Rajalakshmi Engineering College

Name: veshal M C
Email: 240701585@rajalakshmi.edu.in
Roll no: 240701585
Phone: 7904712060
Branch: REC
Department: I CSE FF
Batch: 2028
Degree: B.E - CSE

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NeoColab_REC_CS23221_Python Programming

REC_Python_Week 1_CY

Attempt : 1
Total Mark : 40
Marks Obtained : 40

Section 1 : Coding

1. Problem Statement

Emily is organizing a taco party and needs to determine the total number of tacos required and the total cost. Each attendee at the party will consume 2 tacos. To ensure there are enough tacos:

If there are 10 or more attendees, Emily will need to provide an additional 5 tacos.If there are fewer than 10 attendees, Emily must ensure a minimum of 20 tacos are provided.

The cost of each taco is $25. Write a program that calculates both the total number of tacos required and the total cost based on the number of attendees.

Input Format

The input consists of an integer n, representing the number of attendees.

Output Format

The first line prints "Number of tacos needed: " followed by an integer representing the number of tacos needed for n attendees.

The second line prints "Total cost: " followed by an integer representing the total cost.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 10
Output: Number of tacos needed: 25
Total cost: 625

Answer

```
n=int(input())
if(n>=10):
    n=n*2+5
else:
    n=20
tacos=n
total=n*25
print("Number of tacos needed:",tacos)
print("Total cost:",total)
```

Status : Correct   *Marks : 10/10*

2. Problem Statement

Mandy is working on a mathematical research project involving complex numbers. For her calculations, she often needs to swap the real and imaginary parts of two complex numbers.

Mandy needs a Python program that takes two complex numbers as input and swaps their real and imaginary values.

Input Format

The first line of input consists of a complex number in the format a+bj, representing the first complex number.

The second line consists of a complex number in the format a+bj, representing the second complex number.

Output Format

The first line of output displays "New first complex number: " followed by the swapped complex number.

The second line of output displays "New second complex number: " followed by the swapped complex number.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 10+8j
7-9j
Output: New first complex number: (8+10j)
New second complex number: (-9+7j)

Answer

```
a=complex(input())
b=complex(input())
print("New first complex number:",complex(a.imag,a.real))
print("New second complex number:",complex(b.imag,b.real))
```

Status : Correct   *Marks : 10/10*

3. Problem Statement

John is developing a financial application to help users manage their investment portfolios. As part of the application, he needs to write a program that receives the portfolio's main value and the values of two

specific investments as inputs. The program should then display these values in reverse order for clear visualization.

Help John achieve this functionality by writing the required program.

Input Format

The first line of input consists of a float, representing the first investment value.

The second line of input consists of a float, representing the second investment value.

The third line of input consists of an integer, representing the portfolio ID.

Output Format

The first line of output prints "The values in the reverse order:".

The second line prints the integer, representing the portfolio ID.

The third line prints the second float, representing the second investment value.

The fourth line prints the first float, representing the first investment value.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 35.29
9374.11
48
Output: The values in the reverse order:
48
9374.11
35.29

Answer

```
first=float(input())
second=float(input())
portfolio=int(input())
print("The values in the reverse order:")
```

```
print(portfolio)
print(second)
print(first)
```

Status : Correct   ***Marks : 10/10***

4. Problem Statement

Shawn is planning for his younger sister's college education and wants to ensure she has enough funds when the time comes. He starts with an initial principal amount and plans to make regular monthly contributions to a savings account that offers a fixed annual interest rate.

Shawn needs to calculate the total amount that will accumulate by the time his sister is ready for college. Your task is to write a program that calculates the final amount in the savings account based on the initial principal, monthly contributions, annual interest rate, and the number of months the money is invested.

Formula:

$A = P \times (1 + r/n)^{(n \times t)} + C \times [((1 + r/n)^{(n \times t)} - 1) / (r/n)]$

Where:

A = Final amount after the specified time

P = Initial principal amount

C = Monthly contribution

r = Annual interest rate (as a decimal, e.g., 5% = 0.05)

n = Number of compounding periods per year (12 for monthly compounding)

t = Total time in years (months / 12)

Input Format

The first line of input consists of a float P, representing the initial principal amount.

The second line of input consists of a float R, representing the annual interest rate (in percentage).

The third line of input consists of a float C, representing the monthly contribution.

The fourth line of input consists of an integer M, representing the number of months.

Output Format

The output displays "Final amount after X months: Rs." followed by the total accumulated amount, formatted to two decimal places, where X is the number of months.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 10000.0
5.0
2000.0
12
Output: Final amount after 12 months: Rs.35069.33

Answer

```
p=float(input())
r=float(input())
c=float(input())
m=int(input())
r=r/100
t=m/12
a=p*(1+r/12)**m
b=c*(((1+r/12)**m-1)/(r/12))
print(f"Final amount after {m} months:Rs.{a+b:.2f}")
```

Status : Correct   *Marks : 10/10*