Green University of Bangladesh
Department of Computer Science and Engineering (CSE)
Faculty of Sciences and Engineering
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LAB FINAL PROJECT REPORT
Course Title: Algorithm Lab
Course Code: CSE-206   Section: D-13

Title: Quiz Game

Student Details

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Project Overview

The Quiz Game in C is a console-based application developed using the C programming language. This project aimed to create an interactive and educational game where users can answer quiz questions based on their difficulty levels. The game categorizes questions into different levels and sorts them accordingly, offering a progressive challenge to the users.

Objectives

-To develop a user-friendly quiz game in C.
-To implement sorting algorithms for arranging questions based on difficulty.
-To enhance user interaction through a scoring system and difficulty levels.
-To demonstrate the use of structures, arrays, and functions in C.

Methodology

The project was developed in the C programming language, utilizing its various features such as structures, arrays, loops, and conditional statements. The development process involved:

-Designing the Question Structure: Creating a `struct` to hold each quiz question, its options, correct answer, and difficulty level.
-Implementing Bubble Sort: Using bubble sort to arrange questions based on their difficulty level.
-Developing Interactive Functions: Writing functions to display questions, accept user input, and calculate scores.
-Testing and Debugging: Running the program with various inputs to ensure functionality and fixing any bugs encountered.

Code Explanation

The program consists of several key components:

-Struct Definition: `struct Question` defines the structure of each quiz question.
-Bubble Sort Algorithm: `bubbleSort` function sorts the array of questions based on the `difficultyLevel`.
-Question Display: `displayQuestion` function displays a question and its options.
-Quiz Gameplay: `playQuizLevel` function conducts the quiz for a specific difficulty level, accepts user answers, and calculates the score.
-Main Function: Initializes quiz questions, calls the sorting function, and manages the game flow.

Results

Upon execution, the program:

-Displays quiz questions sorted by difficulty level.
-Allows users to answer questions, providing immediate feedback.
-Keeps track of the user's score and progresses through difficulty levels based on performance.

Output:

Need At Least 2 Answer To continue 2nd Level

```
C:\Users\ASH\Documents\Qu    ×    +    ∨                                                          —    ☐    ✕

3. Berlin
4. Madrid
Your answer (1-4): 1
Correct!

Question 2 (Difficulty Level 1):
Which planet is known as the Red Planet?
1. Mars
2. Venus
3. Jupiter
4. Saturn
Your answer (1-4): 2
Incorrect. The correct answer is 1. Mars

Question 3 (Difficulty Level 1):
What is the largest mammal?
1. Elephant
2. Whale Shark
3. Blue Whale
4. Giraffe
Your answer (1-4): 2
Incorrect. The correct answer is 3. Blue Whale
Your score for Level 1: 1 out of 3
Sorry, you need at least 2 correct answers to unlock the next level.

Quiz completed. Your total score: 1

Process returned 0 (0x0)   execution time : 15.588 s
Press any key to continue.
```

Now Unlocked 2nd Level

```
Question 2 (Difficulty Level 1):
Which planet is known as the Red Planet?
1. Mars
2. Venus
3. Jupiter
4. Saturn
Your answer (1-4): 1
Correct!

Question 3 (Difficulty Level 1):
What is the largest mammal?
1. Elephant
2. Whale Shark
3. Blue Whale
4. Giraffe
Your answer (1-4): 3
Correct!
Your score for Level 1: 3 out of 3
Congratulations! You have unlocked the next level.

Level 2

Question 4 (Difficulty Level 2):
What is the chemical symbol for gold?
1. Au
2. Ag
3. Fe
4. Hg
Your answer (1-4):
```

```
Question 5 (Difficulty Level 2):
Which gas do plants absorb from the atmosphere?
1. Oxygen
2. Carbon Dioxide
3. Nitrogen
4. Hydrogen
Your answer (1-4): 2
Correct!

Question 6 (Difficulty Level 2):
What is the freezing point of water in Celsius?
1. 0 C
2. -10 C
3. 100 C
4. 25 C
Your answer (1-4): 1
Correct!
Your score for Level 2: 3 out of 3
Congratulations! You have unlocked the next level.

Level 3

Question 7 (Difficulty Level 3):
What is the smallest prime number?
1. 1
2. 2
3. 3
4. 4
Your answer (1-4):
```

Challenges Faced

-Implementing an efficient sorting algorithm for question difficulty.
-Ensuring user inputs are validated and handled correctly.
-Designing the program to be scalable and easy to modify with more questions or levels.

Future Scope

-Graphical User Interface: Implementing a GUI for a more engaging user experience.
-Database Integration: Storing questions in a database for dynamic content.
-Multiplayer Functionality: Adding a feature to allow multiple players to compete.
-Question Categories: Introducing different categories (e.g., science, history, general knowledge).
-Difficulty Adjustment: Implementing an algorithm to adjust difficulty based on user performance.

Conclusion

The Quiz Game in C successfully demonstrates basic programming concepts while providing an interactive and educational tool. It serves as a foundation for more complex quiz games and educational applications.