Criterion A: Planning

Defining the Problem:

      Interest in the computer science DP course at my school is currently on the rise. In the past three years since the school first introduced this course, the class size has grown over 65%. This sudden increase in students has proven to be challenging for Ms. x, the only computer science teacher for the DP course at my school. Ms.x's style of teaching involves creating different exams for different classes, involving specific topics and daily quizzes that cover last lesson's material. The increase in CS students has led Ms. x to spend a lot more time searching for specific questions online that are scattered and unsorted. This manual effort Ms. x puts has led to part of her work becoming more repetitive and inefficient. I conducted an interview with Ms. x to discuss this issue (refer to Appendix A), and volunteered to develop a web application allowing DP computer science teachers to browse sorted practice questions that are linked to a database management system, and to create randomized practice tests for her students on specific topics that they can choose. I chose to develop a solution for my teacher since I believe it will be a scalable product that can remove a lot of the manual labor associated with exam creation, and will be a system that leads to less time and effort required for DP computer science teachers.

WORD COUNT: 230 Words

Rationale for Proposed Solution:

      I will develop a web application solution to the problem through the atom IDE, a color coded and flexible text-editor. I chose specifically to create a web application due to its accessibility across a multitude of platforms and being easily shared between users. For the front-end, I will be using the standard HTML and CSS for the layout of my application, and to set a framework for the back-end work. The back-end of my web application will be powered using the PHP programming language. This language is suitable as the creation of the question bank as a solution to my client's problem requires direct and easy access to a database management system containing the questions with all their features. PHP is flexible and compatible with the HTML framework and has built-in libraries to allow linking to the phpmyadmin database administration software tool that will allow smooth and quick transactions between the web application and the database. Also, PHP provides data structures such as multidimensional arrays, looping, along with mathematical and randomizer functions that will allow manipulation of questions and practice tests.

      Finally, using PHP and phpmyadmin will allow me to host my application on a local network free of cost powered by the XAMPP apache package. I will link these tools to develop my solution.

WORD COUNT: 215 words

Success Criteria:
1. The application should have a functional account register system that allows the creation of a username/password-protected distinct profile.
2. **The ap**plication should provide an interface containing a welcome message, search filters, filtered questions, logout option, and link to create practice tests.
3. The application should allow the user to filter by both unit (topic in DP CS course), and section (either section A or section B) with accurate results.
4. The application should provide the user with information as to which unit and section they have selected as search filters.
5. **T**he **app**lication should provide the section, units, title, question image, and markscheme for each question.
6. **T**he **appl**ication should hide the question mark scheme until the user clicks it.
7. Practice test questions must be in order of lowest time taken to highest.
8. The practice test must fall within the 5 minutes of the time specified by the user. For example, if the user chooses a 45 minute practice test, the test must be between 40-50 marks.