CODE CHALLENGE
CHAMPIONSHIP

PYTHON MISSION 3

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SENIOR CATEGORY

2024

Marketing Campaign Analyzer

Overview:

A digital marketing company, "AdSmart", runs multiple campaigns to their clients. They want to create a custom module to easily calculate some marketing important measures to understand trends in campaign effectiveness and improve overall marketing strategies.

Mission:

1- Make a custom module (Python file) named "campaign_analyzer" which will contain 3 functions taking integer parameters as follows:

- **calculate_roi(cost, revenue) → Calculates the Return on Investment (ROI) percentage of a marketing campaign.**

$$\text{ROI (\%)} = \left(\frac{\text{Revenue} - \text{Cost}}{\text{Cost}} \right) \times 100$$

- **click_through_rate(clicks, impressions) → Returns the percentage of how many people clicked on the ad compared to how many times it was viewed.**

$$\text{CTR (\%)} = \left(\frac{\text{Clicks}}{\text{Impressions}} \right) \times 100$$

- **conversion_rate(conversions, clicks) → Represents the ratio of successful actions taken compared to the total number of clicks.**

$$\text{Conversion Rate (\%)} = \left(\frac{\text{Conversions}}{\text{Clicks}} \right) \times 100$$

2- Then, make another file which is the main program which will use these functions to evaluate the marketing campaign by taking the needed inputs for each function from the marketing specialist (user).

3- The program should be running until **"stop"** is entered.

4- Handle entering **invalid values** or **dividing by zero.**

As a bonus part, convert this code to utilize a more professional approach which is OOP instead of using normal functions.

Useful Hints:

- ✓ Utilize the **import** keyword to import the **campaign_analyzer** file.
- ✓ Add a **docstring** for each function as it's an essential part.
- ✓ Use a **while loop** to make the program run as long as **stop** is not entered and make a choice number for each function.

Expected Output:

Example of using the 3 functions to calculate ROI, CTR, and CR

```
Choose an option or 'stop' to exit:
1. Calculate ROI (Return on Investment)
2. Calculate CTR (Click Through Rate)
3. Calculate CR (Conversion Rate)

Enter your choice: 1
Enter the cost of the campaign: 15000
Enter the revenue generated: 75000
ROI: 400.00%

Enter your choice: 2
Enter the number of clicks: 12345
Enter the number of impressions: 53500
CTR: 23.07%

Enter your choice: 3
Enter the number of conversions: 2350
Enter the number of clicks: 12345
CR: 19.04%
```

Calculating ROI

Calculating CTR

Calculating CR

Example of handling invalid cases and exiting the program

```
Choose an option or 'stop' to exit:
1. Calculate ROI (Return on Investment)
2. Calculate CTR (Click Through Rate)
3. Calculate CR (Conversion Rate)

Enter your choice: 4
Invalid choice. Please select a valid option.

Enter your choice: 3
Enter the number of conversions: 2500
Enter the number of clicks: 0
Dividing by zero or entering negative values is not accepted.

Enter your choice: stop
Exiting the program. Goodbye!
```

Invalid value

Dividing by zero

Exiting the program