Computer Science GCSE Quiz System

My project aims to assist both students and teachers at GCSE. I aim to create a revision system for GCSE Computer Science students to help them prepare for their exams at the end of Year 11. This system will be unique to each user as it records their progress and provides questions for them to answer in order to constantly test their knowledge of the course.

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Objectives

1. Create a log in page to allow users to log in to existing accounts
   1. Create an option where the student can log out of their account
   2. The log in page should not show the password as it is typed in for security reasons.
   3. The system should take the user to their individual menus once logging in
   4. The system should have an option to create an account
   5. Create a teacher log in so they can manage the students in terms of what questions they can answer
   6. The system should require a minimum of 6 characters when creating a username, and 6 characters when creating a password
2. Have questions from a database appear to the students
   1. The questions should be in the correct format for the system
      1. The questions should be able to be formatted by using a GUI creator
   2. The stored questions in the database should be clear for the students answering them
   3. The questions should be organised by topic within the system
3. The system should let students answer questions
   1. The users should be able to choose when they submit an answer when completing a question
   2. There could be a way for class teachers to assign questions depending on difficulty and student
   3. There could be a way for the teacher to manage the relevant students within the system
   4. The system could let teachers add, edit and delete quizzes
      1. This would be useful in keeping the question relation in the database up to date
   5. The system could allow for a variety of question types
      1. These questions should be similar to the exam questions set by AQA Computer Science at GCSE
   6. There should be an element of randomization to the quizzes and questions given to the students
   7. The system could allow for spelling mistakes when students answer a question
   8. The system could use an algorithm to analyse longer responses for key words/phrases in order to determine the marks received
      1. There could be questions with different numbers of marks depending on complexity
   9. The system could analyse a data source to gather questions
      1. This would mean the system could stay up to date with the changing curriculum
      2. This would most likely involve an AI algorithm designed to scan for specific information
4. The system should automatically mark completed questions using data from a database
   1. The system should store a student’s answer when it has been submitted, along with the mark received, and when the question was submitted
   2. The system should note what areas the student struggled in over a period of time
5. The system should automatically save completed questions to the student’s account in order to monitor progress
   1. The system could provide brief notes on each topic for students.
      1. These can be used to help a student review a topic quickly before answering questions
      2. These could be viewed by clicking a help button when on each topic page
6. The system should display progress to individual users
   1. Progress should show the percentages for questions and topics
      1. How many attempts at a question were correct vs how many attempts were made
      2. For example, someone answered a question 10 times however only got 3 of those attempts correct. Their percentage would be 30% for that question
   2. The system could allow teachers to view student progress over time
   3. The system could recommend areas that need focus by analyzing past progress
   4. Student progress could be exported to a separate text file if requested by the student
   5. The student progress results could be mapped on a graph
      1. Use a bar graph to show the percentages for each topic
      2. A line graph could be made to show the user’s progress over time
         1. The progress over time could be by month or by week or by day depending on how long they have been attempting questions for
7. The database should rank questions based on difficulty
   1. The system could use one of each difficulty to initially analyse the student’s knowledge
   2. The system should use past question marks to consider what question to next give the student.
   3. The system could comment on the progress of the student