Criterion A: Planning

Defining the Problem

After hearing about the IA, I got straight to brainstorming. Throughout the brainstorming process, I remembered how I frequently found math questions online to prepare me for math contests and tests. However, the problems I found were all in separate PDF documents. Thus, I had to have many different PDF documents open at the same time. This resulted in me losing track of which PDF contained a specific problem. Moreover, the problems were not sorted by any types nor were they organized by difficulty. I had to manually locate the type of problems I wanted within the PDF and I did not know which problems would be appropriate for my skill level.

As such, I began thinking of a way I could solve this problem. After thinking about it, I decided that I should make a questionbank. With a question bank, after inputting the problems, they will all be stored in one location and can be easily accessed or sorted in different ways.

I consulted my computer science teacher and she thought that it was a sound idea. Furthermore, in order to develop a better understanding of how my product should function, I looked at the formatting of math contest problems and referenced preexisting question banks that I could find.

My client is myself and my supervisor is Mr.xx who is someone that occasionally helps me with math problems.

Rationale for the Proposed Solution

In my opinion, a question bank application coded in Java was best suited for the task as it allows for ease in storage, display and manipulation.

The Java program will include two different modes. There will be a student mode meant for students to look through problems and find different problems to attempt. The question bank will also have an option to check an inputted answer. There is also a teacher mode meant for adding new problems into the questionbank. All of the questions will be stored into text files and displayed for the user within the student mode.

I used Java because:
- It is the language I have learned in school.
- It is the language I am most familiar with.
- It is platform independent.
- I can make a GUI in Java and the Netbeans IDE also simplifies this process further.
- Java is a language with Object Oriented Programming capabilities.

Success Criteria

1. Program will have an encrypted login feature to protect users.
2. The login feature will also be regulated and throw error messages when passwords/usernames do not fit the criterias set.
3. Program will allow for users to add problems through the teacher mode.
4. Program will have a user friendly interface.
5. Program will display a table with all the problems and have search filters/sorting options to go through the programs.
6. Users will be able to open and attempt any of the problems.
7. Program will check inputted answers and also users will have the option to look at the correct answer.
8. Program will generate problem sets for the user to practice.

Word Count: 385