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Subject Name: Python Programming

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Section/Group: MCD-1/A

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Subject Code:

Q. Title of Project

To create a project/game based on python programming.

Aim/Overview of the practical:

The aim of this practical is to develop an interactive Python quiz application that tests and reinforces the user's understanding of core Python programming concepts, including variables, operators, data types, and commonly used functions, through a flashcard-style game. This application will serve as an educational tool to facilitate active learning by presenting questions in a random order and providing instant feedback on the user's answers. By applying these concepts in a quiz format, learners can deepen their comprehension of Python, improve recall, and enhance problem-solving skills in a fun and engaging manner.. Furthermore, the quiz format is easily scalable, making it a versatile tool for both beginners and experienced programmers to review and assess their knowledge regularly.

Task to be done:

- Develop a Python flashcard quiz game that presents multiple-choice questions related to Python programming concepts.
- Implement user input handling to check answers and provide feedback.
- Track and display the user's score at the end of the quiz.
- Shuffle questions to ensure a random order each time the quiz is taken.

Code for experiment/practical:

```
import random
```

```
# Flashcards related to Python concepts (question: answer)
```

```
flashcards = {
```

```
    "Which function is used to get the length of a list in Python?": "len()",
```

```
    "How do you create a comment in Python?": "#",
```

```
"What is the data type of 'True' in Python?": "bool",  
"What operator is used to check equality in Python?": "==",  
"What is the result of 10 % 3 in Python?": "1",  
"Which keyword is used to define a function in Python?": "def",  
"Which method is used to add an item to a list in Python?": "append()"  
}  
  
# Convert flashcards dictionary to a list of tuples and shuffle  
flashcard_list = list(flashcards.items())  
random.shuffle(flashcard_list)  
  
def quiz():  
    score = 0  
  
    for question, answer in flashcard_list:  
        user_answer = input(f"{question} ")  
  
        if user_answer == answer:  
            print("Correct!")  
            score += 1  
  
        else:  
            print(f"Incorrect. The correct answer is {answer}.")  
  
    print(f"\nQuiz Over! Your final score: {score}/{len(flashcard_list)}")  
  
if __name__ == "__main__":  
    print("Welcome to the Python Concepts Flashcard Quiz Game!")  
    quiz()
```

Explanation of the Code:

1. **Importing Modules:** The random module is imported to shuffle the questions.

2. **Creating Flashcards:** A dictionary of flashcards is created, where each key is a question to Python concepts, and each value is the correct answer.

3. **Shuffling Flashcards:** The flashcards are converted into a list of tuples and shuffled to ensure a random order each time the quiz is played.

4. **Quiz Function:**

- Initializes the score to zero.
- Iterates over the shuffled flashcards, prompting the user for answers.
- Compares user input to the correct answer and provides feedback.
- Updates the score for correct answers and displays the final score at the end.

5. **Main Function:** The program welcomes the user and starts the quiz when executed.

3. **Result/Output/Writing Summary:**

```
Welcome to the Python Concepts Flashcard Quiz Game!
Which function is used to get the length of a list in Python? len
Incorrect. The correct answer is len().
How do you create a comment in Python? #
Correct!
What operator is used to check equality in Python? ==
Correct!
What is the result of 10 % 3 in Python? 1
Correct!
Which method is used to add an item to a list in Python? append
Incorrect. The correct answer is append().
What is the data type of 'True' in Python? booleam
Incorrect. The correct answer is bool.
Quiz Over! Your final score: 3/6
```

Learning outcomes (What I have learnt):

1. Understanding Key Python Concepts:

- Gained familiarity with fundamental concepts such as variables, operators, and data types through practical application.

2. User Input Handling:

- Learned to effectively handle user input and validate responses, enhancing interactive programming skills.

3. Data Structures:

- Developed skills in using dictionaries and lists for storing and manipulating data, critical for many Python applications.

4. Randomization Techniques:

- Gained experience with the random module to shuffle questions, adding unpredictability and engagement to the quiz.

5. Code Organization:

- Improved code organization through the use of functions, leading to more readable and maintainable code.