Flashcard App with Randomized Question Display

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- Project Title: Flashcard App with Randomized Question Display

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1. Introduction

Flashcards are an effective educational tool widely used for learning and memorization. The Flashcard App is a simple program that enhances the process by randomizing questions and displaying answers upon user input, creating an interactive learning experience.

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2. Problem Statement

Traditional flashcard usage lacks interactivity and randomness, making the learning process monotonous. The challenge is to create a program that dynamically selects and displays questions from a pool, improving user engagement and retention.

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3. Objectives

- Develop a user-friendly flashcard application.
- Implement randomized question display to enhance unpredictability.
- Provide immediate feedback by displaying the answer upon user request.

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4. Methodologies

The application is implemented in C++ and follows these steps:

1. **Defining the Flashcard Structure:** A structure is created to store questions and their respective answers.
2. **Randomized Question Selection:** The program uses a random number generator seeded by the current time to select a question from a collection.
3. **User Interaction:** The app waits for user input to reveal the answer and continues displaying random questions based on user choice.
4. **Iterative Approach:** A loop is used to allow multiple rounds of question and answer display.

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5. Code Implementation

```
#include <iostream>
#include <string>
using namespace std;

int main() {
    string questions[] = {
        "What is the capital of France?",
        "What is 2 + 2?",
        "Who wrote 'Hamlet'?",
```

```
    "What is the largest planet in our solar system?",
    "What is the boiling point of water in Celsius?",
    "What is the smallest prime number?",
    "Who painted the Mona Lisa?",
    "What is the speed of light in m/s?",
    "Who discovered penicillin?",
    "What is the chemical symbol for water?"
};

string answers[] = {
    "paris",
    "4",
    "shakespeare",
    "jupiter",
    "100",
    "2",
    "da vinci",
    "299792458",
    "fleming",
    "h2o"
};
```

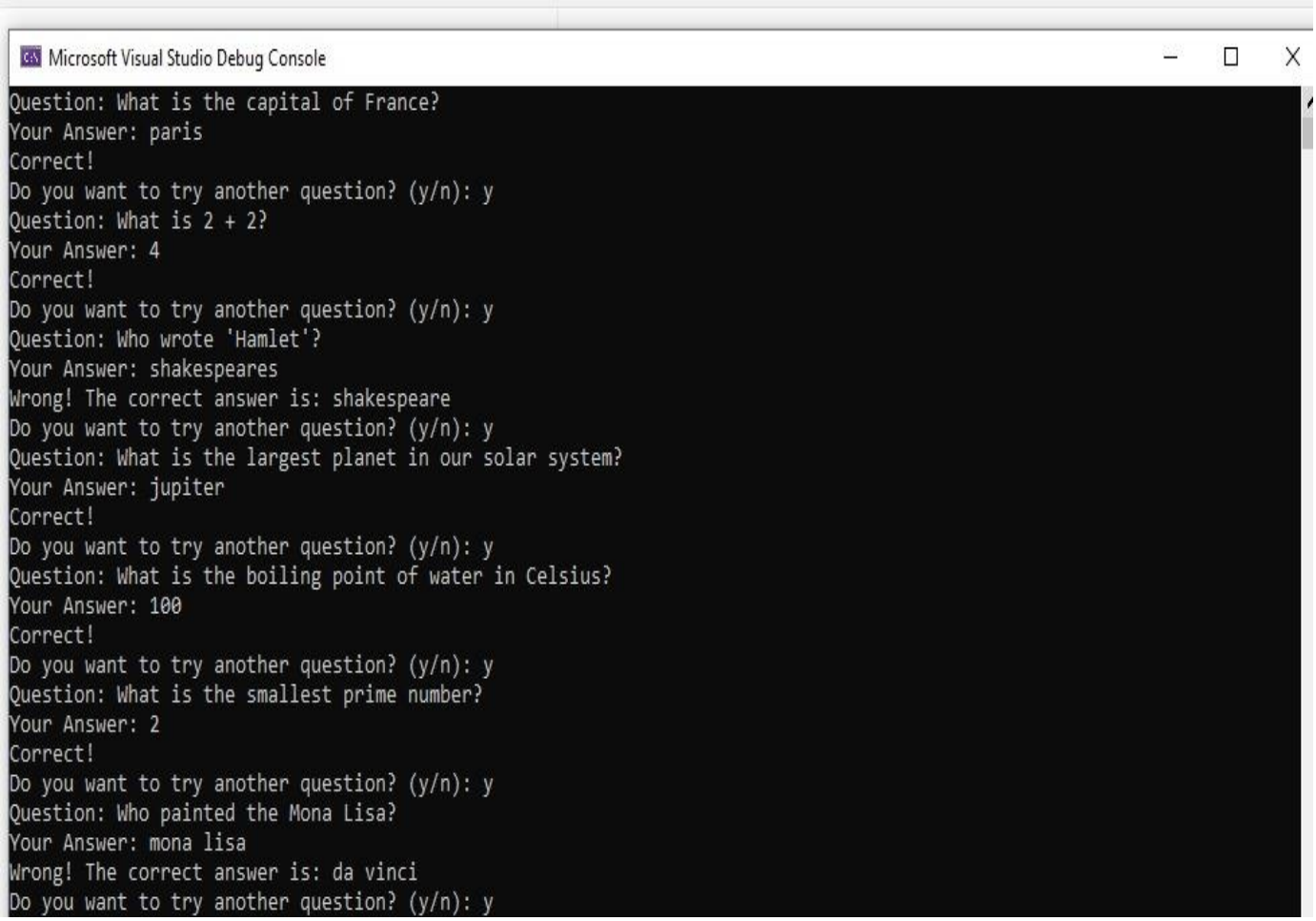
```
    int totalQuestions = 10;
    bool asked[10] = { false };

    char choice;
    int currentIndex = 0;
    do {
        bool allAsked = true;
        for (int i = 0; i < totalQuestions; i++) {
            if (!asked[i]) {
                allAsked = false;
                break;
            }
        }

        if (allAsked) {
            cout << "You've answered all questions! Restarting the
quiz.\n";
            for (int i = 0; i < totalQuestions; i++) {
                asked[i] = false;
            }
```

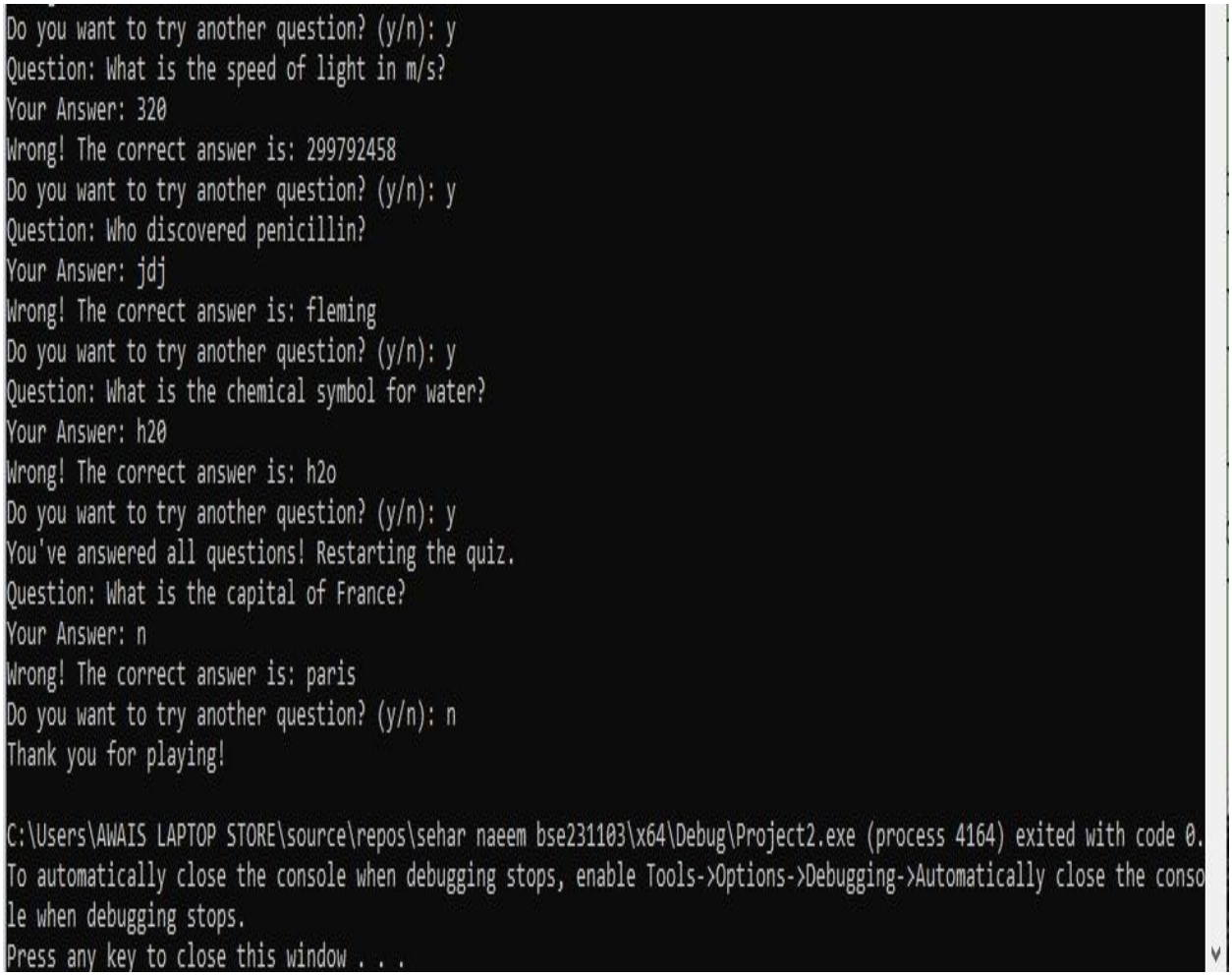
```
        currentIndex = 0;
    }

    while (asked[currentIndex]) {
        currentIndex = (currentIndex + 1) % totalQuestions;
    }

    asked[currentIndex] = true;

    cout << "Question: " << questions[currentIndex] << endl;

    string userAnswer;
    cout << "Your Answer: ";
    cin >> ws; // Clear leading whitespace
    getline(cin, userAnswer);

    for (size_t i = 0; i < userAnswer.length(); i++) {
        userAnswer[i] = tolower(userAnswer[i]); // Convert to
lowercase for case-insensitive comparison
    }
```

```
        for (size_t i = 0; i < answers[currentIndex].length(); i++) {
            answers[currentIndex][i] =
tolower(answers[currentIndex][i]);
        }

        if (userAnswer == answers[currentIndex]) {
            cout << "Correct!\n";
        }
        else {
            cout << "Wrong! The correct answer is: " <<
answers[currentIndex] << "\n";
        }

        cout << "Do you want to try another question? (y/n): ";
        cin >> choice;

    } while (choice == 'y' || choice == 'Y');

    cout << "Thank you for playing!\n";
    return 0;
}
```

6. Results

- The application successfully randomizes and displays flashcards.
- The user can view answers interactively by pressing Enter.
- The loop allows multiple interactions, improving engagement.
- Upon exiting, a farewell message is displayed, ensuring a user-friendly experience.




Do you want to try another question? (y/n): y
Question: What is the speed of light in m/s?
Your Answer: 320
Wrong! The correct answer is: 299792458
Do you want to try another question? (y/n): y
Question: Who discovered penicillin?
Your Answer: jdj
Wrong! The correct answer is: fleming
Do you want to try another question? (y/n): y
Question: What is the chemical symbol for water?
Your Answer: h20
Wrong! The correct answer is: h2o
Do you want to try another question? (y/n): y
You've answered all questions! Restarting the quiz.
Question: What is the capital of France?
Your Answer: n
Wrong! The correct answer is: paris
Do you want to try another question? (y/n): n
Thank you for playing!
C:\Users\AWAIS LAPTOP STORE\source\repos\sehar naeem bse231103\x64\Debug\Project2.exe (process 4164) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the conso
le when debugging stops.
Press any key to close this window . . .

7. References

1. C++ documentation for <iostream> and <vector>.
2. Standard Template Library (STL) for efficient data handling.
3. Online resources for random number generation in C++.
