SE 461 Software Testing and Quality

Group Project: JUnit and Test Coverage Criteria

Due on Wednesday, May 12, 11:59AM.

Develop JUnit test cases to test a Tetris video game written in Java. The source code is included in the Tetris-Testing.zip file. Download the zip file, unzip it, and import the project into your Eclipse workspace.

Your team must use at least one of the test coverage criteria that we have learned in SE 461 to develop JUnit test cases. This is similar to Question 1 of Assignment 3, except that we have a code base (instead of a single method) consisting of five classes to test.

Use JaCoCo (https://www.jacoco.org/), a Java code coverage tool, to generate a code coverage report, such as lines coverage, methods coverage, and branches coverage.

Write a project report that covers the following aspects:

1. **Test design**: use at least three examples to explain how your team developed JUnit test cases to satisfy the coverage criterion/criteria that your team used. The explanation should be specific and similar to your answers to Question 1 of Assignment 3 (e.g., include graphs, TRs, test cases, and test paths). For each test case, explain what your input is and what your expected output is.
2. **Test results and analysis**: what problem(s) did you find in the code? For each problem, further explain how you found it (e.g., using which test case). What is your JaCoCo code coverage score? How did your team improve your coverage score? Include screenshots of JaCoCo test reports.
3. **Reflection and lessons learned**: describe your experience of designing JUnit test cases in this project and how your test coverage criteria helped (or hindered?) your test design. Putting everything together, what worked, what did not? What are your overall thoughts about software testing, test coverage criteria, or Junit?

Your project will be graded based on the following aspects.

1. Code coverage score that JaCoCo reported.
2. The number and quality of JUnit test cases that you have developed.
3. The completeness and quality of your project report.
4. The problems that you have found in the Tetris code.
5. Project presentation as described below.

At the end, each team should submit two files to Cougar Course: (1) project report and (2) the zipped project file that includes your test cases for the Tetris application.

Additionally, each team will give an in-class presentation about their project. The presentation counts 20% towards your project grade.