

First, the git repository was cloned and built appropriately from source . Then, NotifyProcessor.java was placed in directory sorald/src/main/java/sorald/processor/ and commands:

```
$ mvn clean compile dependency:build-classpath -Dmdep.outputFile=cp.txt
```

```
$ java -cp "$(cat cp.txt):./target/classes" sorald.CodeGenerator
```

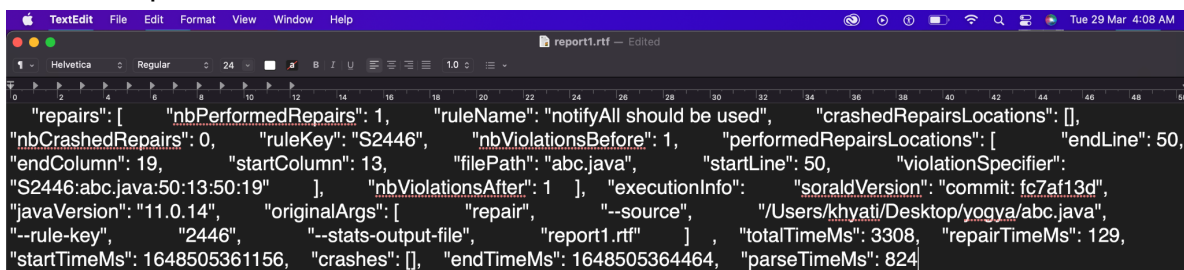
were used to compile the file :

```
zsh: command not found: sorald
khyati@Khyatis-MacBook-Air sorald % mvn clean compile dependency:build-classpath -Dmdep.outputFile=cp.txt
[INFO] Scanning for projects...
[INFO]
[INFO] -----< se.kth.castor:sorald >-----
[INFO] Building Sorald 0.3.1-SNAPSHOT
[INFO] -----[ jar ]-----
Downloading from maven-default-http-blocker: http://0.0.0.0/org/apache/maven/maven-model/maven-metadata.xml
[WARNING] Could not transfer metadata org.apache.maven:maven-model/maven-metadata.xml from/to maven-default-http-blocker (http://0.0.0.0/): transfer failed
maven-metadata.xml
[INFO]
[INFO] --- maven-clean-plugin:2.5:clean (default-clean) @ sorald ---
[INFO] Deleting /Users/khyati/sorald/target
[INFO]
[INFO] --- buildnumber-maven-plugin:3.0.0:create (default) @ sorald ---
[INFO] ShortRevision tag detected. The value is '8'.
[INFO] Executing: /bin/sh -c cd '/Users/khyati/sorald' && 'git' 'rev-parse' '--verify' '--short=8' 'HEAD'
[INFO] Working directory: /Users/khyati/sorald
[INFO] Storing buildNumber: fc7af13d at timestamp: 1648507317022
[INFO] Storing buildScmBranch: master
[INFO]
[INFO] --- jacoco-maven-plugin:0.8.7:prepare-agent (default-prepare-agent) @ sorald ---
[INFO] argLine set to -javaagent:/Users/khyati/.m2/repository/org/jacoco/org.jacoco.agent/0.8.7/org.jacoco.agent-0.8.7-runtime.jar=destfile=/Users/khyati/sorald/target/jacoco.exec
[INFO]
[INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ sorald ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] Copying 1 resource
[INFO]
[INFO] --- maven-compiler-plugin:3.10.1:compile (default-compile) @ sorald ---
[INFO] Changes detected - recompiling the module!
[INFO] Compiling 90 source files to /Users/khyati/sorald/target/classes
[INFO] /Users/khyati/sorald/src/main/java/sorald/sonar/JavaInputFile.java: /Users/khyati/sorald/src/main/java/sorald/sonar/JavaInputFile.java use
[INFO] /Users/khyati/sorald/src/main/java/sorald/sonar/JavaInputFile.java: Recompile with -Xlint:deprecation for details.
[INFO] /Users/khyati/sorald/src/main/java/sorald/processor/SelfAssignmentProcessor.java: Some input files use unchecked or unsafe operations.
[INFO] /Users/khyati/sorald/src/main/java/sorald/processor/SelfAssignmentProcessor.java: Recompile with -Xlint:unchecked for details.
[INFO]
[INFO] --- maven-dependency-plugin:2.8:build-classpath (default-cli) @ sorald ---
[INFO] Skipped writing classpath file '/Users/khyati/sorald/cp.txt'. No changes found.
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 2.017 s
[INFO] Finished at: 2022-03-29T04:11:58+05:30
[INFO] -----
khyati@Khyatis-MacBook-Air sorald % java -cp "$(cat cp.txt):./target/classes" sorald.CodeGenerator
khyati@Khyatis-MacBook-Air sorald % sorald repair --source /Users/khyati/Desktop/yogya/abc.java --rule-key 2446 --stats-output-file report1.rtf
zsh: command not found: sorald
```

After successful compilation, test the processor on sample project named abc.java (here) and the report analysis is saved in report1.rtf where the violation is shown as:

```
34
35     // Print and display the total threads on the
36     // console
37     System.out.println("Total is: " + objB.total);
38 }
39 }
40 }
41 class Thread2 extends Thread {
42
43     int total;
44     // run() method which is called automatically when
45     // start() is initiated for the same
46     // @Override
47     public void run()
48     {
49         synchronized (this)
50         { notify();}
51     }
52 }
53
```

And the report obtained for this is:



```
{
  "repairs": [
    {
      "nbPerformedRepairs": 1,
      "ruleName": "notifyAll should be used",
      "crashedRepairsLocations": [],
      "nbCrashedRepairs": 0,
      "ruleKey": "S2446",
      "nbViolationsBefore": 1,
      "performedRepairsLocations": [
        {
          "endLine": 50,
          "endColumn": 19,
          "startColumn": 13,
          "filePath": "abc.java",
          "startLine": 50,
          "violationSpecifier": "S2446:abc.java:50:13:50:19"
        }
      ],
      "nbViolationsAfter": 1,
      "executionInfo": {
        "soraldVersion": "commit: fc7af13d",
        "javaVersion": "11.0.14",
        "originalArgs": [
          "repair",
          "--source",
          "/Users/khyati/Desktop/yogya/abc.java",
          "--rule-key",
          "2446",
          "--stats-output-file",
          "report1.rtf"
        ],
        "totalTimeMs": 3308,
        "repairTimeMs": 129,
        "startTimeMs": 1648505361156,
        "crashes": [],
        "endTimeMs": 1648505364464,
        "parseTimeMs": 824
      }
    }
  ]
}
```

**Limitations:**

1. The transformation isn't getting reflected in the source code
2. Assumption has been made that if the notify method is called in a block, it will be in the first line only.