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Android Studio Plug-in for Code Reviews

SCG Seminar

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Introduction

```
99 // int[] grantResults)
100 // to handle the case where the user grants the permission. See the
101 // for ActivityCompat#requestPermissions for more details.
102 return;
103 }
104 String id = mngr.getDeviceId();
105
106 Using getDeviceId to get device identifiers is not recommended. more... (Strg+F1)
107 Editable edit = text.getText();
108 URL url = new URL( spec: "http://www.android.com/" + edit.toString() + "-
109 Intent intent34 = new Intent(Intent.ACTION_VIEW, Uri.parse("http://www.a
110 startActivity(intent34);
111
```

Android Lint

The screenshot shows the Microsoft Excel interface with a table of reviewer data. The table has columns for Smell ID, Reported or New?, Affected File Name, and Code Lin. The data is as follows:

	D	E	F	G	H
1	# Smells	Reported or New?	Smell ID	Affected File Name	Code Lin
2	39	reported	SM07	BasePlayer.java	
3	39	reported	SM01	AndroidManifest.xml	
4	39	reported	SM01	AndroidManifest.xml	
5	39	reported	SM01	AndroidManifest.xml	
6	39	reported	SM01	AndroidManifest.xml	
7	39	reported	SM04	AndroidManifest.xml	
8	39	reported	SM04	AndroidManifest.xml	
9	39	reported	SM09	ReCaptchaActivity.java	
10	39	reported	SM08	BackgroundPlayer.java	195;197;199;201;207
11	39	reported	SM08	PopupVideoPlayer.java	267;269;271;273
12	39	reported	SM02	AboutActivity.java	152;161;170

Reviewer Data

Android Lint

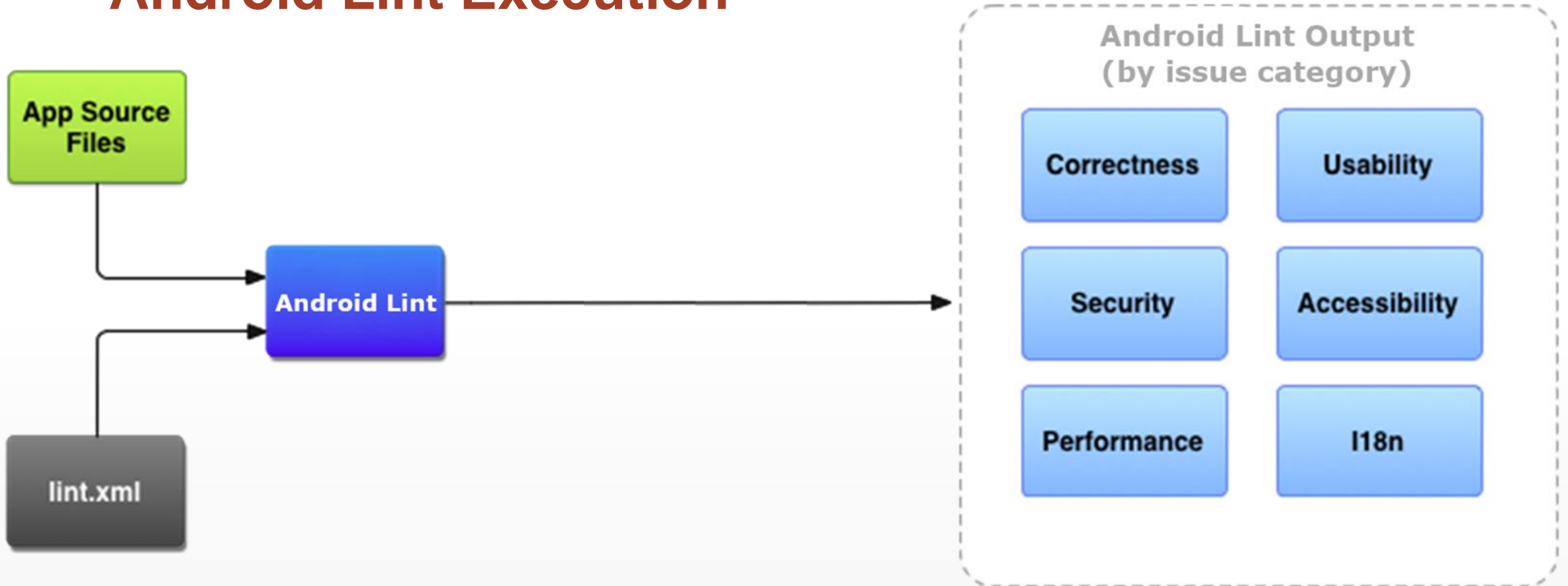
- Provides 300+ checks

Android Lint is a tool for analysis of source code to highlight programming errors, and suspicious constructs.

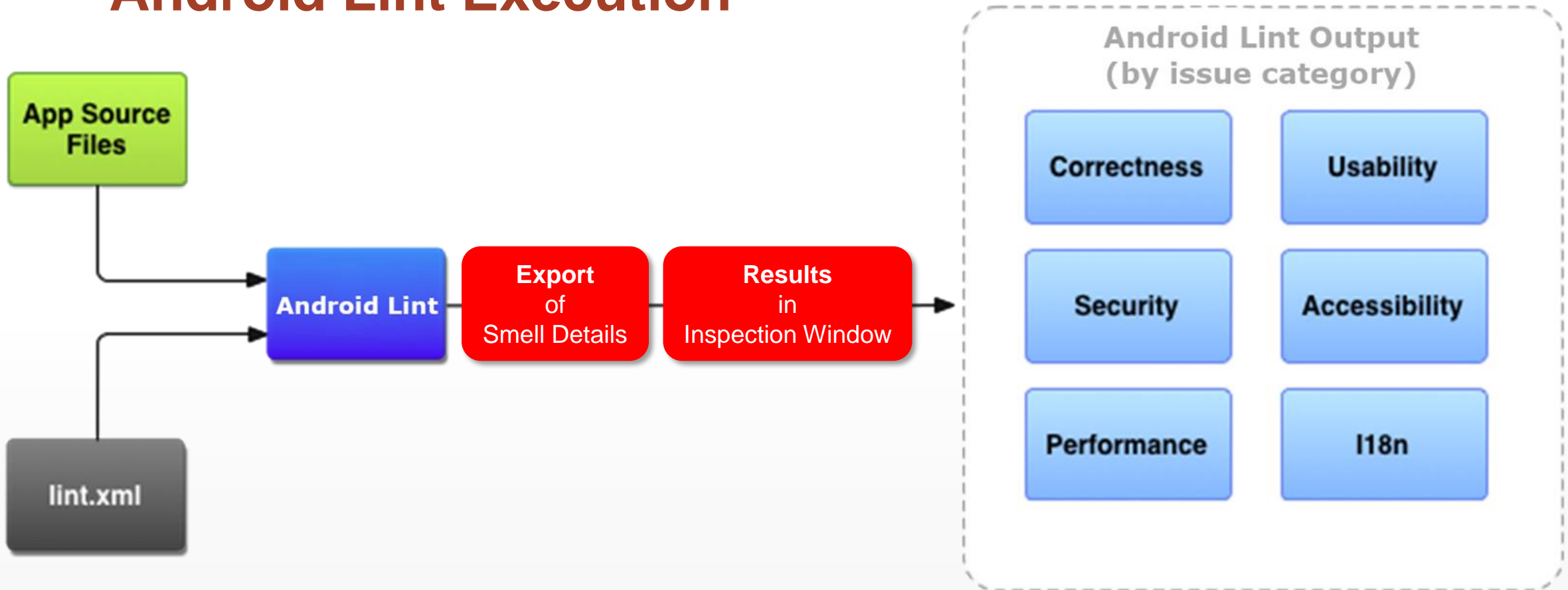
- Android Studio

Android Studio is the recommended IDE by Google and integrates Android Lint.

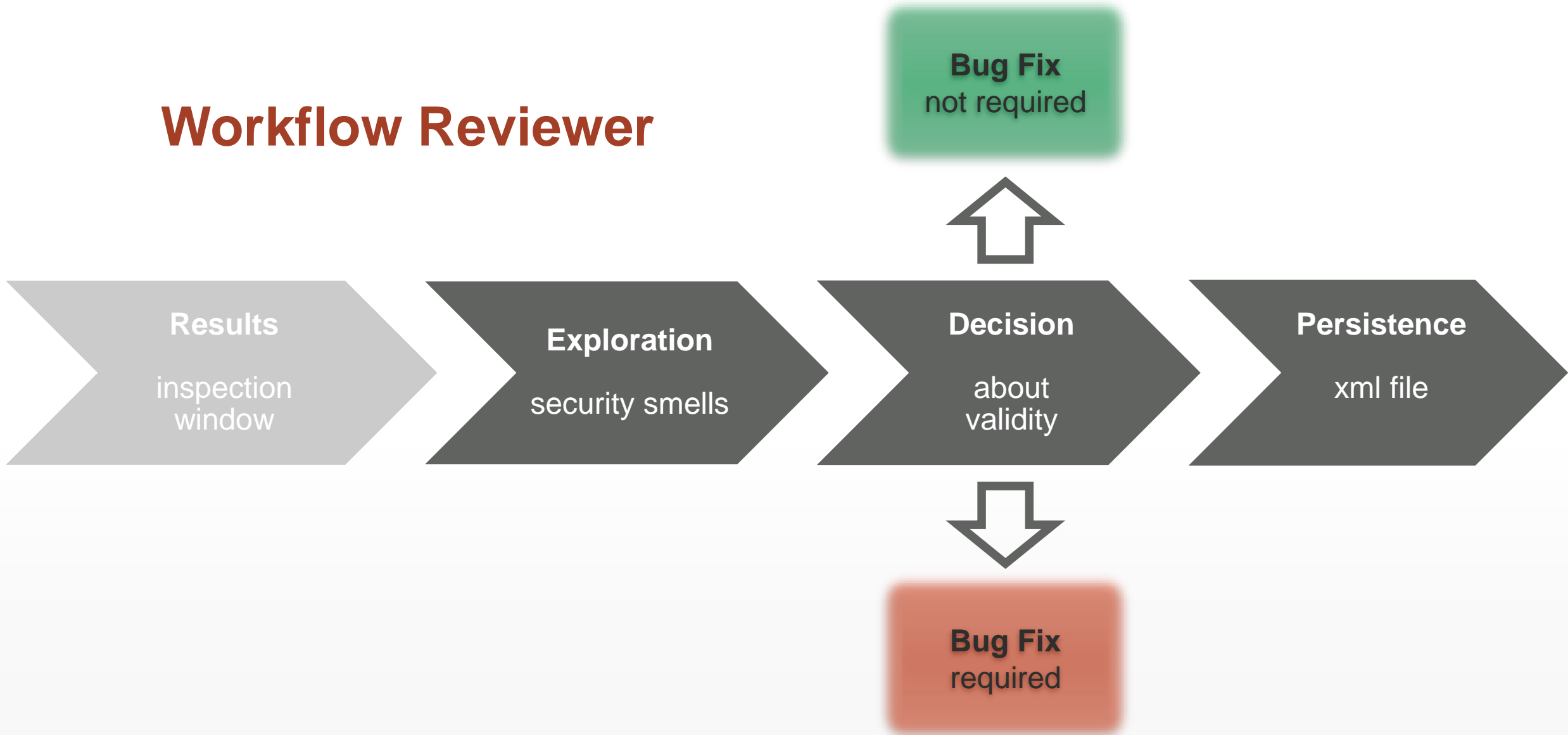
Android Lint Execution



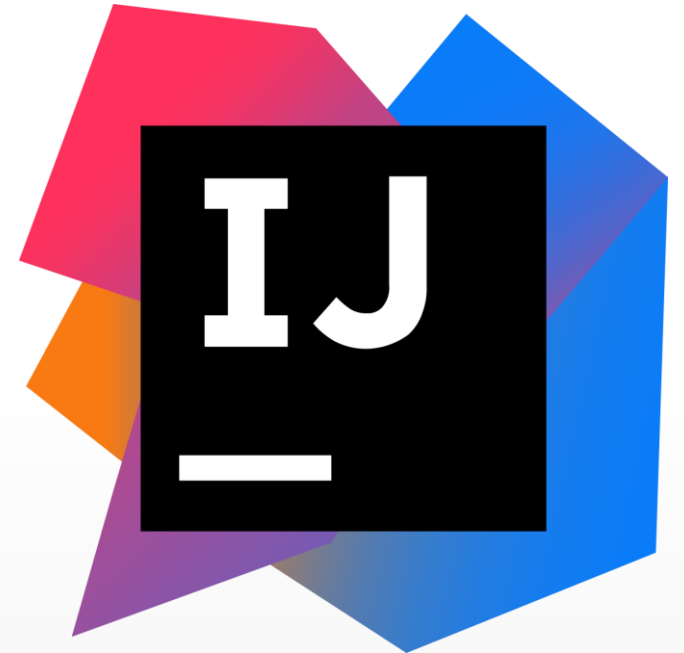
Android Lint Execution



Workflow Reviewer



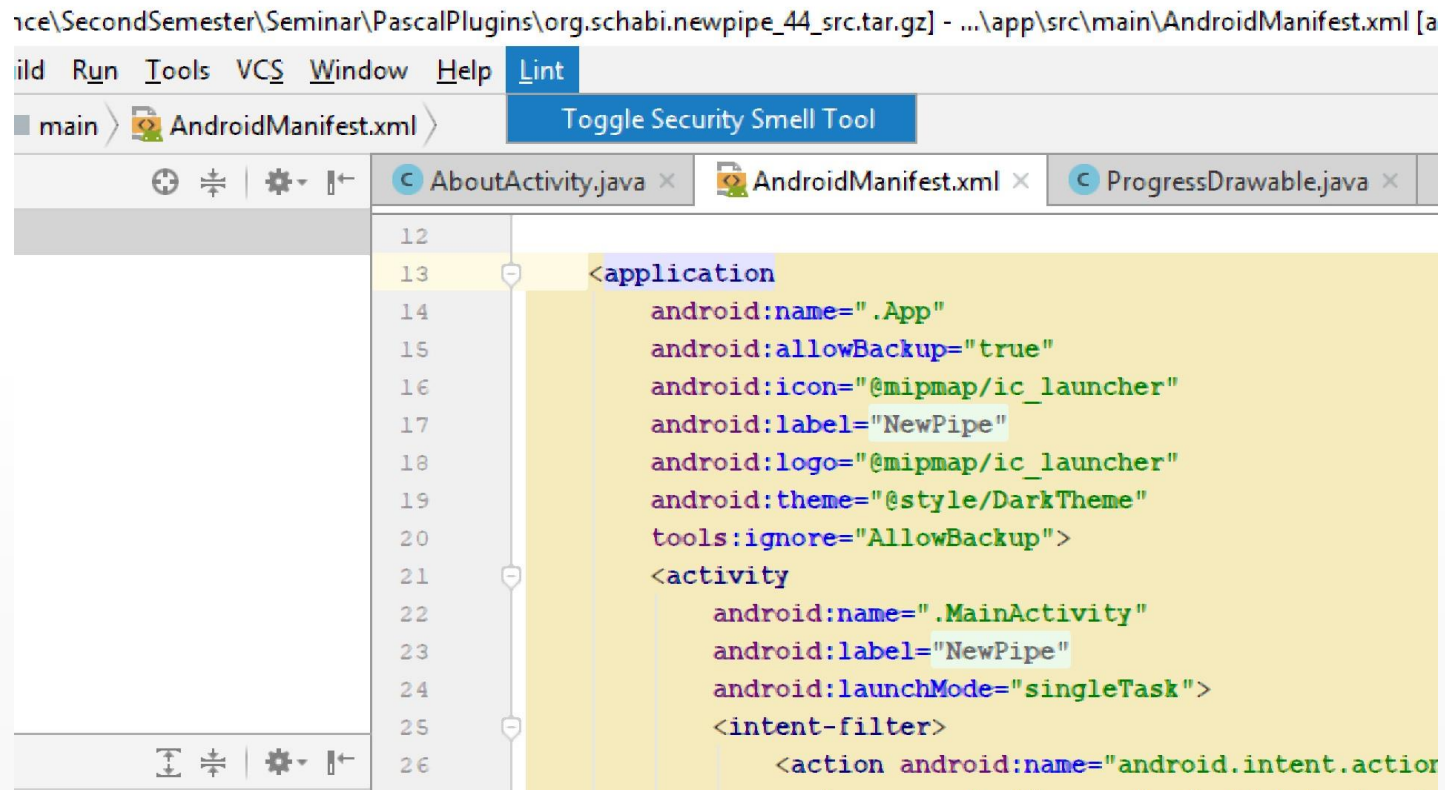
Complexity #1



Complexity #2

- No documentation
- Search into intellij source code
- Android studio build in plugins
- Plug-in development is different

Results



The screenshot shows an IDE window with the following elements:

- File path: `...\\SecondSemester\\Seminar\\PascalPlugins\\org.schabi.newpipe_44_src.tar.gz] - ...\\app\\src\\main\\AndroidManifest.xml [a`
- Menu bar: `File Edit Run Tools VCS Window Help Lint`
- Toolbar: `Toggle Security Smell Tool`
- Project browser: `main > AndroidManifest.xml`
- Tab bar: `AboutActivity.java`, `AndroidManifest.xml`, `ProgressDrawable.java`
- Code editor showing `AndroidManifest.xml` with the following XML content:

```
12  
13 <application  
14     android:name=".App"  
15     android:allowBackup="true"  
16     android:icon="@mipmap/ic_launcher"  
17     android:label="NewPipe"  
18     android:logo="@mipmap/ic_launcher"  
19     android:theme="@style/DarkTheme"  
20     tools:ignore="AllowBackup">  
21     <activity  
22         android:name=".MainActivity"  
23         android:label="NewPipe"  
24         android:launchMode="singleTask">  
25         <intent-filter>  
26             <action android:name="android.intent.action
```

Results

```
1 <?xml version="1.0" encoding="UTF-8" standalone="no"?>
2 <Issues>
3   <Issue>
4     <SmellType>SM04: Task Affinity | Do not set taskAffinity</SmellType>
5     <fileName>file://$PROJECT_DIR$/app/src/main/AndroidManifest.xml</fileName>
6     <lineNumber>126</lineNumber>
7     <package>&lt;default&gt;</package>
8     <description>&lt;html&gt;SM04: Task Affinity | Do not set taskAffinity&lt;/html&gt;</descri
9     <comment>&lt;html&gt;SM04: Task Affinity | Do not set taskAffinity&lt;/html&gt;</comment>
10    <anIssue>yes</anIssue>
11  </Issue>
12 </Issues>
13
```

DEMO

Future Work

- Suggestions for reviewers
- Quick fixes
- Enhancement:
plug-in for reviewers → plug-in for developers



Conclusion

- Our tool will make android apps more secure
- Working without documentation was challenging
- Android Studio interface was *not* easy to use
- Debugging of nested plug-ins is *very time consuming and boring*