
}
```

https://kotlinlang.org/docs/reference/object-declarations.html#companion-objects

4. Change your test case

```kotlin
@Test
fun add_a_new_note_to_note_list() {
    // Click Add new note
    onView(withId(R.id.fab_add_notes))
            .perform(click())

    // Fill in data
    onView(withId(R.id.add_note_title))
            .perform(typeText(newTitle),
                    closeSoftKeyboard());
    onView(withId(R.id.add_note_description))
            .perform(typeText(newDescription),
                    closeSoftKeyboard());

    // Save note
    onView(withId(R.id.fab_add_notes)).perform(click());
}
```

Run and see test result

Class com.example.somkiat.sample.AddNoteFlowWithParameterizedTest

all > com.example.somkiat.sample > AddNoteFlowWithParameterizedTest

2	0	17.802s
tests	failures	duration

100%
successful

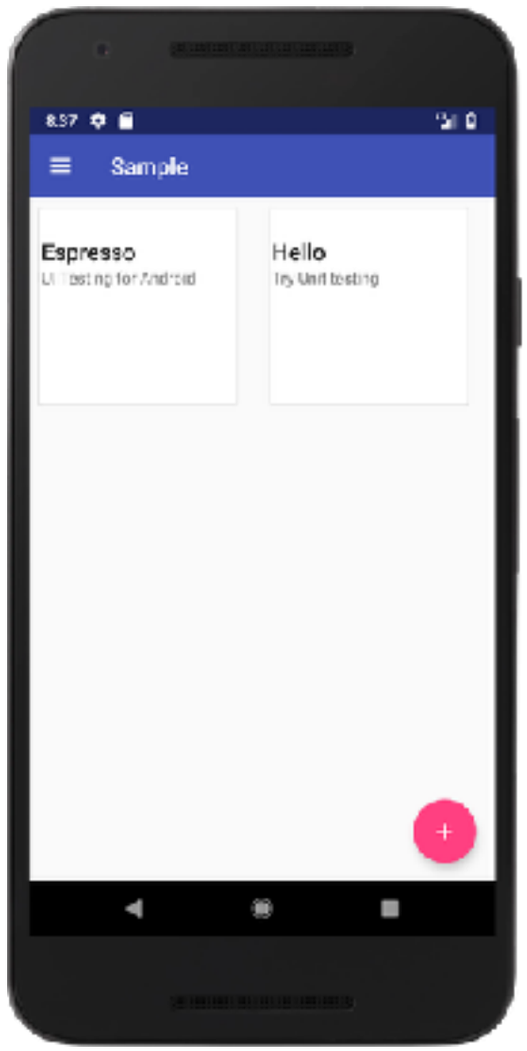
Tests

Test	SM-G360HU - 4.4.4
add_a_new_note_to_note_list[0]	passed (8.871s)
add_a_new_note_to_note_list[1]	passed (8.931s)

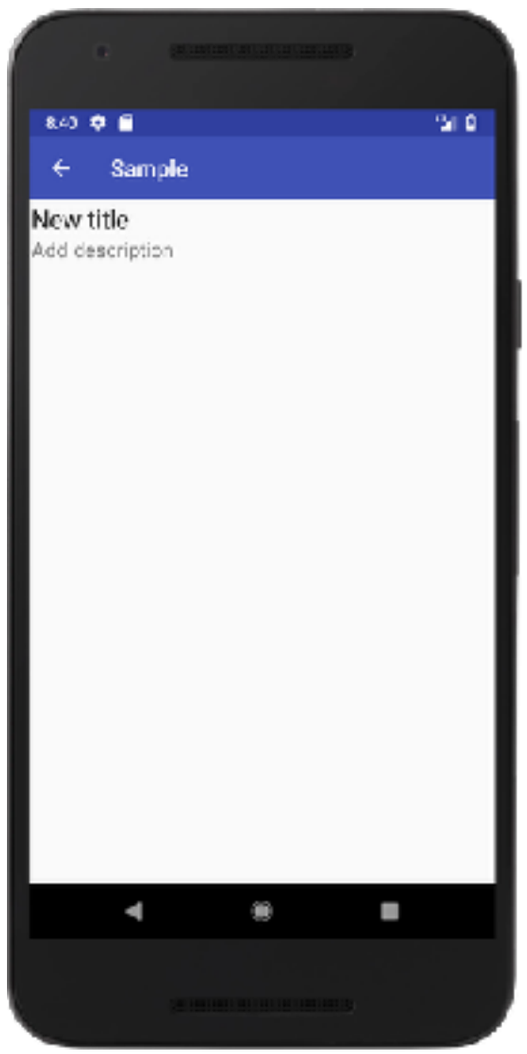
Show detail of note

Show detail of note

Main



Detail



Show detail of note

Create new test class :: NoteDetailScreenTest.kt

```
class NoteDetailScreenTest {
    @get:Rule
    private val rule: ActivityTestRule<NoteDetailActivity> =
            ActivityTestRule(NoteDetailActivity::class.java,
true,  // Initial touch mode
false) // Lazily launch activity
```

Show detail of note

Create a test case

```
@Test
fun show_detail_of_note_in_screen() {
    // Arrange and Act
    val startIntent = Intent()
    // ID of note ?
    startIntent.putExtra(NoteDetailActivity.EXTRA_NOTE_ID, "0")
    rule.launchActivity(startIntent)

    // Assert
    onView(withId(R.id.note_detail_title))
            .check(matches(withText(""))) // Expected value ?
    onView(withId(R.id.note_detail_description))
            .check(matches(withText(""))); // Expected value ?
}
```

Problem ?

Note ID ?

```
@Test
fun show_detail_of_note_in_screen() {
    // Arrange and Act
    val startIntent = Intent()
    // ID of note ?
    startIntent.putExtra(NoteDetailActivity.EXTRA_NOTE_ID, "0")
    rule.launchActivity(startIntent)

    // Assert
    onView(withId(R.id.note_detail_title))
            .check(matches(withText(""))) // Expected value ?
    onView(withId(R.id.note_detail_description))
            .check(matches(withText(""))); // Expected value ?
}
```

Problem ?

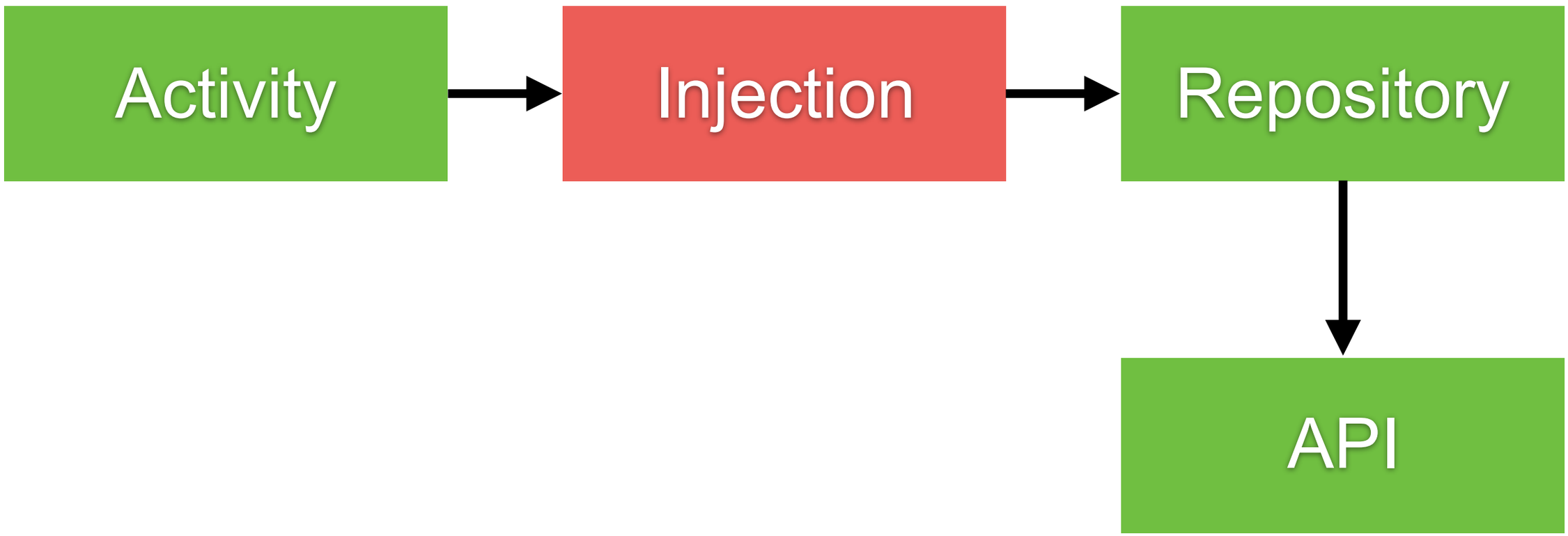
Expected result/value ?

```
@Test
fun show_detail_of_note_in_screen() {
    // Arrange and Act
    val startIntent = Intent()
    // ID of note ?
    startIntent.putExtra(NoteDetailActivity.EXTRA_NOTE_ID, "0")
    rule.launchActivity(startIntent)

    // Assert
    onView(withId(R.id.note_detail_title))
            .check(matches(withText(""))) // Expected value ?
    onView(withId(R.id.note_detail_description))
            .check(matches(withText(""))); // Expected value ?
}
```

Your project can test or not ?

Testable application ?

Look inside your project

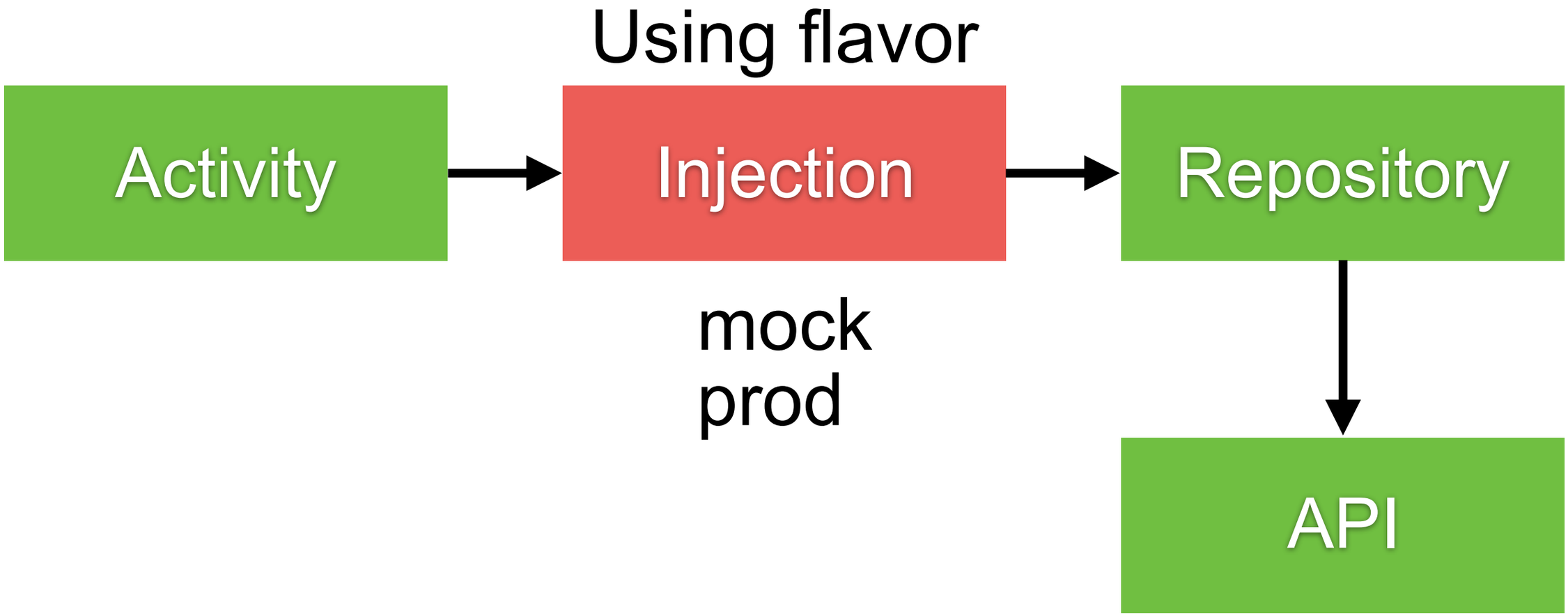


Injection.java

Use to create Repository and API

```
public class Injection {
    public static ImageStorage provideImageFile() {
        return new ImageFile();
    }

    public static NoteRepository provideNotesRepository() {
        return new InMemoryNotesRepository(new MockNoteServiceApi());
    }
}
```

Concept :: More testable



Add product flavour

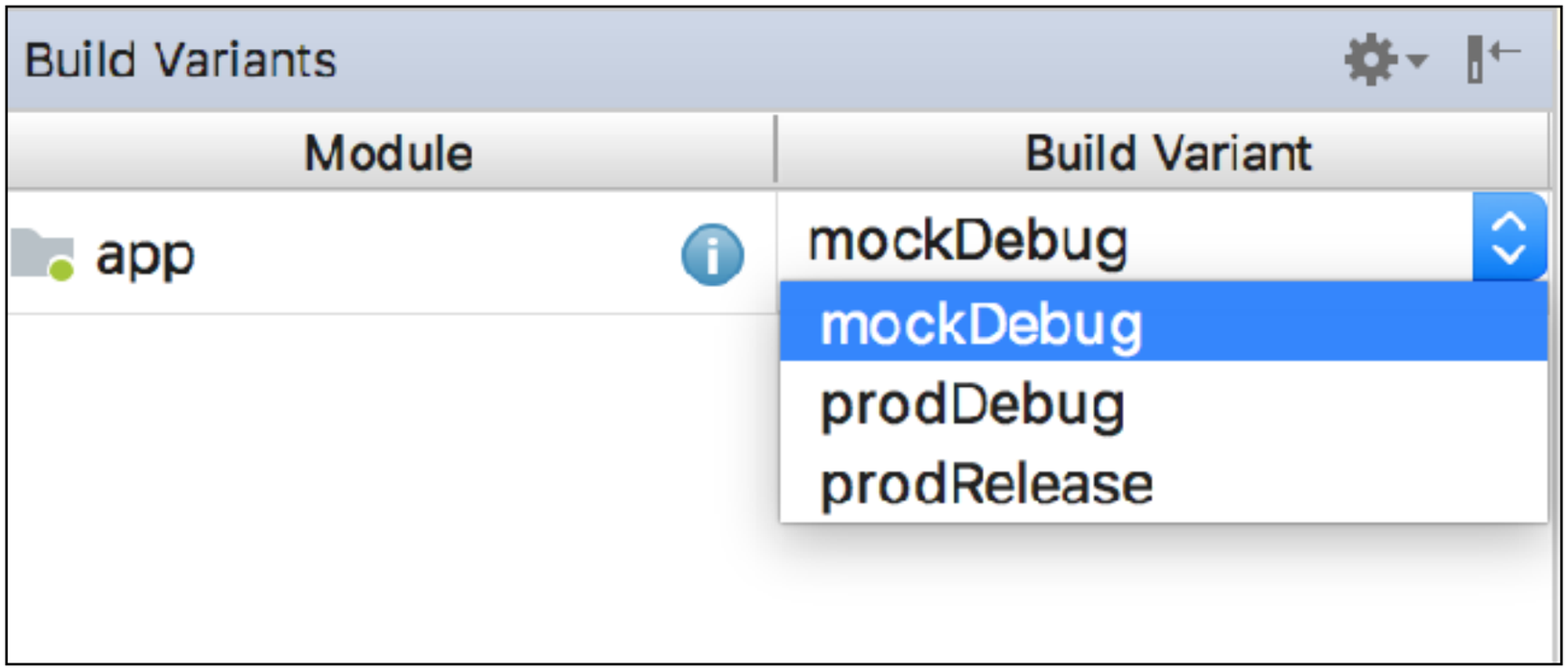
To file /app/build.gradle

```
flavorDimensions "mock"

// If you need to add more flavors, consider using flavor dimensions.
productFlavors {
    mock {
        applicationIdSuffix = ".mock"
        dimension "mock"
    }
    prod {

    }
}

// Remove mockRelease as it's not needed.
android.variantFilter { variant ->
    if(variant.buildType.name.equals('release')
            && variant.getFlavors().get(0).name.equals('mock')) {
        variant.setIgnore(true);
    }
}
```

https://github.com/up1/android-testing-workshop/wiki

Add product flavour

See result in Build Variants



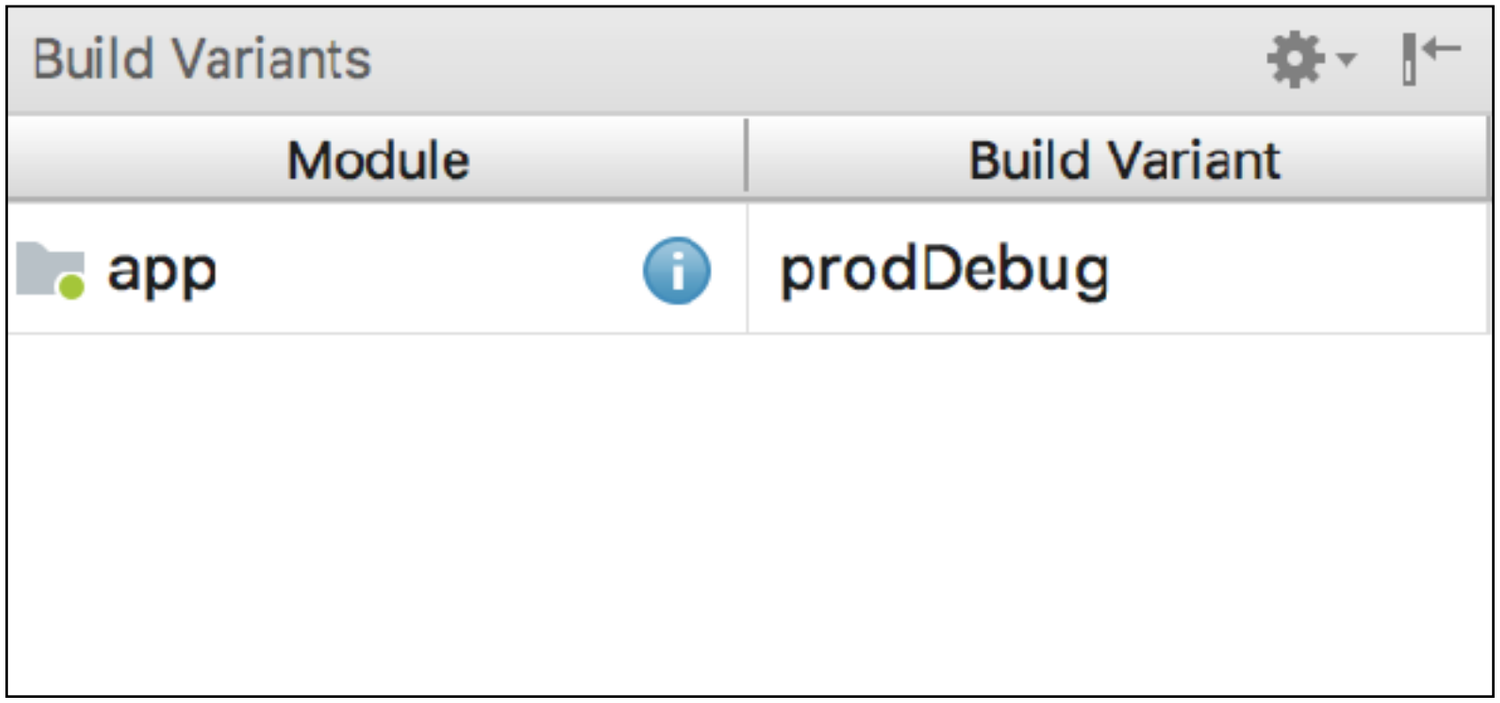
Create new folder in /app/src

mock/java/com/example/somkiat/sample
prod/java/com/example/somkiat/sample

Move class Injection into prod

prod/java/com/example/somkiat/sample

Run with prodDebug



Run with prodDebug

$./gradlew clean connectedProdDebugAndroidTest

Create class Injection in mock

mock/java/com/example/somkiat/sample

```
public class Injection {
    public static ImageStorage provideImageFile() {
        return new FakeImageFile();
    }

    public static NoteRepository provideNotesRepository() {
        return new InMemoryNotesRepository(new FakeNoteServiceApi());
    }
}
```

Create file **FakeNoteServiceApi**

Create class FakeNoteServiceApi

mock/java/com/example/somkiat/sample

```
class FakeNoteServiceApi implements NoteServiceApi {
    private static final Map<String, Note> NOTES_SERVICE_DATA = new HashMap<>();

    @Override
    public void getAllNotes(NotesServiceCallback<List<Note>> callback) {
        callback.onLoaded(Lists.newArrayList(NOTES_SERVICE_DATA.values()));
    }

    @Override
    public void getNote(String noteId, NotesServiceCallback<Note> callback) {
        Note note = NOTES_SERVICE_DATA.get(noteId);
        callback.onLoaded(note);
    }

    @Override
    public void saveNote(Note note) {
        NOTES_SERVICE_DATA.put(note.getId(), note);
    }

    @VisibleForTesting
    public static void addNotes(Note... notes) {
        for (Note note : notes) {
            NOTES_SERVICE_DATA.put(note.getId(), note);
        }
    }
}
```

https://github.com/up1/android-testing-workshop/wiki

Create new folder in /app/src

androidTestMock/java/com/example/somkiat/sample

Move your test class to this folder

Back to show detail test

Show detail of note

```kotlin
@Test
fun show_detail_of_note_in_screen() {
    // Arrange and Act
    val newNote = Note("Fake title", "Fake description");
    FakeNoteServiceApi.addNotes(newNote);
    val startIntent = Intent()
    startIntent.putExtra(NoteDetailActivity.EXTRA_NOTE_ID, newNote.id)
    rule.launchActivity(startIntent)

    // Assert
    onView(withId(R.id.note_detail_title))
            .check(matches(withText(newNote.title)))
    onView(withId(R.id.note_detail_description))
            .check(matches(withText(newNote.description)));
}
```

Run with mockDebug

$./gradlew clean connectedMockDebugAndroidTest

Test result

Test Summary

4	0	11.064s
tests	failures	duration

100%
successful

Packages Classes

Package	Tests	Failures	Duration	Success rate
com.example.somkiat.sample	2	0	10.707s	100%
com.example.somkiat.sample.addnote	1	0	0.220s	100%
com.example.somkiat.sample.notedetail	1	0	0.137s	100%

Code coverage

"Code coverage can show the high risk areas in a program, but never the risk-free."

Paul Reilly, 2018, Kotlin TDD with Code Coverage

Code coverage

A tool to measure how much of your code is covered by tests that break down into classes, methods and lines.

Code coverage

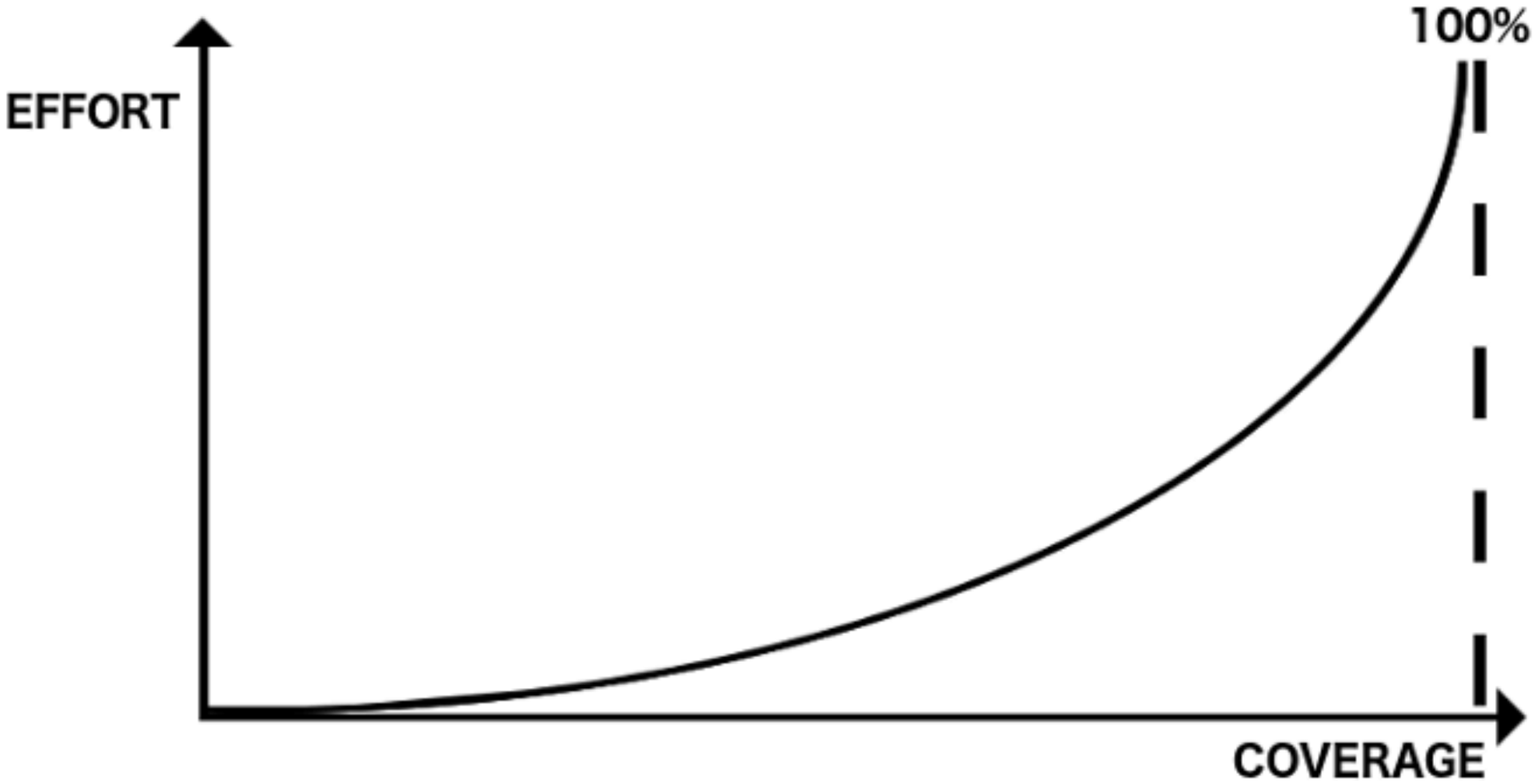
But 100% of code coverage **does not mean** that your code is 100% correct

Code coverage

Powerful tool to improve the quality of your code

Code coverage != quality of tests

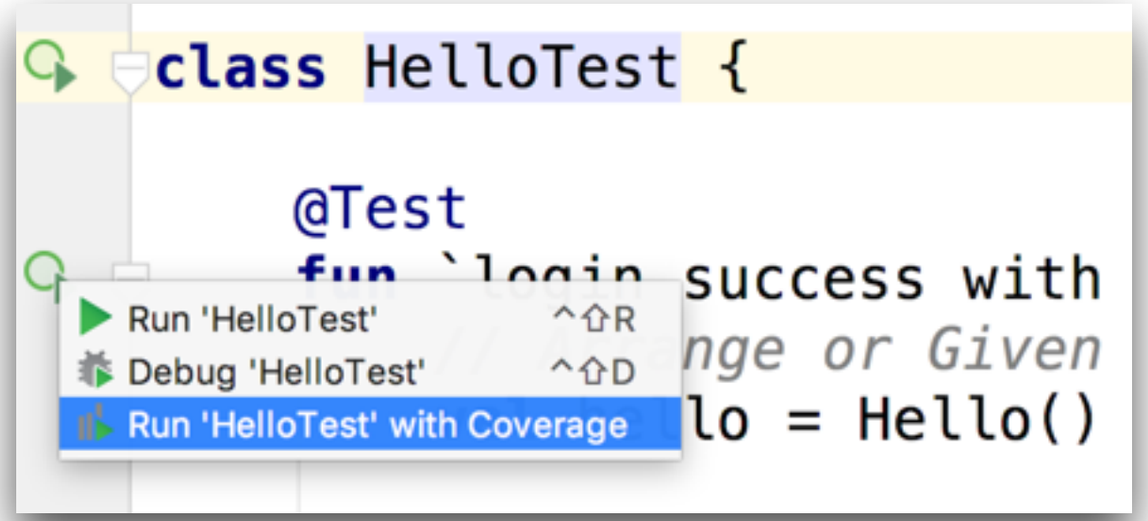
Code coverage 100% ?



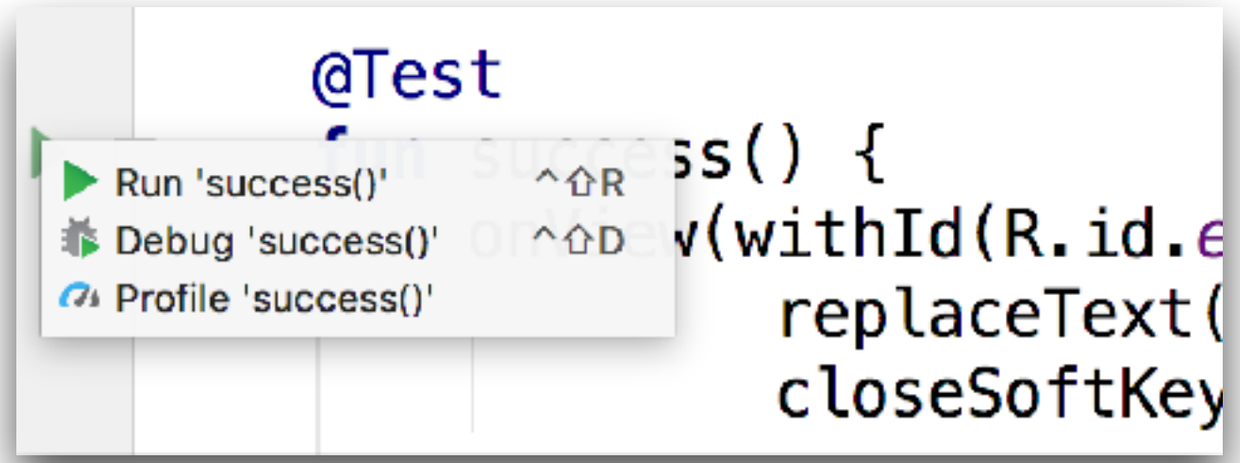
Code coverage for android

Disabled by default !!

Unit test



androidTest



Try to enable code coverage

Use Jacoco library

https://github.com/nomisRev/AndroidGradleJacoco

https://www.jacoco.org/jacoco/

1. Enable coverage in debug

In file /app/build.gradle

```
buildTypes {
    debug {
        testCoverageEnabled true
    }
    release {
        minifyEnabled false
        proguardFiles getDefaultProg
    }
}
```

2. Use jacobo library

In file /app/build.gradle

```
apply plugin: 'jacoco'

jacoco {
    toolVersion = "0.8.1"
}
```

3. Merge result of coverage

Create new grade's task

```
task jacocoTestReport(type: JacocoReport, dependsOn: ['testDebugUnitTest',
    reports {
        xml.enabled = true
        html.enabled = true
    }

    def fileFilter = [ '**/R.class', '**/R$*.class', '**/BuildConfig.*', '*
    def debugTree = fileTree(dir: "$project.buildDir/tmp/kotlin-classes/deb
    def mainSrc = "$project.projectDir/src/main/java"

    sourceDirectories = files([mainSrc])
    classDirectories = files([debugTree])
    executionData = fileTree(dir: project.buildDir, includes: [
            'jacoco/testDebugUnitTest.exec', 'outputs/code-coverage/connect
    ])
}
```

4. Run test with code coverage

$gradlew clean jacocoTestReport

Result in /build/reports/jacoco/jacocoTestReport

app > demo.loginapplication

demo.loginapplication

Element	Missed Instructions	Cov.	Missed Branches	Cov.	Missed	Cxty	Missed	Lines
MainActivity		82%		50%	7	13	1	13
Hello		100%		n/a	0	2	0	2
Total	18 of 119	84%	7 of 14	50%	7	15	1	15

More detail of coverage

app > demo.loginapplication > MainActivity.kt

MainActivity.kt

```
1.  package demo.loginapplication
2.
3.  import android.support.v7.app.AppCompatActivity
4.  import android.os.Bundle
5.  import android.view.View
6.  import android.widget.Toast
7.  import kotlinx.android.synthetic.main.activity_main.*
8.
9.  class MainActivity : AppCompatActivity(), View.OnClickListener {
10.
11.     override fun onCreate(savedInstanceState: Bundle?) {
12.         super.onCreate(savedInstanceState)
13.         setContentView(R.layout.activity_main)
14.
15.         email_sign_in_button.setOnClickListener(this)
16.     }
17.
18.     override fun onClick(v: View?) {
19.         when(v?.id) {
20.             R.id.email_sign_in_button -> {
21.                 processLogin()
22.             }
23.         }
24.     }
25.
26.     private fun processLogin() {
27.         if(email.text.toString().equals("somkiat@xxx.com")) {
28.             Toast.makeText(this@MainActivity, "Success", Toast.LENGTH_SHORT).show()
29.         } else {
30.             Toast.makeText(this@MainActivity, "Fail", Toast.LENGTH_SHORT).show()
31.         }
32.     }
33. }
```

Miss in branch coverage

Miss in line coverage

Problem with Jacoco

version of Jacoco

https://github.com/nomisRev/AndroidGradleJacoco

Improve UI Testing with Espresso

1. Improve test structure

Robot or Page Object pattern

https://martinfowler.com/bliki/PageObject.html

Easy to read and understand

Robot or Page Object pattern

```kotlin
@Test
fun success_with_robot() {
    robot
            .setEmail("somkiat@xxx.com")
            .setPassword("")
            .clickLogin()
            .mustShow( text: "Success")
}
```

Create Login page

Create file LoginRobot.kt

```
class LoginRobot(val activity: Activity){

    fun setEmail(email: String)
            = apply { fillEditText(R.id.email, email) }
    fun setPassword(password: String)
            = apply { fillEditText(R.id.password, password) }
    fun clickLogin() = apply { clickButton(R.id.email_sign_in_button) }
    fun mustShow(text: String) = apply { toast(text) }
```

Create Login page

Create file LoginRobot.kt

```
private fun fillEditText(resId: Int, text: String): ViewInteraction =
        onView(withId(resId))
                .perform(replaceText(text),
                        closeSoftKeyboard())

private fun clickButton(resId: Int): ViewInteraction =
        onView((withId(resId))).perform(click())

private fun matchText(viewInteraction: ViewInteraction,
                      text: String): ViewInteraction = viewInteraction
        .check(ViewAssertions.matches(ViewMatchers.withText(text)))
```

2. Use library/DSL :: Kakao

https://github.com/agoda-com/Kakao

Add dependencies

In file /app/build.gradle

```
dependencies {

    androidTestImplementation 'com.agoda.kakao:kakao:1.3.0'
}
```

Easy to read and understand

```
fun success_with_kakao() {
    screen {
        email {
            replaceText("somkiat@xxx.com")
            closeSoftKeyboard()
        }
        password {
            replaceText("")
        }
        login {
            click()
        }
    }
```

Login Screen

```
open class TestLoginScreen: Screen<TestLoginScreen>() {

    val email: KEditText = KEditText { withId(R.id.email)}
    val password: KEditText = KEditText { withId(R.id.password)}
    val login: KButton = KButton { withId(R.id.email_sign_in_button) }

}
```

More topics …

Capture screenshot with Screengrab

https://docs.fastlane.tools/getting-started/android/screenshots/

1. Install Screengrab

$sudo gem install fastlane -NV

$sudo gem install screengrab

2. Add dependency

In file /app/build.gradle

```
dependencies {

    testImplementation 'junit:junit:4.12'
    androidTestImplementation 'com.android.support.test:runner:1
    androidTestImplementation 'com.android.support.test:rules:1.
    androidTestImplementation 'com.android.support.test.espresso

    androidTestImplementation 'com.agoda.kakao:kakao:1.3.0'

    androidTestImplementation 'tools.fastlane:screengrab:1.0.0'
}
```

3. Create file AndroidManifest.xml

In folder **/app/src/debug/**

```
<!-- Allows unlocking your device and activating its screen so UI tests can succeed -->
<uses-permission android:name="android.permission.DISABLE_KEYGUARD"/>
<uses-permission android:name="android.permission.WAKE_LOCK"/>

<!-- Allows for storing and retrieving screenshots -->
<uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE" />
<uses-permission android:name="android.permission.READ_EXTERNAL_STORAGE" />

<!-- Allows changing locales -->
<uses-permission android:name="android.permission.CHANGE_CONFIGURATION"
    tools:ignore="ProtectedPermissions" />
```

4. Add screengrab to UI test

In folder **/app/src/debug/**

```
class MainActivityUITest {

    @get:Rule
    val rule: ActivityTestRule<MainActivity>
            = ActivityTestRule(MainActivity::class.java)
```

```
@get:Rule
val local: LocaleTestRule = LocaleTestRule();
```

4. Add screengrab to UI test

```
@Test
fun success() {
    Screengrab.screenshot( screenshotName: "step01");

    onView(withId(R.id.email)).perform(
            replaceText( stringToBeSet: "somkiat@xxx.com"),
            closeSoftKeyboard())

    onView(withId(R.id.password)).perform(
            replaceText( stringToBeSet: ""),
            closeSoftKeyboard())

    Screengrab.screenshot( screenshotName: "step02");

    onView(withId(R.id.email_sign_in_button)).perform(click())

    Screengrab.screenshot( screenshotName: "step03");

    onView(withText( text: "Success"))
            .inRoot(withDecorView(not(rule.activity.window.decorView)))
            .check(matches(isDisplayed()))
}
```

5. Run

$gradlew assembleDebug assembleAndroidTest

$fastlane screengrab

```
[✔] 🚀
[07:19:15]: Get started using a Gemfile for fastlane https:/
ls/getting-started/ios/setup/#use-a-gemfile
[07:19:15]: To not be asked about this value, you can specif
ckage_name'
[07:19:15]: The package name of the app under test (e.g.
com.yourcompany.yourapp):
```

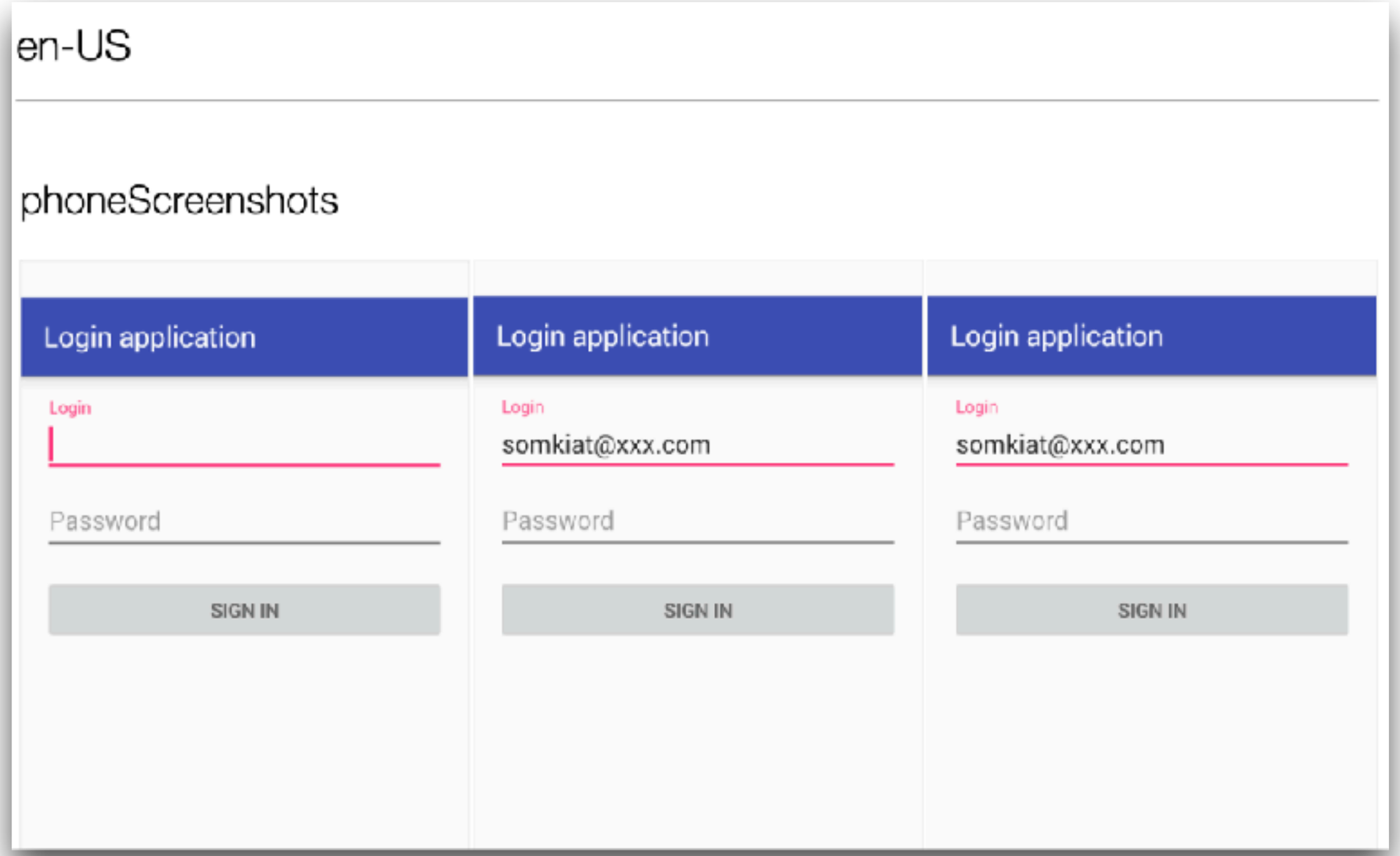
6. Try to config screngrabfile

$screengrab init

```
app_package_name('demo.loginapplication')

app_apk_path('app/build/outputs/apk/debug/app-debug.apk')
tests_apk_path('app/build/outputs/apk/androidTest/debug/app-debug-androidTest.apk')

locales(['en-US', 'fr-FR', 'it-IT'])

# clear all previously generated screenshots in your local output directory before c
clear_previous_screenshots(true)
```

7. See result

In folder **/fastlane**



Problem with Screengrab

Version of screen grab for Android N+

Solution :: reduce version of screengrab