

**Winter 2017 Contest**

**Final Software Requirements**

**2016 December 15<sup>th</sup>**

Final Software Requirements for the Winter 2017 Contest are as follows:

1. The solution shall use a minimum of Java7 and a maximum of Java 8.
2. The solution shall test executables in the form of Java Jars via the command line.
3. The solution shall increase code coverage of the Software Under Test (SUT) via exploratory black box testing.
4. The solution shall increase the number of unique exceptions generated by the SUT via exploratory black box testing.
5. The solution shall accept the path of the executable jar to test as a required command line argument in the form of: `-jarToTestPath <jar to test path here>`.
6. The solution shall accept the path to the directory where jacoco will generate output files as a required command line argument in the form of: `-jacocoOutputPath <jacoco output dir path here>`.
7. The solution shall accept the path of the jacoco agent jar in the form of: `-jacocoAgentJarPath <jacoco agent jar path here>`.
8. The solution shall execute the specified number of exploratory black box test iterations (default 1000) against the SUT.
9. The solution shall run additional exploratory black box test iterations, if the specified number of exploratory black box test iterations completes within a specified test time goal (default 5 minutes).
10. The solution shall accept the number of exploratory black box tests to run as an optional command line argument in the form of: `-bbTests <number of tests here>`.
11. The solution shall accept the test time goal as an optional command line argument in the form of: `-timeGoal <number of minutes here>`.
12. The solution shall support applications that take a fixed number of arguments.
13. The solution shall support applications that take a variable number of arguments.
14. The solution shall support integer arguments.
15. The solution shall support double arguments.
16. The solution shall support bounded String arguments.

17. The solution shall support unbounded String arguments.
18. The solution shall record unique exceptions or crashes seen during exploratory testing.
19. The solution shall print to stdout a YAML report at the end of testing that is in the following format:
  - Total predefined tests run: <count here>
  - Number of predefined tests that passed: <count here>
  - Number of predefined tests that failed: <count here>
  - Total code coverage percentage: <percentage as a double here>
  - Unique error count: <count here>
  - Errors seen:
    - <Exception or crash information here>
    - <Exception or crash information here>
    - <Exception or crash information here>
20. The solution shall accept an optional command line argument of the form "-toolChain" that will limit the output to contain only the parseable YAML indicated above.
21. The solution shall be delivered as an executable jar with the name  
com.idtus.contest.winter2017.framework.jar.
22. The solution shall also be delivered as an Maven Project in Eclipse (zipped up) with the name  
com.idtus.contest.winter2017.framework.zip.