CS 5103 Course Project: Software Engineering Practice

1. General Requirements

In this project, you need to go through all software engineering practices with a small personal project. We try to reduce the implementation effort of the project to minimum to allow an individual student to finish it.

2. Project Topics

(a) **Strings and Words:** In this project you are writing a program to perform various word statistics of a given document (as a string). The initial requirement is to count the frequency of each unique word. The code should support combinations of space, tab, and newline characters as separators.
(b) **Date Time Transformation:** In this project you are writing a program to transform the given datetime string to different formats. The initial requirement is to transform it to any different time zone.
(c) **Big Number Computation:** In this project you are performing computation on big numbers (thousands of digits). The initial requirement is to perform addition and subtraction of two numbers.

3. Project Process

1. Requirement Engineering: Write textual-based specifications and test cases of the program you are writing.
2. Design: Adapt and refactor your software design based on new requirements posted later.
3. Implementation: Implement your code based on version control system and make changes to implementation based on new requirements.
4. Testing: Write additional unit tests for your classes.
5. Tool Application: Apply code clone detection, static bug detection on your code base and report results.

4. Requirement Changes

We have three requirement changes that will be posted later.

5. Delivery

We will have two mid-term check points due on Mar. 10th and Mar. 31th after two development sprints, and the final due date will be Apr 28th.

Due on Mar. 10th: Requirements, implementation (with repo link), unit tests, and readme file (describing how to run your code) for the first batch of requirement.

Due to Mar. 31th: Requirements, implementation (with the same repo link), unit tests, and readme file (describing how to run your code) for the second batch of requirement.

Due on Apr. 28th: Requirements, implementation (with repo link), readme file, for the last batch of requirement, design change report (reporting the design principles and design patterns you used if any), tool application report (reporting the results and experience of using automatic tools mentioned above).

6. Grading

Distribution of Points:

Check point 1: 9 points (3 points for each of specification, tests, and implementation)

Check point 2: 9 points (3 points for each of specification, tests, and implementation)

Final delivery: 12 points (3 points for each of specification & test, implementation, design change report, and tool application results)

7. Others

Your delivery should be named as: CS5103_[abc123]_[name].zip

You can use any programming language, any programming environment, any version control system (you need to find a public code repository such as github to host your code so that the TA is able to check your code commit history).