CUSTOM **LINT RULES** FOR A CUSTOM **WORLD**

ONTRUCK

Chema
Android Engineer
@jmperezra

Who am I?

Chema
Android Engineer
@jmperezra

Agenda

1. Ontruck
2. Lint
3. Our use case

onTRUCK

Trucking is BROKEN

30%

kilometres are driven empty

Trucking is BROKEN

For every **1%** we reduce in empty km, we save…

1.2Bn €	100M	240M
Transport costs	Liters of fuel	Km being driven

Ontruck - Mobile Guild

Álvar Montes

Antonio Calvo

David Vallejo

Ontruck - Mobile Guild

Chema Pérez

Iván Martínez

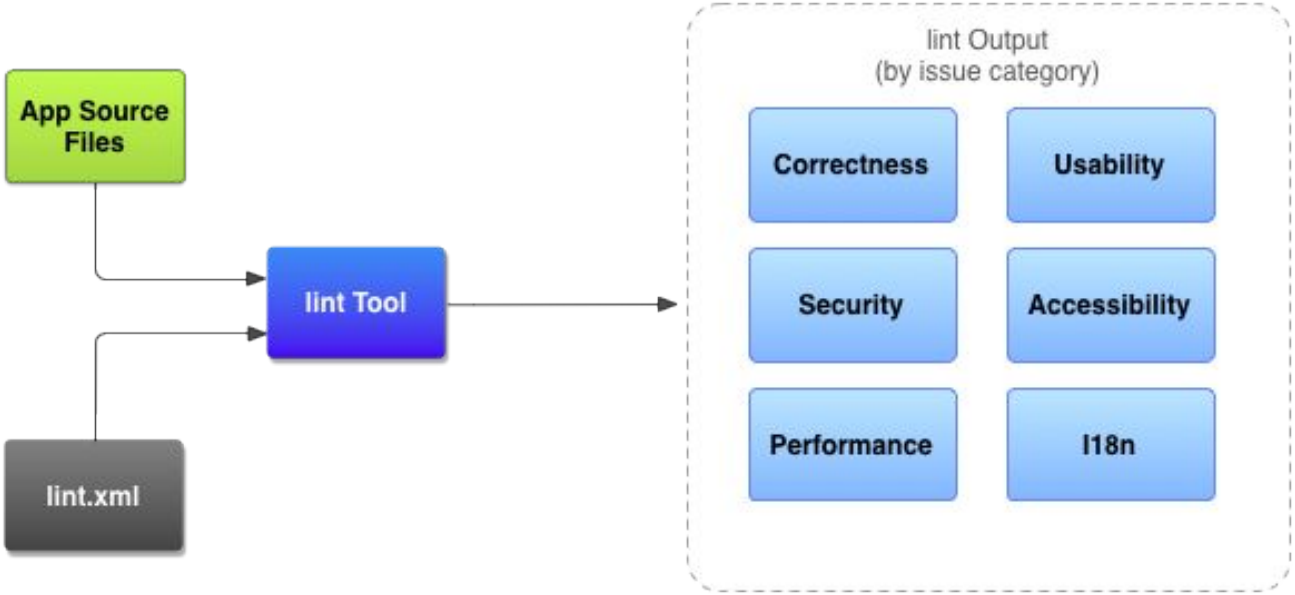
Ana Llera

What is **Lint?**

What is Lint?

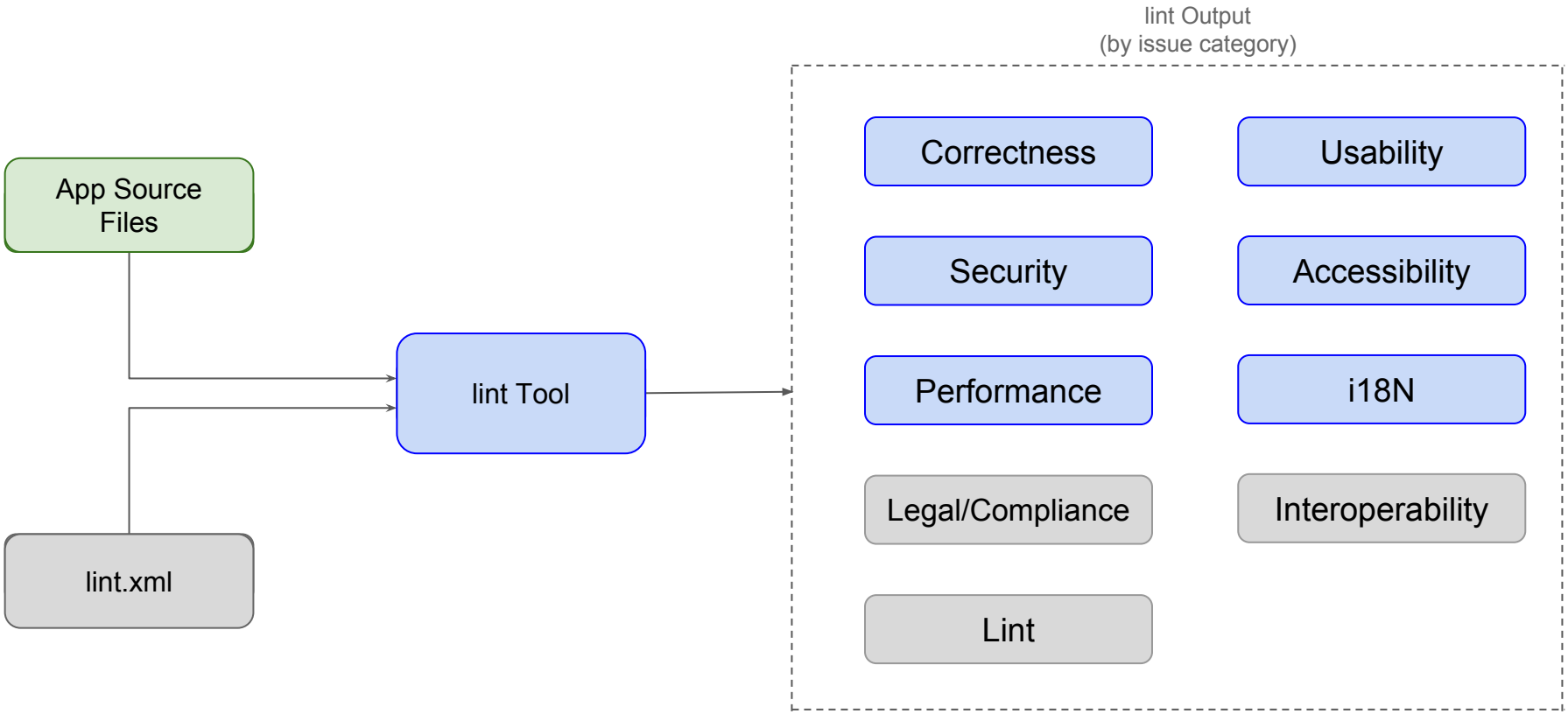
- A code scanning tool that helps prevent and fix structural code problems
- No need to run the app or write tests
- Each detected problem is communicated with a descriptive message and a security level

What is Lint?

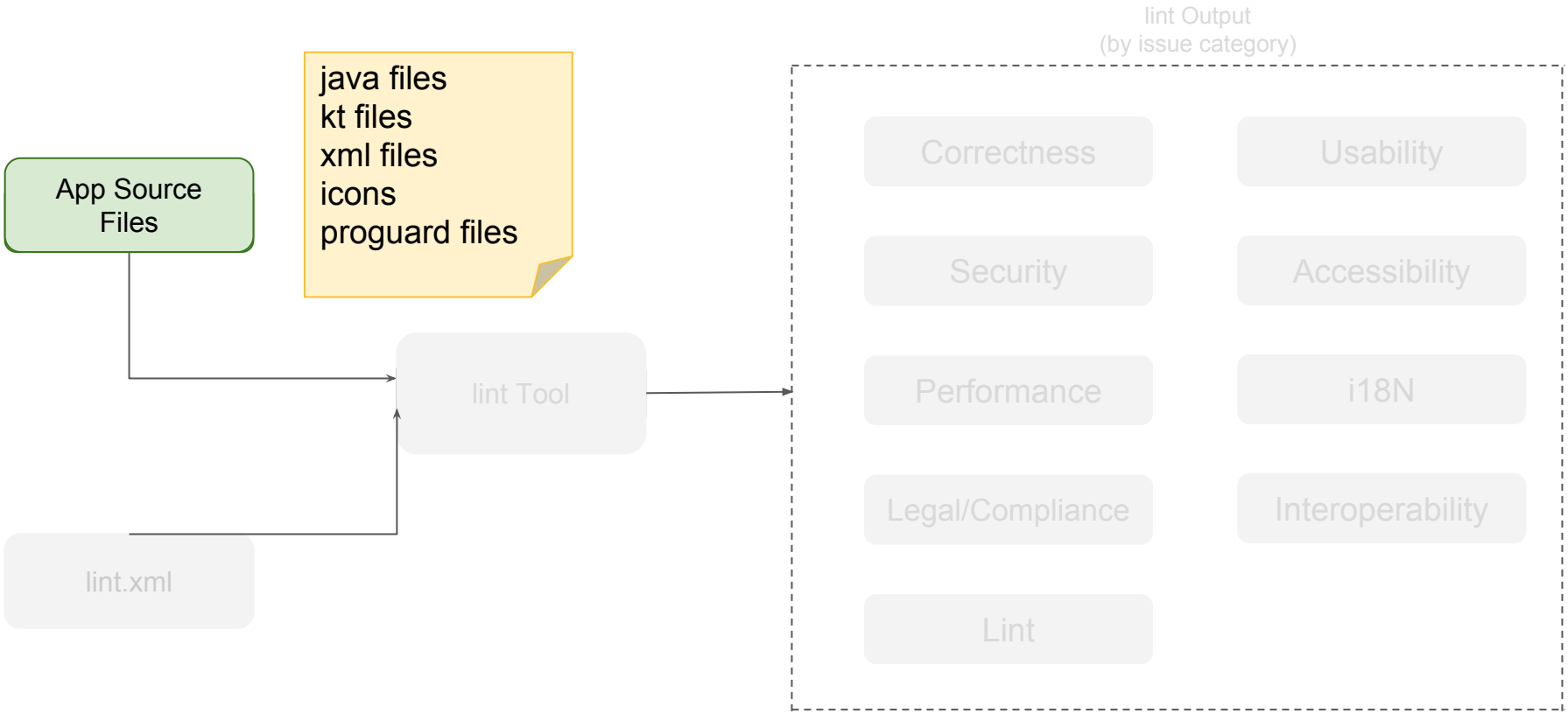


Source: https://developer.android.com/studio/images/write/lint.png

What is Lint?


App Source Files
lint.xml
lint Tool
lint Output
(by issue category)
Correctness
Usability
Security
Accessibility
Performance
i18N
Legal/Compliance
Interoperability
Lint

What is Lint?


App Source Files
java files
kt files
xml files
icons
proguard files
lint.xml
lint Tool
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Correctness
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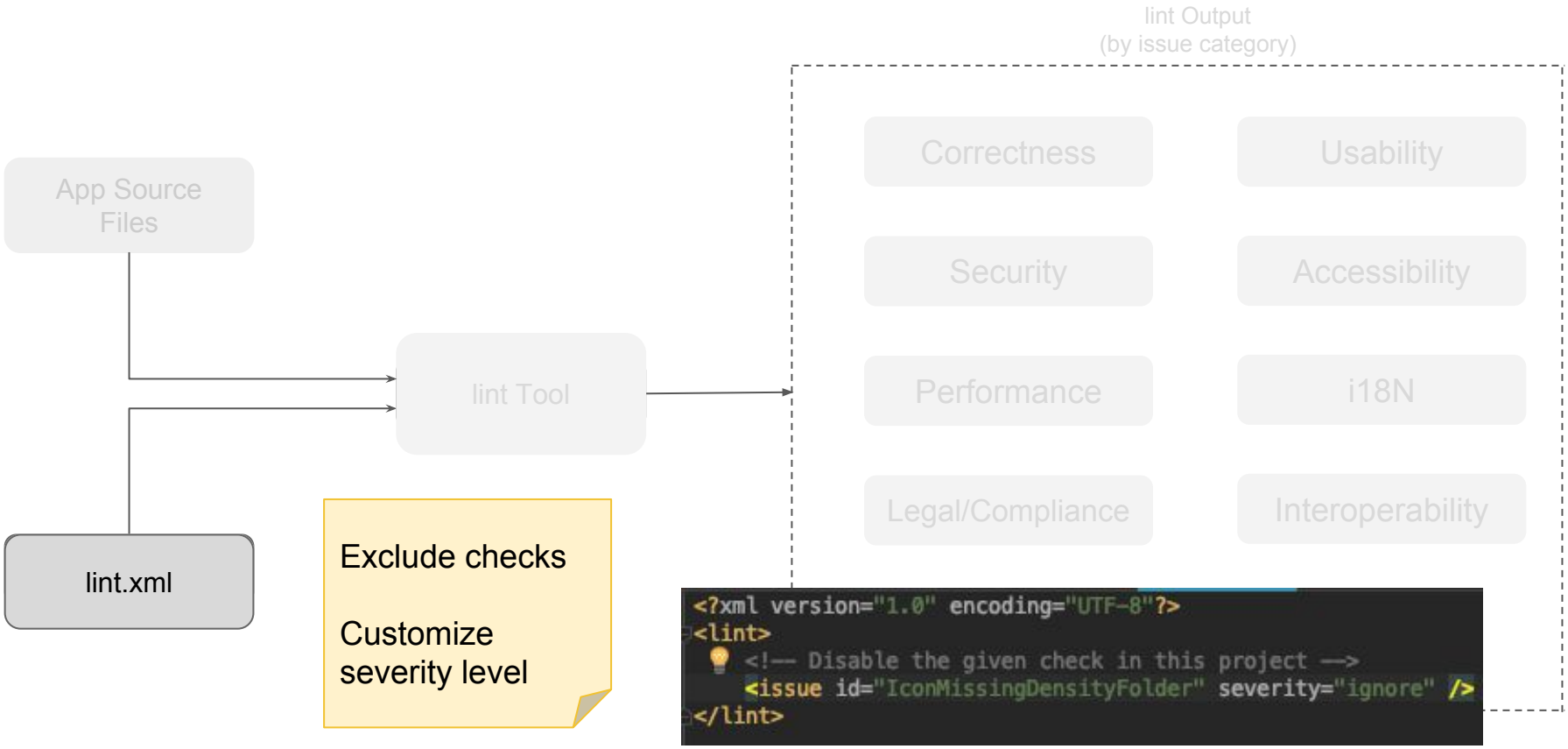
lint Output
(by issue category)
App Source Files
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lint.xml
Correctness
Usability
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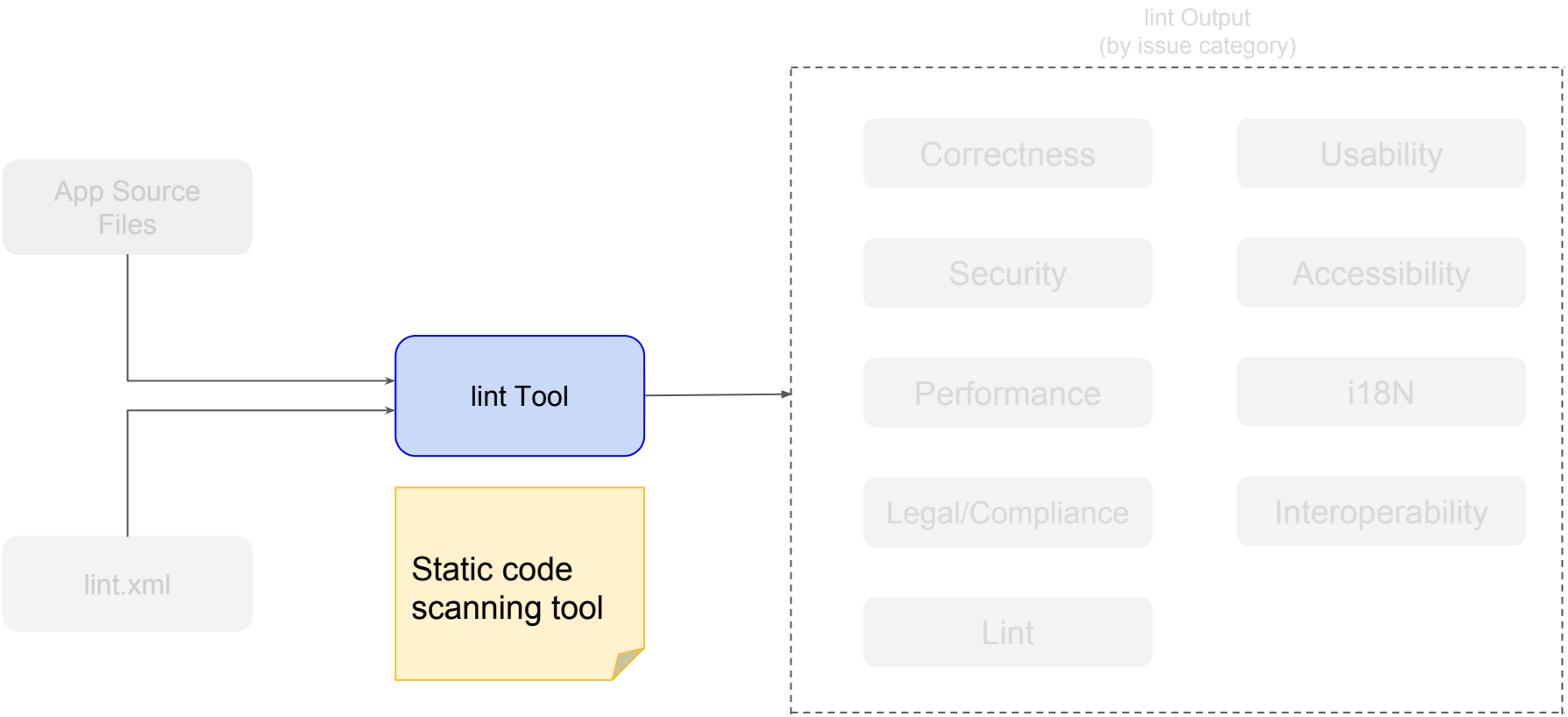
Exclude checks
Customize severity level
<?xml version="1.0" encoding="UTF-8"?>
<lint>
<!-- Disable the given check in this project -->
<issue id="IconMissingDensityFolder" severity="ignore" />
</lint>

What is Lint?


App Source Files
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Static code scanning tool
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(by issue category)
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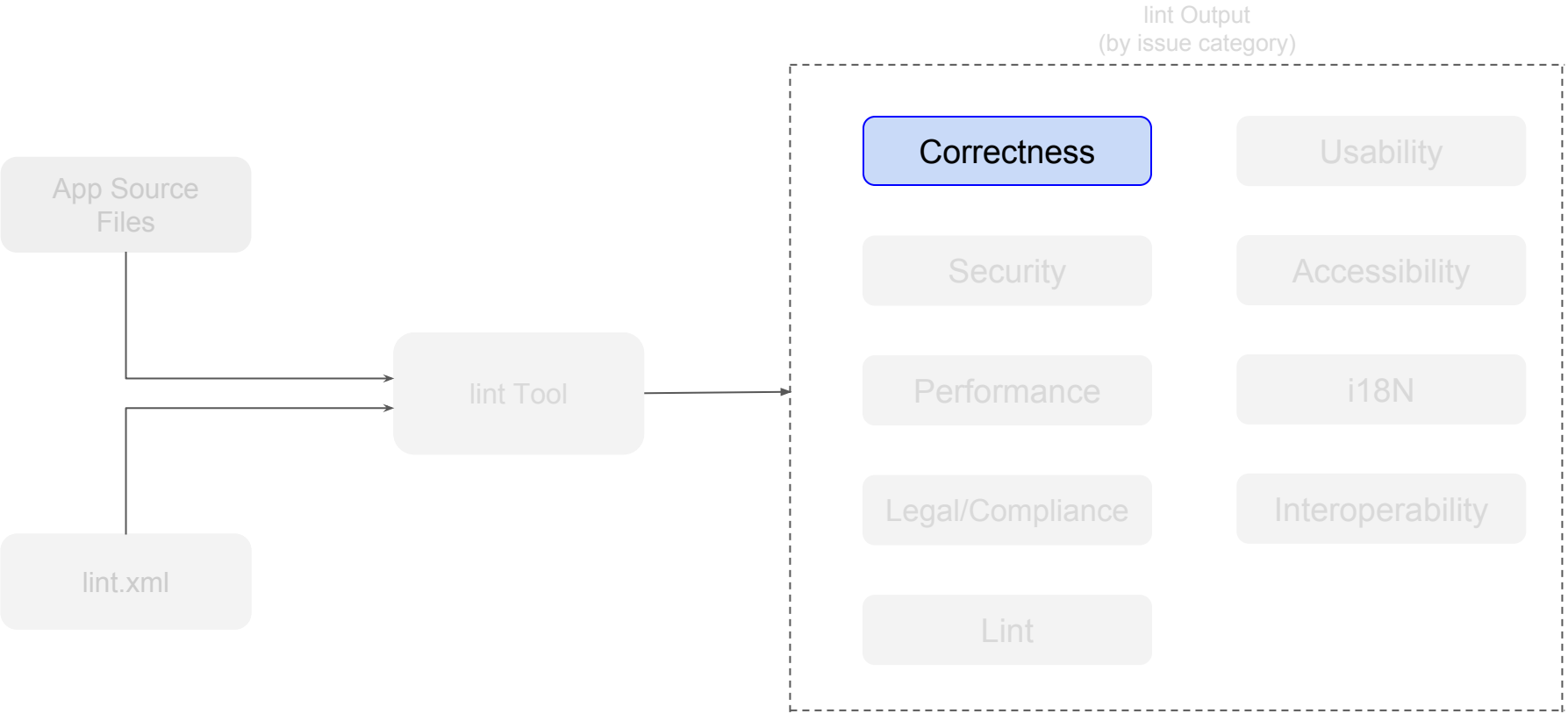
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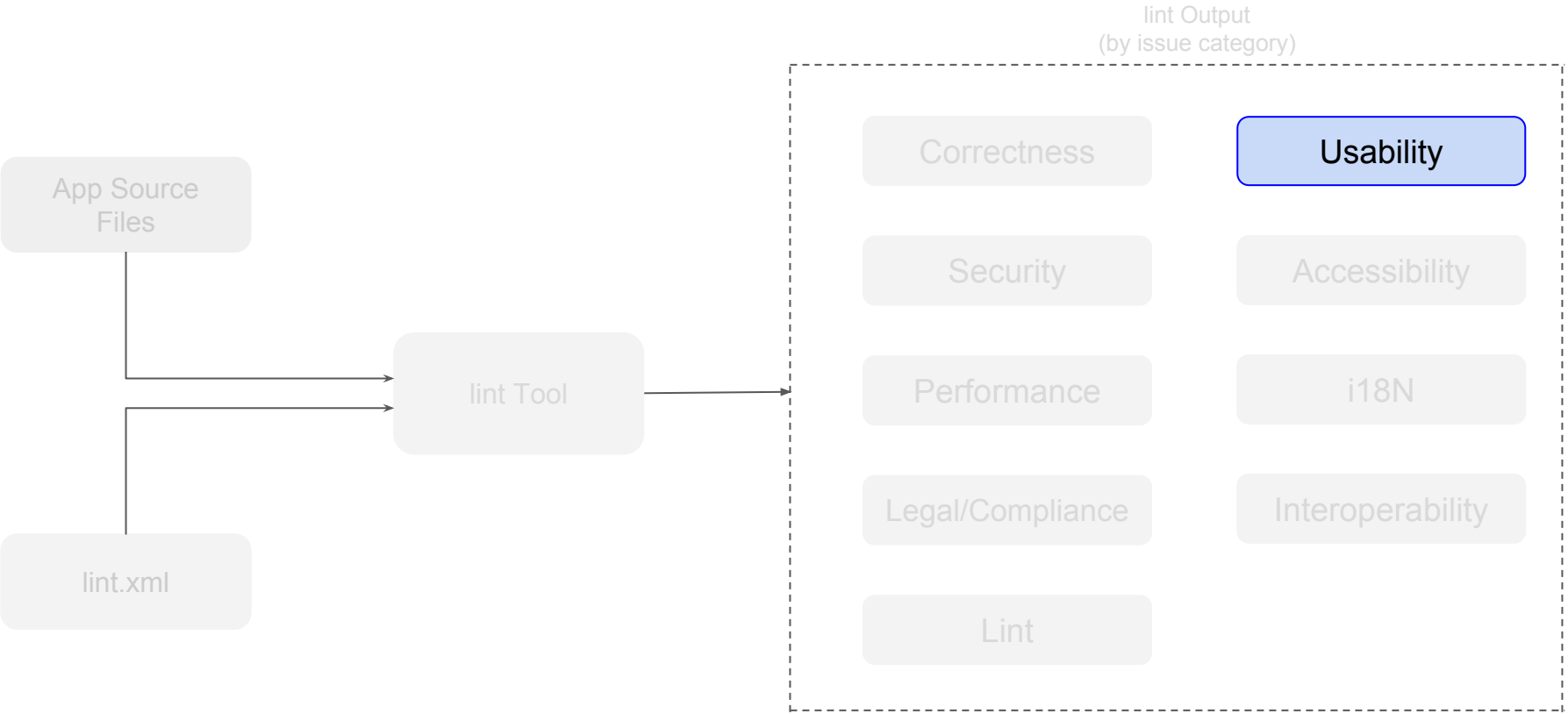
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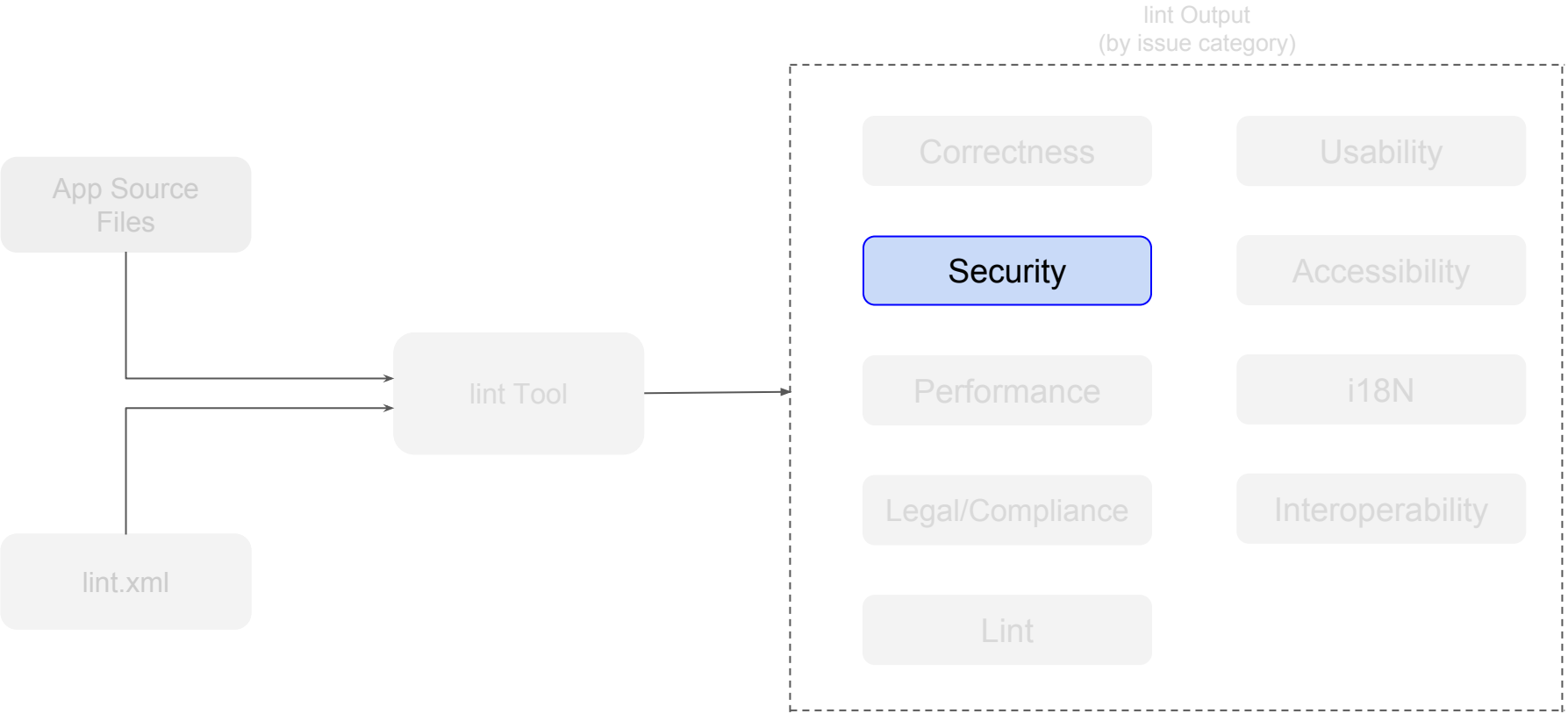
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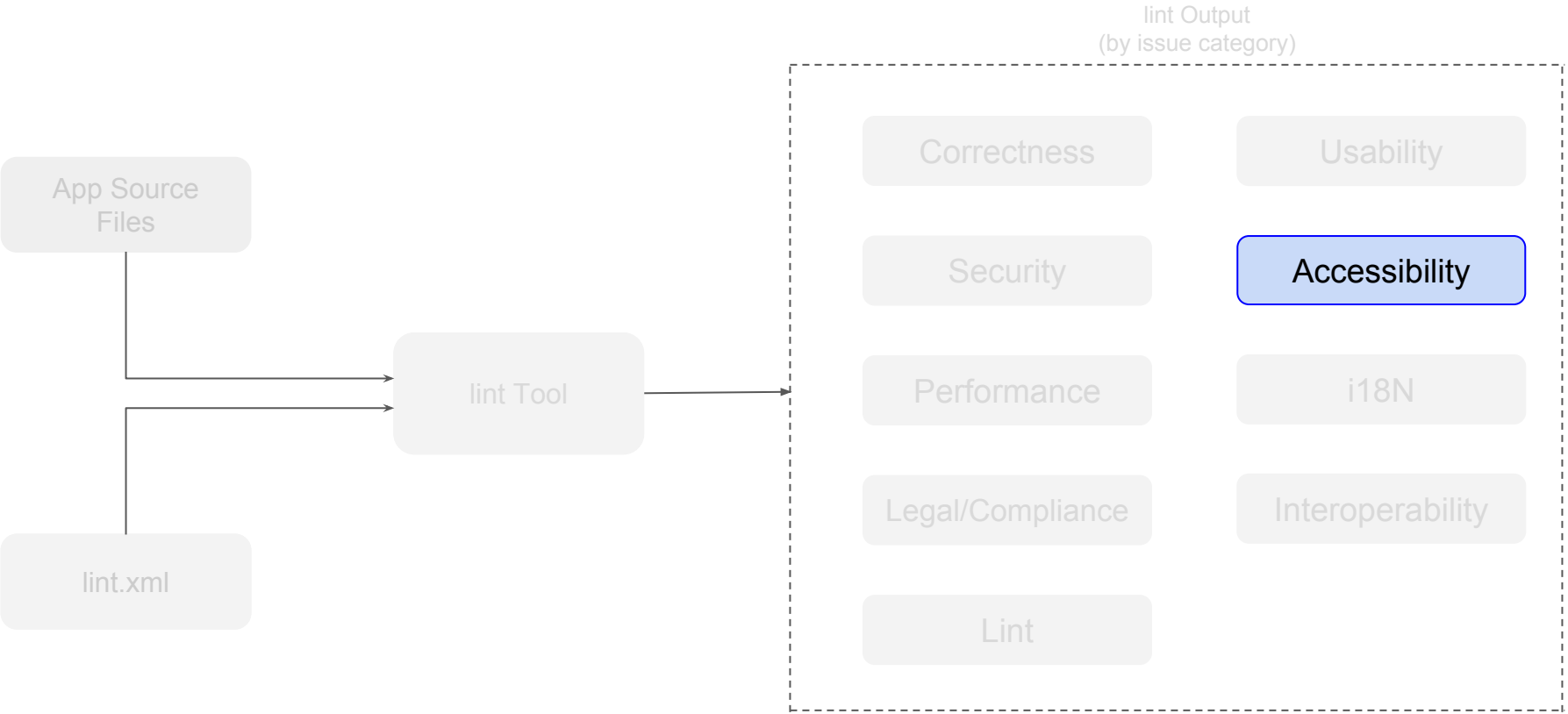
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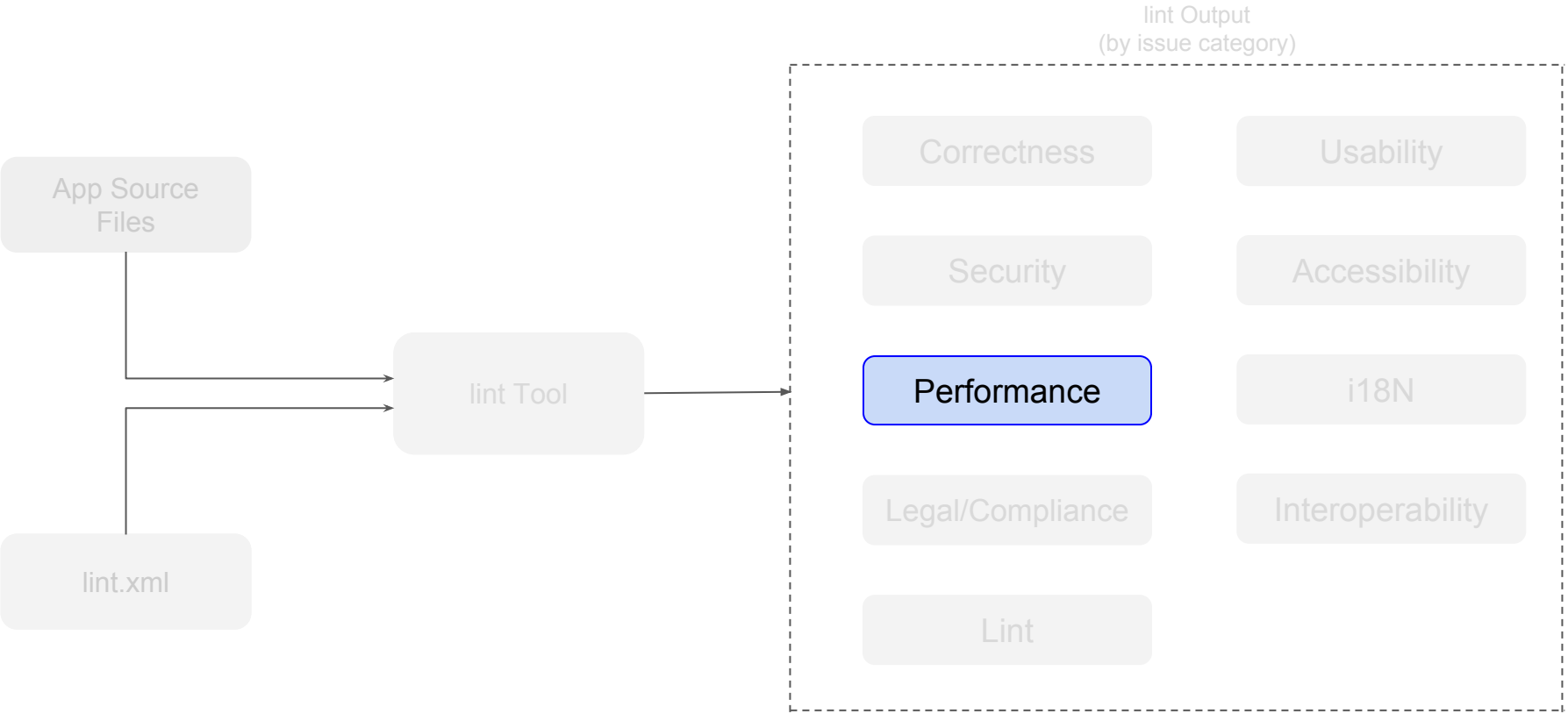
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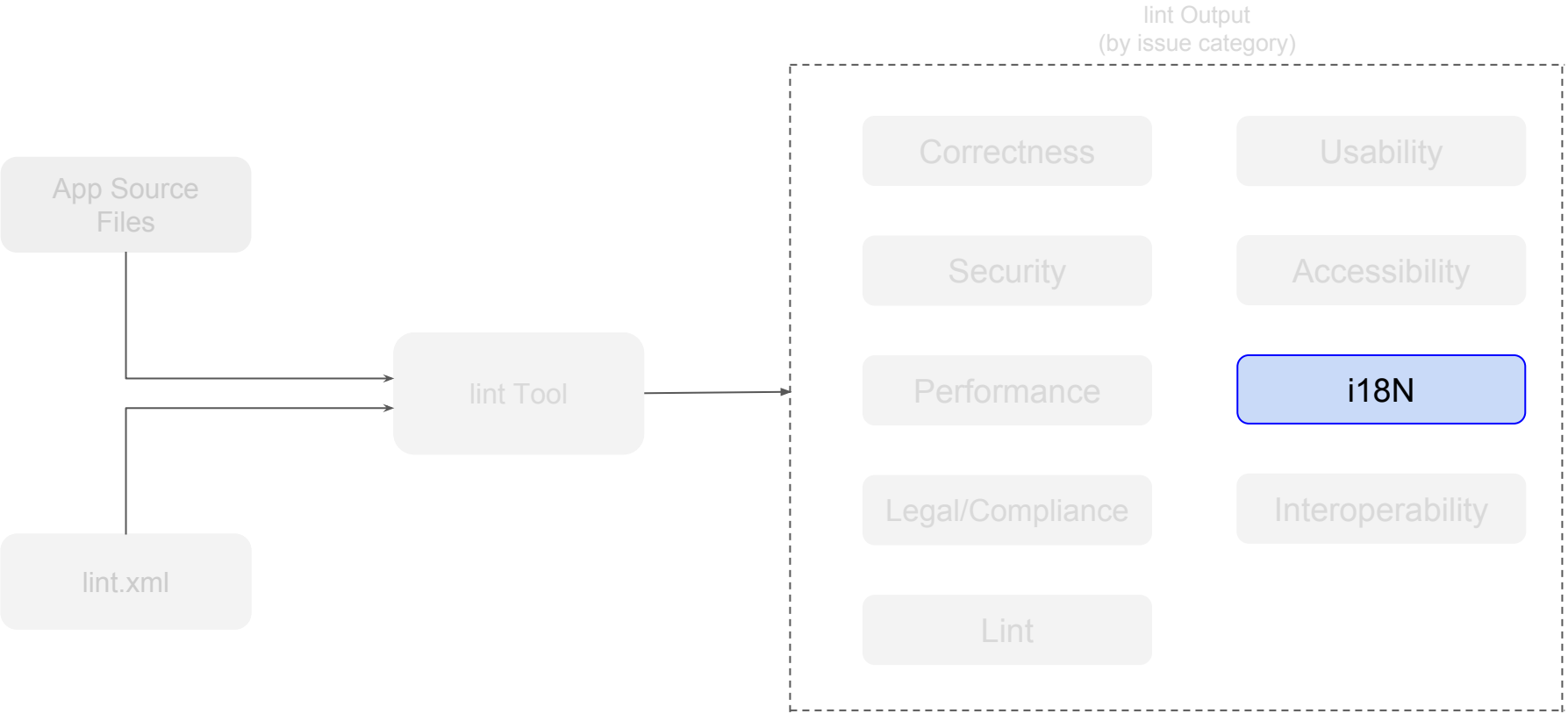
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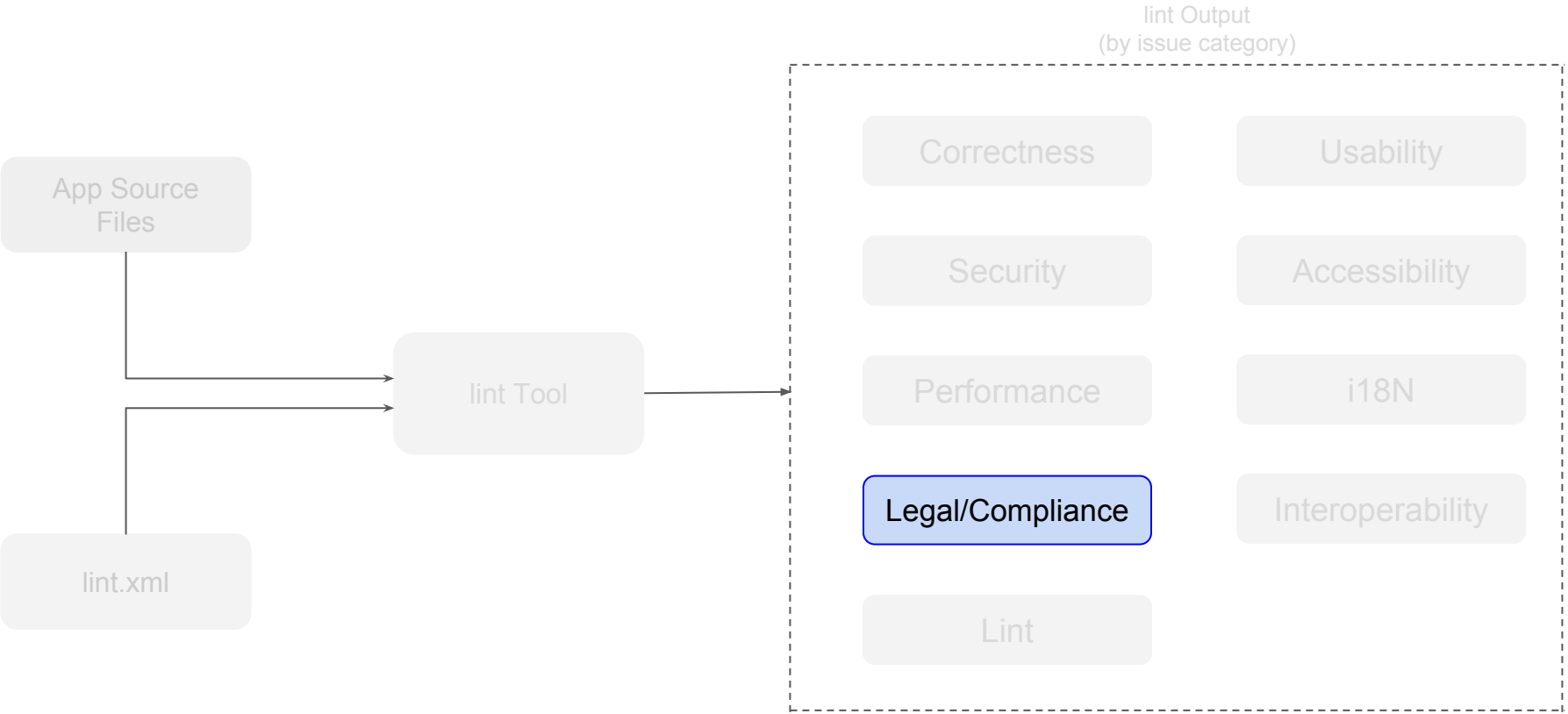
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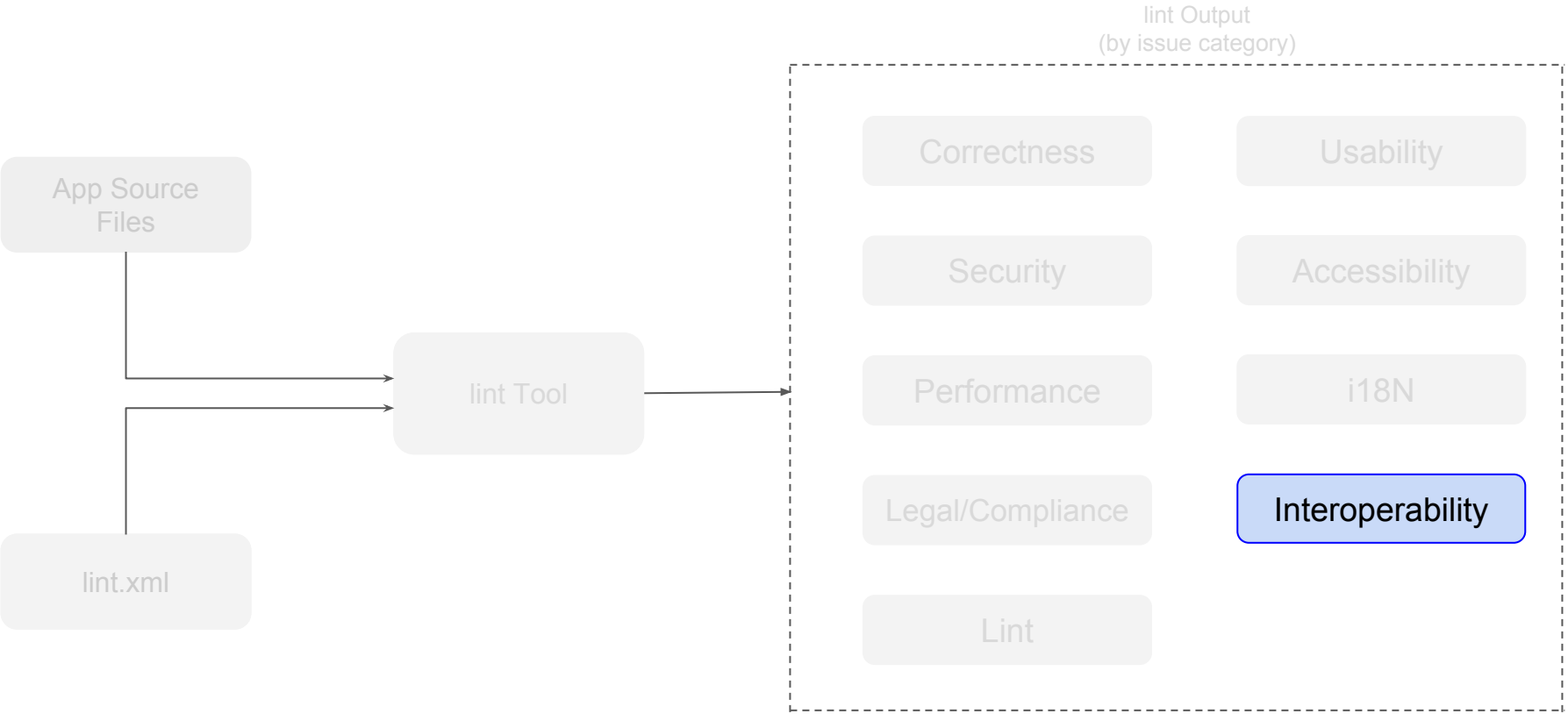
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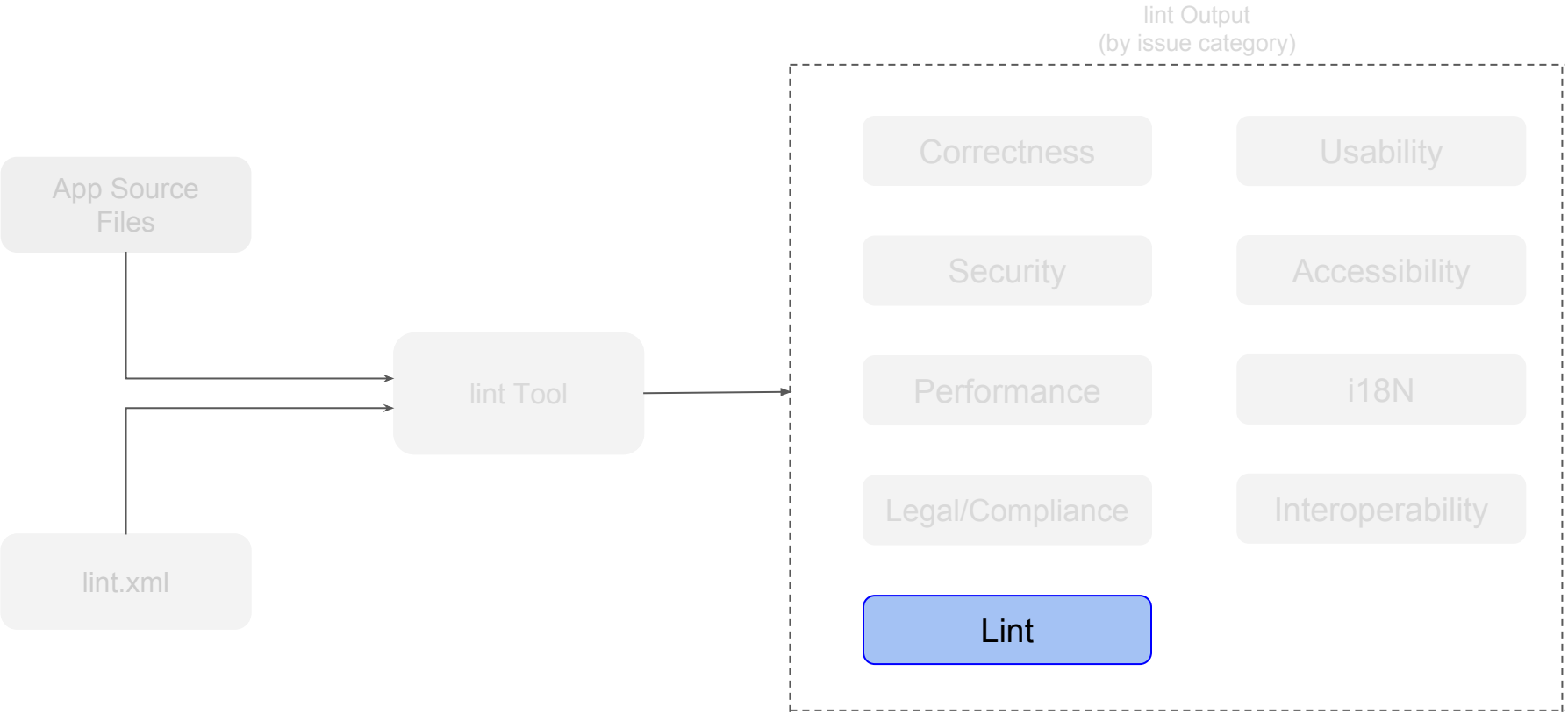
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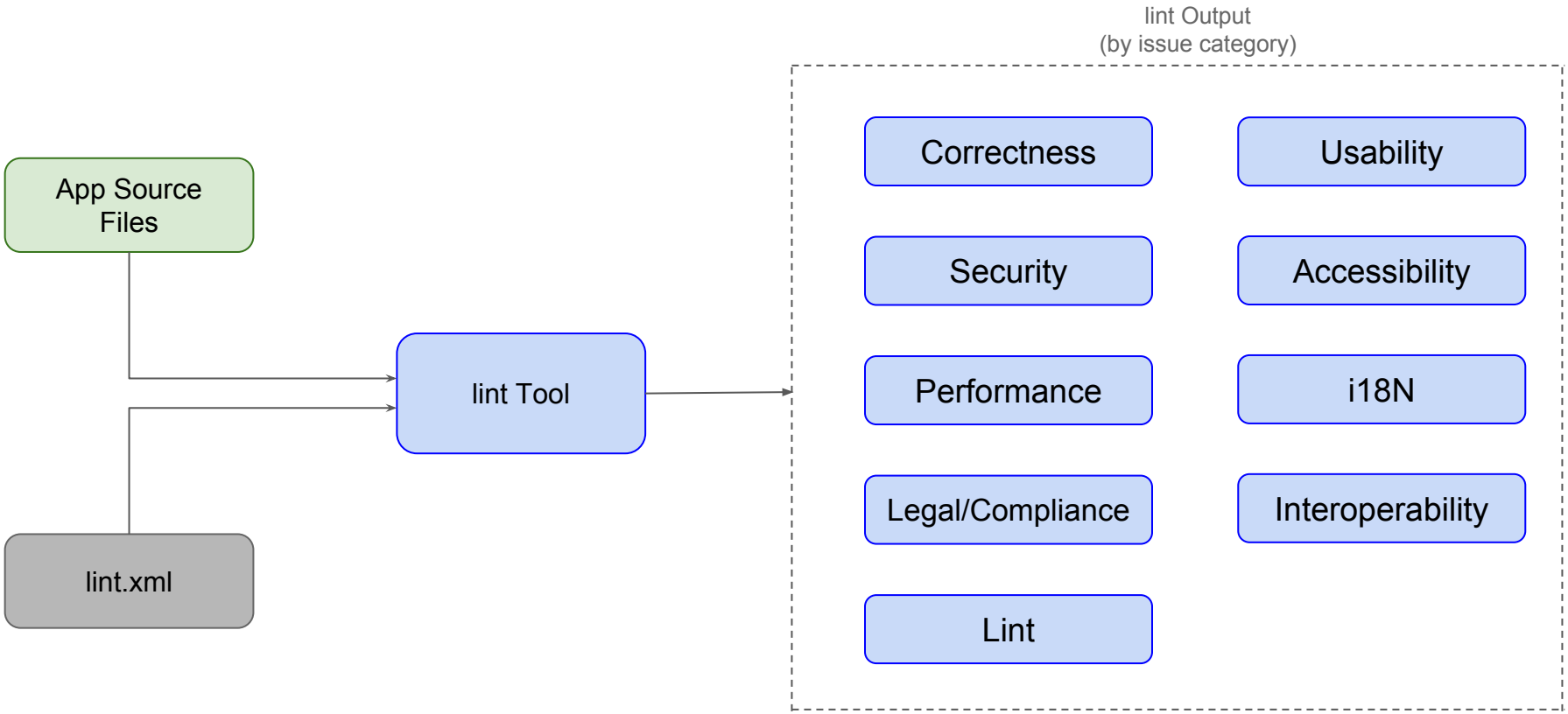
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What is Lint?

Lint & Gradle

```
android {
  ...
  lintOptions {
    // Turns off checks for the issue IDs you specify.
    disable 'TypographyFractions','TypographyQuotes'
    // Turns on checks for the issue IDs you specify. These checks are in
    // addition to the default lint checks.
    enable 'RtlHardcoded','RtlCompat', 'RtlEnabled'
    // To enable checks for only a subset of issue IDs and ignore all others,
    // list the issue IDs with the 'check' property instead. This property overrides
    // any issue IDs you enable or disable using the properties above.
    check 'NewApi', 'InlinedApi'
    // If set to true, turns off analysis progress reporting by lint.
    quiet true
    // if set to true (default), stops the build if errors are found.
    abortOnError false
    // if true, only report errors.
    ignoreWarnings true
  }
}
```

Source: https://developer.android.com/studio/write/lint

What is Lint?

Execution

- Automatic execution while coding
- Manual execution from Android Studio
- Manual execution through the console

What is Lint?

- Automatic execution while coding

```
private fun render() {
    localizationManager.getString( key: "action_accept_")
}
```

What is Lint?

- Automatic execution while coding

```
private fun render() {
    localizationManager.getString( key: "action_accept_")
}
```

```
62          localizationManager.getString( key: "action_accept_")
The key "action_accept_" is not present in local JSON translation file. more... (⌘F1)
65      }
```

What is Lint?

- Automatic execution while coding

```
private fun render() {
    localizationManager.getString( key: "action_accept_")
}
```

```
62        localizationManager.getString( key: "action_accept_")
The key "action_accept_" is not present in local JSON translation file. more... (⌘F1)
65    }
```

```
@SuppressLint( ...value: "LocalizedString")
private fun render() {
    localizationManager.getString( key: "action_accept_")
}
```

What is Lint?

- Automatic execution while coding

```
<drivers.ontruck.ontruck.uicomponents.LocalizedTextView
    android:id="@+id/visibilityTitleTextView"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="8dp"
    android:textAppearance="@style/TextAppearance.Header"
    app:localizedText="driver_detail_choose_dispatcher_" />
```

What is Lint?

- Automatic execution while coding

```
<drivers.ontruck.ontruck.uicomponents.LocalizedTextView
    android:id="@+id/visibilityTitleTextView"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
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```

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<Ra  The key "driver_detail_choose_dispatcher_" is not present in local JSON translation file. n
```

What is Lint?

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    android:layout_marginTop="8dp"
    android:textAppearance="@style/TextAppearance.Header"
    app:localizedText="driver_detail_choose_dispatcher_"
    tools:ignore="LocalizedString" />
```

```
<drivers.ontruck.ontruck.uicomponents.LocalizedTextView
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    android:textAppearance="@style/TextAppearance.Header"
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The key "driver_detail_choose_dispatcher_" is not present in local JSON translation file.
```

What is Lint?

- Automatic execution while coding

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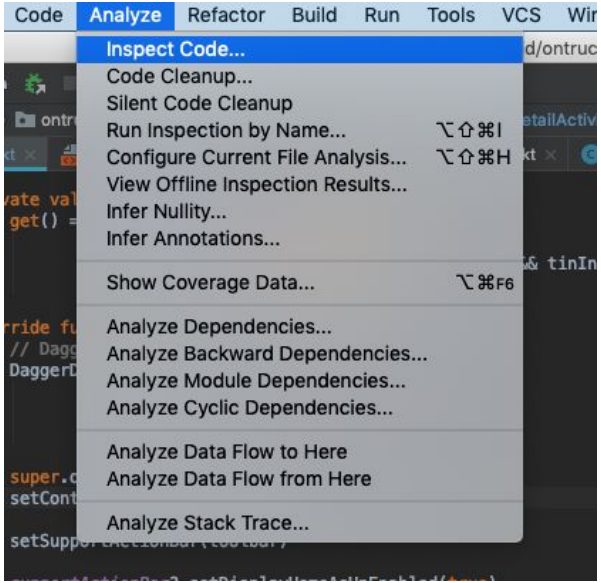
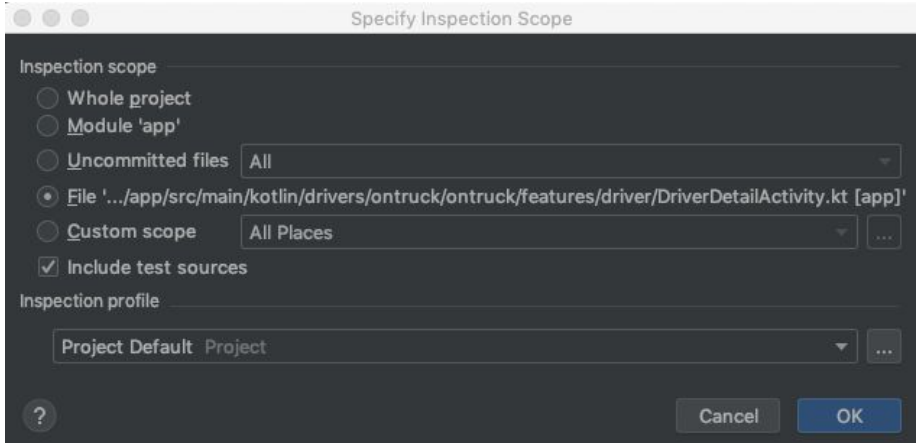
    app:localizedText="driver_detail_choose_dispatcher_" />

The key "driver_detail_choose_dispatcher_" is not present in local JSON translation file.
```

What is Lint?

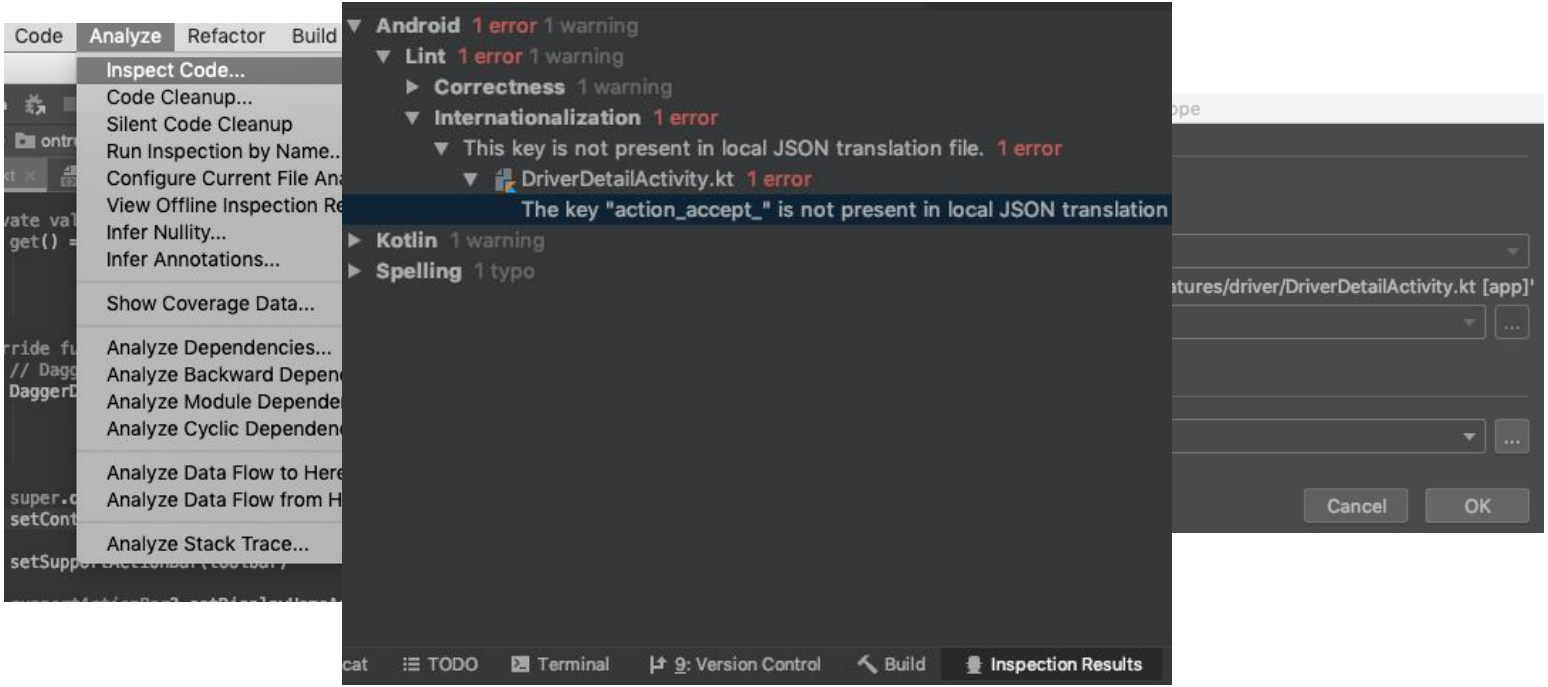
- Manual execution from Android Studio





What is Lint?

- Manual execution from Android Studio



What is Lint?

- Manual execution through the console

```
MacBook-Pro-de-Jose-Maria-Perez:ontruck josemariaperez$ ./gradlew lint

> Configure project :app
```

What is Lint?

- Manual execution through the console

```
MacBook-Pro-de-Jose-Maria-Perez:ontruck josemariaperez$ ./gradlew lint

> Configure project :app
```

```
Wrote HTML report to file:///Users/josemariaperez/Proyectos/Android/ontruck/app/build/reports/lint-results-developDebug.html
Wrote XML report to file:///Users/josemariaperez/Proyectos/Android/ontruck/app/build/reports/lint-results-developDebug.xml
```

What is Lint?

- Manual execution through the console

```
MacBook-Pro-de-Jose-Maria-Perez:ontruck josemariaperez$ ./gradlew lint
> Configure project :app
```

Lint Report: 30 errors and 294 warnings

```
Wrote HTML report to file:///Users/ ports/lint-results-developDebug.html
Wrote XML report to file:///Users/ orts/lint-results-developDebug.xml
```

Overview

Lint	
1	ObsoleteLintCustomCheck: Obsolete custom lint check
Correctness	
1	ScrollViewSize: ScrollView size validation
2	DefaultLocale: Implied default locale in case conversion
6	MissingConstraints: Missing Constraints in ConstraintLayout
1	NewApi: Calling new methods on older versions
1	OldTargetApi: Target SDK attribute is not targeting latest version

Our use case at **Ontruck**

Lint at Ontruck

Context

```
private void foo(){
    getString(R.string.app_name);
}
```

```
<androidx.appcompat.widget.AppCompatTextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="@string/app_name"/>
```

Lint at Ontruck

Context

Lint at Ontruck

Context

```
<drivers.ontruck.ontruck.uicomponents.LocalizedTextView
    android:id="@+id/capacityLabel"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:textAppearance="@style/TextAppearance.Header"
    app:localizedText="vehicle_detail_capacity_section" />
```

```
@Override
public void showLogoutProgress() {
    logoutProgressDialog = ProgressDialog.show( context: this,
            localizationManager.getString( key: "logout_loader_title"),
            localizationManager.getString( key: "logout_loader_message"),
            indeterminate: true,
            cancelable: false);
}
```

Problems

- Localization file sync is not automatic
- Sometimes there are keys missing from one language file - pending to translate
- Sometimes keys are removed from Lokalise but are still used in the apps

Lint at Ontruck

Solution, create a Lint rule that warns us when:

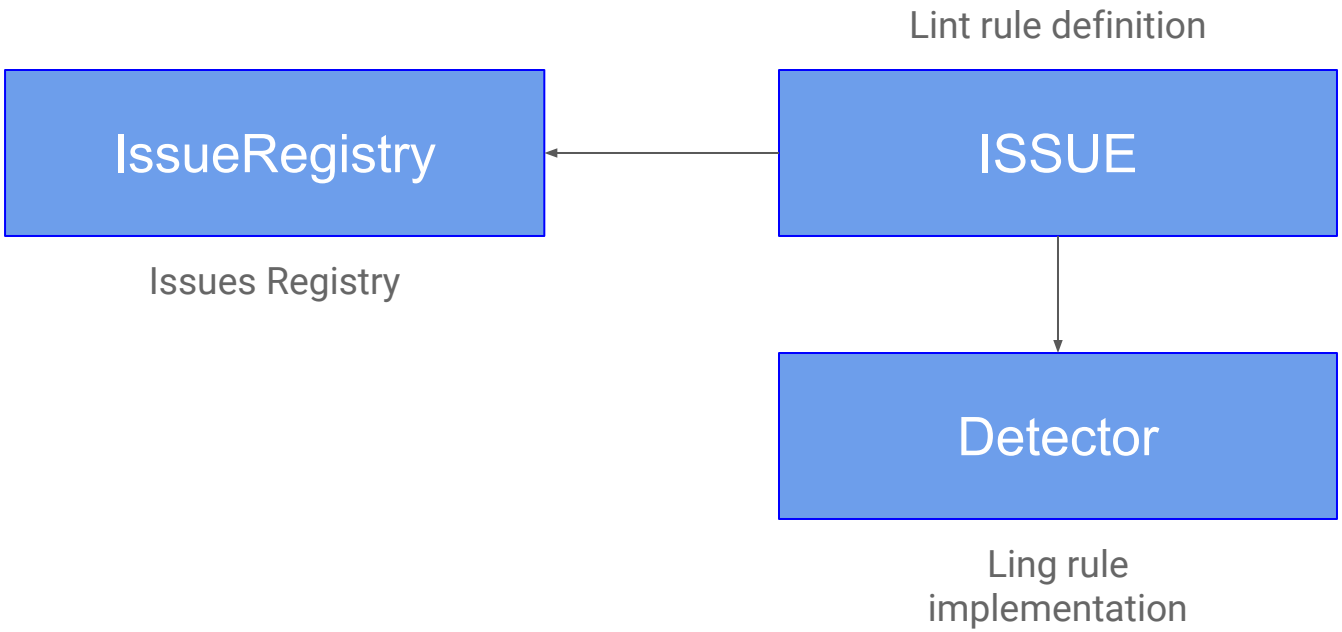
- We are using, from **code**, a key that is not present in the localization files (json)
- We are using, in a **xml file**, a key that is not present in the localization files (json)

Show me the Code

Custom Lint Rule

Custom Lint Rule: Localization

Lint: Scheme Class



Custom Lint Rule: Localization

IssueRegistry

```
class LintIssuesRegistry : IssueRegistry() {

    override val issues: List<Issue>
        get() = object : ArrayList<Issue>() {
            init {
                add(LocalizedStringDetector.ISSUE)
                add(LocalizedLayoutDetector.ISSUE)
            }
        }
```

Issue registry

Custom Lint Rule: Localization

IssueRegistry

```
class LintIssuesRegistry : IssueRegistry() {

    override val issues: List<Issue>
        get() = object : ArrayList<Issue>() {
            init {
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            }
        }
```

Issue registry

Custom Lint Rule: Localization

Issue

```
val ISSUE = Issue.create(
        ID_LINT_RULE, // = LocalizedString
        LINT_BRIEF_DESCRIPTION, // = This key is not present in local JSON translation file.
        LINT_EXPLANATION, // = The key you are setting is not present in local....
        I18N, // Category
        LINT_PRIORITY, //Priority: Current value is 10.
        Severity.FATAL, //Severity
        Implementation(
                LocalizedStringDetector::class.java,
                Scope.JAVA_FILE_SCOPE)) // Implementation: Logic and Scope
```

Issue file Java and Kt

Custom Lint Rule: Localization

Issue

```
val ISSUE = Issue.create(
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Issue file Java and Kt

Custom Lint Rule: Localization

Issue

```
val ISSUE = Issue.create(
        ID_LINT_RULE, // = LocalizedString
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Issue file Java and Kt

Custom Lint Rule: Localization

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Custom Lint Rule: Localization

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Issue file Java and Kt

Custom Lint Rule: Localization

Issue

```
val ISSUE = Issue.create(
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        LINT_EXPLANATION, // = The key yo
        I18N, // Category
        LINT_PRIORITY, //Priority: Curren
        Severity.FATAL, //Severity
        Implementation(
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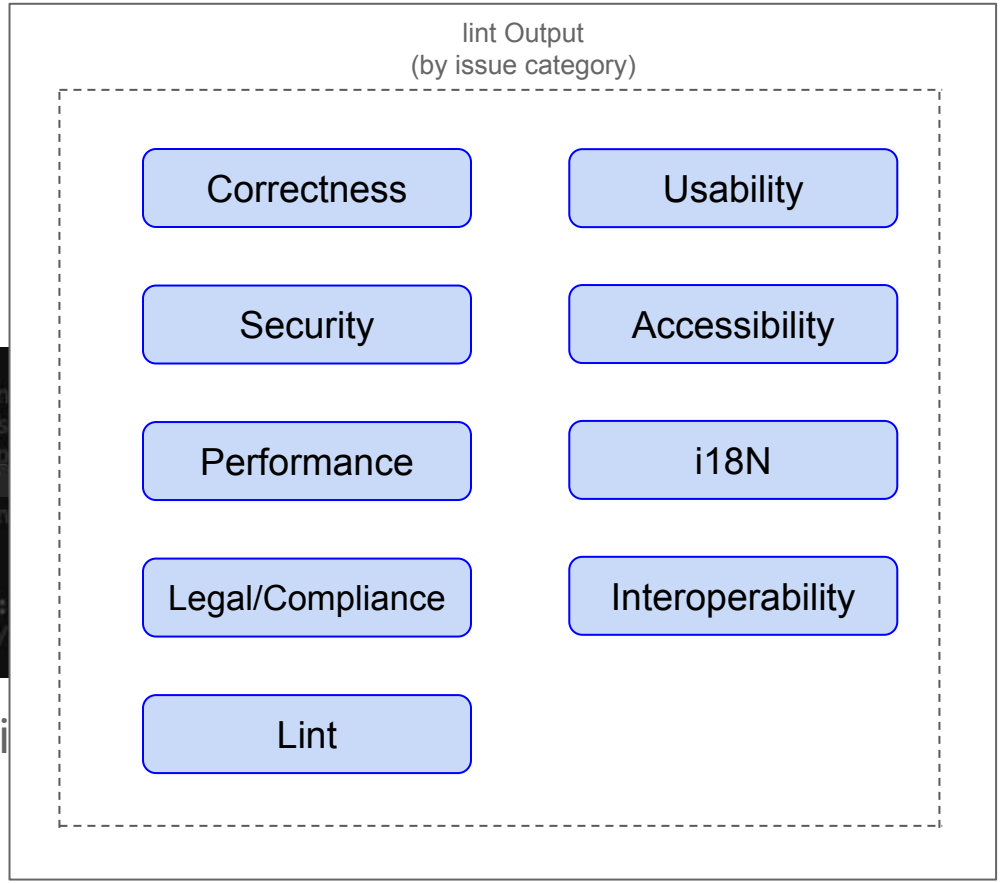
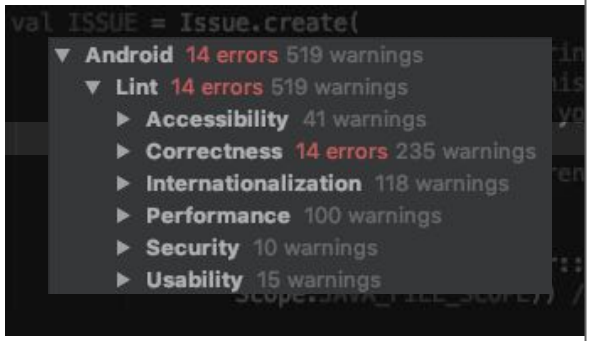
```

Issue fi

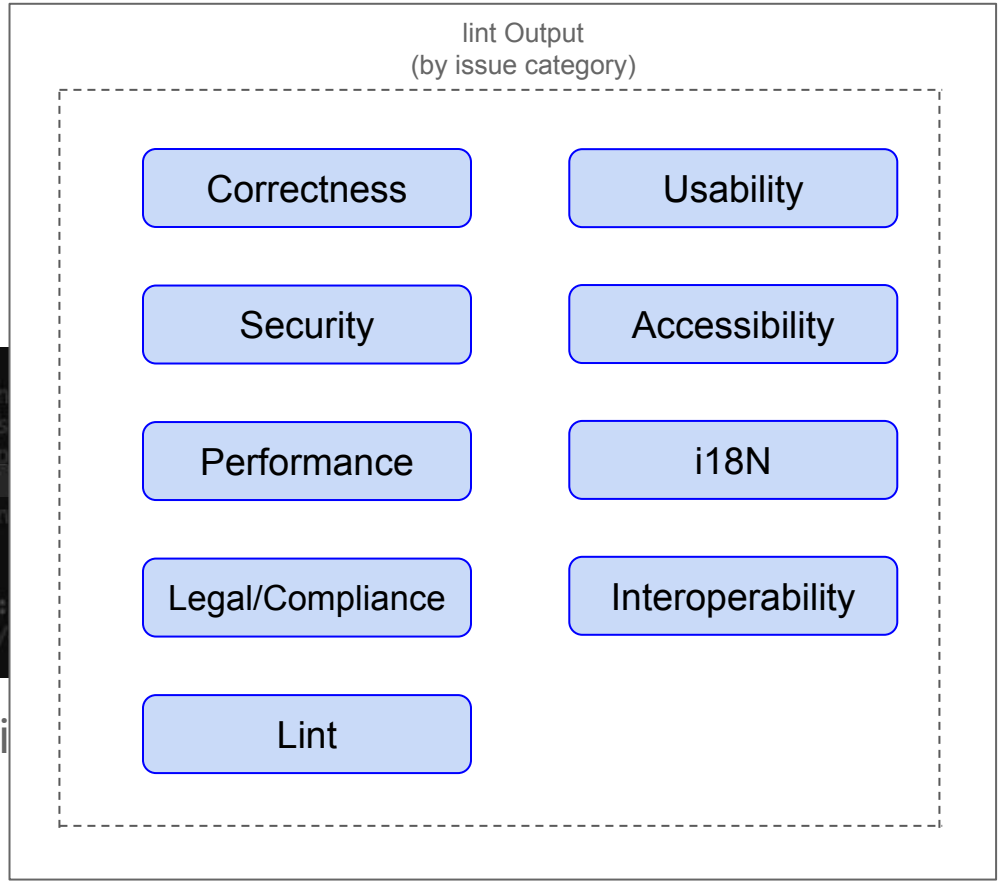


Custom Lint Rule: Localization

Issue



Issue fi



Custom Lint Rule: Localization

Issue

```
val ISSUE = Issue.create(
        ID_LINT_RULE, // = LocalizedString
        LINT_BRIEF_DESCRIPTION, // = This key is not present in local JSON translation file.
        LINT_EXPLANATION, // = The key you are setting is not present in local....
        I18N, // Category
        LINT_PRIORITY, //Priority: Current value is 10.
        Severity.FATAL, //Severity
        Implementation(
                LocalizedStringDetector::class.java,
                Scope.JAVA_FILE_SCOPE)) // Implementation: Logic and Scope
```

Issue file Java and Kt

Custom Lint Rule: Localization

Issue

```
val ISSUE = Issue.create(
        ID_LINT_RULE, // = LocalizedString
        LINT_BRIEF_DESCRIPTION, // = This key is not present in local JSON translation file.
        LINT_EXPLANATION, // = The key you are setting is not present in local....
        I18N, // Category
        LINT_PRIORITY, //Priority: Current value is 10.
        Severity.FATAL, //Severity
        Implementation(
                LocalizedStringDetector::class.java,
                Scope.JAVA_FILE_SCOPE)) // Implementation: Logic and Scope
```

Issue file Java and Kt

Custom Lint Rule: Localization

Issue

```
val ISSUE = Issue.create(
        ID_LINT_RULE, // = LocalizedString
        LINT_BRIEF_DESCRIPTION, // = This key
        LINT_EXPLANATION, // = The key you are
        I18N, // Category
        LINT_PRIORITY, //Priority: Current val
        Severity.FATAL, //Severity
        Implementation(
                LocalizedStringDetector::class
                Scope.JAVA_FILE_SCOPE)) // Imp
```

Issue file J

```
/**
 * Fatal: Use sparingly because a warning marked as fatal will be
 * considered critical and will abort Export APK etc in ADT
 */
FATAL( description: "Fatal"),

/**
 * Errors: The issue is known to be a real error that must be addressed.
 */
ERROR( description: "Error"),

/**
 * Warning: Probably a problem.
 */
WARNING( description: "Warning"),

/**
 * Information only: Might not be a problem, but the check has found
 * something interesting to say about the code.
 */
INFORMATIONAL( description: "Information"),

/**
 * Ignore: The user doesn't want to see this issue
 */
IGNORE( description: "Ignore");
```

Custom Lint Rule: Localization

Issue

```
val ISSUE = Issue.create(
        ID_LINT_RULE, // = LocalizedString
        LINT_BRIEF_DESCRIPTION, // = This key is not present in local JSON translation file.
        LINT_EXPLANATION, // = The key you are setting is not present in local....
        I18N, // Category
        LINT_PRIORITY, //Priority: Current value is 10.
        Severity.FATAL, //Severity
        Implementation(
                LocalizedStringDetector::class.java,
                Scope.JAVA_FILE_SCOPE)) // Implementation: Logic and Scope
```

Issue file Java and Kt

Custom Lint Rule: Localization

Issue

```
val ISSUE = Issue.create(
        ID_LINT_RULE,
        LINT_BRIEF_DESCRIPTION,
        LINT_EXPLANATION,
        I18N,
        LINT_PRIORITY,
        Severity.FATAL,
        Implementation(
                LocalizedLayoutDetector::class.java,
                RESOURCE_FILE_SCOPE)
)
```

Issue file .xml

Custom Lint Rule: Localization

Issue

```
val ISSUE = Issue.create(
        ID_LINT_RULE,
        LINT_BRIEF_DESCRIPTION,
        LINT_EXPLANATION,
        I18N,
        LINT_PRIORITY,
        Severity.FATAL,
        Implementation(
                LocalizedLayoutDetector::class.java,
                RESOURCE_FILE_SCOPE)
)
```

Issue file .xml

Custom Lint Rule: Localization

Detector

LocalizedLayoutDetector

Files .xml

LocalizedStringDetector

Files java/kt

Custom Lint Rule: Localization

Detector

```
val ATTR_LOCALIZED = listOf("localizedText", "localizedTitle", "localizedHint", "localizedMessage")

class LocalizedLayoutDetector : LayoutDetector() {

    private val assetHandler = AssetHandler()

    override fun getApplicableAttributes() = ATTR_LOCALIZED

    override fun visitAttribute(context: XmlContext, attribute: Attr) {
        if (!assetHandler.existKeyInJson(context, attribute.value)) {
            context.report(
                    ISSUE,
                    attribute,
                    context.getValueLocation(attribute),
                    message: "The key \"${attribute.value}\" is not present in local JSON translation file.")
        }
    }

    companion object {...}
}
```

Files .xml

Custom Lint Rule: Localization

Detector

```
val ATTR_LOCALIZED = listOf("localizedText", "localizedTitle", "localizedHint", "localizedMessage")

class LocalizedLayoutDetector : LayoutDetector() {

    private val assetHandler = AssetHandler()

    override fun getApplicableAttributes() = ATTR_LOCALIZED

    override fun visitAttribute(context: XmlContext, attribute: Attr) {
        if (!assetHandler.existKeyInJson(context, attribute.value)) {
            context.report(
                    ISSUE,
                    attribute,
                    context.getValueLocation(attribute),
                    message: "The key \"${attribute.value}\" is not present in local JSON translation file.")
        }
    }

    companion object {...}
}
```

Files .xml

Custom Lint Rule: Localization

Detector

```
val ATTR_LOCALIZED = listOf("localizedText", "localizedTitle", "localizedHint", "localizedMessage")

class LocalizedLayoutDetector : LayoutDetector() {

    private val assetHandler = AssetHandler()

    override fun getApplicableAttributes() = ATTR_LOCALIZED

    override fun visitAttribute(context: XmlContext, attribute: Attr) {
        if (!assetHandler.existKeyInJson(context, attribute.value)) {
            context.report(
                    ISSUE,
                    attribute,
                    context.getValueLocation(attribute),
                    message: "The key \"${attribute.value}\" is not present in local JSON translation file.")
        }
    }

    companion object {...}
}
```

Files .xml

Custom Lint Rule: Localization

Detector

```kotlin
class LocalizedStringDetector : Detector(), Detector.UastScanner {

    private val assetHandler = AssetHandler()

    override fun getApplicableMethodNames(): List<String>? {
        return listOf("getString")
    }

    override fun visitMethodCall(context: JavaContext, node: UCallExpression, method: PsiMethod) {
        if (context.evaluator.isMemberInClass(method, NAME_CLASS_LOCALIZATION)) {
            val key = node.valueArguments[0].asSourceString().replace( oldValue: "\"",  newValue: "")
            if (!assetHandler.existKeyInJson(context, key)) {
                context.report(
                        ISSUE,
                        node,
                        context.getLocation(node),
                         message: "The key \"$key\" is not present in local JSON translation file.")
            }
            return
        }
    }

    companion object {...}
}
```

Files java/kt

Custom Lint Rule: Localization

Detector

```kotlin
class LocalizedStringDetector : Detector(), Detector.UastScanner {

    private val assetHandler = AssetHandler()

    override fun getApplicableMethodNames(): List<String>? {
        return listOf("getString")
    }

    override fun visitMethodCall(context: JavaContext, node: UCallExpression, method: PsiMethod) {
        if (context.evaluator.isMemberInClass(method, NAME_CLASS_LOCALIZATION)) {
            val key = node.valueArguments[0].asSourceString().replace( oldValue: "\"",  newValue: "")
            if (!assetHandler.existKeyInJson(context, key)) {
                context.report(
                        ISSUE,
                        node,
                        context.getLocation(node),
                         message: "The key \"$key\" is not present in local JSON translation file.")
            }
            return
        }
    }

    companion object {...}
}
```

Files java/kt

Custom Lint Rule: Localization

Detector

```kotlin
class LocalizedStringDetector : Detector(), Detector.UastScanner {

    private val assetHandler = AssetHandler()

    override fun getApplicableMethodNames(): List<String>? {
        return listOf("getString")
    }

    override fun visitMethodCall(context: JavaContext, node: UCallExpression, method: PsiMethod) {
        if (context.evaluator.isMemberInClass(method, NAME_CLASS_LOCALIZATION)) {
            val key = node.valueArguments[0].asSourceString().replace( oldValue: "\"",  newValue: "")
            if (!assetHandler.existKeyInJson(context, key)) {
                context.report(
                        ISSUE,
                        node,
                        context.getLocation(node),
                         message: "The key \"$key\" is not present in local JSON translation file.")
            }
            return
        }
    }

    companion object {...}
}
```

Files java/kt

Custom Lint Rule: Localization

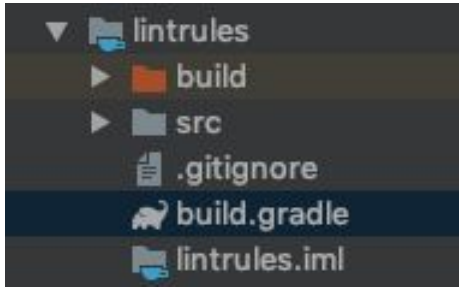
Detector

```kotlin
class LocalizedStringDetector : Detector(), Detector.UastScanner {

    private val assetHandler = AssetHandler()

    const val NAME_CLASS_LOCALIZATION = "drivers.ontruck.ontruck.localization.LocalizationManager"
    }

    override fun visitMethodCall(context: JavaContext, node: UCallExpression, method: PsiMethod) {
        if (context.evaluator.isMemberInClass(method, NAME_CLASS_LOCALIZATION)) {
            val key = node.valueArguments[0].asSourceString().replace( oldValue: "\"", newValue: "")
            if (!assetHandler.existKeyInJson(context, key)) {
                context.report(
                        ISSUE,
                        node,
                        context.getLocation(node),
                        message: "The key \"$key\" is not present in local JSON translation file.")
            }
            return
        }
    }

    companion object {...}
}
```

Files java/kt

Custom Lint Rule: Localization

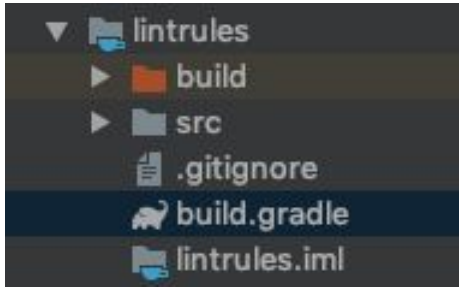
Module LintRules




```
apply plugin: 'java-library'
apply plugin: 'kotlin'

targetCompatibility = '1.8'
sourceCompatibility = '1.8'

repositories {
    jcenter()
}

dependencies {
    compileOnly 'com.android.tools.lint:lint-api:26.3.2'
    compileOnly 'com.android.tools.lint:lint-checks:26.3.2'
    testImplementation 'com.android.tools.lint:lint:26.3.2'
    testImplementation 'com.android.tools.lint:lint-tests:26.3.2'
}

jar {
    manifest {
        attributes 'Lint-Registry-v2': 'drivers.ontruck.ontruck.lintrules.LintIssuesRegistry'
    }
}
```

Custom Lint Rule: Idiomas

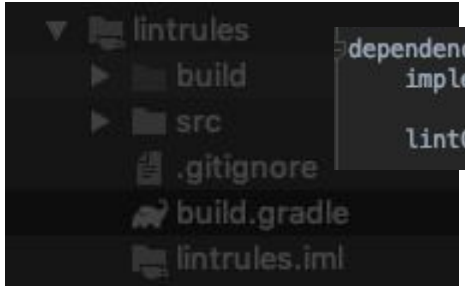
Module LintRules




```
apply plugin: 'java-library'
apply plugin: 'kotlin'

targetCompatibility = '1.8'
sourceCompatibility = '1.8'

repositories {
    jcenter()
}

dependencies {
    compileOnly 'com.android.tools.lint:lint-api:26.3.2'
    compileOnly 'com.android.tools.lint:lint-checks:26.3.2'
    testImplementation 'com.android.tools.lint:lint:26.3.2'
    testImplementation 'com.android.tools.lint:lint-tests:26.3.2'
}

jar {
    manifest {
        attributes 'Lint-Registry-v2': 'drivers.ontruck.ontruck.lintrules.LintIssuesRegistry'
    }
}
```

Custom Lint Rule: Idiomas

Module LintRules




```
dependencies {
    implementation fileTree(dir: 'libs', include: ['*.jar'])

    lintChecks project(':lintrules')
```

```
apply plugin: 'java-library'
apply plugin: 'kotlin'

targetCompatibility = '1.8'
sourceCompatibility = '1.8'

repositories {

    testImplementation 'com.android.tools.lint:lint:26.3.2'
    testImplementation 'com.android.tools.lint:lint-tests:26.3.2'
}

jar {
    manifest {
        attributes 'Lint-Registry-v2': 'drivers.ontruck.ontruck.lintrules.LintIssuesRegistry'
    }
}
```

Testing
Custom Lint Rule

XML: Testing Custom Lint Rule

```
@Test
fun shouldShowErrorWhenKeyNotFound() {
    lint()
            .files(xml( to: "res/layout/layouts.xml",  source: """
        <drivers.ontruck.ontruck.uicomponents.LocalizedTextView
            xmlns:android="http://schemas.android.com/apk/res/android"
            xmlns:app="http://schemas.android.com/apk/res-auto"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            app:localizedText="keyNotFound" />""").indented(), jsonTestFile())
            .issues(LocalizedLayoutDetector.ISSUE)
            .run()
            .expect("""
              |res/layout/layouts.xml:6: Error: The key "keyNotFound" is not present in local
              |     app:localizedText="keyNotFound" />
              |                        ~~~~~~~~~~~~
              |1 errors, 0 warnings""".trimMargin())
}
```

XML: Testing Custom Lint Rule

```
@Test
fun shouldShowErrorWhenKeyNotFound() {
    lint()
```

```
@Test
fun shouldShowErrorWhenKeyNotFound() {

    lint()
            .files(xml( to: "res/layout/layouts.xml", getFile( filePath: "layout_key_not_found.xml")).indented(),
                    jsonTestFile())
            .issues(LocalizedLayoutDetector.ISSUE)
            .run()
            .expect(getFile( filePath: "assert_result_layout_key_not_found.txt").trimMargin())
}
```

```
|res/layout/layouts.xml:6: Error: The key "keyNotFound" is not present in local
|    app:localizedText="keyNotFound" />
|                       ~~~~~~~~~~~~
|1 errors, 0 warnings""".trimMargin())
}
```

XML: Testing Custom Lint Rule

```
@Test
fun shouldShowErrorWhenKeyNotFound() {
    lint()
            .files(xml( to: "res/layout/layouts.xml",  source: """
        <drivers.ontruck.ontruck.uicomponents.LocalizedTextView
            xmlns:android="http://schemas.android.com/apk/res/android"
            xmlns:app="http://schemas.android.com/apk/res-auto"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            app:localizedText="keyNotFound" />""").indented(), jsonTestFile())
            .issues(LocalizedLayoutDetector.ISSUE)
            .run()
            .expect("""
              |res/layout/layouts.xml:6: Error: The key "keyNotFound" is not present in local
              |     app:localizedText="keyNotFound" />
              |                        ~~~~~~~~~~~~
              |1 errors, 0 warnings""".trimMargin())
}
```

XML: Testing Custom Lint Rule

```
@Test
fun shouldShowErrorWhenKeyNotFound() {
    lint()
            .files(xml( to: "res/layout/layouts.xml",  source: """
        <drivers.ontruck.ontruck.uicomponents.LocalizedTextView
            xmlns:android="http://schemas.android.com/apk/res/android"
            xmlns:app="http://schemas.android.com/apk/res-auto"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            app:localizedText="keyNotFound" />""").indented(), jsonTestFile())
            .issues(LocalizedLayoutDetector.ISSUE)
            .run()
            .expect("""
              |res/layout/layouts.xml:6: Error: The key "keyNotFound" is not present in local
              |     app:localizedText="keyNotFound" />
              |                        ~~~~~~~~~~~
              |1 errors, 0 warnings""".trimMargin())
}
```

XML: Testing Custom Lint Rule

```
@Test
fun shouldShowErrorWhenKeyNotFound() {
    lint()
            .files(xml( to: "res/layout/layouts.xml",  source: """
        <drivers.ontruck.ontruck.uicomponents.LocalizedTextView
            xmlns:android="http://schemas.android.com/apk/res/android"
            xmlns:app="http://schemas.android.com/apk/res-auto"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            app:localizedText="keyNotFound" />""").indented(), jsonTestFile())
            .issues(LocalizedLayoutDetector.ISSUE)
            .run()
            .expect("""
              |res/layout/layouts.xml
              |     app:localizedText=
              |
              |1 errors, 0 warnings""".trimMargin())
}
```

```
private fun jsonTestFile(): TestFile {
    return source(
            DEFAULT_LOCALIZATION_JSON_RELATIVE_PATH,
            source: "{ \"key1\": \"value1\", \"key2\": \"value2\" }")
}
```

XML: Testing Custom Lint Rule

```
@Test
fun shouldShowErrorWhenKeyNotFound() {
    lint()
            .files(xml( to: "res/layout/layouts.xml",  source: """
        <drivers.ontruck.ontruck.uicomponents.LocalizedTextView
            xmlns:android="http://schemas.android.com/apk/res/android"
            xmlns:app="http://schemas.android.com/apk/res-auto"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            app:localizedText="keyNotFound" />""").indented(), jsonTestFile())
            .issues(LocalizedLayoutDetector.ISSUE)
            .run()
            .expect("""
              |res/layout/layouts.xml:6: Error: The key "keyNotFound" is not present in local
              |     app:localizedText="keyNotFound" />
              |                        ~~~~~~~~~~~
              |1 errors, 0 warnings""".trimMargin())
}
```

XML: Testing Custom Lint Rule

```
@Test
fun shouldShowErrorWhenKeyNotFound() {
    lint()
            .files(xml( to: "res/layout/layouts.xml",  source: """
        <drivers.ontruck.ontruck.uicomponents.LocalizedTextView
            xmlns:android="http://schemas.android.com/apk/res/android"
            xmlns:app="http://schemas.android.com/apk/res-auto"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            app:localizedText="keyNotFound" />""").indented(), jsonTestFile())
            .issues(LocalizedLayoutDetector.ISSUE)
            .run()
            .expect("""
              |res/layout/layouts.xml:6: Error: The key "keyNotFound" is not present in local
              |     app:localizedText="keyNotFound" />
              |                        ~~~~~~~~~~~~
              |1 errors, 0 warnings""".trimMargin())
}
```

FAIL

XML: Testing Custom Lint Rule

```
@Test
fun shouldShowErrorWhenKeyNotFound() {
    lint()
            .files(xml( to: "res/layout/layouts.xml",  source: """
        <drivers.ontruck.ontruck.uicomponents.LocalizedTextView
            xmlns:android="http://schemas.android.com/apk/res/android"
            xmlns:app="http://schemas.android.com/apk/res-auto"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            app:localizedText="keyNotFound" />""").indented(), jsonTestFile())
            .issues(LocalizedLayoutDetector.ISSUE)
            .run()
            .expect("""
                |res/layout/layouts.xml:6: Error: The key "keyNotFound" is not present in local
```

```
res/layout/layouts.xml:5: Error: The key "keyNotFound" is not present in local JSON translation file.
res/layout/layouts.xml:6: Error: The key "keyNotFound" is not present in local JSON translation file.
    app:localizedText="keyNotFound" />
                       ~~~~~~~~~~~
1 errors, 0 warnings
```

XML: Testing Custom Lint Rule

```
@Test
fun shouldShowNotWarningsWhenKeyIsFound() {
    lint()
            .files(xml( to: "res/layout/layouts.xml",  source: """
        <drivers.ontruck.ontruck.uicomponents.LocalizedTextView
            xmlns:android="http://schemas.android.com/apk/res/android"
            xmlns:app="http://schemas.android.com/apk/res-auto"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            app:localizedText="key1" />""").indented(), jsonTestFile())
            .issues(LocalizedLayoutDetector.ISSUE)
            .run()
            .expectClean()
}
```

XML: Testing Custom Lint Rule

```
@Test
fun shouldShowNotWarningsWhenKeyIsFound() {
    lint()
            .files(xml( to: "res/layout/layouts.xml",  source: """
        <drivers.ontruck.ontruck.uicomponents.LocalizedTextView
            xmlns:android="http://schemas.android.com/apk/res/android"
            xmlns:app="http://schemas.android.com/apk/res-auto"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            app:localizedText="key1" />""").indented(), jsonTestFile())
            .issues(LocalizedLayoutDetector.ISSUE)
            .run()
            .expectClean()
}
```

```
private fun jsonTestFile(): TestFile {
    return source(
            DEFAULT_LOCALIZATION_JSON_RELATIVE_PATH,
            source: "{ \"key1\": \"value1\", \"key2\": \"value2\" }")
}
```

XML: Testing Custom Lint Rule

```
@Test
fun shouldShowNotWarningsWhenKeyIsFound() {
    lint()
            .files(xml( to: "res/layout/layouts.xml",  source: """
        <drivers.ontruck.ontruck.uicomponents.LocalizedTextView
            xmlns:android="http://schemas.android.com/apk/res/android"
            xmlns:app="http://schemas.android.com/apk/res-auto"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            app:localizedText="key1" />""").indented(), jsonTestFile())
            .issues(LocalizedLayoutDetector.ISSUE)
            .run()
            .expectClean()
}
```

PASS

Actual

```
1    No warnings.
```

Java&Kt: Testing Custom Lint Rule

```
private val LOCALIZATION_MANAGER_STUB = java("""
  |package drivers.ontruck.ontruck.localization;
  |public class LocalizationManager {
  |   public String getString(@LocalizedString String key) {
  |       return localizationJsonObject.get(key).getAsString();
  |   }
  |}""".trimMargin())
```

Java&Kt: Testing Custom Lint Rule

```
private val LOCALIZATION_MANAGER_STUB = java("""
  |package drivers.ontruck.ontruck.localization;
  |public class LocalizationManager {
  |   public String getString(@LocalizedString String key) {
  |       return localizationJsonObject.get(key).getAsString();
  |   }
  |}""".trimMargin())
```

```
private val LOCALIZATION_MANAGER_STUB =
        java(getFile( filePath: "LocalizationManager.java").trimMargin())
```

Java&Kt: Testing Custom Lint Rule

```
@Test
fun shouldShowErrorWhenKeyNotFound() {
    TestLintTask
            .lint()
            .allowCompilationErrors()
            .files(LOCALIZATION_MANAGER_STUB, java("""
                        |package foo;
                        |
                        |import drivers.ontruck.ontruck.localization.LocalizationManager;
                        |
                        |public class TestClass {
                        |
                        |  public void foo(LocalizationManager localization) {
                        |    localization.getString("keyNotFound");
                        |  }
                        |
                        |}""".trimMargin()).indented(), jsonTestFile())
            .issues(LocalizedStringDetector.ISSUE)
            .run()
            .expect("""
                    |src/foo/TestClass.java:8: Error: The key "keyNotFound" is not present in
                    |    localization.getString("keyNotFound");
                    |    ~~~
```

Java&Kt: Testing Custom Lint Rule

```
@Test
fun shouldShowErrorWhenKeyNotFound() {
    TestLintTask
            .lint()
```

```
@Test
fun shouldShowErrorWhenKeyNotFound() {
    TestLintTask
            .lint()
            .allowCompilationErrors()
            .files(LOCALIZATION_MANAGER_STUB, java(getFile( filePath: "TestClassKeyNotFound.java")
                    .trimMargin()).indented(),
                    jsonTestFile())
            .issues(LocalizedStringDetector.ISSUE)
            .run()
            .expect(getFile( filePath: "assert_result_class_key_not_found.txt").trimMargin())
}
```

```
            .issues(LocalizedStringDetector.ISSUE)
            .run()
            .expect("""
                    |src/foo/TestClass.java:8: Error: The key "keyNotFound" is not present in
                    |    localization.getString("keyNotFound");
                    |    ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
                    |1 errors, 0 warnings""".trimMargin())
}
```

Java&Kt: Testing Custom Lint Rule

```
@Test
fun shouldShowErrorWhenKeyNotFound() {
    TestLintTask
            .lint()
            .allowCompilationErrors()
            .files(LOCALIZATION_MANAGER_STUB, java("""
                        |package foo;
                        |
                        |import drivers.ontruck.ontruck.localization.LocalizationManager;
                        |
                        |public class TestClass {
                        |
                        |  public void foo(LocalizationManager localization) {
                        |    localization.getString("keyNotFound");
                        |  }
                        |
                        |}""".trimMargin()).indented(), jsonTestFile())
            .issues(LocalizedStringDetector.ISSUE)
            .run()
            .expect("""
                    |src/foo/TestClass.java:8: Error: The key "keyNotFound" is not present in
                    |    localization.getString("keyNotFound");
                    |    ~~~
```

Java&Kt: Testing Custom Lint Rule

```
@Test
fun shouldShowErrorWhenKeyNotFound() {
    TestLintTask
            .lint()
            .allowCompilationErrors()
            .files(LOCALIZATION_MANAGER_STUB, java("""
                        |package foo;
                        |
                        |import drivers.ontruck.ontruck.localization.LocalizationManager;
                        |
                        |public class TestClass {
                        |
                        |  public void foo(LocalizationManager localization) {
                        |    localization.getString("keyNotFound");
                        |  }
                        |
                        |}""".trimMargin()).indented(), jsonTestFile())
            .issues(LocalizedStringDetector.ISSUE)
            .run()
            .expect("""
                    |src/foo/TestClass.java:8: Error: The key "keyNotFound" is not present in
                    |    localization.getString("keyNotFound");
                    |    ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
                    |1 errors, 0 warnings""".trimMargin())
}
```

Java&Kt: Testing Custom Lint Rule

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fun shouldShowErrorWhenKeyNotFound() {
    TestLintTask
            .lint()
            .allowCompilationErrors()
            .files(LOCALIZATION_MANAGER_STUB, java("""
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                    |
                    |public class TestClass {
                    |
                    |  public void foo(LocalizationManager localization) {
                    |    localization.getString("keyNotFound");
                    |  }
                    |
                    |}""".trimMargin()).indented(), jsonTestFile())
            .issues(LocalizedStringDetector.ISSUE)
            .run()
            .expect("""
                    |src/foo/TestClass.java:8: Error: The key "keyNotFound" is not present in
                    |    localization.getString("keyNotFound");
                    |    ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
                    |1 errors, 0 warnings""".trimMargin())
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```

Java&Kt: Testing Custom Lint Rule

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fun shouldShowErrorWhenKeyNotFound() {
    TestLintTask
            .lint()
            .allowCompilationErrors()
            .files(LOCALIZATION_MANAGER_STUB, java("""
                        |package foo;
                        |
                        |import drivers.ontruck.ontruck.localization.LocalizationManager;
                        |
                        |public class TestClass {
                        |
                        |  public void foo(LocalizationManager localization) {
                        |    localization.getString("keyNotFound");
                        |  }
                        |
                        |}""".trimMargin()).indented(), jsonTestFile())
            .issues(LocalizedStringDetector.ISSUE)
            .run()
            .expect("""
                    |sr
                    |
                    |
                    |1 errors, 0 warnings""".trimMargin())
}
```

```
private fun jsonTestFile(): TestFile {
    return source(
            DEFAULT_LOCALIZATION_JSON_RELATIVE_PATH,
            source: "{ \"key1\": \"value1\", \"key2\": \"value2\" }")
}
```

Java&Kt: Testing Custom Lint Rule

```
@Test
fun shouldShowErrorWhenKeyNotFound() {
    TestLintTask
            .lint()
            .allowCompilationErrors()
            .files(LOCALIZATION_MANAGER_STUB, java("""
                        |package foo;
                        |
                        |import drivers.ontruck.ontruck.localization.LocalizationManager;
                        |
                        |public class TestClass {
                        |
                        |  public void foo(LocalizationManager localization) {
                        |    localization.getString("keyNotFound");
                        |  }
                        |
                        |}""".trimMargin()).indented(), jsonTestFile())
            .issues(LocalizedStringDetector.ISSUE)
            .run()
            .expect("""
                    |src/foo/TestClass.java:8: Error: The key "keyNotFound" is not present in
                    |    localization.getString("keyNotFound");
                    |    ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
                    |1 errors, 0 warnings""".trimMargin())
}
```

Java&Kt: Testing Custom Lint Rule

```
@Test
fun shouldShowErrorWhenKeyNotFound() {
    TestLintTask
            .lint()
            .allowCompilationErrors()
            .files(LOCALIZATION_MANAGER_STUB, java("""
                        |package foo;
                        |
                        |import drivers.ontruck.ontruck.localization.LocalizationManager;
                        |
                        |public class TestClass {
                        |
                        |  public void foo(LocalizationManager localization) {
                        |    localization.getString("keyNotFound");
                        |  }
                        |
                        |}""".trimMargin()).indented(), jsonTestFile())
            .issues(LocalizedStringDetector.ISSUE)
            .run()
            .expect("""
                    |src/foo/TestClass.java:8: Error: The key "keyNotFound" is not present in
                    |    localization.getString("keyNotFound");
                    |    ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
                    |1 errors, 0 warnings""".trimMargin())
}
```

Java&Kt: Testing Custom Lint Rule

```
@Test
fun shouldShowNotWarningsWhenKeyIsFound() {
    TestLintTask
            .lint()
            .allowCompilationErrors()
            .files(LOCALIZATION_MANAGER_STUB, java("""
                        |package foo;
                        |
                        |import drivers.ontruck.ontruck.localization.LocalizationManager;
                        |
                        |public class TestClass {
                        |
                        |  public void foo(LocalizationManager localization) {
                        |    localization.getString("key1");
                        |  }
                        |
                        |}""".trimMargin()).indented(), jsonTestFile())
            .issues(LocalizedStringDetector.ISSUE)
            .run()
            .expectClean()
}
```

Java&Kt: Testing Custom Lint Rule

```
@Test
fun shouldShowNotWarningsWhenKeyIsFound() {
    TestLintTask
            .lint()
            .allowCompilationErrors()
            .files(LOCALIZATION_MANAGER_STUB, java("""
                        |package foo;
                        |
                        |import drivers.ontruck.ontruck.localization.LocalizationManager;
                        |
                        |public class TestClass {
                        |
                        |  public void foo(LocalizationManager localization) {
                        |    localization.getString("key1");
                        |  }
                        |
                        |}""".trimMargin()).indented(), jsonTestFile())
            .issues(LocalizedStringDetector.ISSUE)
            .run()
            .expectClean()
}
```

```
Actual
1    No warnings.
```

PASS

References

- Android Doc:
  https://developer.android.com/studio/write/lint
- Github Sophie Dankel:
  https://github.com/sophiedankel/Android-lint
- Github Jake Warthon:
  https://github.com/JakeWharton/timber/tree/master/timber-lint
- Android Tools Doc:
  http://tools.android.com/tips/lint-checks

Thanks!
Questions?