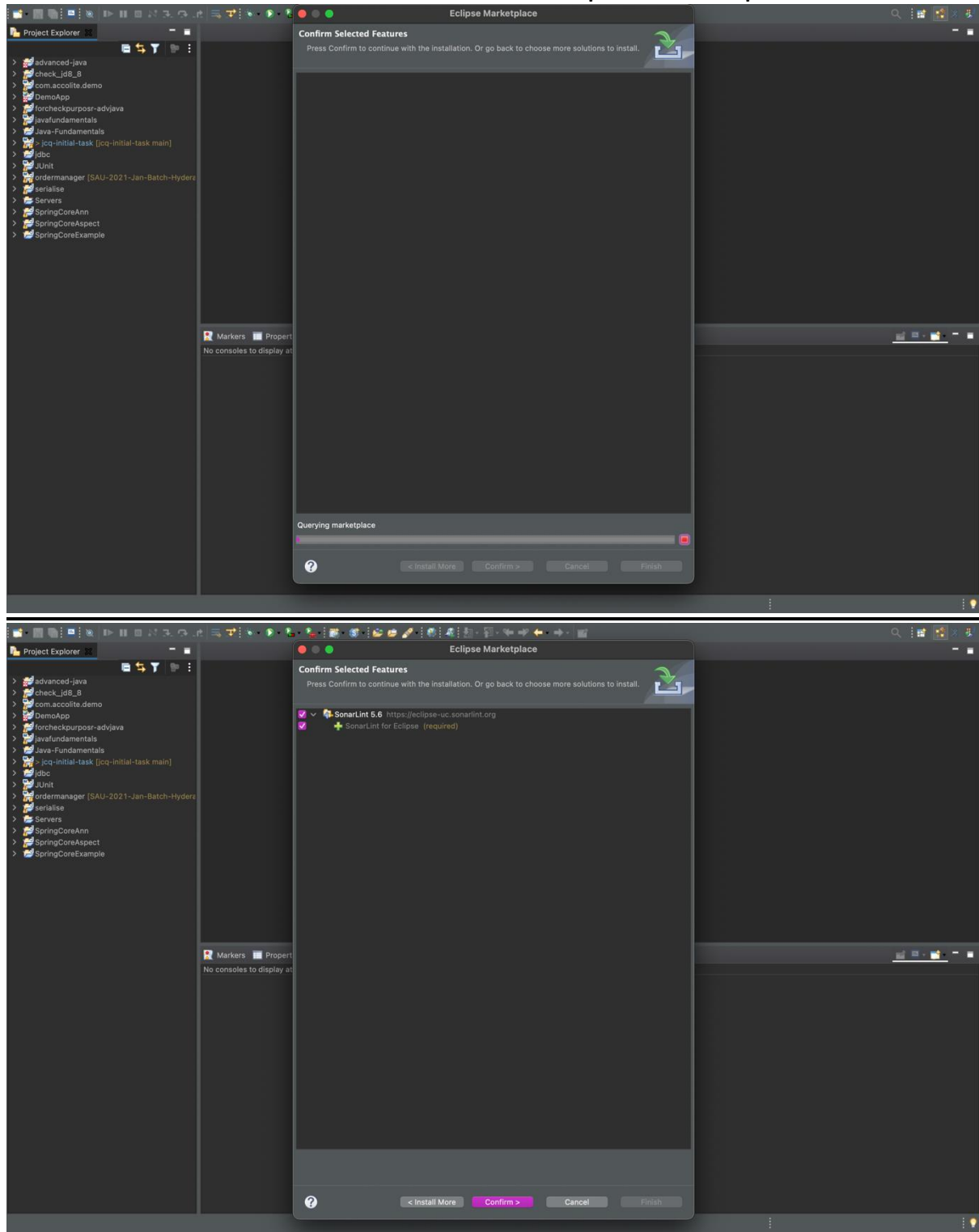


JAVA CODE QUALITY ASSIGNMENT-A

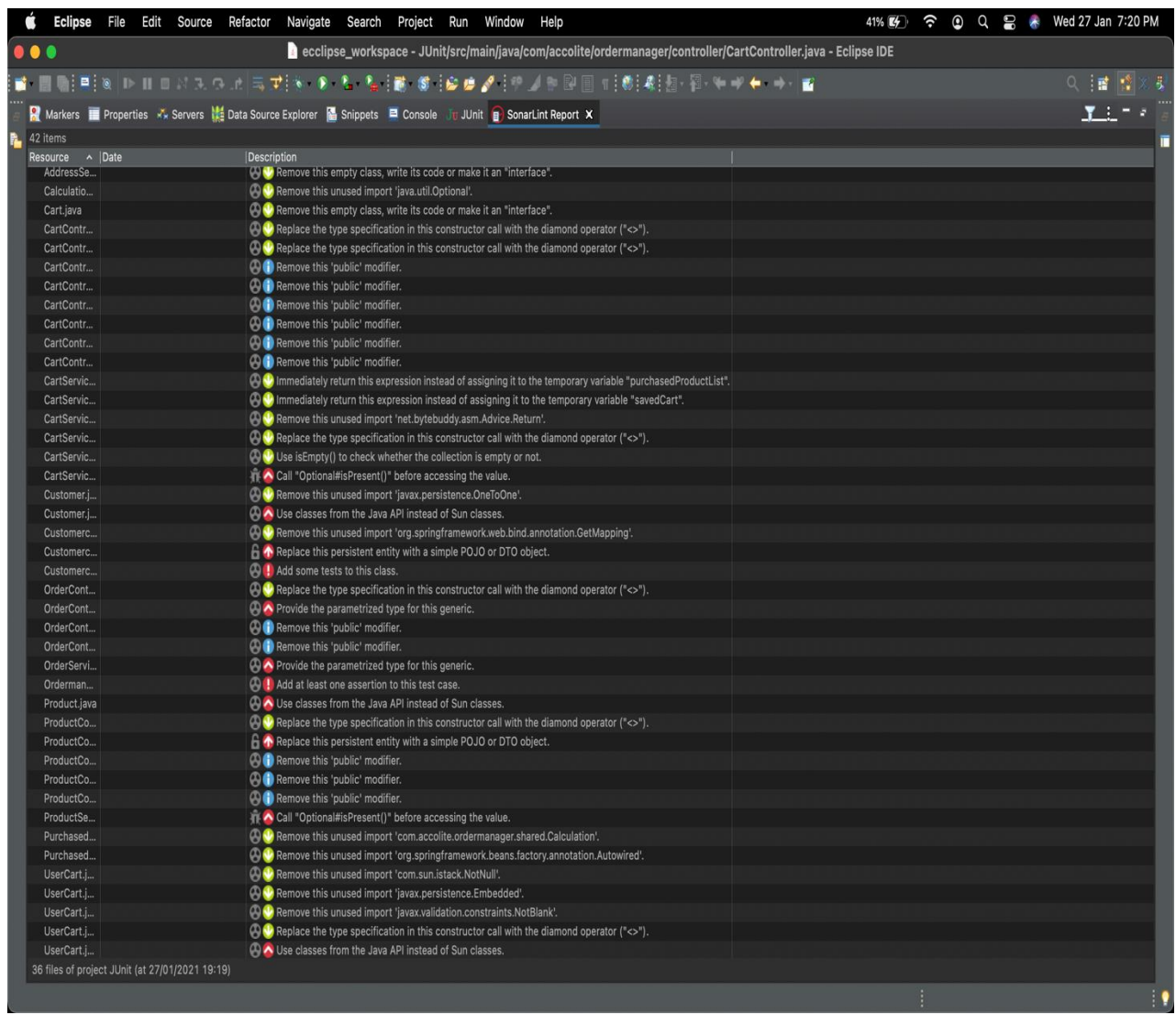
SONAR LINT:

Installation process

* Sonar lint is downloaded from eclipse marketplace.



Report: Report for sonar lint is generated in eclipse.



CHECKSTYLE:

Plugin : A plugin is used to generate a checkstyle report.

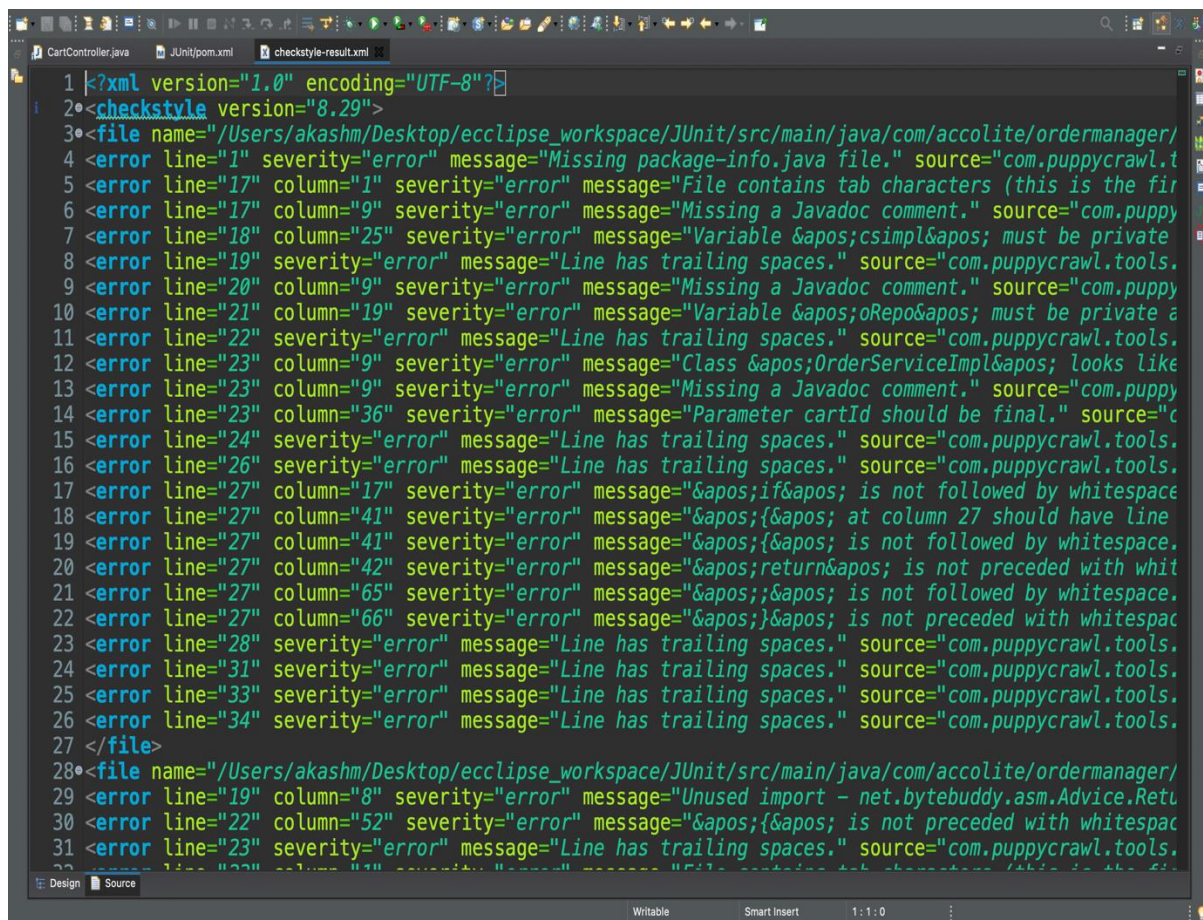
```
<reporting>
<plugins>
<plugin>
<groupId>org.apache.maven.plugins</groupId>
<artifactId>maven-checkstyle-plugin</artifactId>
<version>3.1.1</version>
<reportSets>
<reportSet>
<reports>
<report>checkstyle</report>
</reports>
</reportSet>
</reportSets>
</plugin>
</plugins>
</reporting>
```

CLI: mvn checkstyle:checkstyle command is used to generate a report.

```
JUnit — java -classpath ~/Applications/apache-maven-3.6.3/boot/plexus-classworlds-2.6.0.jar -Dclassworlds.conf=/Users/akashm/Applic...
lugins/maven-invoker-plugin/3.2.1/maven-invoker-plugin-3.2.1.pom (14 kB at 23 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-invoker-plugin/3.2.1/maven-invoker-plugin-3.2.1.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-invoker-plugin/3.2.1/maven-invoker-plugin-3.2.1.jar (127 kB at 125 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-javadoc-plugin/3.2.0/maven-javadoc-plugin-3.2.0.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-javadoc-plugin/3.2.0/maven-javadoc-plugin-3.2.0.pom (20 kB at 32 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-javadoc-plugin/3.2.0/maven-javadoc-plugin-3.2.0.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-javadoc-plugin/3.2.0/maven-javadoc-plugin-3.2.0.jar (492 kB at 230 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-shade-plugin/3.2.4/maven-shade-plugin-3.2.4.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-shade-plugin/3.2.4/maven-shade-plugin-3.2.4.pom (11 kB at 18 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-shade-plugin/3.2.4/maven-shade-plugin-3.2.4.jar
Progress (1): 33/134 kB
```

```
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-source-plugin/3.2.1/maven-source-plugin-3.2.1.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-source-plugin/3.2.1/maven-source-plugin-3.2.1.jar (32 kB at 58 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/mojo/versions-maven-plugin/2.8.1/versions-maven-plugin-2.8.1.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/mojo/versions-maven-plugin/2.8.1/versions-maven-plugin-2.8.1.pom (16 kB at 26 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/mojo/versions-maven-plugin/2.8.1/versions-maven-plugin-2.8.1.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/mojo/versions-maven-plugin/2.8.1/versions-maven-plugin-2.8.1.jar (309 kB at 212 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/mojo/xml-maven-plugin/1.0.2/xml-maven-plugin-1.0.2.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/mojo/xml-maven-plugin/1.0.2/xml-maven-plugin-1.0.2.pom (8.6 kB at 15 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/mojo/xml-maven-plugin/1.0.2/xml-maven-plugin-1.0.2.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/mojo/xml-maven-plugin/1.0.2/xml-maven-plugin-1.0.2.jar (64 kB at 93 kB/s)
[INFO]
[INFO] -----< com.accolite:ordermanager >-----
[INFO] Building ordermanager 0.0.1-SNAPSHOT
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- maven-checkstyle-plugin:3.1.1:checkstyle (default-cli) @ ordermanager ---
[INFO] There are 587 errors reported by Checkstyle 8.29 with sun_checks.xml ruleset.
[WARNING] Unable to locate Source XRef to link to - DISABLED
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 39.897 s
[INFO] Finished at: 2021-01-27T19:34:57+05:30
[INFO]
AKASHs-MacBook-Pro:JUnit akashm$
```


Report : Report generated by checkstyle.



```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <checkstyle version="8.29">
3 <file name="/Users/akashm/Desktop/ecclipse_workspace/JUnit/src/main/java/com/accolite/ordermanager/
4 <error line="1" severity="error" message="Missing package-info.java file." source="com.puppycrawl.t
5 <error line="17" column="1" severity="error" message="File contains tab characters (this is the fir
6 <error line="17" column="9" severity="error" message="Missing a Javadoc comment." source="com.puppy
7 <error line="18" column="25" severity="error" message="Variable &apos;csimpl&apos; must be private
8 <error line="19" severity="error" message="Line has trailing spaces." source="com.puppycrawl.tools.
9 <error line="20" column="9" severity="error" message="Missing a Javadoc comment." source="com.puppy
10 <error line="21" severity="error" message="Variable &apos;oRepo&apos; must be private a
11 <error line="22" severity="error" message="Line has trailing spaces." source="com.puppycrawl.tools.
12 <error line="23" column="9" severity="error" message="Class &apos;OrderServiceImpl&apos; looks like
13 <error line="23" column="9" severity="error" message="Missing a Javadoc comment." source="com.puppy
14 <error line="23" column="36" severity="error" message="Parameter cartId should be final." source="c
15 <error line="24" severity="error" message="Line has trailing spaces." source="com.puppycrawl.tools.
16 <error line="26" severity="error" message="Line has trailing spaces." source="com.puppycrawl.tools.
17 <error line="27" column="17" severity="error" message="&apos;if&apos; is not followed by whitespace
18 <error line="27" column="41" severity="error" message="&apos;{&apos; at column 27 should have line
19 <error line="27" column="41" severity="error" message="&apos;{&apos; is not followed by whitespace.
20 <error line="27" column="42" severity="error" message="&apos;return&apos; is not preceded with whit
21 <error line="27" column="65" severity="error" message="&apos;;&apos; is not followed by whitespace.
22 <error line="27" column="66" severity="error" message="&apos;}&apos; is not preceded with whitespac
23 <error line="28" severity="error" message="Line has trailing spaces." source="com.puppycrawl.tools.
24 <error line="31" severity="error" message="Line has trailing spaces." source="com.puppycrawl.tools.
25 <error line="33" severity="error" message="Line has trailing spaces." source="com.puppycrawl.tools.
26 <error line="34" severity="error" message="Line has trailing spaces." source="com.puppycrawl.tools.
27 </file>
28 <file name="/Users/akashm/Desktop/ecclipse_workspace/JUnit/src/main/java/com/accolite/ordermanager/
29 <error line="19" column="8" severity="error" message="Unused import - net.bytebuddy.asm.Advice.Retu
30 <error line="22" column="52" severity="error" message="&apos;{&apos; is not preceded with whitespac
31 <error line="23" severity="error" message="Line has trailing spaces." source="com.puppycrawl.tools.
32 </file>
```

PMD:

Installation: A zip file for PMD is downloaded and then extracted.



```
AKASHs-MacBook-Pro:~ akashm$ curl -OL https://github.com/pmd/pmd/releases/download/pmd_releases%2F6.30.0/pmd-bin-6.30.0.zip
% Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100 640 100 640  0  0 1361  0  --:--:-- --:--:-- --:--:-- 1358
2 42.2M 2 1103k  0  0 103k  0  0:07:00 0:00:10 0:06:50 131k
```

Report: After pmd is configured

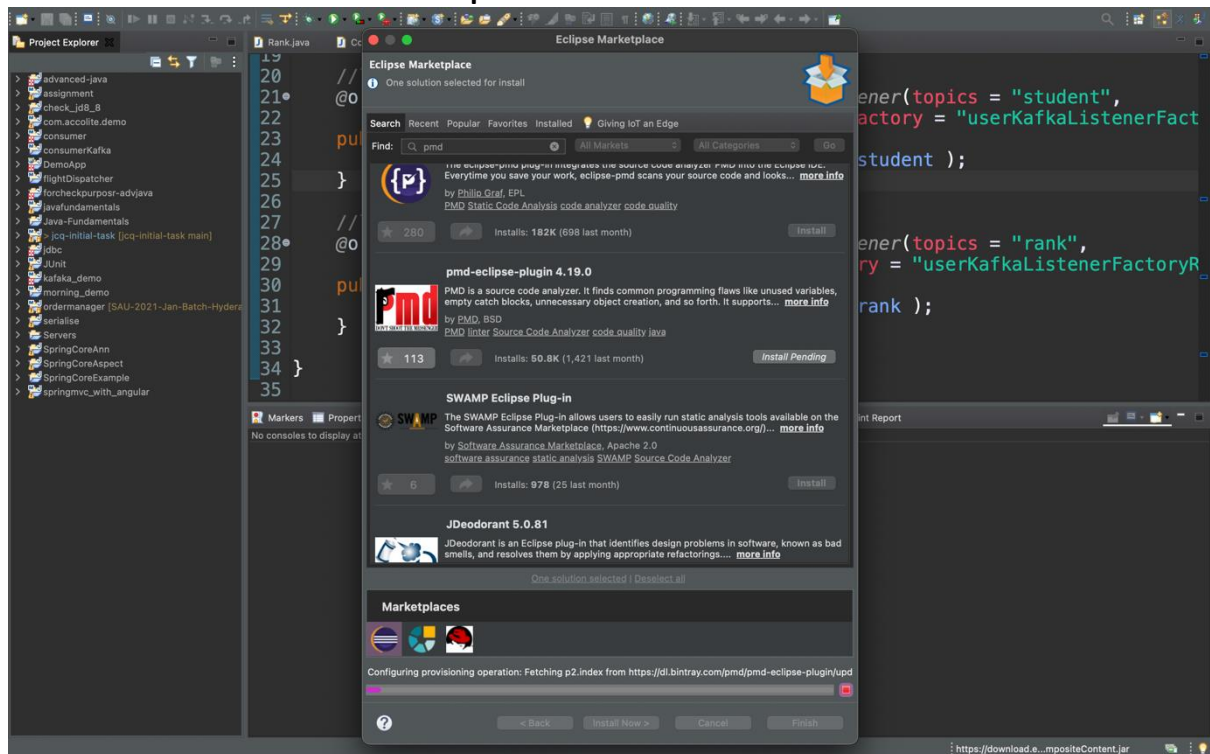
pmd -d /usr/src... -R rulesets/java/quickstart.xml -f text
command is used to generate report.

```
AKASHs-MacBook-Pro:~ akashm$ pmd -d /Users/akashm/Desktop/eclipse_workspace/JUnit/src/main/java/com/accolite/ordermanager/OrdermanagerApplication.java -R rulesets/java/quickstart.xml -f text
Jan 27, 2021 8:00:35 PM net.sourceforge.pmd.PMD encourageToUseIncrementalAnalysis
WARNING: This analysis could be faster, please consider using Incremental Analysis: https://pmd.github.io/pmd-6.30.0/pmd_userdocs_incremental_analysis.html
/Users/akashm/Desktop/eclipse_workspace/JUnit/src/main/java/com/accolite/ordermanager/OrdermanagerApplication.java:7:
  UseUtilityClass:      All methods are static. Consider using a utility class instead. Alternatively, you could add
                        a private constructor or make the class abstract to silence this warning.
AKASHs-MacBook-Pro:~ akashm$ pmd -d /Users/akashm/Desktop/eclipse_workspace/JUnit/src/main/java -R rulesets/java/quickstart.xml -f text
Jan 27, 2021 8:04:00 PM net.sourceforge.pmd.PMD encourageToUseIncrementalAnalysis
WARNING: This analysis could be faster, please consider using Incremental Analysis: https://pmd.github.io/pmd-6.30.0/pmd_userdocs_incremental_analysis.html
/Users/akashm/Desktop/eclipse_workspace/JUnit/src/main/java/com/accolite/ordermanager/OrdermanagerApplication.java:7:
  UseUtilityClass:      All methods are static. Consider using a utility class instead. Alternatively, you could add
                        a private constructor or make the class abstract to silence this warning.
/Users/akashm/Desktop/eclipse_workspace/JUnit/src/main/java/com/accolite/ordermanager/controller/Customercontroller.java:7:
  UnusedImports:      Avoid unused imports such as 'org.springframework.web.bind.annotation.GetMapping'
/Users/akashm/Desktop/eclipse_workspace/JUnit/src/main/java/com/accolite/ordermanager/dao/PurchasedProduct.java:5:
  UnusedImports:      Avoid unused imports such as 'org.springframework.beans.factory.annotation.Autowired'
/Users/akashm/Desktop/eclipse_workspace/JUnit/src/main/java/com/accolite/ordermanager/dao/PurchasedProduct.java:7:
  UnusedImports:      Avoid unused imports such as 'com.accolite.ordermanager.shared.Calculation'
/Users/akashm/Desktop/eclipse_workspace/JUnit/src/main/java/com/accolite/ordermanager/entity/Customer.java:7:  UnusedImports:      Avoid unused imports such as 'javax.persistence.OneToOne'
/Users/akashm/Desktop/eclipse_workspace/JUnit/src/main/java/com/accolite/ordermanager/entity/UserCart.java:7:  UnusedImports:      Avoid unused imports such as 'javax.persistence.Embedded'
/Users/akashm/Desktop/eclipse_workspace/JUnit/src/main/java/com/accolite/ordermanager/entity/UserCart.java:13: UnusedImports:      Avoid unused imports such as 'javax.validation.constraints.NotBlank'
/Users/akashm/Desktop/eclipse_workspace/JUnit/src/main/java/com/accolite/ordermanager/entity/UserCart.java:16: UnusedImports:      Avoid unused imports such as 'com.sun.istack.NotNull'
/Users/akashm/Desktop/eclipse_workspace/JUnit/src/main/java/com/accolite/ordermanager/impl/CarServiceimpl.java:19:
  UnusedImports:      Avoid unused imports such as 'net.bytebuddy.asm.Advice.Return'
/Users/akashm/Desktop/eclipse_workspace/JUnit/src/main/java/com/accolite/ordermanager/impl/CarServiceimpl.java:37:
  UnnecessaryLocalBeforeReturn: Consider simply returning the value vs storing it in local variable 'savedCart'
/Users/akashm/Desktop/eclipse_workspace/JUnit/src/main/java/com/accolite/ordermanager/impl/CarServiceimpl.java:49:
```

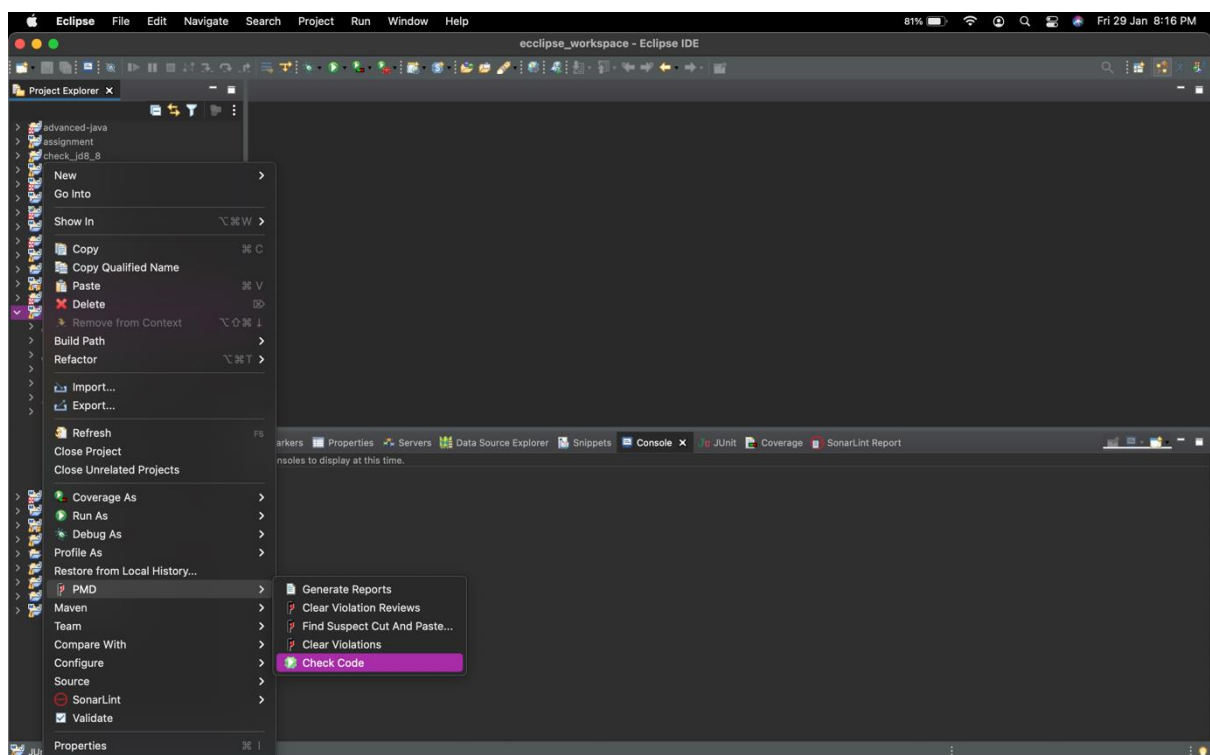
```
/Users/akashm/Desktop/eclipse_workspace/JUnit/src/main/java/com/accolite/ordermanager/impl/CarServiceimpl.java:37:
  UnnecessaryLocalBeforeReturn: Consider simply returning the value vs storing it in local variable 'savedCart'
/Users/akashm/Desktop/eclipse_workspace/JUnit/src/main/java/com/accolite/ordermanager/impl/CarServiceimpl.java:49:
  UnnecessaryLocalBeforeReturn: Consider simply returning the value vs storing it in local variable 'purchasedProductList'
/Users/akashm/Desktop/eclipse_workspace/JUnit/src/main/java/com/accolite/ordermanager/impl/CarServiceimpl.java:92:
  UseCollectionIsEmpty: Substitute calls to size() == 0 (or size() != 0, size() > 0, size() < 1) with calls to isEmpty()
/Users/akashm/Desktop/eclipse_workspace/JUnit/src/main/java/com/accolite/ordermanager/service/CalculationService.java:6:
  UnnecessaryModifier: Unnecessary modifier 'public' on method 'calculatePrice': the method is declared in an interface type
/Users/akashm/Desktop/eclipse_workspace/JUnit/src/main/java/com/accolite/ordermanager/service/CarService.java:10:
  UnnecessaryModifier: Unnecessary modifier 'public' on method 'createCart': the method is declared in an interface type
/Users/akashm/Desktop/eclipse_workspace/JUnit/src/main/java/com/accolite/ordermanager/service/CarService.java:12:
  UnnecessaryModifier: Unnecessary modifier 'public' on method 'getCartById': the method is declared in an interface type
/Users/akashm/Desktop/eclipse_workspace/JUnit/src/main/java/com/accolite/ordermanager/service/CarService.java:14:
  UnnecessaryModifier: Unnecessary modifier 'public' on method 'getAllProducts': the method is declared in an interface type
/Users/akashm/Desktop/eclipse_workspace/JUnit/src/main/java/com/accolite/ordermanager/service/CarService.java:16:
  UnnecessaryModifier: Unnecessary modifier 'public' on method 'addProduct': the method is declared in an interface type
/Users/akashm/Desktop/eclipse_workspace/JUnit/src/main/java/com/accolite/ordermanager/service/CarService.java:18:
  UnnecessaryModifier: Unnecessary modifier 'public' on method 'deleteProdFromCart': the method is declared in an interface type
/Users/akashm/Desktop/eclipse_workspace/JUnit/src/main/java/com/accolite/ordermanager/service/CarService.java:20:
  UnnecessaryModifier: Unnecessary modifier 'public' on method 'updateQuantity': the method is declared in an interface type
/Users/akashm/Desktop/eclipse_workspace/JUnit/src/main/java/com/accolite/ordermanager/service/CustomerService.java:7:
  UnnecessaryModifier: Unnecessary modifier 'public' on method 'createCustomer': the method is declared in an interface type
/Users/akashm/Desktop/eclipse_workspace/JUnit/src/main/java/com/accolite/ordermanager/service/OrderService.java:7:
  UnnecessaryModifier: Unnecessary modifier 'public' on method 'placeOrder': the method is declared in an interface type
```

PMD Eclipse plugin:

Installed in marketplace.



Starting code analysis



Report :

The screenshot shows the Eclipse IDE interface. The main editor displays the `Customer.java` file with the following code:

```
16 • @Id
17 • @GeneratedValue(strategy = GenerationType.IDENTITY)
18 • private int id;
19
20 • @NotNull
21 • @Size(min = 2, message = "First name should be minimum of two letters")
22 • private String name;
23
24 • @NotNull
25 • @Email
26 • private String emailId;
27
28 • @NotNull
29 • private String houseNo;
30
31 • @NotNull
32 • private String street;
33
34 • @NotNull
```

The Package Explorer on the left shows a project structure with various packages and classes. The Violations Outline at the bottom left lists several violations with their priority, line number, and error message. The Violations Overview at the bottom right provides a summary of violations across the project.

Element	# Violations	# Violations/KLOC	# Violations/Method	Project
com.accolite.ordermanager	4	N/A	N/A	JUnit
com.accolite.ordermanager.entity	72	N/A	N/A	JUnit
Customer.java	30	N/A	N/A	JUnit
MethodArgumentCouldBeFinal	15	N/A	N/A	JUnit
CommentRequired	11	N/A	N/A	JUnit
DataClass	1	N/A	N/A	JUnit
UnusedImports	1	N/A	N/A	JUnit
ShortVariable	2	N/A	N/A	JUnit
OrderFinal.java	9	N/A	N/A	JUnit
Product.java	14	N/A	N/A	JUnit
UserCart.java	19	N/A	N/A	JUnit
com.accolite.ordermanager.controller	155	N/A	N/A	JUnit
com.accolite.ordermanager.repo	4	N/A	N/A	JUnit