

CSPP Week - 6 Exam

Section - II

Time: 3 hours

Max Score: 25 pts

Console-Based Quiz Application

Overview:

Build a simple quiz application CSPP concepts you learned in this course. The quiz application features several multiple-choice questions. Here is an example of displaying one question with 4 choices on the console.

Who is the current Chief Minister of Telangana? (Max Marks: 3)
KCR Chandra Babu Naidu President's Rule Jagan

The first line of the example is the "question text," along with the maximum marks awarded for giving the right answer to the question. The second line has the "answer choices" that the user can choose from. **The user must choose one answer and type it in the console.** One of the choices is the correct answer. The user gets the maximum marks for giving the correct answer. An incorrect answer to the question attracts a penalty. A **penalty** for each question is given.

Here is a test case, with sample questions as input

```
2 question text - 1:choice 1, choice 2, choice 3, choice 4:3:1:-4
3 question text - 2:choice 1, choice 2, choice 3, choice 4:1:2:-3
4 question text - 3:choice 1, choice 2, choice 3, choice 4:2:3:-2
5 question text - 4:choice 1, choice 2, choice 3, choice 4:4:4:-1
6 question text - 5:choice 1, choice 2, choice 3, choice 4:3:1:-4
7 question text - 6:choice 1, choice 2, choice 3, choice 4:1:2:-3
8 question text - 7:choice 1, choice 2, choice 3, choice 4:2:3:-2
9 question text - 8:choice 1, choice 2, choice 3, choice 4:3:4:-1
10 question text - 9:choice 1, choice 2, choice 3, choice 4:4:1:-4
11 question text - 10:choice 1, choice 2, choice 3, choice 4:1:2:-3
```

Format

Lines 2 to 11 are for the 10 questions, one per line

Each field in the question line is delimited by a ":" When you split the line you will get 5 tokens. The first token is the question text, the second token is the list of choices delimited by a "," Third token is a number indicating the correct answer choice. The fourth token is the maximum mark awarded when the user gives the correct answer. The fifth token is the penalty when the user gives the wrong answer.

Here is a test case, and sample output if all the choices are correct.

```

cihl-132@cihl-132:~/Desktop/Console Based Quiz$ python3 quiz.py
|-----|
| Load Questions |
|-----|
questions loaded... 4
|-----|
| Start Quiz |
|-----|
question text - 1 (1)
choice 1      choice 2      choice 3      choice 4
Enter the choice option as 1/2/3/4: 3

question text - 2 (2)
choice 1      choice 2      choice 3      choice 4
Enter the choice option as 1/2/3/4: 1

question text - 3 (3)
choice 1      choice 2      choice 3      choice 4
Enter the choice option as 1/2/3/4: 2

question text - 4 (4)
choice 1      choice 2      choice 3      choice 4
Enter the choice option as 1/2/3/4: 4

|-----|
| Score Report |
|-----|
question text - 1
Correct Answer! - Marks Awarded:1
question text - 2
Correct Answer! - Marks Awarded:2
question text - 3
Correct Answer! - Marks Awarded:3
question text - 4
Correct Answer! - Marks Awarded:4
Total Score: 10

```

Here is a test case, and sample output if some of the choices are incorrect

```

cihl-132@cihl-132:~/Desktop/Console Based Quiz$ python3 quiz.py
|-----|
| Load Questions |
|-----|
questions loaded... 4
|-----|
| Start Quiz |
|-----|
question text - 1 (1)
choice 1      choice 2      choice 3      choice 4
Enter the choice option as 1/2/3/4: 1

question text - 2 (2)
choice 1      choice 2      choice 3      choice 4
Enter the choice option as 1/2/3/4: 2

question text - 3 (3)
choice 1      choice 2      choice 3      choice 4
Enter the choice option as 1/2/3/4: 3

question text - 4 (4)
choice 1      choice 2      choice 3      choice 4
Enter the choice option as 1/2/3/4: 4

|-----|
| Score Report |
|-----|
question text - 1
Wrong Answer! - Penalty:-4
question text - 2
Wrong Answer! - Penalty:-3
question text - 3
Wrong Answer! - Penalty:-2
question text - 4
Correct Answer! - Marks Awarded:4
Total Score: -5

```

Here is the breakdown of the problem descriptions into 5 functions.

1. loadData(filename) - 1 points
2. parseQuestions(data) - 5 points
3. startQuiz(questions) - 5 points
4. scoreReport(questions) - 4 points
5. runQuiz() - 10 points

Function - 1 loadData(filename)

This function, loadData, is designed to retrieve data from a file specified by the filename parameter. The filename should contain a valid file path on your computer. It's important to ensure that the filename is accurate and the file path is valid; otherwise, the function won't be able to open and read the file. Once it successfully opens the file, the function reads its contents and returns them as a string.

Function - 2 parseQuestions(data)

The function, parseQuestions, is designed to read the data from the parameter which is delimited by a new line character. Try splitting them with new line characters and iterate through every line to create the list of dictionaries. Every dictionary must contain the keys question_text, choices, correct_option, max_marks, and penalty. In the above section Format, look at how to parse the lines and store them in the list of dictionaries.

The dictionary format can look like this:

```
[[
  {
    'question_text': 'question text - 1',
    'choices': ['choice 1', 'choice 2', 'choice 3', 'choice 4'],
    'correct_option': 3,
    'max_marks': 1,
    'penalty': -4
  }, {
    'question_text': 'question text - 2',
    'choices': ['choice 1', 'choice 2', 'choice 3', 'choice 4'],
    'correct_option': 1,
    'max_marks': 2,
    'penalty': -3
  }, {
    'question_text': 'question text - 3',
    'choices': ['choice 1', 'choice 2', 'choice 3', 'choice 4'],
    'correct_option': 2,
    'max_marks': 3,
    'penalty': -2
  }, {
    'question_text': 'question text - 4',
    'choices': ['choice 1', 'choice 2', 'choice 3', 'choice 4'],
    'correct_option': 4,
    'max_marks': 4,
    'penalty': -1
  }
]]
```

Function - 3 startQuiz(questions)

The startQuiz function is designed to facilitate a quiz by processing a list of questions provided as the questions parameter. Here's how it works:

1. It iterates through the list of questions.
2. For each question, it prints the following information:
 - The question text.
 - The available choices are separated by tab spaces.
3. It then prompts the user to input their choice as an integer value (1, 2, 3, or 4).
4. After reading the user's input as an integer, the function validates it to ensure it corresponds to one of the provided choices for the question.

5. If the user's choice is valid, the function updates the dictionary representing the question with the following information:
 - The user's choice is stored as the user choice key.
 - The score key is updated based on whether the user's choice is correct.
6. Returns the updated list of questions by updating every dictionary with the user's choice and score.

In essence, this function guides the user through the quiz, records their choices, and updates the scores for each question accordingly.

The dictionary format can look like:

```
[{
  'question_text': 'question text - 1',
  'choices': ['choice 1', 'choice 2', 'choice 3', 'choice 4'],
  'correct_option': 3,
  'max_marks': 1,
  'penalty': -4,
  'user_choice': 1,
  'score': -4
}, {
  'question_text': 'question text - 2',
  'choices': ['choice 1', 'choice 2', 'choice 3', 'choice 4'],
  'correct_option': 1,
  'max_marks': 2,
  'penalty': -3,
  'user_choice': 1,
  'score': 2
}, {
  'question_text': 'question text - 3',
  'choices': ['choice 1', 'choice 2', 'choice 3', 'choice 4'],
  'correct_option': 2,
  'max_marks': 3,
  'penalty': -2,
  'user_choice': 1,
  'score': -2
}, {
  'question_text': 'question text - 4',
  'choices': ['choice 1', 'choice 2', 'choice 3', 'choice 4'],
  'correct_option': 4,
  'max_marks': 4,
  'penalty': -1,
  'user_choice': 1,
  'score': -1
}]
```

Function - 4 scoreReport(questions)

The `scoreReport` function is created to provide the user with a comprehensive feedback report, including their total score. Here's how it operates:

1. It iterates through a list of questions provided as a parameter.
2. For each question, it checks whether the `correct_option` and `user_choice` keys in the question dictionary are the same.
3. If the `correct_option` and `user_choice` match, it prints a message saying "Correct Answer!" and indicates the marks awarded for that question.
4. If the `correct_option` and `user_choice` don't match, it prints a message saying "Wrong Answer!" and mentions the penalty for that question.

In summary, this function goes through the questions, evaluates the user's answers, and provides detailed feedback along with the user's total score.

Function - 5 runQuiz()

The `runQuiz` function serves as the central component that brings together the previously mentioned functions to execute a complete quiz experience. Here's how it works:

1. It starts by loading quiz data and creating a list of dictionaries. This is accomplished by calling the `loadData` function with the `filename` as a parameter and then using the output of that function as input for the `parseQuestions` function.
2. Next, it initiates the quiz itself and collects user responses. This is done by calling the `startQuiz` function with the `questions` parameter, which is the list of dictionaries created earlier.
3. After the quiz is completed, the function proceeds to display detailed feedback on the user's performance. This is achieved by calling the `scoreReport` function with the output from the previous step.
4. Finally, the function prints the total score achieved in the quiz.

In summary, the `runQuiz` function orchestrates the entire quiz process, from loading data to displaying feedback and reporting the total score.

Look for the sample output on how we expect the output of the `runQuiz` function.

Happy VinayaChavithi!!