#### Task 1.

### Correctness

# Method ignores return value

• Return value of string.replace ignored in charReplace

#### **Bad Practice**

# Comparison of String object using == or !=

• Comparison of String objects using == in CharReader

### Method ignores result of InputStream.read()

• CharReader ignores result of BufferedReader.read

# Method may fail to close stream on exception

• Char reader may fail to close stream on exception

### Internationalization

# Reliance on default encoding

• Reliance on default encoding CharReader

## Dodgy code

### **Exception caught when Exception not thrown**

• Exception caught when not thrown in CharReader

SpotBugs
<u>File Edit View Navigation Help</u>
Class name filter:
Group bugs by:   Category   Bug Kind   Bug Pattern   ↔   Bug Rank
□ Bugs (6)
Correctness (1)
∳- ☐ Bad use of return value from method (1)
∳- ☐ Method ignores return value (1)
Return value of String.replace(char, char) ignored in oose.w2.Util.charReplace(String, char, char)
P Bad practice (3)
Checking String equality using == or != (1)
Comparison of String objects using == or != (1)
Comparison of String objects using == or != in oose.w2.Util.customCharReader(File, int)
Method ignores results of InputStream.read() (1)
↑
oose.w2.Util.customCharReader(File, int) ignores result of java.io.BufferedReader.read(char[], int, int)
♦— Method may fail to close stream on exception (1)
oose.w2.Util.customCharReader(File, int) may fail to close stream on exception
nternationalization (1)
P— Dubious method used (1)
P— Reliance on default encoding (1)
Found reliance on default encoding in oose.w2.Util.customCharReader(File, int): new java.io.FileReader(File)
P Dodgy code (1)
RuntimeException capture (1)     RuntimeException capture (1)
Exception is caught when Exception is not thrown in oose.w2.Util.customCharReader(File, int)
<b>A</b> ♥

Bug report before refactoring

Task 2.

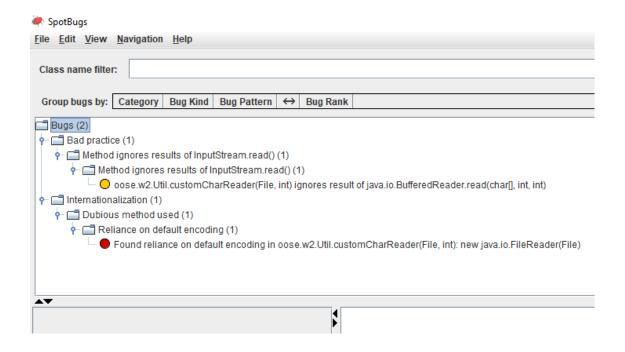
I believe the bugs detection system in unsound because there are bugs in the program that were not picked up:

- 1) The method charReplace(String text, char oldchar, char newchar) is unused.
- 2) The variable int start within the customCharReader(File file, int n) method is unused.
- 3) Within customCharReader the for loop and if statement iteration is incorrect as it produces an outofbounds error when replacing every even index with a blank space.

Task 3.

I believe the bugs detection system is imprecise because some of the bugs addressed are incorrect. One false bug is "oose.w2.Util.customCharReader(File, int) ignores result of java.io.BufferedReader.read(char[], int, int)". The result is actually stored as char[] buffer, I believe the bugs detection system mistakenly thinks it is ignored because it is assigned to

buffer inside the .read function not externally. i.e instead of buffer = reader.read we have reader.read(buffer,..)



Bug report after refactoring