SE 333 Software Testing

Assignment: Static Analysis

Due date: May 24, 2021 11:59 pm

Late penalties: 1% late penalty per day for up to 7 days. No late submission will be accepted after 7 days.

The Objectives

The objectives of this assignment are to:

1. learn to use static analysis tools to improve source code
2. learn to use PMD static analysis

Requirements

In this assignment, you need to:

1. add PMD to your class project
2. add 1 ruleset to the provided PMD rules
3. generate the analysis
4. Review the results
5. Write a 1 to 2 page summary of your interpretation results
6. Deliver your project and your analysis to D2L

Each of these steps are described in greater detail below.

Steps

1. Adding static analysis to your project
   The homework folder for week 8 contains:
   a. pmd.txt
      merge these values into your project's build.gradle file
   b. Update packageDistribution to include PMD reports

2. For comparison, add PMD to another project as well. You do not need to deliver these results but it might help you write a better analysis (see below).

3.

3. Generate analysis
   Execute ‘gradle clean build’ to produce the PMD analysis. The provide PMD add-ins for gradle.build have rulePriority set to 3. Valid values range from 1 to 5. Experiment with the other ranges

4. Add one ruleset to
   Go to https://pmd.github.io/pmd-6.21.0/ and click on ‘Rule Reference’ and the ‘Java Rules’. Find one ruleset you want to add to your project and add it. You add rules in the build.gradle file, under “pmd/rulesets”. In the rule description, look for something similar to:

   ```
   <rule ref="category/java/documentation.xml/CommentContent" />
   ```

   to add this ruleset to gradle, you would add “category/java/documentation.xml”. Add the whole set, **not an individual rule**

5. View results
   In each project, the results can be found in build/reports/pmd. Notice that analysis is done on both main and test.

6. Write a 1 to 2 page report on results
   Examine the results and make sure you understand them. Write about your findings.
   a. Provide a detailed analysis for findings more severe than 3 (1 or 2). Each one should be addressed individually.
      i. Should such a flaw block the build? Why or why not?
      ii. What is the consequence of not addressing each flaw?
   b. Provide a summary of the other findings
      i. are there any that you think ought to be considered more severe than their current rating? Why if so?
   c. What specific changes to the application do you recommend, to address these findings? You do not need to actually make the changes, just make a recommendation. This recommendation must include all level 1 and 2 violations but can include others as well.

7. Upload your zip file and your findings document to D2L.
   a. The zip file is just the zip produced by gradle. It should NOT contain your analysis document

b. Your analysis document should be a separate document in Word, PDF, or TXT format. No hand written documents.

Checklist

Check our deliverable against the following:

- ❏ All code you produced meets the class style guidelines
- ❏ Zip file contains PMD reports
- ❏ A new ruleset was added to the build.gradle file
- ❏ All level 1 and 2 violations that were found are addressed by name in your report
- ❏ Summary information about levels 3,4 and 5 are in your report
- ❏ The zip file is named <your-short-name>-shopping-app (not 'dwalke30-shopping-app'
- ❏ Unzipping your file produces an environment that can be built with: 'gradlew clean build'