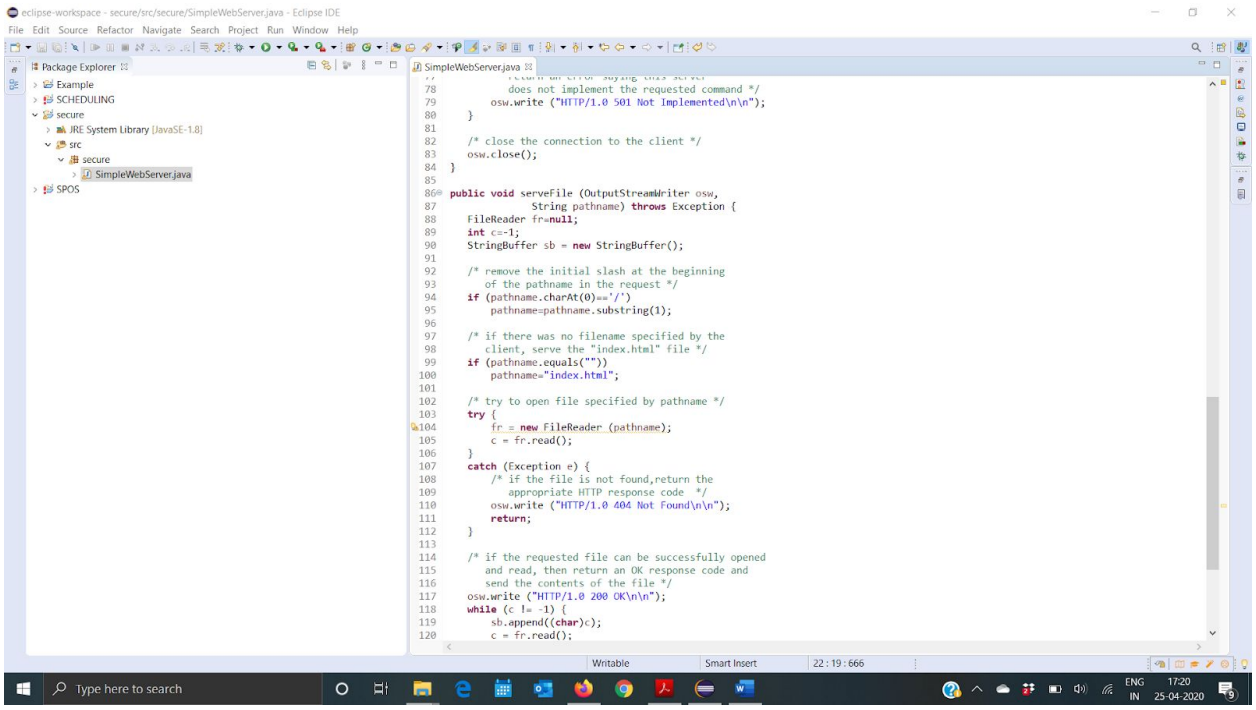
Name: Samiksha Dharmadhikari
Id : 1001740496

Part 1:

Manual analysis:
We can observe that on line 104, fr is never closed. FileReader should be closed in order to remove the problem.



Tool Choices/Versions

1. Spot bugs - plugin 3.1.5
2. SonarLint version - 5.1

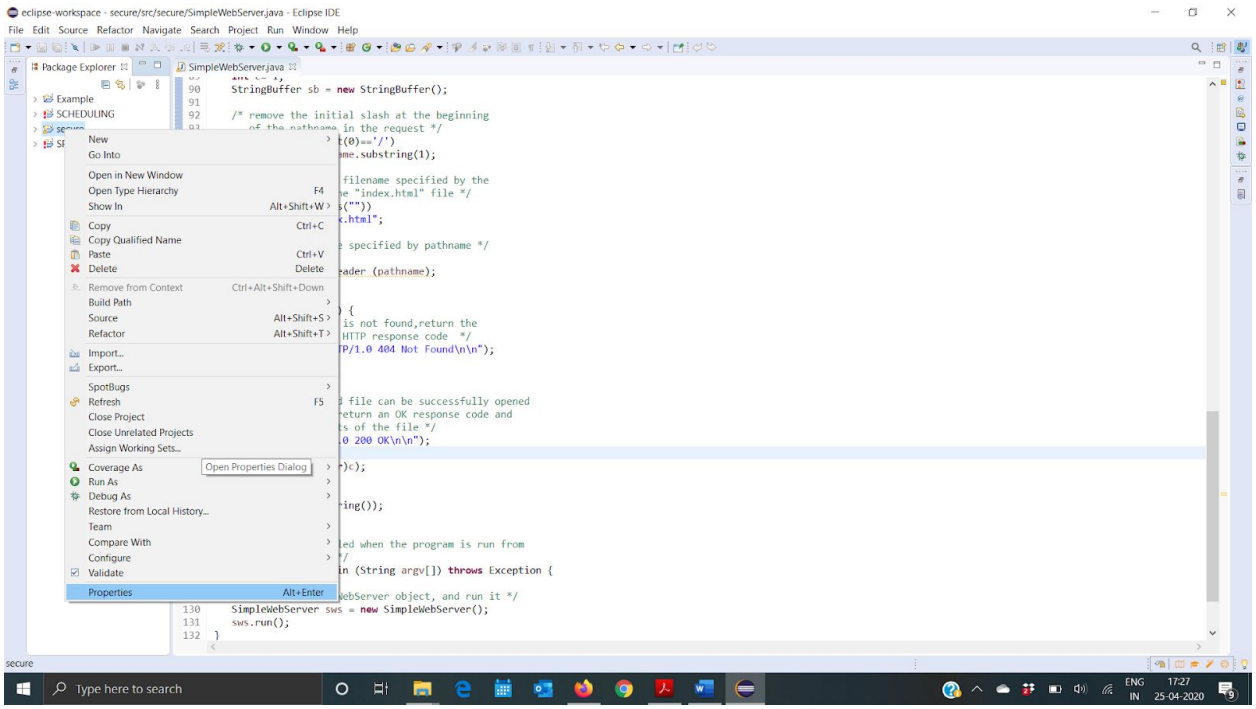
Tool 1 : spot bugs

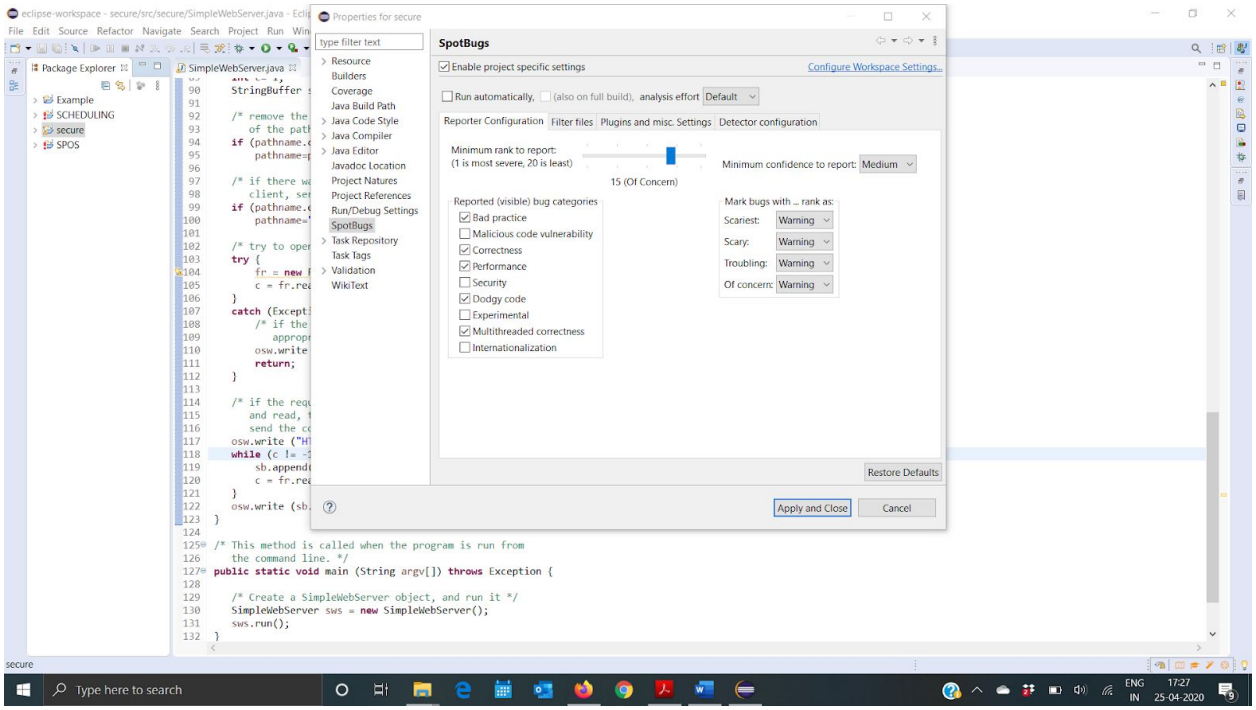
Steps :

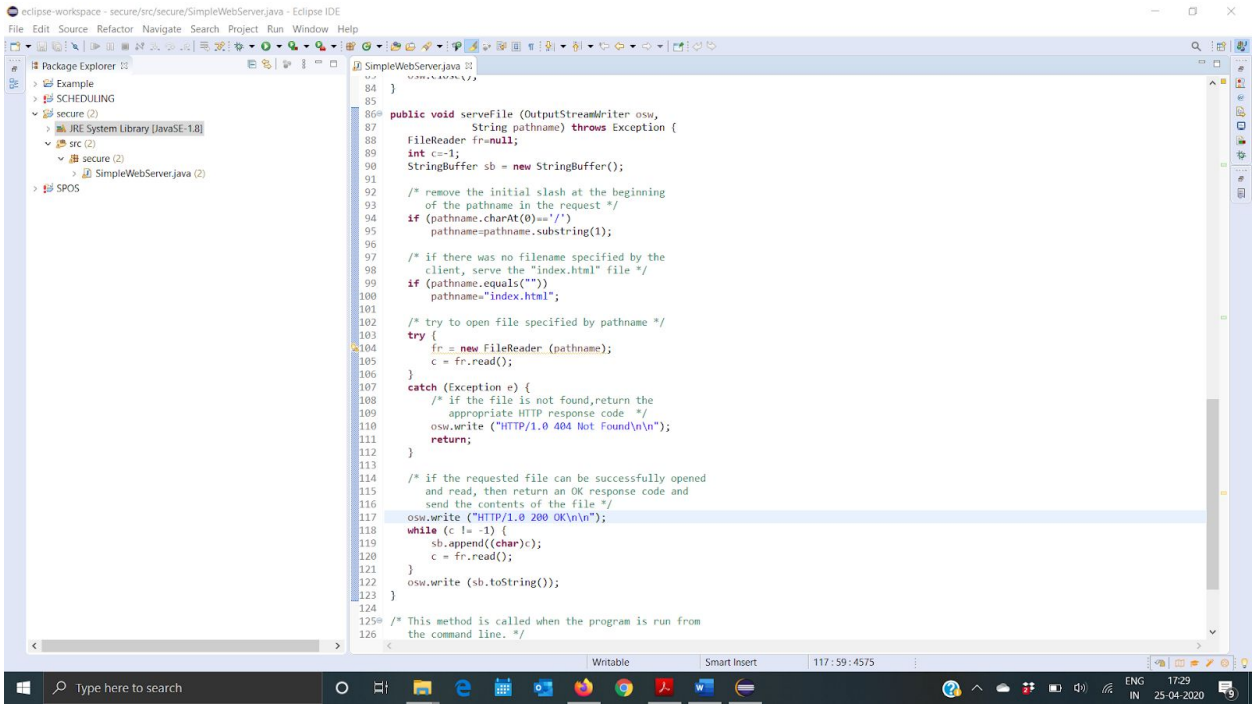
1. We need to install this tool into the eclipse, we do this by searching it in Eclipse Marketplace.
2. Right click on the project and click properties.
3. We need to set the rank, confidence, and Bug Categories.
4. We can see the bugs identified in bugs explorer and its information in bug info.

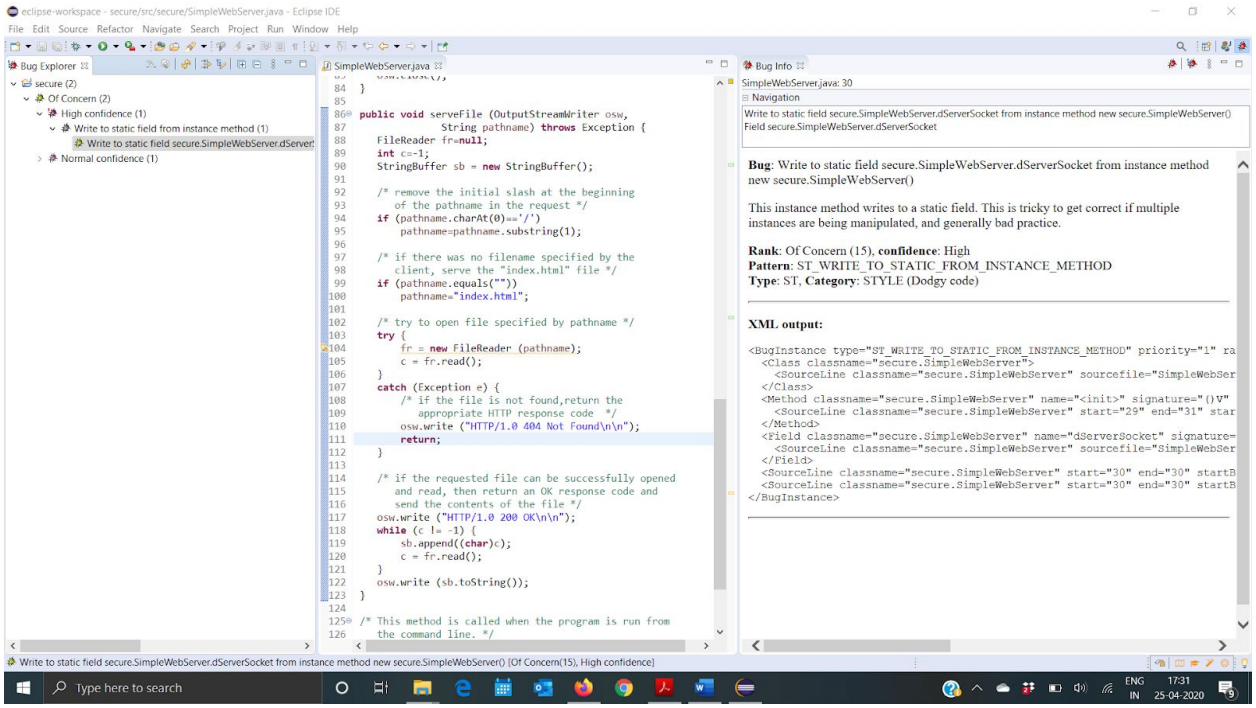
Test 1 :
Rank: 15
Minimum Confidence to report: Medium
Reported Bug Categories(Visible): Bad Practice, Correctness, Performance, Dodgy Code, Multithreaded Correctness
Bugs: 2(1 high confidence, 1 medium confidence)

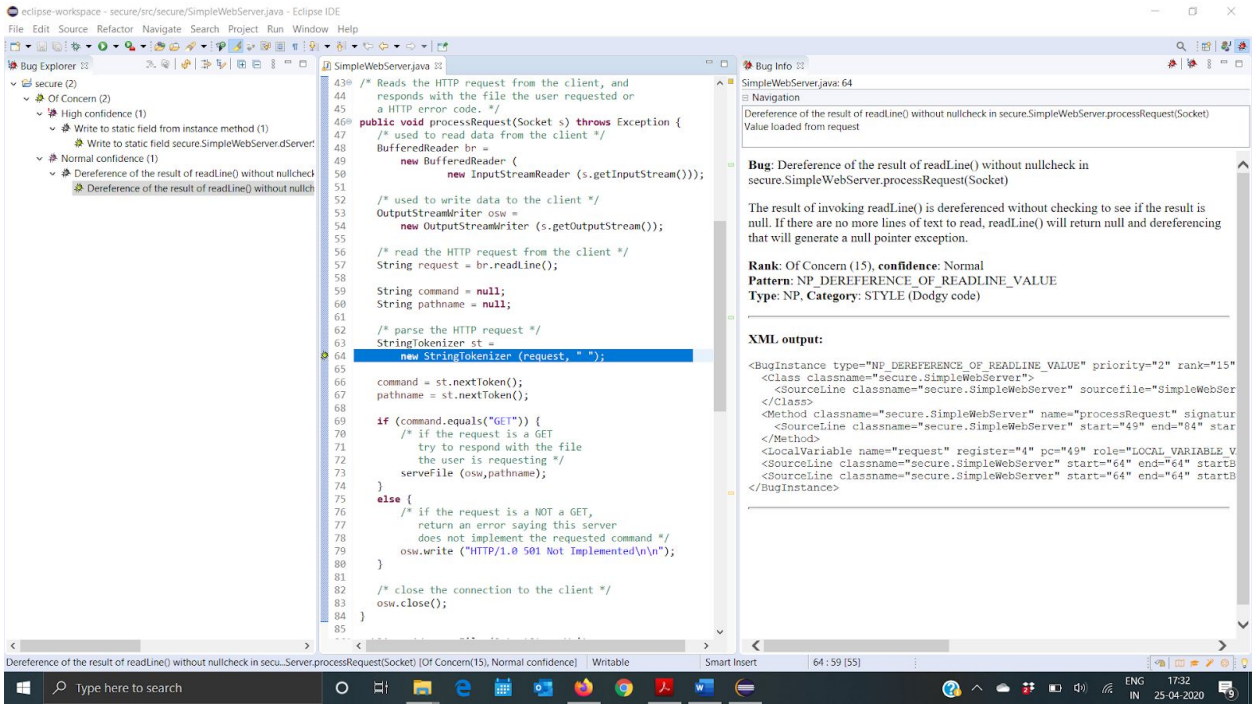
Screenshot for test 1:




Properties for secure
type filter text
Resource
Builders
Coverage
Java Build Path
Java Code Style
Java Compiler
Java Editor
Javadoc Location
Project Natures
Project References
Run/Debug Settings
SpotBugs
Task Repository
Task Tags
Validation
WikiText
SpotBugs
Enable project specific settings
Configure Workspace Settings...
Run automatically, (also on full build), analysis effort Default
Reporter Configuration
Filter files
Plugins and misc. Settings
Detector configuration
Minimum rank to report:
(1 is most severe, 20 is least)
15 (Of Concern)
Minimum confidence to report: Medium
Reported (visible) bug categories
Bad practice
Malicious code vulnerability
Correctness
Performance
Security
Dodgy code
Experimental
Multithreaded correctness
Internationalization
Mark bugs with ... rank as:
Scariest: Warning
Scary: Warning
Troubling: Warning
Of concern: Warning
Restore Defaults
Apply and Close
Cancel



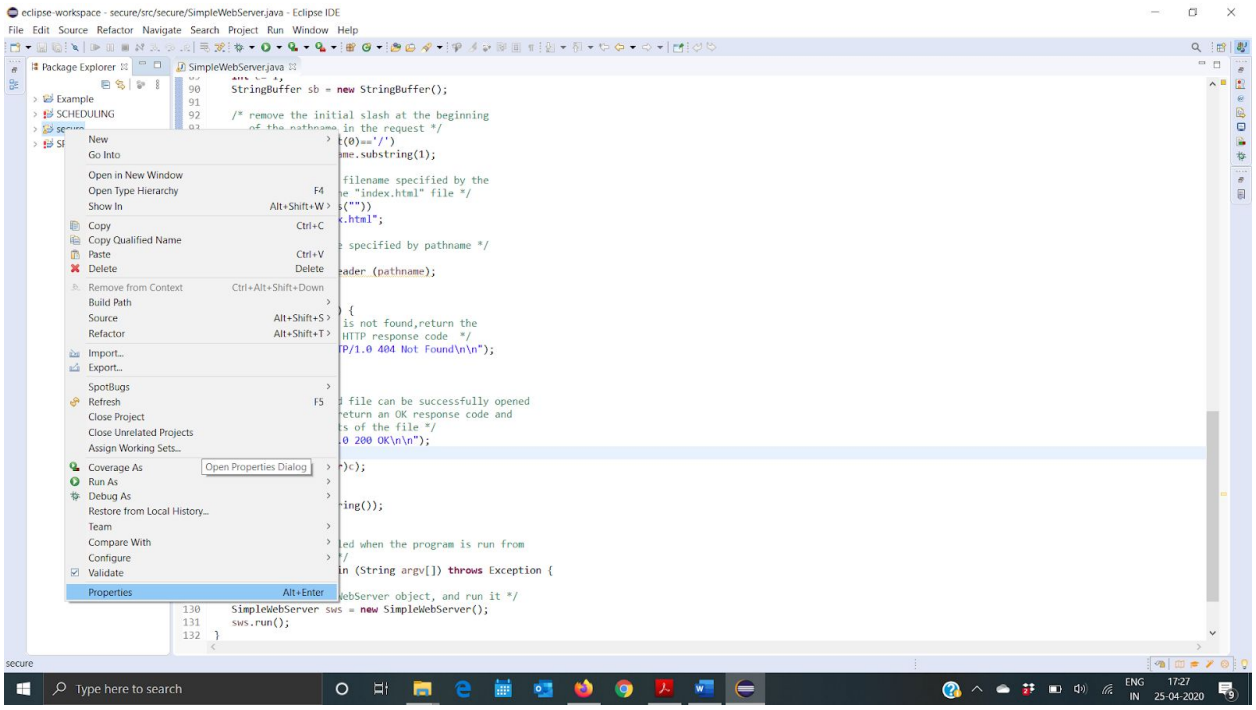


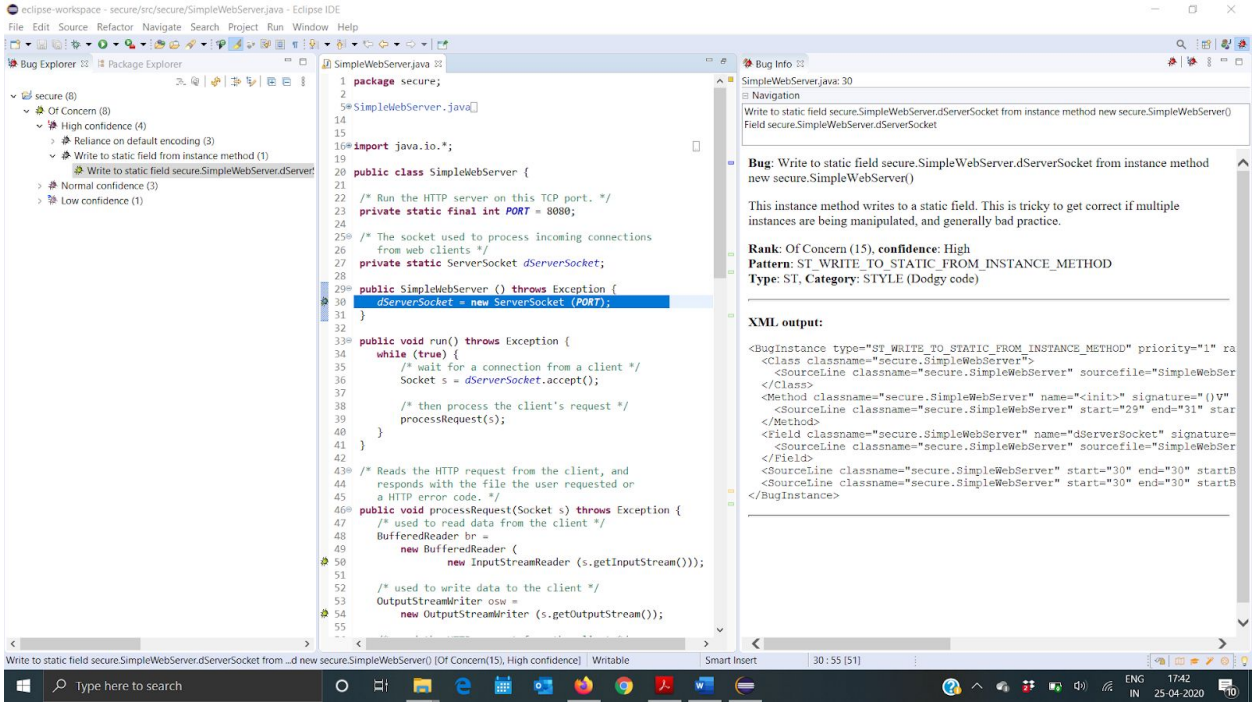


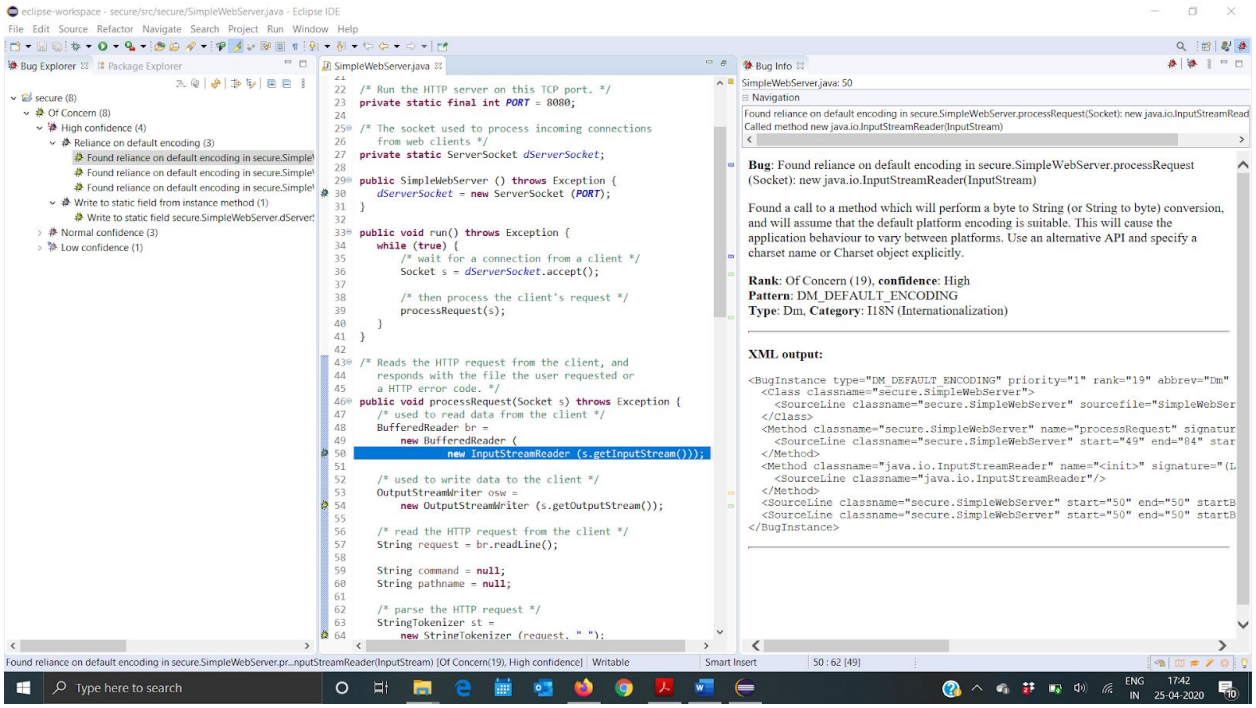
Test 2:(Most aggressive mode)
Rank: 20
Minimum Confidence to report: Low

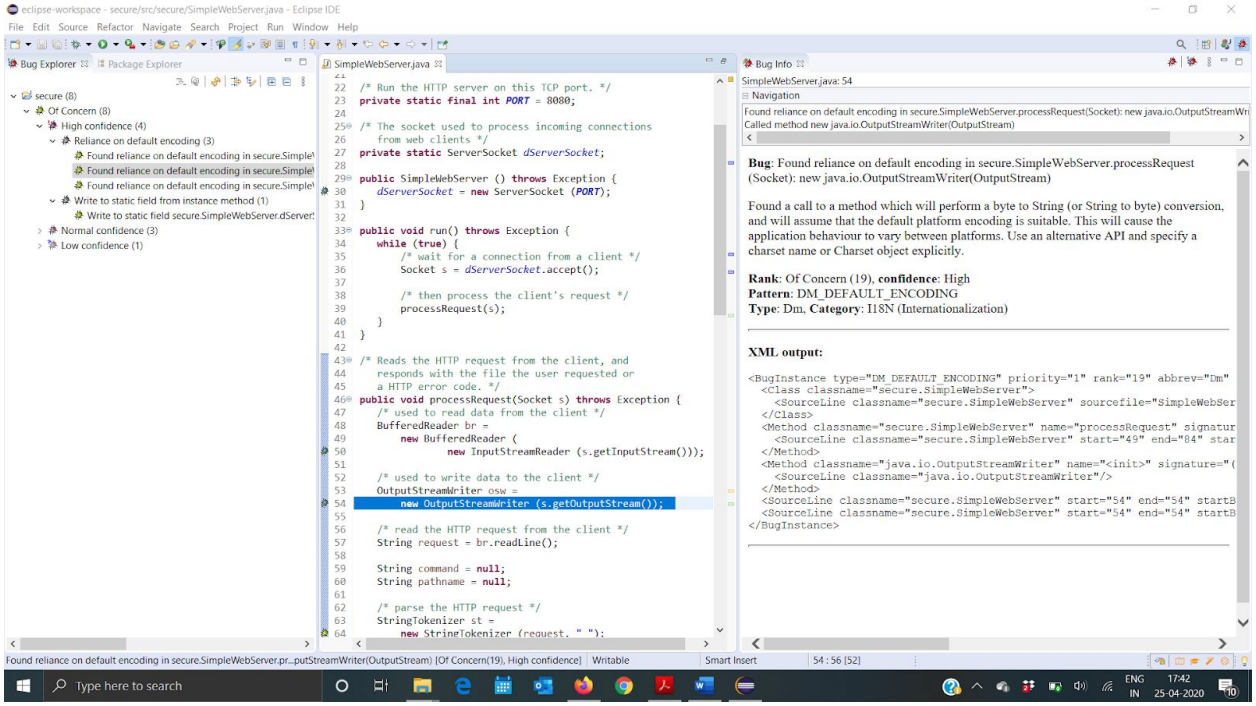
Reported Bug Categories(visible): Bad practice, Malicious code vulnerability, Correctness, Performance, Security, Dodgy Code, Experimental, Multithreaded correctness, Internationalization
Bugs: 8(4 high confidence, 3 normal confidence, 1 low confidence)

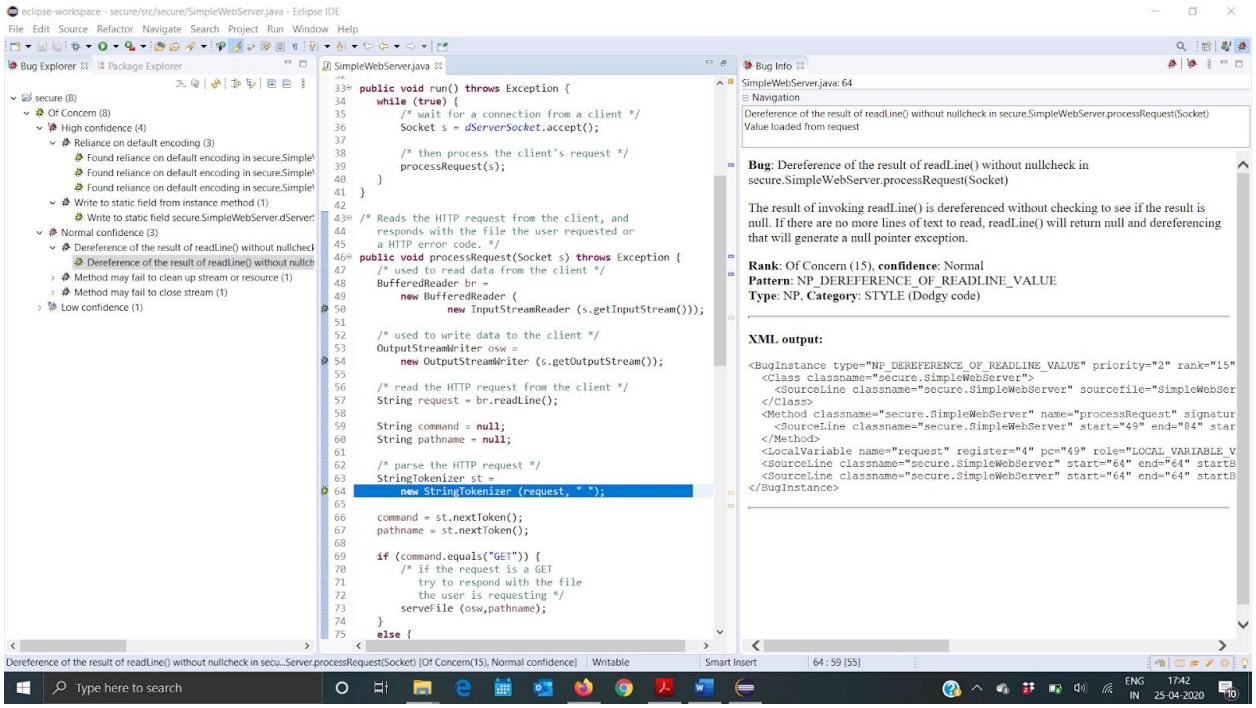
ScreenShots for test 2:

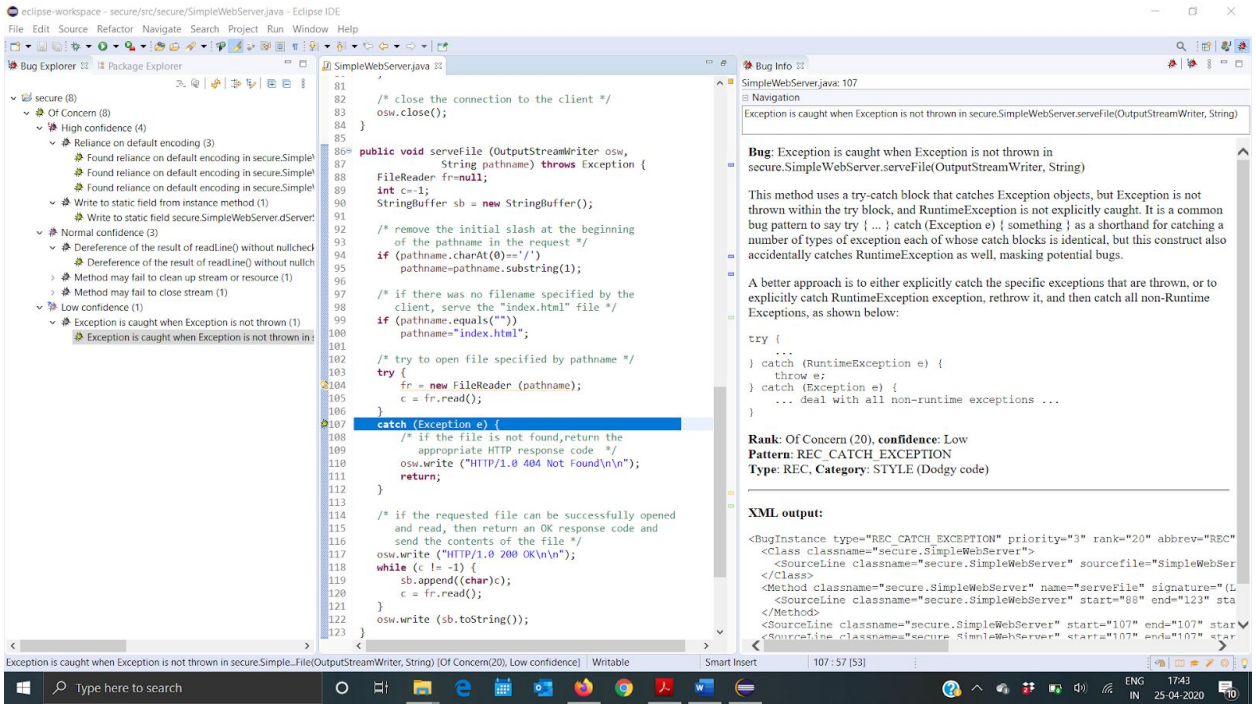


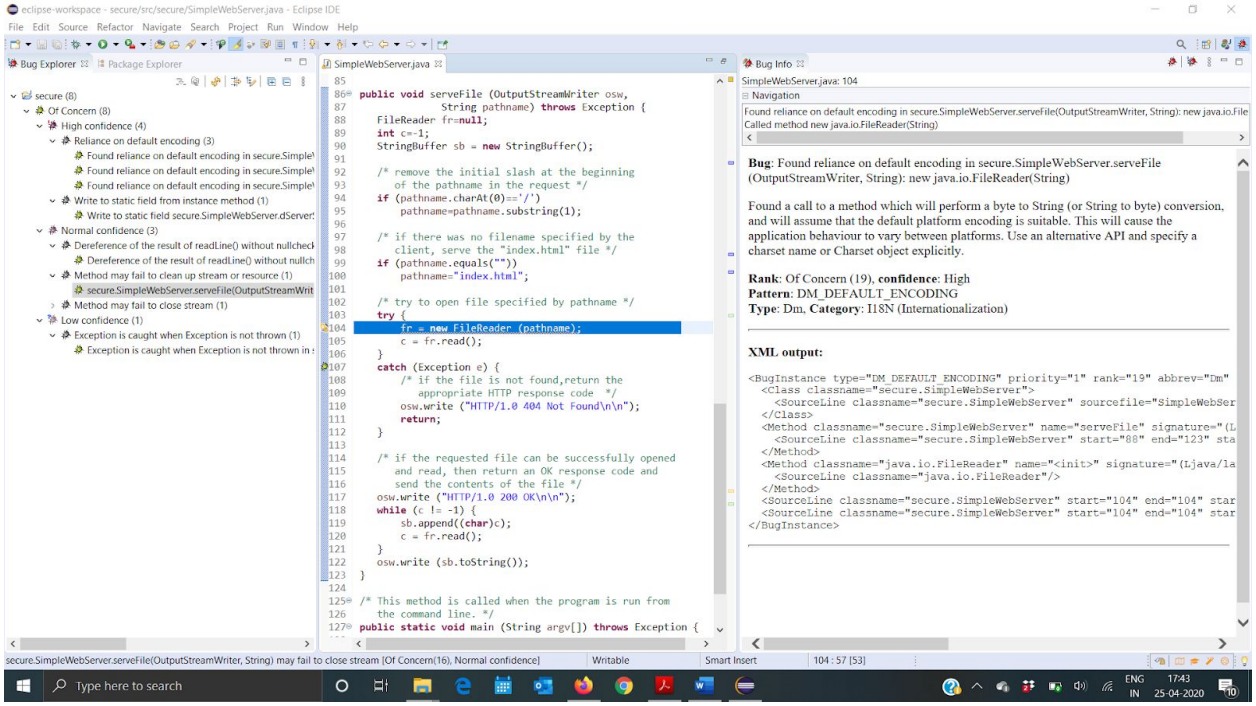

eclipse-workspace - secure/src/secure/SimpleWebServer.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Bug Explorer
Package Explorer
secure (8)
Of Concern (8)
High confidence (4)
Reliance on default encoding (3)
Write to static field from instance method (1)
Write to static field secure.SimpleWebServer.dServer
Normal confidence (3)
Low confidence (1)
SimpleWebServer.java
1 package secure;
2
5 SimpleWebServer.java
14
15
16 import java.io.*;
19
20 public class SimpleWebServer {
21
22 /* Run the HTTP server on this TCP port. */
23 private static final int PORT = 8080;
24
25 /* The socket used to process incoming connections
26 from web clients */
27 private static ServerSocket dServerSocket;
28
29 public SimpleWebServer () throws Exception {
30 dServerSocket = new ServerSocket (PORT);
31 }
32
33 public void run() throws Exception {
34 while (true) {
35 /* wait for a connection from a client */
36 Socket s = dServerSocket.accept();
37
38 /* then process the client's request */
39 processRequest(s);
40 }
41 }
42
43 /* Reads the HTTP request from the client, and
44 responds with the file the user requested or
45 a HTTP error code. */
46 public void processRequest(Socket s) throws Exception {
47 /* used to read data from the client */
48 BufferedReader br =
49 new BufferedReader (
50 new InputStreamReader (s.getInputStream()));
51
52 /* used to write data to the client */
53 OutputStreamWriter osw =
54 new OutputStreamWriter (s.getOutputStream());
55
Bug Info
SimpleWebServer.java: 30
Navigation
Write to static field secure.SimpleWebServer.dServerSocket from instance method new secure.SimpleWebServer()
Field secure.SimpleWebServer.dServerSocket
Bug: Write to static field secure.SimpleWebServer.dServerSocket from instance method new secure.SimpleWebServer()
This instance method writes to a static field. This is tricky to get correct if multiple instances are being manipulated, and generally bad practice.
Rank: Of Concern (15), confidence: High
Pattern: ST_WRITE_TO_STATIC_FROM_INSTANCE_METHOD
Type: ST, Category: STYLE (Dodgy code)
XML output:
<BugInstance type="ST_WRITE_TO_STATIC_FROM_INSTANCE_METHOD" priority="1" ra
<Class classname="secure.SimpleWebServer">
<SourceLine classname="secure.SimpleWebServer" sourcefile="SimpleWebSer
</Class>
<Method classname="secure.SimpleWebServer" name="<init>" signature="()V"
<SourceLine classname="secure.SimpleWebServer" start="29" end="31" star
</Method>
<Field classname="secure.SimpleWebServer" name="dServerSocket" signature=
<SourceLine classname="secure.SimpleWebServer" sourcefile="SimpleWebSer
</Field>
<SourceLine classname="secure.SimpleWebServer" start="30" end="30" startB
<SourceLine classname="secure.SimpleWebServer" start="30" end="30" startB
</BugInstance>
Write to static field secure.SimpleWebServer.dServerSocket from ...d new secure.SimpleWebServer() [Of Concern(15), High confidence]
Writable
Smart Insert
30 : 55 [51]
Type here to search
ENG
IN
17:42
25-04-2020

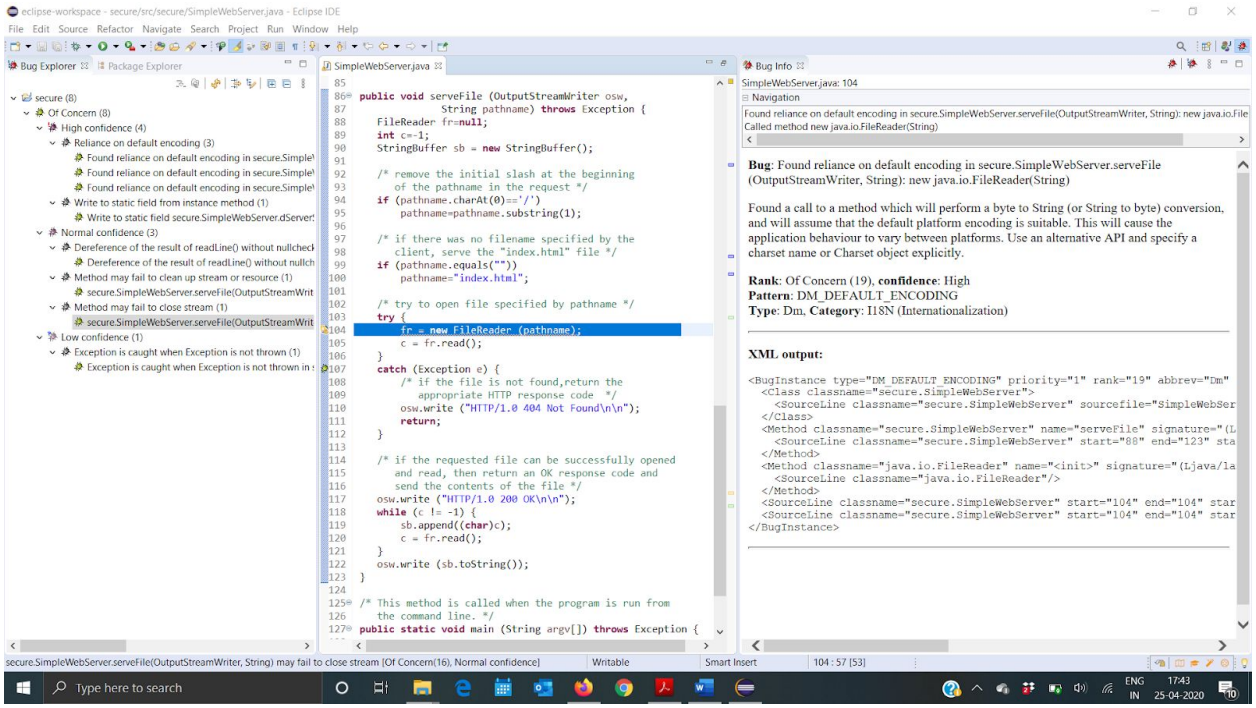

eclipse-workspace - secure/src/secure/SimpleWebServer.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Bug Explorer
Package Explorer
secure (8)
Of Concern (8)
High confidence (4)
Reliance on default encoding (3)
Found reliance on default encoding in secure.Simple
Found reliance on default encoding in secure.Simple
Found reliance on default encoding in secure.Simple
Write to static field from instance method (1)
Write to static field secure.SimpleWebServer.dServer
Normal confidence (3)
Low confidence (1)
SimpleWebServer.java
22 /* Run the HTTP server on this TCP port. */
23 private static final int PORT = 8080;
24
25 /* The socket used to process incoming connections
26 from web clients */
27 private static ServerSocket dServerSocket;
28
29 public SimpleWebServer () throws Exception {
30 dServerSocket = new ServerSocket (PORT);
31 }
32
33 public void run() throws Exception {
34 while (true) {
35 /* wait for a connection from a client */
36 Socket s = dServerSocket.accept();
37
38 /* then process the client's request */
39 processRequest(s);
40 }
41 }
42
43 /* Reads the HTTP request from the client, and
44 responds with the file the user requested or
45 a HTTP error code. */
46 public void processRequest(Socket s) throws Exception {
47 /* used to read data from the client */
48 BufferedReader br =
49 new BufferedReader (
50 new InputStreamReader (s.getInputStream()));
51
52 /* used to write data to the client */
53 OutputStreamWriter osw =
54 new OutputStreamWriter (s.getOutputStream());
55
56 /* read the HTTP request from the client */
57 String request = br.readLine();
58
59 String command = null;
60 String pathname = null;
61
62 /* parse the HTTP request */
63 StringTokenizer st =
64 new StringTokenizer (request, " ");
Bug Info
SimpleWebServer.java: 50
Navigation
Found reliance on default encoding in secure.SimpleWebServer.processRequest(Socket): new java.io.InputStreamRead
Called method new java.io.InputStreamReader(InputStream)
Bug: Found reliance on default encoding in secure.SimpleWebServer.processRequest (Socket): new java.io.InputStreamReader(InputStream)
Found a call to a method which will perform a byte to String (or String to byte) conversion, and will assume that the default platform encoding is suitable. This will cause the application behaviour to vary between platforms. Use an alternative API and specify a charset name or Charset object explicitly.
Rank: Of Concern (19), confidence: High
Pattern: DM_DEFAULT_ENCODING
Type: Dm, Category: I18N (Internationalization)
XML output:
<BugInstance type="DM_DEFAULT_ENCODING" priority="1" rank="19" abbrev="Dm"
<Class classname="secure.SimpleWebServer">
<SourceLine classname="secure.SimpleWebServer" sourcefile="SimpleWebSer
</Class>
<Method classname="secure.SimpleWebServer" name="processRequest" signatur
<SourceLine classname="secure.SimpleWebServer" start="49" end="84" star
</Method>
<Method classname="java.io.InputStreamReader" name="<init>" signature="(L
<SourceLine classname="java.io.InputStreamReader"/>
</Method>
<SourceLine classname="secure.SimpleWebServer" start="50" end="50" startB
<SourceLine classname="secure.SimpleWebServer" start="50" end="50" startB
</BugInstance>
Found reliance on default encoding in secure.SimpleWebServer.pr...nputStreamReader(InputStream) [Of Concern(19), High confidence]
Writable
Smart Insert
50 : 62 [49]
Type here to search
ENG
IN
17:42
25-04-2020


eclipse-workspace - secure/src/secure/SimpleWebServer.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Bug Explorer
Package Explorer
secure (8)
Of Concern (8)
High confidence (4)
Reliance on default encoding (3)
Found reliance on default encoding in secure.SimpleW
Found reliance on default encoding in secure.SimpleW
Found reliance on default encoding in secure.SimpleW
Write to static field from instance method (1)
Write to static field secure.SimpleWebServer.dServer
Normal confidence (3)
Low confidence (1)
SimpleWebServer.java
/* Run the HTTP server on this TCP port. */
private static final int PORT = 8080;
/* The socket used to process incoming connections
from web clients */
private static ServerSocket dServerSocket;
public SimpleWebServer () throws Exception {
dServerSocket = new ServerSocket (PORT);
}
public void run() throws Exception {
while (true) {
/* wait for a connection from a client */
Socket s = dServerSocket.accept();
/* then process the client's request */
processRequest(s);
}
}
/* Reads the HTTP request from the client, and
responds with the file the user requested or
a HTTP error code. */
public void processRequest(Socket s) throws Exception {
/* used to read data from the client */
BufferedReader br =
new BufferedReader (
new InputStreamReader (s.getInputStream()));
/* used to write data to the client */
OutputStreamWriter osw =
new OutputStreamWriter (s.getOutputStream());
/* read the HTTP request from the client */
String request = br.readLine();
String command = null;
String pathname = null;
/* parse the HTTP request */
StringTokenizer st =
new StringTokenizer (request, " ");
Bug Info
SimpleWebServer.java: 54
Navigation
Found reliance on default encoding in secure.SimpleWebServer.processRequest(Socket): new java.io.OutputStreamWri
Called method new java.io.OutputStreamWriter(OutputStream)
Bug: Found reliance on default encoding in secure.SimpleWebServer.processRequest (Socket): new java.io.OutputStreamWriter(OutputStream)
Found a call to a method which will perform a byte to String (or String to byte) conversion, and will assume that the default platform encoding is suitable. This will cause the application behaviour to vary between platforms. Use an alternative API and specify a charset name or Charset object explicitly.
Rank: Of Concern (19), confidence: High
Pattern: DM_DEFAULT_ENCODING
Type: Dm, Category: I18N (Internationalization)
XML output:
<BugInstance type="DM_DEFAULT_ENCODING" priority="1" rank="19" abbrev="Dm"
<Class classname="secure.SimpleWebServer">
<SourceLine classname="secure.SimpleWebServer" sourcefile="SimpleWebSer
</Class>
<Method classname="secure.SimpleWebServer" name="processRequest" signatur
<SourceLine classname="secure.SimpleWebServer" start="49" end="84" star
</Method>
<Method classname="java.io.OutputStreamWriter" name="<init>" signature="(
<SourceLine classname="java.io.OutputStreamWriter"/>
</Method>
<SourceLine classname="secure.SimpleWebServer" start="54" end="54" startB
<SourceLine classname="secure.SimpleWebServer" start="54" end="54" startB
</BugInstance>
Found reliance on default encoding in secure.SimpleWebServer.pr...putStreamWriter(OutputStream) [Of Concern(19), High confidence]
Writable
Smart Insert
54 : 56 [52]
Type here to search
ENG
IN
17:42
25-04-2020

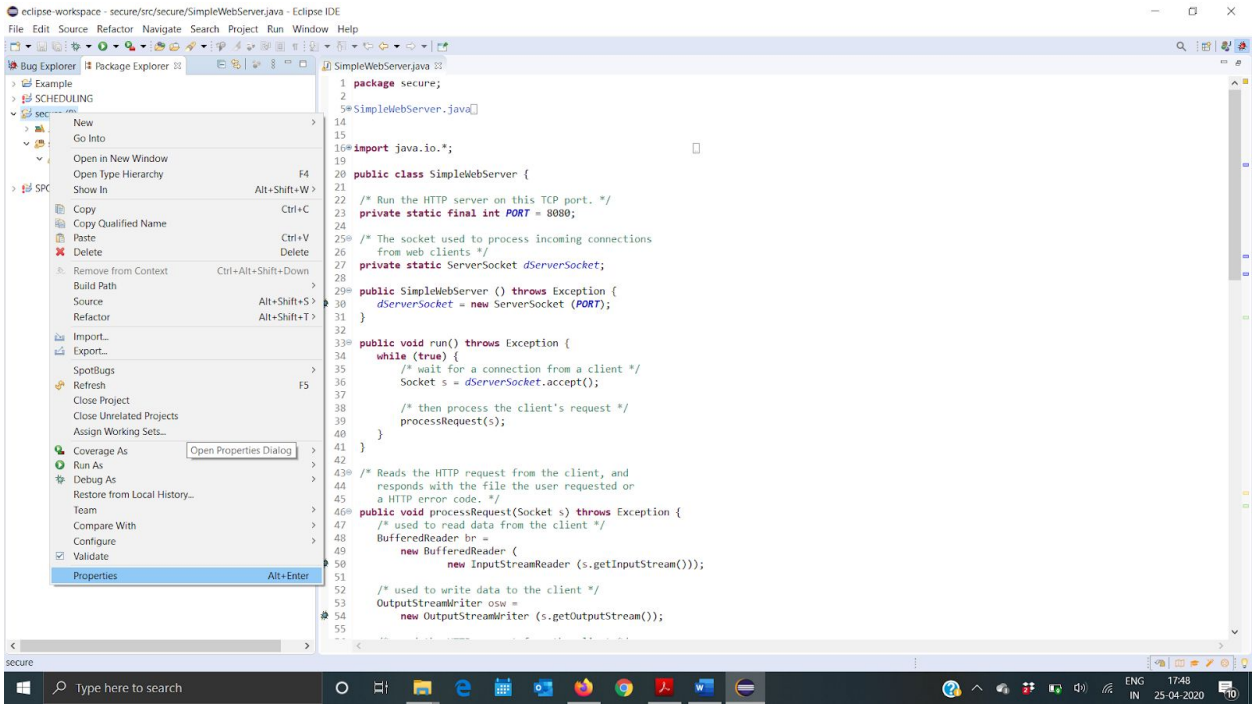

eclipse-workspace - secure/src/secure/SimpleWebServer.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Bug Explorer
Package Explorer
secure (8)
Of Concern (8)
High confidence (4)
Reliance on default encoding (3)
Found reliance on default encoding in secure.SimpleW
Found reliance on default encoding in secure.SimpleW
Found reliance on default encoding in secure.SimpleW
Write to static field from instance method (1)
Write to static field secure.SimpleWebServer.dServer
Normal confidence (3)
Dereference of the result of readLine() without nullcheck
Dereference of the result of readLine() without nullch
Method may fail to clean up stream or resource (1)
Method may fail to close stream (1)
Low confidence (1)
SimpleWebServer.java
public void run() throws Exception {
while (true) {
/* wait for a connection from a client */
Socket s = dServerSocket.accept();
/* then process the client's request */
processRequest(s);
}
}
/* Reads the HTTP request from the client, and
responds with the file the user requested or
a HTTP error code. */
public void processRequest(Socket s) throws Exception {
/* used to read data from the client */
BufferedReader br =
new BufferedReader (
new InputStreamReader (s.getInputStream()));
/* used to write data to the client */
OutputStreamWriter osw =
new OutputStreamWriter (s.getOutputStream());
/* read the HTTP request from the client */
String request = br.readLine();
String command = null;
String pathname = null;
/* parse the HTTP request */
StringTokenizer st =
new StringTokenizer (request, " ");
command = st.nextToken();
pathname = st.nextToken();
if (command.equals("GET")) {
/* if the request is a GET
try to respond with the file
the user is requesting */
serveFile (osw,pathname);
}
else {
Bug Info
SimpleWebServer.java: 64
Navigation
Dereference of the result of readLine() without nullcheck in secure.SimpleWebServer.processRequest(Socket)
Value loaded from request
Bug: Dereference of the result of readLine() without nullcheck in secure.SimpleWebServer.processRequest(Socket)
The result of invoking readLine() is dereferenced without checking to see if the result is null. If there are no more lines of text to read, readLine() will return null and dereferencing that will generate a null pointer exception.
Rank: Of Concern (15), confidence: Normal
Pattern: NP_DEREFERENCE_OF_READLINE_VALUE
Type: NP, Category: STYLE (Dodgy code)
XML output:
<BugInstance type="NP_DEREFERENCE_OF_READLINE_VALUE" priority="2" rank="15"
<Class classname="secure.SimpleWebServer">
<SourceLine classname="secure.SimpleWebServer" sourcefile="SimpleWebSer
</Class>
<Method classname="secure.SimpleWebServer" name="processRequest" signatur
<SourceLine classname="secure.SimpleWebServer" start="49" end="84" star
</Method>
<LocalVariable name="request" register="4" pc="49" role="LOCAL_VARIABLE_V
<SourceLine classname="secure.SimpleWebServer" start="64" end="64" startB
<SourceLine classname="secure.SimpleWebServer" start="64" end="64" startB
</BugInstance>
Dereference of the result of readLine() without nullcheck in secu...Server.processRequest(Socket) [Of Concern(15), Normal confidence]
Writable
Smart Insert
64 : 59 [55]
Type here to search
ENG
IN
17:42
25-04-2020

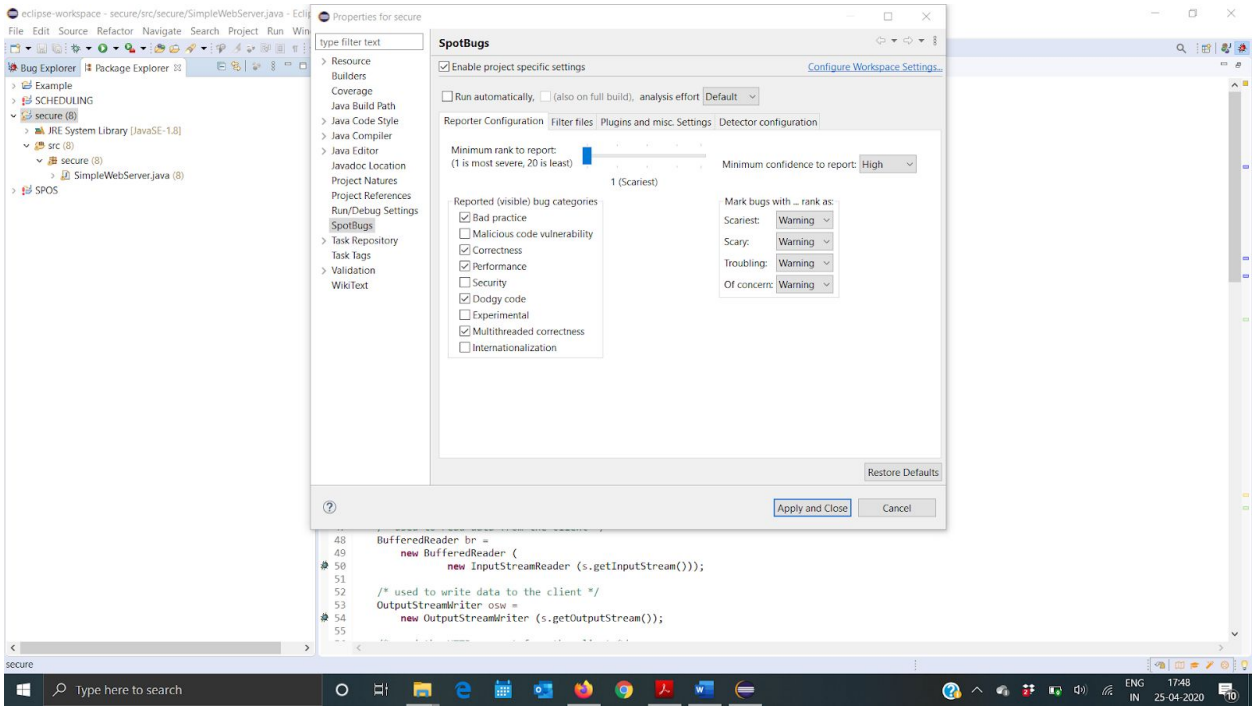

eclipse-workspace - secure/src/secure/SimpleWebServer.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Bug Explorer
Package Explorer
secure (8)
Of Concern (8)
High confidence (4)
Reliance on default encoding (3)
Found reliance on default encoding in secure.Simple
Found reliance on default encoding in secure.Simple
Found reliance on default encoding in secure.Simple
Write to static field from instance method (1)
Write to static field secure.SimpleWebServer.dServer
Normal confidence (3)
Dereference of the result of readLine() without nullcheck
Dereference of the result of readLine() without nullch
Method may fail to clean up stream or resource (1)
Method may fail to close stream (1)
Low confidence (1)
Exception is caught when Exception is not thrown (1)
Exception is caught when Exception is not thrown in
SimpleWebServer.java
Bug Info
SimpleWebServer.java: 107
Navigation
Exception is caught when Exception is not thrown in secure.SimpleWebServer.serveFile(OutputStreamWriter, String)
Bug: Exception is caught when Exception is not thrown in secure.SimpleWebServer.serveFile(OutputStreamWriter, String)
This method uses a try-catch block that catches Exception objects, but Exception is not thrown within the try block, and RuntimeException is not explicitly caught. It is a common bug pattern to say try { ... } catch (Exception e) { something } as a shorthand for catching a number of types of exception each of whose catch blocks is identical, but this construct also accidentally catches RuntimeException as well, masking potential bugs.
A better approach is to either explicitly catch the specific exceptions that are thrown, or to explicitly catch RuntimeException exception, rethrow it, and then catch all non-Runtime Exceptions, as shown below:
try {
...
} catch (RuntimeException e) {
throw e;
} catch (Exception e) {
... deal with all non-runtime exceptions ...
}
Rank: Of Concern (20), confidence: Low
Pattern: REC_CATCH_EXCEPTION
Type: REC, Category: STYLE (Dodgy code)
XML output:
<BugInstance type="REC_CATCH_EXCEPTION" priority="3" rank="20" abbrev="REC"
<Class classname="secure.SimpleWebServer">
<SourceLine classname="secure.SimpleWebServer" sourcefile="SimpleWebSer
</Class>
<Method classname="secure.SimpleWebServer" name="serveFile" signature="(L
<SourceLine classname="secure.SimpleWebServer" start="88" end="123" sta
</Method>
<SourceLine classname="secure.SimpleWebServer" start="107" end="107" star
Exception is caught when Exception is not thrown in secure.Simple...File(OutputStreamWriter, String) [Of Concern(20), Low confidence]
Writable
Smart Insert
107 : 57 [53]
Type here to search
ENG
IN
17:43
25-04-2020

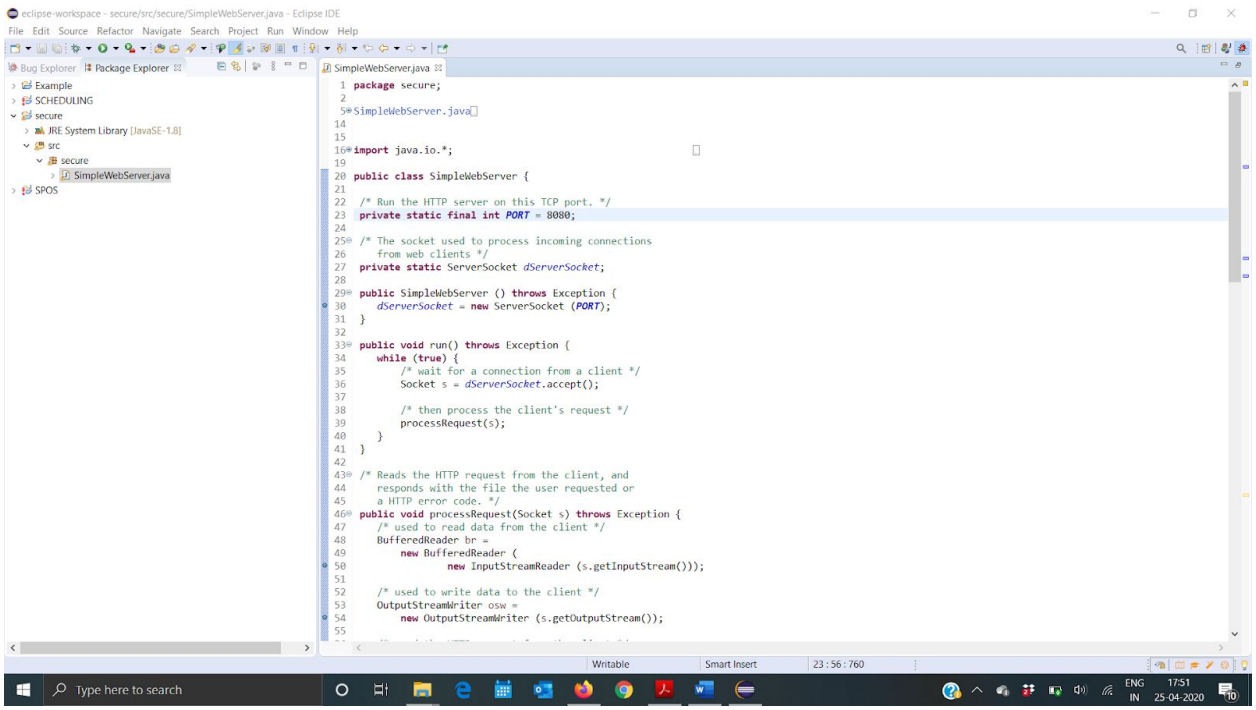

eclipse-workspace - secure/src/secure/SimpleWebServer.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Bug Explorer
Package Explorer
secure (8)
Of Concern (8)
High confidence (4)
Reliance on default encoding (3)
Found reliance on default encoding in secure.Simple
Found reliance on default encoding in secure.Simple
Found reliance on default encoding in secure.Simple
Write to static field from instance method (1)
Write to static field secure.SimpleWebServer.dServer
Normal confidence (3)
Dereference of the result of readLine() without nullcheck
Dereference of the result of readLine() without nullch
Method may fail to clean up stream or resource (1)
secure.SimpleWebServer.serveFile(OutputStreamWrit
Method may fail to close stream (1)
Low confidence (1)
Exception is caught when Exception is not thrown (1)
Exception is caught when Exception is not thrown in
SimpleWebServer.java
Bug Info
SimpleWebServer.java: 104
Navigation
Found reliance on default encoding in secure.SimpleWebServer.serveFile(OutputStreamWriter, String): new java.io.File
Called method new java.io.FileReader(String)
Bug: Found reliance on default encoding in secure.SimpleWebServer.serveFile (OutputStreamWriter, String): new java.io.FileReader(String)
Found a call to a method which will perform a byte to String (or String to byte) conversion, and will assume that the default platform encoding is suitable. This will cause the application behaviour to vary between platforms. Use an alternative API and specify a charset name or Charset object explicitly.
Rank: Of Concern (19), confidence: High
Pattern: DM_DEFAULT_ENCODING
Type: Dm, Category: I18N (Internationalization)
XML output:
<BugInstance type="DM_DEFAULT_ENCODING" priority="1" rank="19" abbrev="Dm"
<Class classname="secure.SimpleWebServer">
<SourceLine classname="secure.SimpleWebServer" sourcefile="SimpleWebSer
</Class>
<Method classname="secure.SimpleWebServer" name="serveFile" signature="(L
<SourceLine classname="secure.SimpleWebServer" start="88" end="123" sta
</Method>
<Method classname="java.io.FileReader" name="<init>" signature="(Ljava/la
<SourceLine classname="java.io.FileReader"/>
</Method>
<SourceLine classname="secure.SimpleWebServer" start="104" end="104" star
<SourceLine classname="secure.SimpleWebServer" start="104" end="104" star
</BugInstance>
secure.SimpleWebServer.serveFile(OutputStreamWriter, String) may fail to close stream [Of Concern(16), Normal confidence]
Writable
Smart Insert
104 : 57 [53]
Type here to search
ENG
IN
17:43
25-04-2020



Test 3:
Rank: 1
Minimum Confidence to report: High
Reported Bug Categories(visible): Bad Practice, Correctness, Performance, Dodgy Code, Multithreaded Correctness
Bugs: 0
Screenshot for test 3:


eclipse-workspace - secure/src/secure/SimpleWebServer.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Bug Explorer
Package Explorer
SimpleWebServer.java
Example
SCHEDULING
New
Go Into
Open in New Window
Open Type Hierarchy F4
Show In Alt+Shift+W
Copy Ctrl+C
Copy Qualified Name
Paste Ctrl+V
Delete Delete
Remove from Context Ctrl+Alt+Shift+Down
Build Path
Source Alt+Shift+S
Refactor Alt+Shift+T
Import...
Export...
SpotBugs
Refresh F5
Close Project
Close Unrelated Projects
Assign Working Sets...
Coverage As
Run As
Debug As
Restore from Local History...
Team
Compare With
Configure
Validate
Properties Alt+Enter
Open Properties Dialog
package secure;
SimpleWebServer.java
import java.io.*;
public class SimpleWebServer {
/* Run the HTTP server on this TCP port. */
private static final int PORT = 8080;
/* The socket used to process incoming connections
from web clients */
private static ServerSocket dServerSocket;
public SimpleWebServer () throws Exception {
dServerSocket = new ServerSocket (PORT);
}
public void run() throws Exception {
while (true) {
/* wait for a connection from a client */
Socket s = dServerSocket.accept();
/* then process the client's request */
processRequest(s);
}
}
/* Reads the HTTP request from the client, and
responds with the file the user requested or
a HTTP error code. */
public void processRequest(Socket s) throws Exception {
/* used to read data from the client */
BufferedReader br =
new BufferedReader (
new InputStreamReader (s.getInputStream()));
/* used to write data to the client */
OutputStreamWriter osw =
new OutputStreamWriter (s.getOutputStream());
secure
Type here to search
ENG
IN
17:48
25-04-2020


Properties for secure
type filter text
Resource
Builders
Coverage
Java Build Path
Java Code Style
Java Compiler
Java Editor
Javadoc Location
Project Natures
Project References
Run/Debug Settings
SpotBugs
Task Repository
Task Tags
Validation
WikiText
SpotBugs
Enable project specific settings
Configure Workspace Settings...
Run automatically, (also on full build), analysis effort Default
Reporter Configuration
Filter files
Plugins and misc. Settings
Detector configuration
Minimum rank to report:
(1 is most severe, 20 is least)
1 (Scariest)
Minimum confidence to report: High
Reported (visible) bug categories
Bad practice
Malicious code vulnerability
Correctness
Performance
Security
Dodgy code
Experimental
Multithreaded correctness
Internationalization
Mark bugs with ... rank as:
Scariest: Warning
Scary: Warning
Troubling: Warning
Of concern: Warning
Restore Defaults
Apply and Close
Cancel
secure (8)
JRE System Library [JavaSE-1.8]
src (8)
secure (8)
SimpleWebServer.java (8)
SPOS
BufferedReader br =
new BufferedReader (
new InputStreamReader (s.getInputStream()));
/* used to write data to the client */
OutputStreamWriter osw =
new OutputStreamWriter (s.getOutputStream());
secure
Type here to search
ENG
IN
17:48
25-04-2020



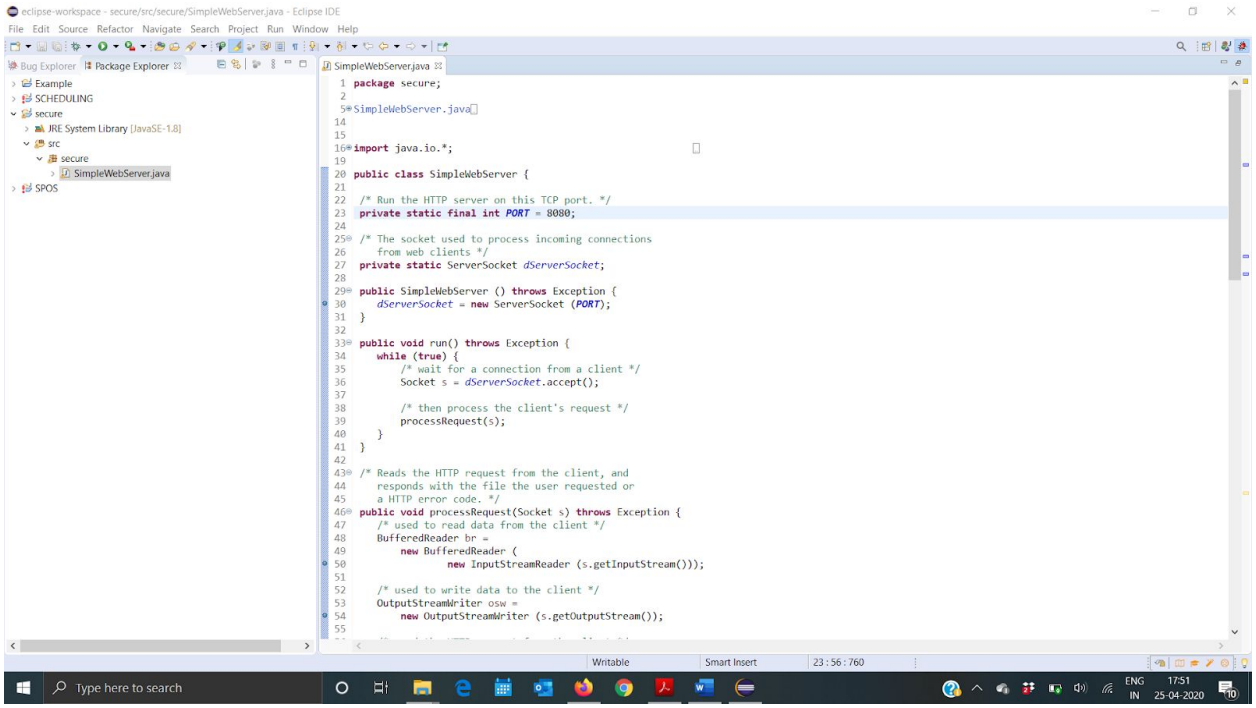
Tool 2: Sonar Lint

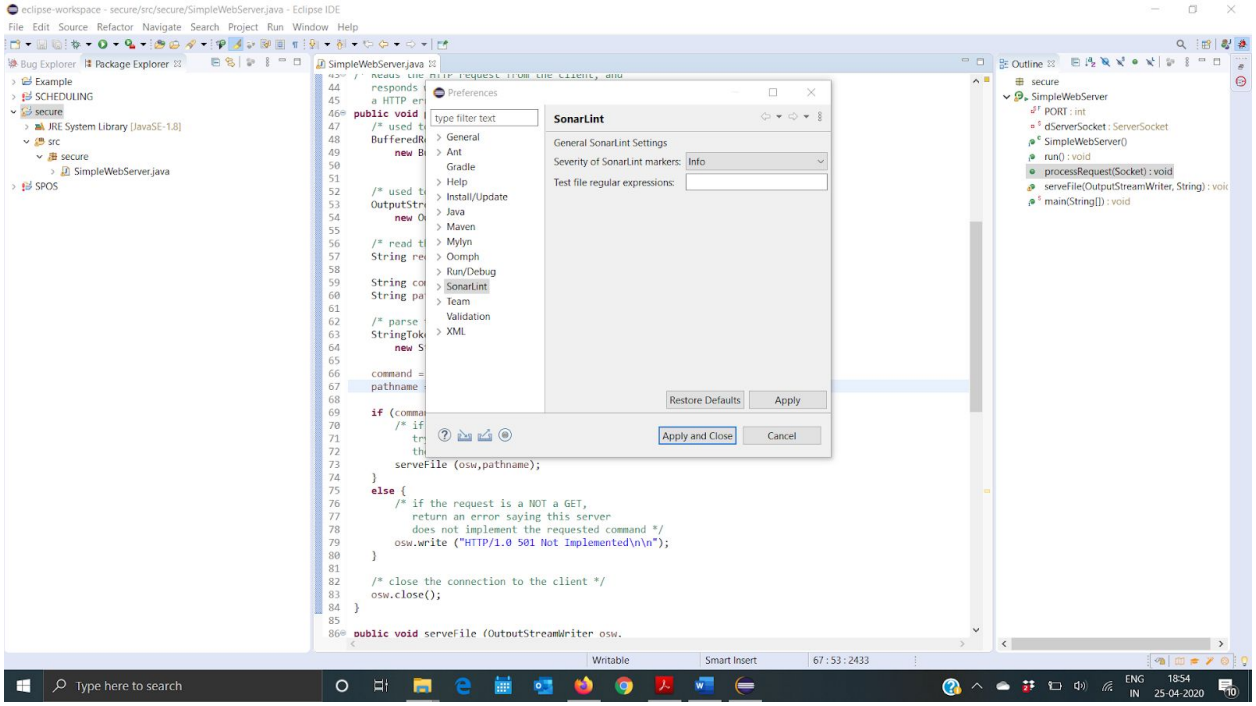
Steps:

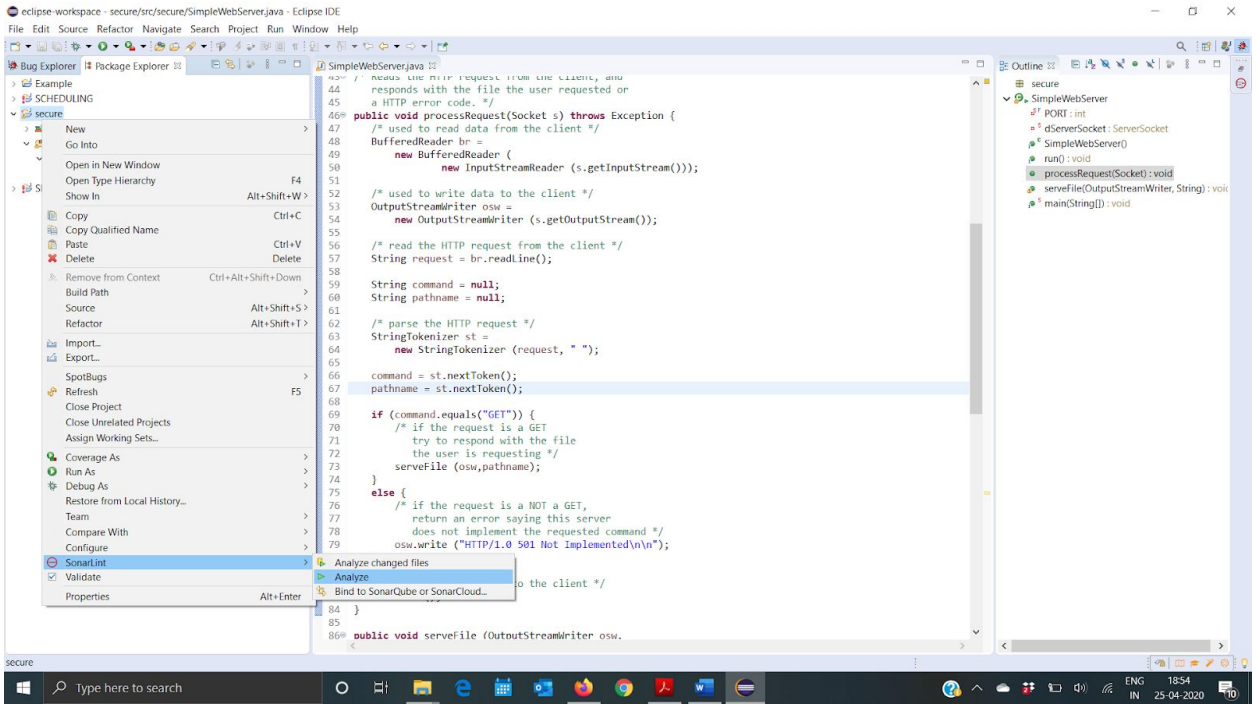
1. We need to install this tool into the eclipse, we do this by searching it in Eclipse Marketplace.
2. We need to set the preferences for this tool to info, warnings and errors before each time we test.
3. After setting so run the sonar lint to get the sonar lint report.

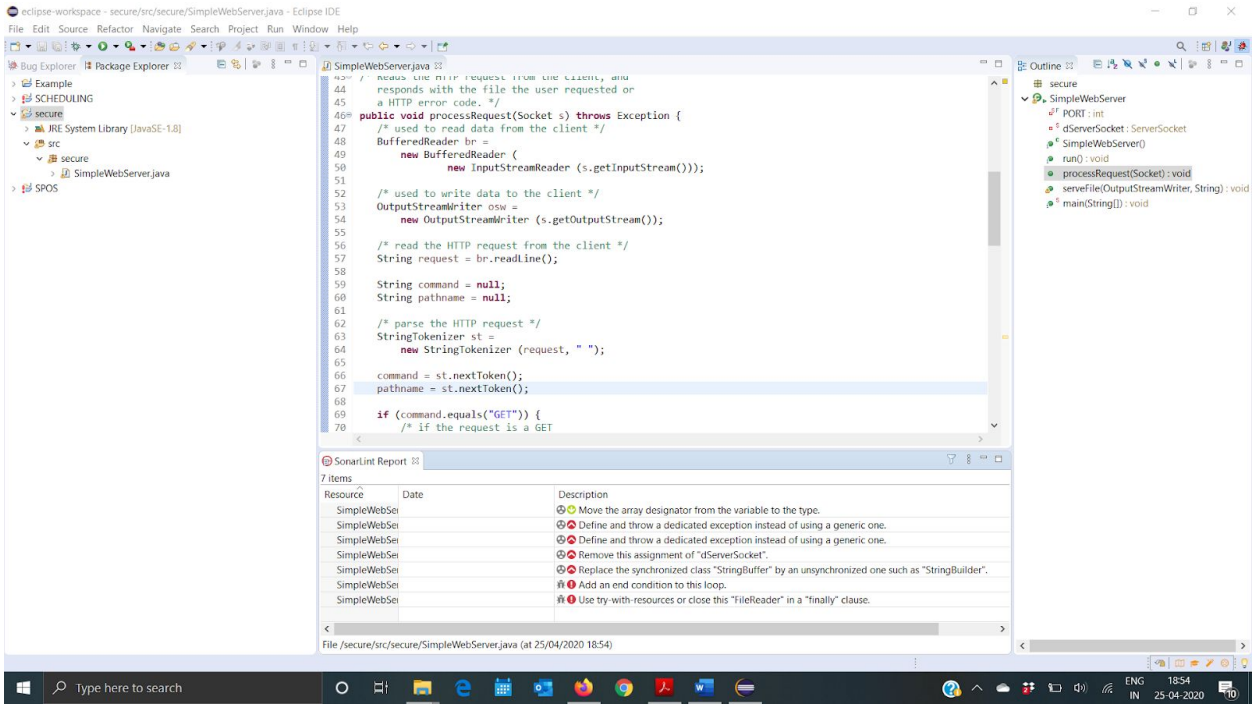
Test 1:
Severity of SonarLint markers: Info
Code Smell:
1)Number of major Code Smells: 4
2) Number of minor Code Smells: 1
3) Bugs(Blocker Issue):2

Screenshots for Test 1:


eclipse-workspace - secure/src/secure/SimpleWebServer.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Bug Explorer
Package Explorer
Example
SCHEDULING
secure
JRE System Library [JavaSE-1.8]
src
secure
SimpleWebServer.java
SPOS
SimpleWebServer.java
1 package secure;
2
5 SimpleWebServer.java
14
15
16 import java.io.*;
19
20 public class SimpleWebServer {
21
22 /* Run the HTTP server on this TCP port. */
23 private static final int PORT = 8080;
24
25 /* The socket used to process incoming connections
26 from web clients */
27 private static ServerSocket dServerSocket;
28
29 public SimpleWebServer () throws Exception {
30 dServerSocket = new ServerSocket (PORT);
31 }
32
33 public void run() throws Exception {
34 while (true) {
35 /* wait for a connection from a client */
36 Socket s = dServerSocket.accept();
37
38 /* then process the client's request */
39 processRequest(s);
40 }
41 }
42
43 /* Reads the HTTP request from the client, and
44 responds with the file the user requested or
45 a HTTP error code. */
46 public void processRequest(Socket s) throws Exception {
47 /* used to read data from the client */
48 BufferedReader br =
49 new BufferedReader (
50 new InputStreamReader (s.getInputStream()));
51
52 /* used to write data to the client */
53 OutputStreamWriter osw =
54 new OutputStreamWriter (s.getOutputStream());
55
Writable
Smart Insert
23 : 56 : 760
Type here to search
ENG
IN
17:51
25-04-2020


eclipse-workspace - secure/src/secure/SimpleWebServer.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Bug Explorer
Package Explorer
Example
SCHEDULING
secure
JRE System Library [JavaSE-1.8]
src
secure
SimpleWebServer.java
SPOS
SimpleWebServer.java
Preferences
type filter text
General
Ant
Gradle
Help
Install/Update
Java
Maven
Mylyn
Oomph
Run/Debug
SonarLint
Team
Validation
XML
SonarLint
General SonarLint Settings
Severity of SonarLint markers:
Info
Test file regular expressions:
Restore Defaults
Apply
Apply and Close
Cancel
Outline
secure
SimpleWebServer
PORT : int
dServerSocket : ServerSocket
SimpleWebServer()
run() : void
processRequest(Socket) : void
serveFile(OutputStreamWriter, String) : void
main(String[]) : void
Writable
Smart Insert
67 : 53 : 2433
Type here to search
ENG
IN
18:54
25-04-2020





Screen shot for test 2:

Test 2:

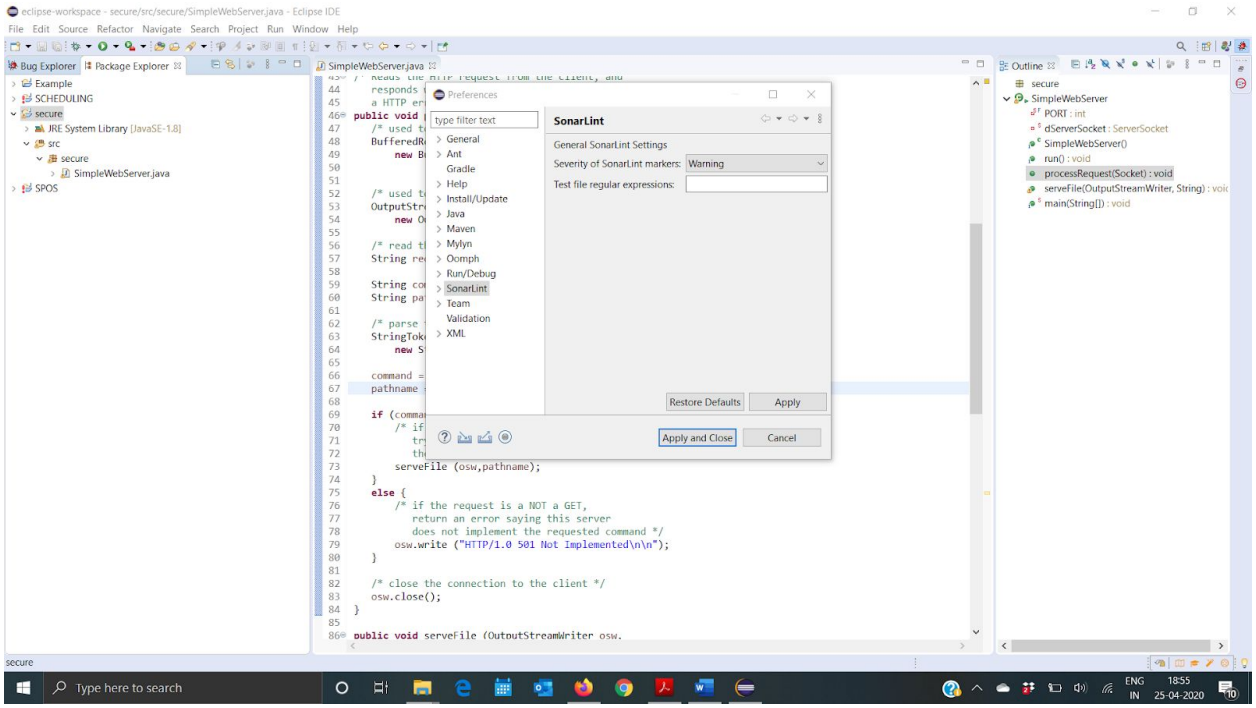
Severity of SonarLint markers: Warnings

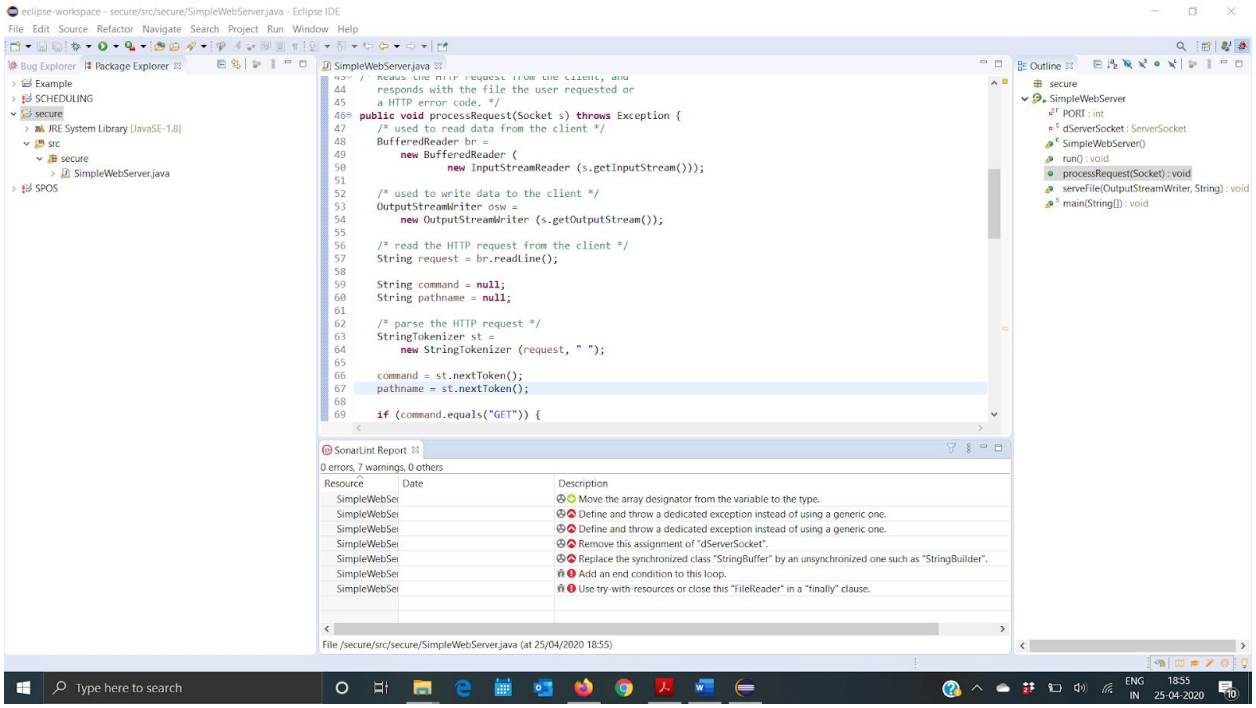
Code Smell:

1)Number of major Code Smells: 4

2) Number of minor Code Smells: 1

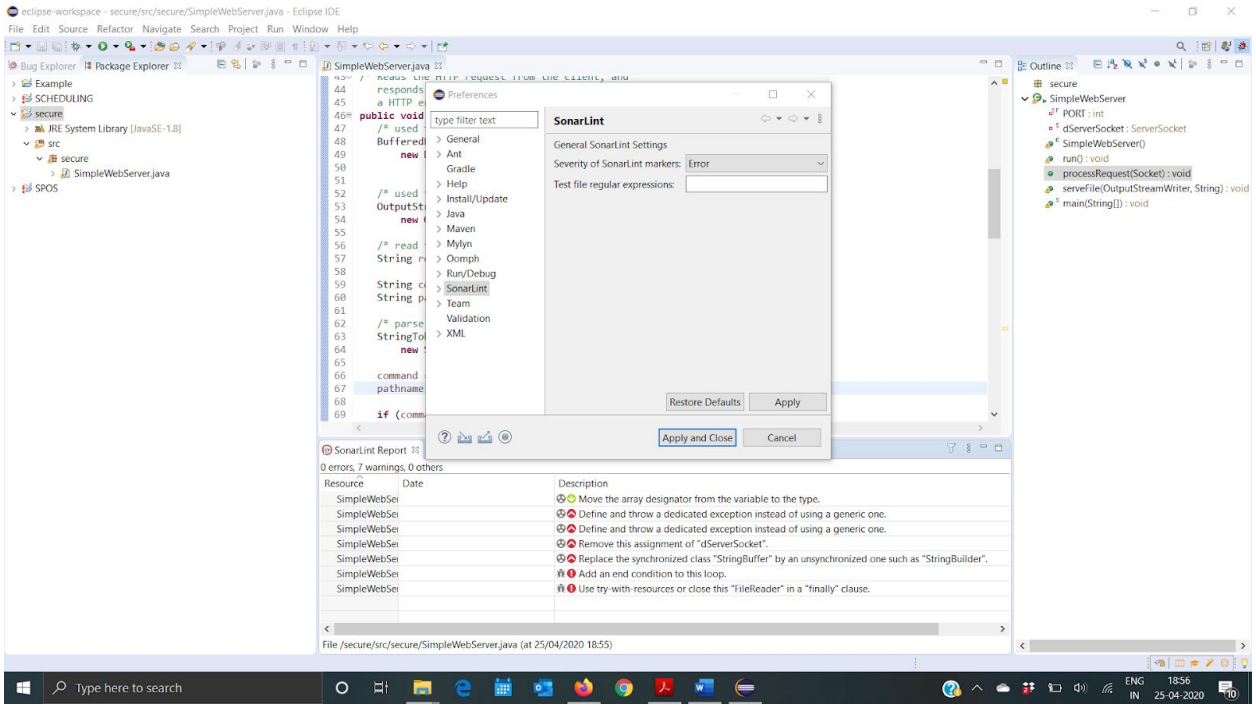
3) Bugs(Blocker Issue):2

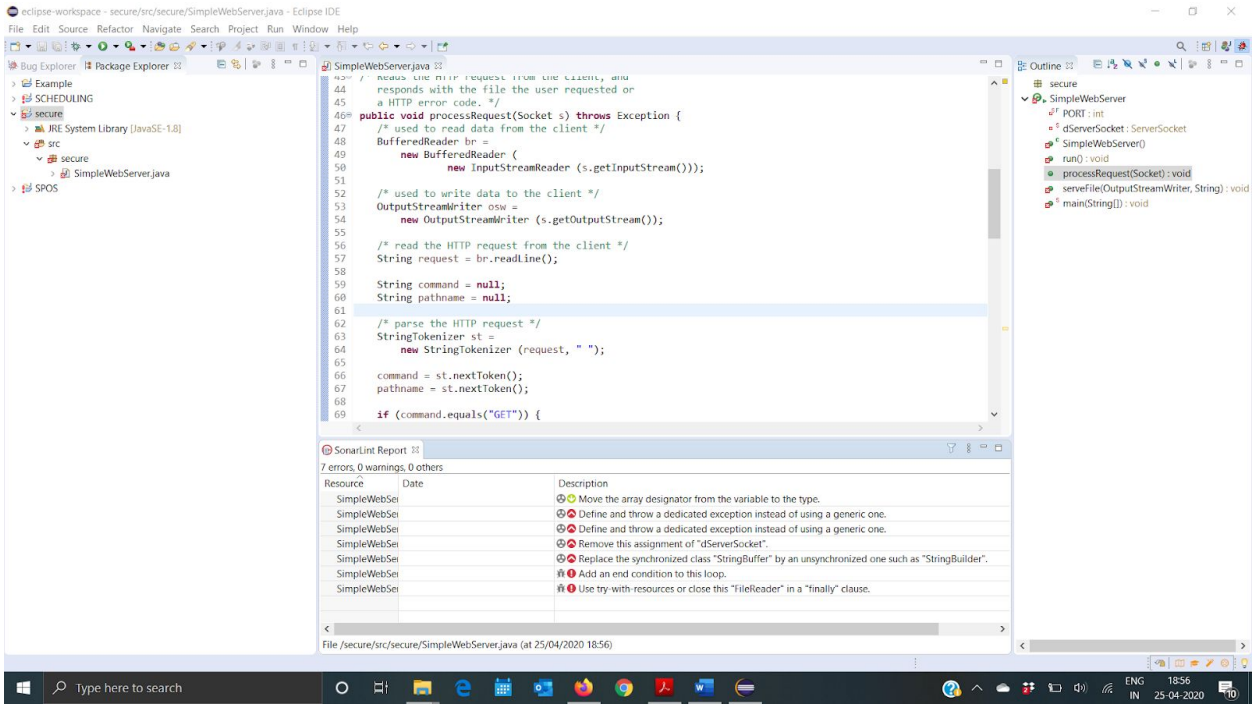




Screenshot for test 3:
Test 3:
Severity of Sonarlint markers: Errors
Code Smell:

1)Number of major Code Smells: 4
2) Number of minor Code Smells: 1
3) Bugs(Blocker Issue):2





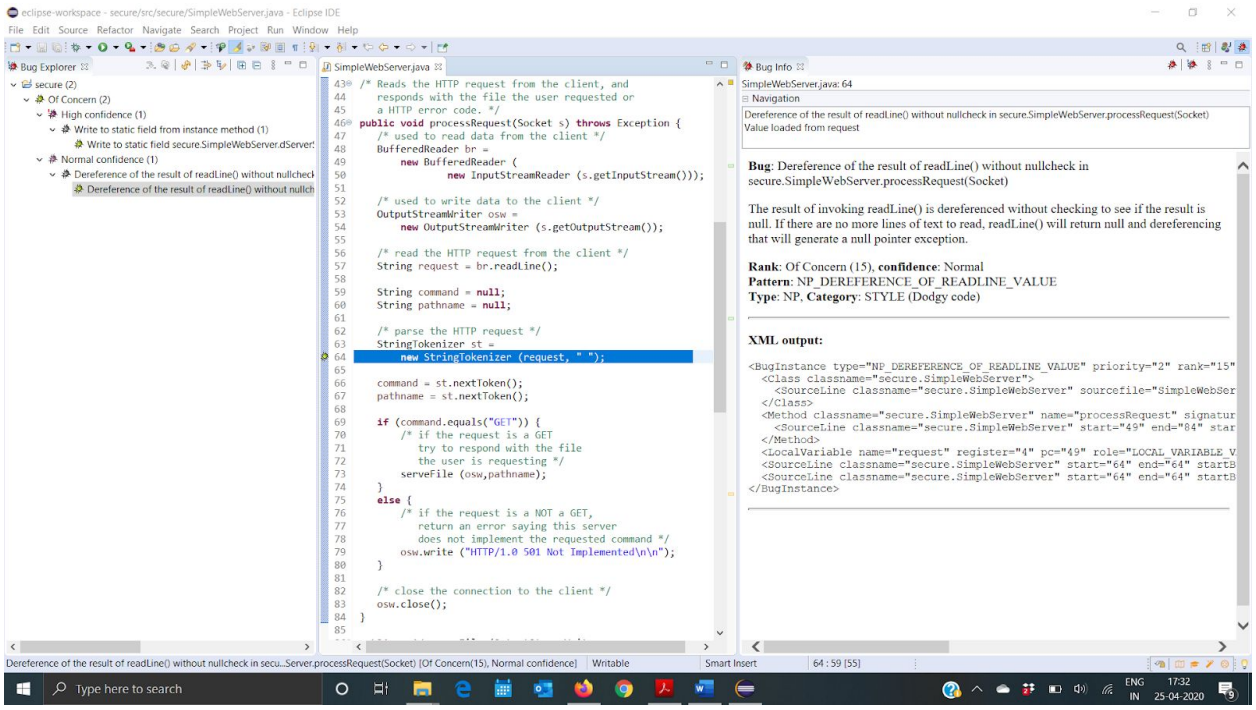
Comparison/Contrast Tools

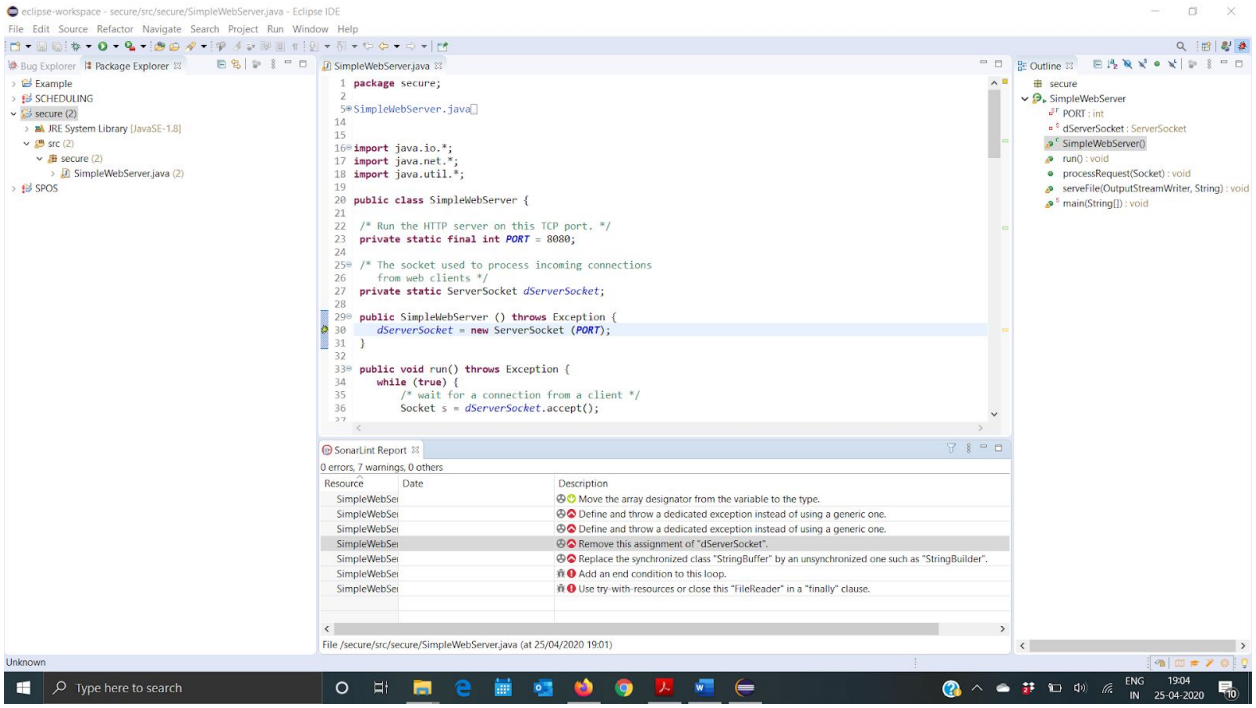
Does the tool analyze source or binary as input?
SonarLint - Source code
SpotBugs - Binary

Which category of tools is it?
SonarLint - Bug finding
SpotBugs - Bug finding

Show an example (if one exists) of a finding that is reported by one tool and not others.

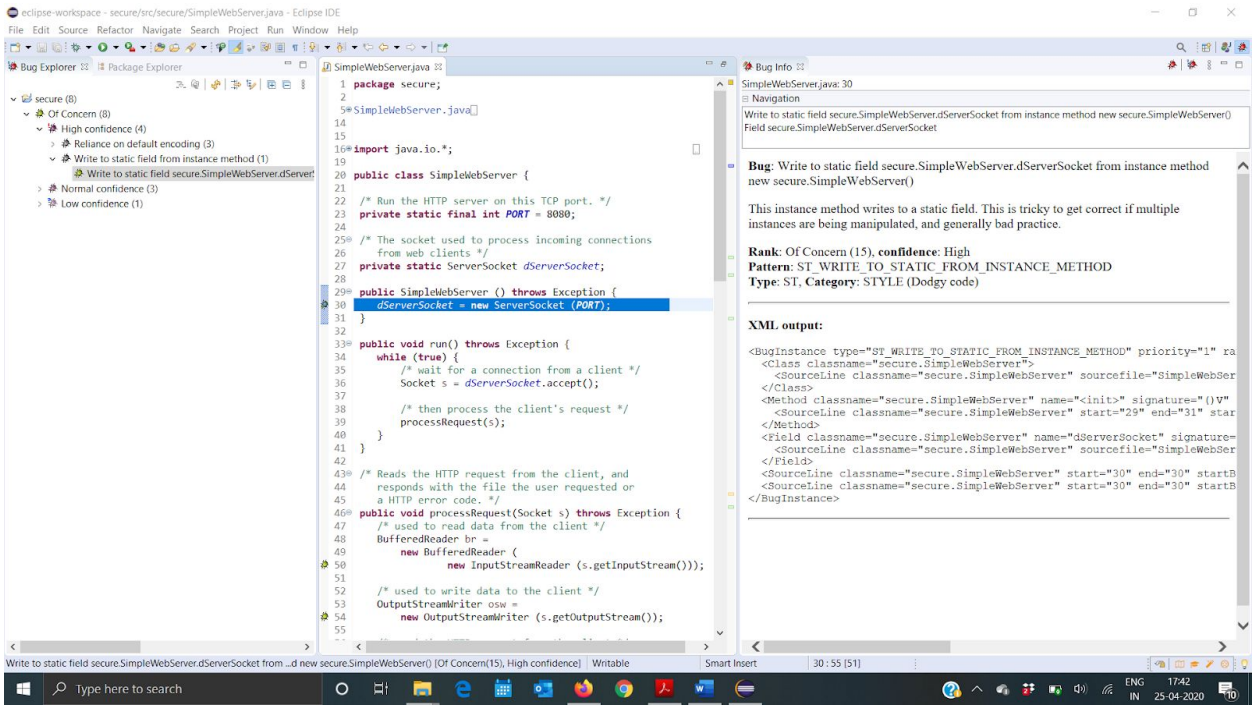
We can see in the below screenshots the finding on line 64 by SpotBugs is not reported by SonarLint which is StringTokenizer.

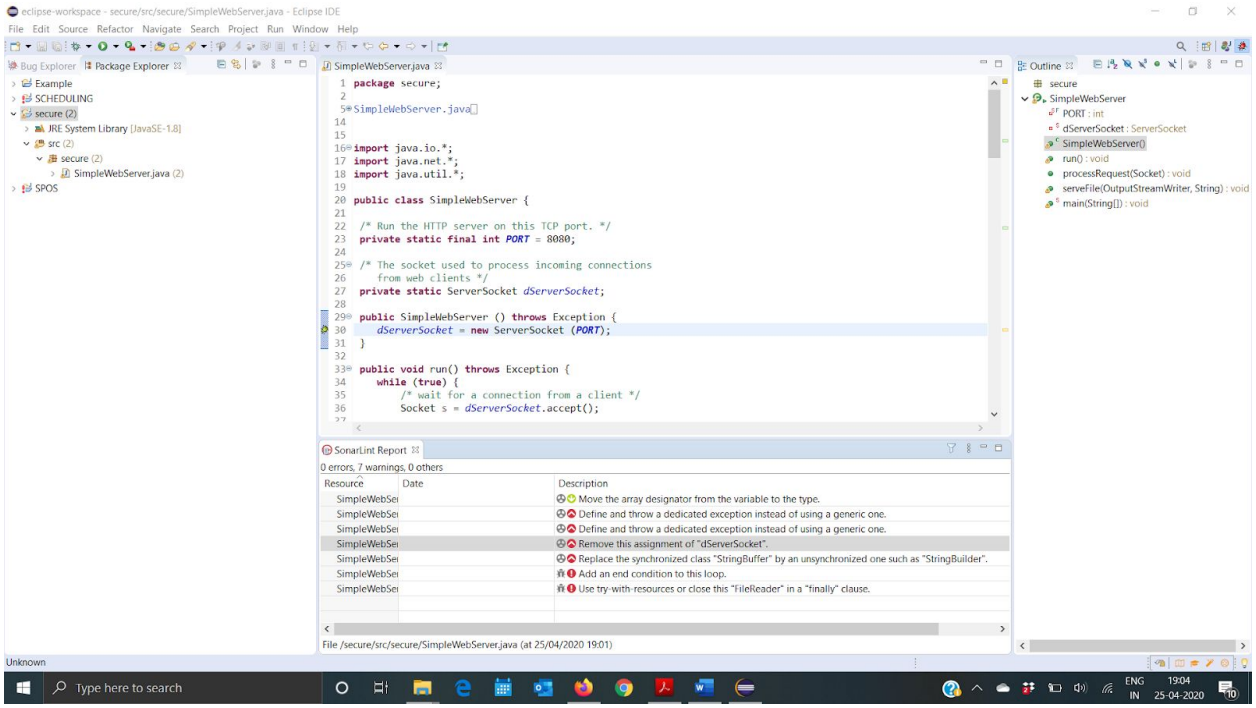




Show an example (if one exists) of a finding reported by multiple tools.

We can see from the below screenshot, both Spotbugs and SonarLint show an issue on line 30 which is ServerSocket.




eclipse-workspace - secure/src/secure/SimpleWebServer.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Bug Explorer
Package Explorer
Example
SCHEDULING
secure (2)
JRE System Library [JavaSE-1.8]
src (2)
secure (2)
SimpleWebServer.java (2)
SPOS
SimpleWebServer.java
1 package secure;
2
5 SimpleWebServer.java
14
15
16 import java.io.*;
17 import java.net.*;
18 import java.util.*;
19
20 public class SimpleWebServer {
21
22 /* Run the HTTP server on this TCP port. */
23 private static final int PORT = 8080;
24
25 /* The socket used to process incoming connections
26 from web clients */
27 private static ServerSocket dServerSocket;
28
29 public SimpleWebServer () throws Exception {
30 dServerSocket = new ServerSocket (PORT);
31 }
32
33 public void run() throws Exception {
34 while (true) {
35 /* wait for a connection from a client */
36 Socket s = dServerSocket.accept();
Outline
secure
SimpleWebServer
PORT : int
dServerSocket : ServerSocket
SimpleWebServer()
run() : void
processRequest(Socket) : void
serveFile(OutputStreamWriter, String) : void
main(String[]) : void
SonarLint Report
0 errors, 7 warnings, 0 others
Resource
Date
Description
SimpleWebSer
Move the array designator from the variable to the type.
Define and throw a dedicated exception instead of using a generic one.
Define and throw a dedicated exception instead of using a generic one.
Remove this assignment of "dServerSocket".
Replace the synchronized class "StringBuffer" by an unsynchronized one such as "StringBuilder".
Add an end condition to this loop.
Use try-with-resources or close this "FileReader" in a "finally" clause.
File /secure/src/secure/SimpleWebServer.java (at 25/04/2020 19:01)
Unknown
Type here to search
ENG
IN
19:04
25-04-2020