

Quick start guide

This guide will help you execute a custom rule analysis in Kiuwan Analyzer.

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If you need more information on programming a rule, please check the [Getting Started with Rule Development](#) page.

Prerequisites

For rule development you need the following prerequisites:

1. A suitable Kiuwan account for developing rules.
2. [Kiuwan Local Analyzer](#) (including **Kiuwan Rule Developer**)
 - a. If you have already downloaded the analyzer, but you cannot find a development folder, please upgrade or reinstall the Kiuwan Local Analyzer.
3. Java 8 (64 bits) or above (JDK or JRE)
4. Your preferred code editor (Eclipse, iDEA, Vi, Emacs...)

Step 1: Preparing your IDE

The rules that Kiuwan executes are created using the Java language. A Kiuwan rule is composed by:

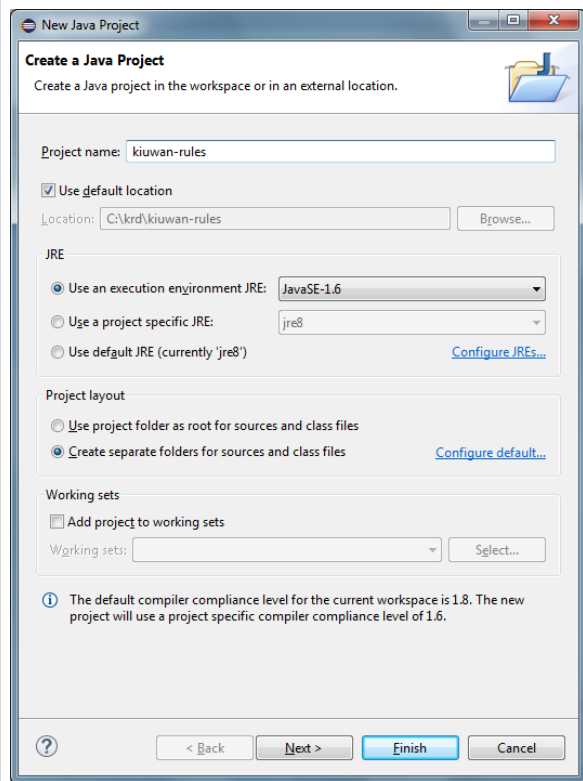
- A rule definition: an XML file where the rule metadata is kept.
- The rule source code, which contains the Java code that will be executed when running the rule.

In this section, we will create a Java project in Eclipse that will contain both parts of the rule. We will use for this guide the Eclipse Luna Standard, but you can use any Eclipse version or any other IDE or editor you like following an equivalent process:

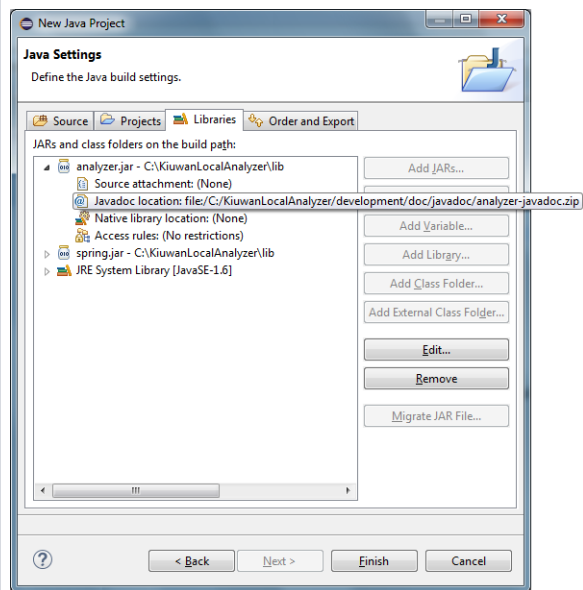
1. Create a new Java project choosing File > New > Java Project...
 - a. Choose a name for your project.
 - b. Set the Java execution environment to **JavaSE-1.8**.
2. Click Next.
3. Configure the project libraries needed to create Kiuwan rules:
 - a. Go to the **Libraries** tab.
 - b. Click the **Add External JARs...** button.
 - c. Go to the folder where you installed Kiuwan Local Analyzer (AGENT_HOME) and click on the **lib.engine** subfolder.
 - d. Choose the **analyzer.jar** and the **spring.jar** files.
 - e. Once the jar files are added to the libraries, click on the analyzer.jar drop-down icon so the jar configuration can be seen.
 - f. Select the **Javadoc location** entry and click **Edit**.
 - g. Click the **Javadoc in the archive** and then the **External file** radio buttons.
 - h. Click **Browse..** and look for the AGENT_HOME/development/doc/javadoc/**analyzer-javadoc.zip** file
 - i. Click **Open** and then **OK**.
 - j. Click the **Finish** button in the New Java Project wizard to end the project configuration.
4. Once the project has been created, create a new folder called **definitions** under the new project. We will use this folder to store the rule definitions created by Kiuwan Rule Developer.

Step	Screenshot
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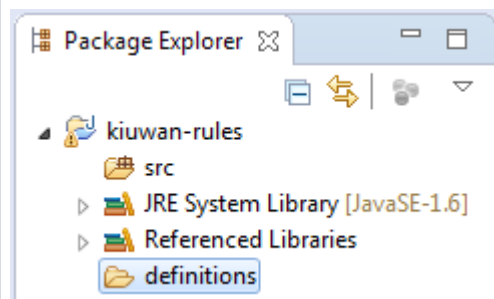
1.



2.



3.



This is all that we need in the IDE part. Now we will launch Kiuwan Rule Developer and work simultaneously with both tools to create rules.

Step 2: Set up Kiuwan Rule Developer

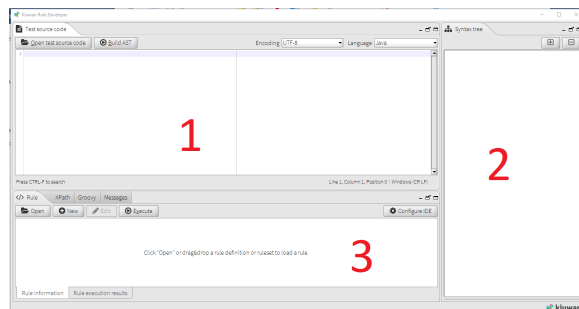
The Kiuwan Rule Developer is a GUI tool that will help you create, run and edit rules that can be executed in a Kiuwan analysis.

Once you have installed or upgraded Kiuwan Local Analyzer, follow these steps to run Kiuwan Rule Developer:

1. Run the software
 - a. In Windows, double-click the script located in AGENT_HOME/development/rdev.cmd.
 - b. In Unix OS, execute the AGENT_HOME/development/rdev.sh script,
2. Enter your Kiuwan account username and password.

The Kiuwan Rule Developer user interface is divided into three areas:

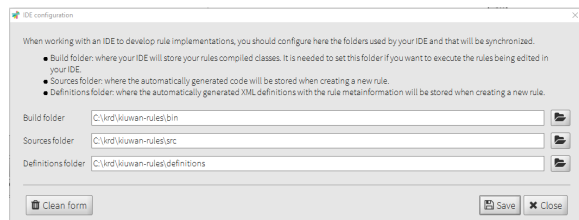
1. Top left: source code area: contains the source code the loaded rule will be run against.
2. Top right: AST (Abstract Syntax Tree) area: where the tree describing the parsed source code will be shown.
3. Bottom: the execution panels: where you can load, create and execute rules, XPath expressions, and groovy scripts.



Link the Kiuwan Rule Developer to your IDE

The first thing we will do is configure the Kiuwan Rule Developer to synchronize with an IDE. In this case, we will use the Eclipse project we have created before.

1. Click **Configure IDE** on the bottom right of Kiuwan Rule Developer
2. In the **Build Folder** field, type or look for the folder where Eclipse builds the project, in our case, `/krd/Kiuwan-rules/bin`
3. In the **Sources Folder** field, type or look for the folder where Eclipse stores the source code, in our case, `/krd/Kiuwan-rules/src`
4. In the **Definitions Folder** field, type or look for the folder we have created to store the rule definitions, in our case, `/krd/Kiuwan-rules/definitions`



Create a rule

Once the IDE and Kiuwan Rule Developer are wired, we can create a new rule definition.

1. Click **New**. The new rule window will appear.
2. We will create a rule to check the usage of `System.out.print*` methods in Java language, so we fill the fields conveniently.
 - a. Fill the **Definition**, **Configuration** and **Relations** fields with values that fit the purpose of the rule.
 - b. Fill the **Code examples** text areas with an example of the violation the rule will detect and how to fix it.
3. Once the fields are filled, click **Generate Code Template** to generate rule class implementation basic structure and then click **Save** to generate rule descriptor.

Step	Screenshot
2a.	

Rule detail

DefinitionConfigurationRelationsCode examples

Rule code *

COM.MYCOMPANY.JAVA.CHECKSYSTEM.OUT

Name *

Check for System.out.print*

Description

This rule looks for uses of the System.out.print* methods in Java code.

Remediation

Insted of this methods, use log and error managment APIs.

Tags

Benefits

Better control on logging and error management.

Drawbacks

References

#	Reference *
1	www.kiuwan.com

Clean form

Generate code template

Save

Close

Rule detail

DefinitionConfigurationRelationsCode examples

Language *

Java

Characteristic *

Efficiency

Vulnerability type

Information leaks

Priority *

High

Effort *

Easy

Class *

com.mycompany.kiuwan.rules.java.CheckSystemOut

Configuration

Parameters

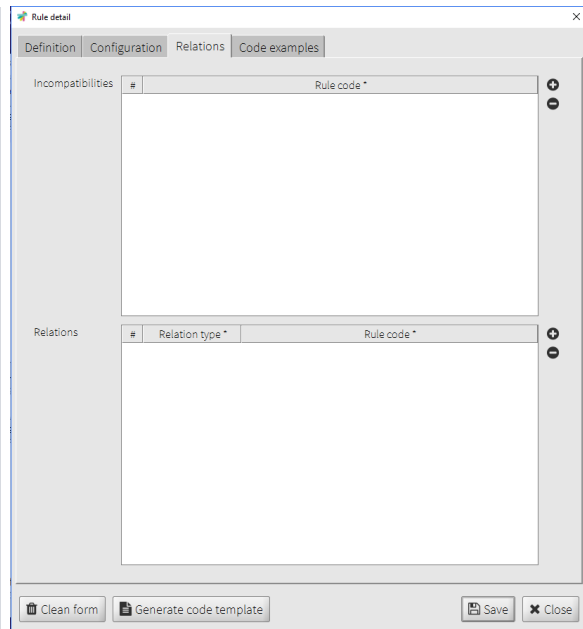
#	Identifier *	Name	Description	Value	Editable
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Clean form

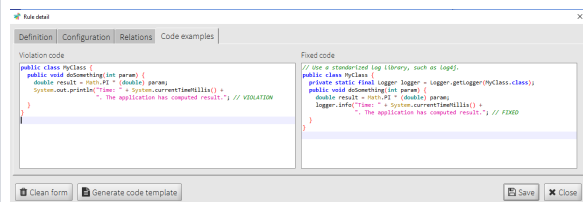
Generate code template

Save

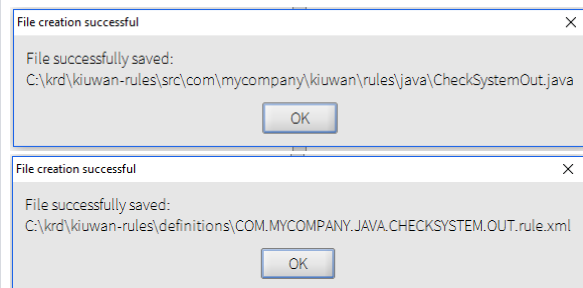
Close



2b.



3.



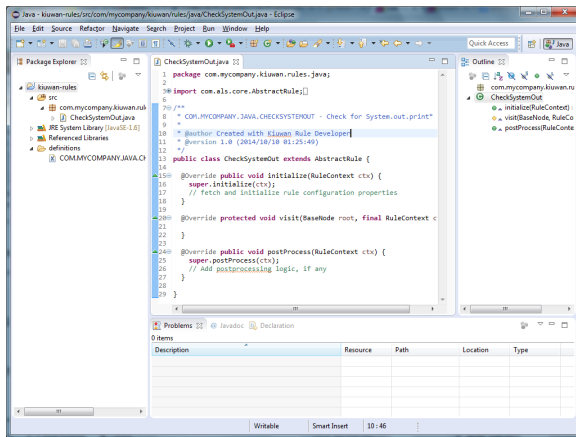
After saving the rule, two files will be created:

- The base source code of the rule, located in the previously configured build folder.
- The rule definition file, located in the previously configured definitions folder.

Once the new rule window is closed, Kiuwan Rule Developer will be prepared to execute your rule's implementation. But we first need to create that implementation.

Edit the rule template

Back to Eclipse, you should refresh to project contents to see the files created by Kiuwan Rule Developer.

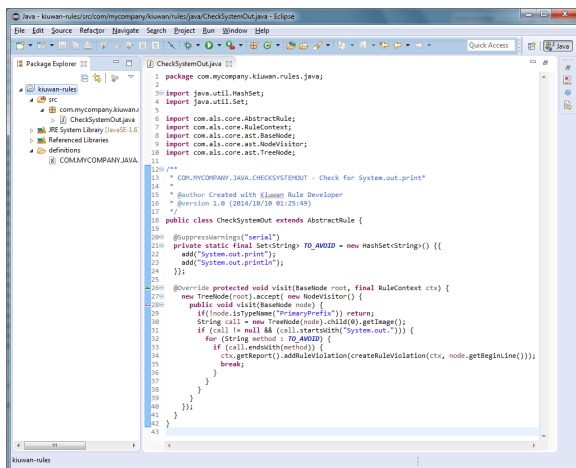


In our example, Kiuwan Rule Developer has created the following files:

- The **rule base code**: src/com/mycompany/Kiuwan/rules/java/CheckSystemOut.java
- The **rule definition**: definitions/COM.MYCOMPANY.JAVA.CHECKSYSTEMOUT.rule.xml

If you open the rule base code file, you will see the basic rule template. This is where you should add the code to detect the violations you want to find in your Java code. For more information on this topic, check the [Getting Started with Rule Development](#) guide.

In our example, we want to detect the uses of `System.out.print(String)` and `System.out.println(String)` in Java code. So this will be the source code for our rule:



Eclipse compiles the rules as we save changes in the file (you should have the **Build automatically** option turned on, under the Project menu), so we already have a `.class` file in the build folder that Kiuwan Rule Developer can execute.



Kiuwan API Javadoc

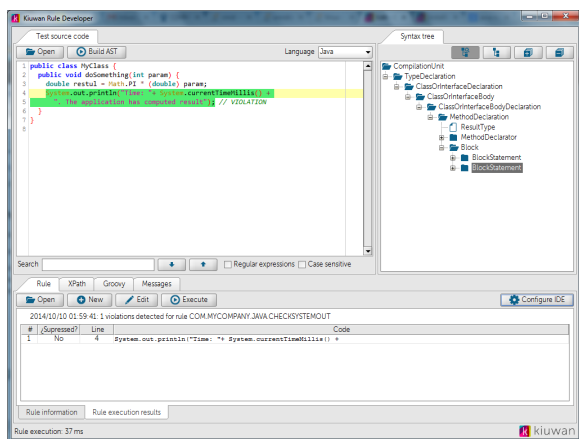
Note that you can access the Kiuwan API Javadoc anytime from your IDE, as we configured the Javadoc Location of the analyzer.jar file when we created the New Java Project, in the "Preparing your IDE" section.

Execute the rule in Kiuwan Rule Developer

Switch back to Kiuwan Rule Developer.

We will need a source code to test the rule against. We will copy the code example we entered when we created the rule in the new rule dialog:

1. Copy or write down the source code in the **Test source code** tab.
2. Click **Generate AST** to parse the file and create an Abstract Syntax Tree.
3. Click **Execute** to see the results of applying the rule to the test code.



As you can see in the previous screenshot, the "Rule execution results" tab will be automatically selected with the results of applying the rule to the test source code. In our example, one violation will be detected in line 4. This line uses one of the methods the rule looks for.

You can modify the rule in your IDE and execute it in Kiuwan Rule Editor as many times as you need until you are satisfied with your rule's implementation. Kiuwan Rule Editor automatically detects changes in the compiled code, as long as you have correctly configured your IDE as we did in the previous sections.

Debug the rule in your IDE

Read more here: [Debug custom rules](#)

Step 3: Upload a Rule to Kiuwan Quality Models Manager

Once we are happy with our rule, the next step is to upload the rule definition to Kiuwan.

1. Access <https://www.Kiuwan.com> and log in to your Kiuwan account.
2. Go to **Model Management** module (click on the menu at the top right of the screen).
3. Create an empty quality model (New model, Create from scratch).
4. Go to the **Rules** section and click **Install rule definitions**.
 - a. Click the "Upload" button and select the rule definition that Kiuwan Rule Developer has created in the definitions folder.
 - b. Click "Next" and click on the quality model you have just created to add your rule to it.
 - c. Click on the "Install" button to proceed.
5. Your rule will be installed into your library and will be added to the new quality model.
6. Publish the quality model so you can assign it to one of your applications for analysis.
7. Click on the configuration icon (top right of the screen) and click on the Application management option.
 - a. Select the application you will analyze with the new quality model that contains your custom rule.
 - b. Open the drop-down menu in the Quality parameters section and select the quality model you have created in step 3.

Step	Screenshot
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NEW MODEL

Model name

Indicate the model name.

Description

A description for your model.

1 Initial content

☒ Create from scratch

Select this option if you want to start with a model with the minimum data.

☐ Create from an existing model

Select this option if you want to copy the contents of an existing model.

CREATE MODEL

The screenshot shows the Kiuwan web application interface. The top navigation bar contains the Kiuwan logo and several menu items: CODE SECURITY, CODE ANALYSIS, ARCHITECTURE, LIFE CYCLE, GOVERNANCE, and MODELS. The left sidebar has a menu with 'SUMMARY', 'INDICATORS', 'RULES', and 'METRICS'. The 'RULES' menu item is selected, and a dropdown menu is open, showing options: Rules, Compare, PDF, CSV, ZIP, Import rulesets, and Install rule definitions. The main content area displays a table of rules with columns: Name, Language, Characteristic, Vulnerability type, Priority, and Effort. The table is currently empty, and a message 'Only Code Security rules' is displayed below the table header.

INSTALL RULE DEFINITIONS

✕

Upload rule definition file(s)

You can upload multiple rule definitions (.rule.xml files or ZIP files) created with Kiwanon Rule Developer.

Select file(s) to upload

Upload

Summary

Note that installed rules can only be used in local analyses. [Learn more](#)

Files	Valid rules	Invalid rules
	no files selected yet	

◀ ◯ ▶ Step 1 of 3

NEXT

INSTALL RULE DEFINITIONS

Add new rules to models

Rules that does not already exist will be added to your library. If you want the installed rules to be added to one or more models in your account, please select them here. Only valid rules will be added to the selected models.

<input type="checkbox"/> Name	Description
<input type="checkbox"/> CVE-ADAP	
<input type="checkbox"/> OVIADP Top 10	Only all the security rules implementing OVIADP Top 10 vulnerabilities in all languages available
<input type="checkbox"/> PHP Wordpress	Specific PHP model for wordpress projects
<input type="checkbox"/> Android QM	My android QM
<input type="checkbox"/> Cobol-JCL-CQM	
<input type="checkbox"/> ASPX Model	Model for training
<input type="checkbox"/> My PHP model	
<input type="checkbox"/> Clients	Clients training model

◀ ▶ Step 2 of 3

PREVIOUSNEXT

4.c.

INSTALL RULE DEFINITIONS

Install preview

This is the expected result of this install process

Name	Characteristic	Vulnerability type	Priority	Action
Imposter Neutralization of Input During Web Page Generation (Cross-site Scripting)	Security	Injection	Medium	Install

More All

1 of 3 Step 3 of 3

PREVIOUS INSTALL

5.

i

The following rules have been installed/updated:

- CUS.JAVA.SEC_JAVA.MyCustomRule (Installed)

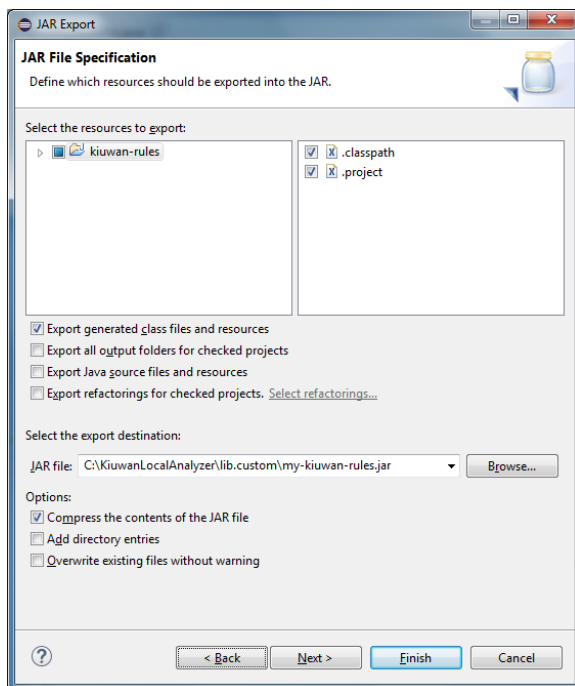
OK

After following the previous steps, everything should be prepared to run a new analysis with Kiuwan Local Analyzer.

Step 4: Execute a custom rule analysis with Kiuwan Local Analyzer

Once your application has assigned the new quality model, we have to create a package with our rule so Kiuwan Local Analyzer can execute it.

1. In Eclipse, right-click on the **rules project** and choose **Export... Java > JAR File**.
2. Browse for the lib.custom folder under the Kiuwan Local Analyzer folder and write a name for your rules jar archive. For example AGENT_HOME/lib.custom/my-Kiuwan-rules.jar
3. Click **Finish** to export your rules project.



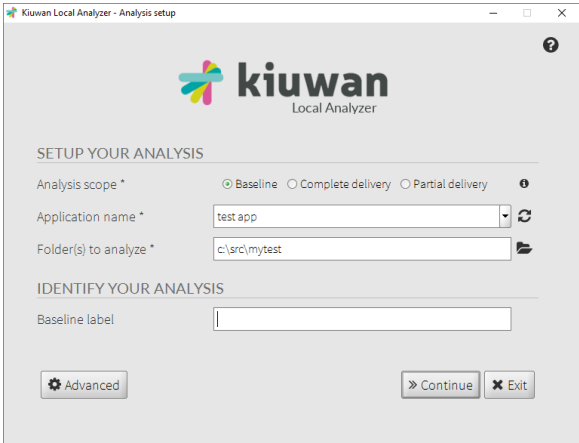
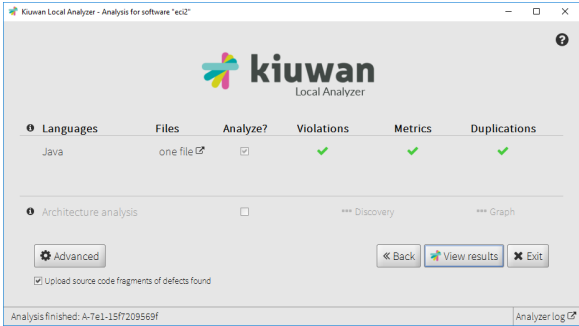
Now everything should be prepared to launch your analysis.

The next step is to run Kiuwan Local Analyzer and analyze your application. If you need more information on this topic, please read the [Kiuwan Local Analyzer](#) page.

We will use a test application made of two Java classes. One with a rule violation, one with no violations. We will call this application **Test application**.

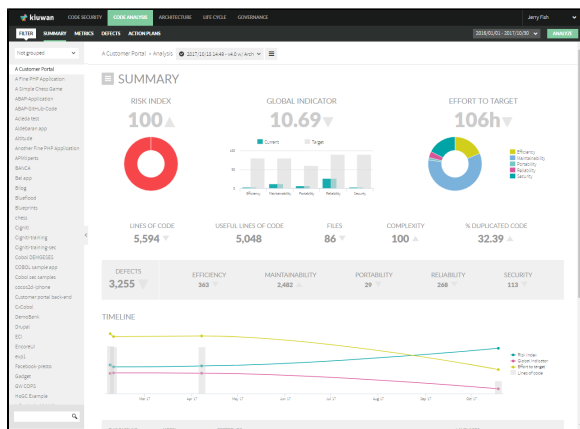
Follow these steps to analyze the application in Kiuwan Local Analyzer:

1. Run Kiuwan Local Analyzer by double clicking *AGENT_HOME/Kiuwan.cmd* script in Windows or by running the *AGENT_HOME/Kiuwan.sh* script in Unix OS.
2. Log in with your Kiuwan account.
3. Select the application you want to analyze with your custom rules. In our case, this will be **Test application**.
4. Select the source code you want to analyze and click **Next**.
5. Click **Analyze**. You will see in the status bar (bottom of the window) that Kiuwan Local Analyzer first downloads the quality model associated with the selected application, in our example, **My company quality model** and, then, analyzes the source code you have previously configured.
6. Click **View results** to access the Kiuwan site and see the results.

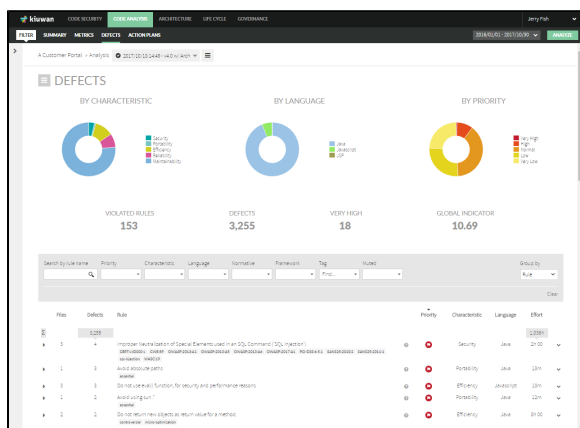
Step	Screenshot
3. and 4.	
6.	

Step 5: View the Analysis Results

Once the analysis is done, you can check the results by clicking **View results**. A browser window will open and the Kiuwan web page will appear with the results of the analysis.



Access the **Defects** section to see a defect emitted by the custom rule you have just created with Kiuwan Rule Developer.



Summary

In this quick start guide, we have seen how to create, modify, pack, install and execute a custom rule for Kiuwan. We can summarize the needed steps in the following list:

1. **IDE:** create a project and configure it to be used with Kiuwan Rule Editor.
2. **Kiuwan Rule Developer:** wire with your IDE.
3. **Kiuwan Rule Developer:** create a custom Kiuwan rule.
4. **IDE:** implement your custom rule from the automatically created template.
5. **Kiuwan Rule Developer:** execute and check the results of your custom rule.
6. **Kiuwan:** install your custom rule and use it in a quality model.
7. **IDE:** pack your custom rule code and deploy it to Kiuwan Local Analyzer.
8. **Kiuwan Local Analyzer:** execute an analysis of your application.
9. **Kiuwan:** view the results of analyzing your application with your custom rule.

Next Steps

The next steps you should follow are:

- Read the [Getting Started with Rule Development](#) guide.
- Read the Rule Development Manual, found under the AGENT_HOME/development/doc folder.
- Check the rule examples included under the AGENT_HOME/development/doc/samples folder.