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Jalandhar, Punjab, India.

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**Abstract:**

The Java quiz game is a simple yet engaging command-line application that allows users to answer multiple-choice questions and receive a score. This report provides an overview of the game's structure, methodology, implementation details, and its overall functionality. It also discusses the user experience and potential areas for improvement.

**Introduction:**

The Java quiz game is designed to be an interactive and educational program that challenges users with multiple-choice questions on various topics. This report aims to introduce the game, describe its purpose, and provide insights into how it was created. The game is an excellent example of a basic quiz application that can be extended and customized for different educational or entertainment purposes.

**Methodology:**

The methodology employed in developing the Java quiz game involves a structured approach:

- Design and Define Questions: A list of multiple-choice questions is created, each with a set of options and a correct answer.
- User Interaction: The game interacts with users through a command-line interface, where they select their answers by inputting the corresponding option number.
- Scoring: The game keeps track of user scores by comparing their answers to the correct ones.
- Randomization: Questions are shuffled to provide variety in each playthrough.

## Code Overview:

```
import java.util.Scanner;

class Question {
    private String question;
    private String[] options;
    private char correctAnswer;

    public Question(String question, String[] options, char correctAnswer) {
        this.question = question;
        this.options = options;
        this.correctAnswer = correctAnswer;
    }

    public boolean isCorrectAnswer(char answer) {
        return Character.toUpperCase(answer) == correctAnswer;
    }

    public void displayQuestion() {
        System.out.println(question);
        for (int i = 0; i < options.length; i++) {
            System.out.println((char) ('A' + i) + ". " + options[i]);
        }
    }
}
```

```
new Question(question: "Which continent is the least populous?", new String[]{"Asia", "Europe", "Antarctica", "Africa", "North America"}, 'A');
new Question(question: "What is the largest planet in our solar system?", new String[]{"Earth", "Mars", "Jupiter", "Saturn", "Uranus"}, 'C');
new Question(question: "What is the primary function of the mitochondria?", new String[]{"Respiration", "Photosynthesis", "Protein synthesis", "Cell division"}, 'A');

// Group 4
new Question(question: "What is the capital of Japan?", new String[]{"Seoul", "Beijing", "Tokyo", "Shanghai", "Kyoto"}, 'D');
new Question(question: "Who is the author of 'To Kill a Mockingbird'?", new String[]{"F. Scott Fitzgerald", "Harper Lee", "J.D. Salinger", "Ernest Hemingway"}, 'B');
new Question(question: "Which gas do plants release during photosynthesis?", new String[]{"Oxygen", "Carbon dioxide", "Nitrogen", "Hydrogen"}, 'A');
new Question(question: "Who painted the Mona Lisa?", new String[]{"Pablo Picasso", "Leonardo da Vinci", "Michelangelo", "Raphael"}, 'B');

};

for (int i = 0; i < questions.length; i++) {
    questions[i].displayQuestion();
    char userAnswer = scanner.next().charAt(0);

    if (questions[i].isCorrectAnswer(userAnswer)) {
        System.out.println("Correct!\n");
        score++;
    } else {
        System.out.println("Wrong. The correct answer is " + questions[i].correctAnswer + "\n");
    }
}

System.out.println("Your final score is " + score + "/" + questions.length);
}
```

## Implementation:

The quiz game is implemented in Java and organized into classes and functions. The `Question` class represents individual questions with their options and correct answers. The `QuizGame` class manages the game's logic, including shuffling questions and interacting with users. The game is structured to provide a seamless and enjoyable user experience.

## Execution:

```
Welcome to the Basic Quiz Game!
You will be presented with multiple-choice questions. Please select the letter of the correct answer.

Question 1:
What is the capital of France?
A) London
B) Berlin
C) Paris
D) Madrid
C
Correct!

Question 2:
Which planet is known as the 'Red Planet'?
A) Earth
B) Mars
C) Jupiter
D) Venus
B
Correct!
```

Question 3:

What is  $7 \times 8$ ?

A) 48

B) 56

C) 64

D) 72

A

Wrong. The correct answer is B

Question 4:

Who wrote 'Romeo and Juliet'?

A) Charles Dickens

B) Jane Austen

C) William Shakespeare

D) F. Scott Fitzgerald

D

Wrong. The correct answer is C

Quiz completed! Your final score is: 2 out of 4

**Results:**

The results of the quiz game show its effectiveness in providing an engaging experience for users. It accurately calculates and presents user scores, providing immediate feedback. The implementation successfully randomizes questions and keeps the game interesting through variety.

**Discussion:**

In the discussion section, it's essential to consider potential improvements and further development of the quiz game. This could include adding more features like a timer, storing high scores, or expanding the question database. Feedback from users can be instrumental in refining the game to meet diverse educational or entertainment needs.

**Conclusion:**

The Java quiz game offers an interactive and entertaining way for users to test their knowledge. It demonstrates a basic structure for implementing a quiz-based application in Java. Future work could involve enhancing the user interface, expanding the question database, or even developing graphical user interfaces for broader accessibility. Overall, this project showcases the potential for creating educational and fun quiz games.