Rajalakshmi Engineering College

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NeoColab_REC_CS23221_Python Programming

REC_Python_Week 1_MCQ

Attempt : 1
Total Mark : 15
Marks Obtained : 14

Section 1 : MCQ

1. Which of the following is an example of the type casting?

Answer

float(5)

Status : Wrong ***Marks : 0/1***

2. What does 3 ^ 4 evaluate to?

Answer

7

Status : Correct ***Marks : 1/1***

3. What is the output of the following program?

```
print((1, 2) + (3, 4))
```

Answer

(1, 2, 3, 4)

Status : Correct ***Marks : 1/1***

4. Which of the following functions converts a string to a float in Python?

Answer

float(x)

Status : Correct ***Marks : 1/1***

5. What is the value of the following expression?

```
float(22//3+3/3)
```

Answer

8.0

Status : Correct ***Marks : 1/1***

6. Which is the correct operator for power(xy)?

Answer

x**y

Status : Correct ***Marks : 1/1***

7. What is used to concatenate two strings in Python?

Answer

+ operator

Status : Correct ***Marks : 1/1***

8. Which of these is not a core data type?

Answer

Class

Status : Correct ***Marks : 1/1***

9. What is the return type of the function id?

Answer

int

Status : Correct ***Marks : 1/1***

10. Which of the following expressions results in an error?

Answer

int('10.8')

Status : Correct ***Marks : 1/1***

11. The value of the expressions 4/(3*(2-1)) and 4/3*(2-1) is the same. True or False?

Answer

True

Status : Correct ***Marks : 1/1***

12. What will be the output of the following code?

```
x = int(34.56 - 2 * 2)
print(x)
```

Answer

30

Status : Correct ***Marks : 1/1***

13. What will the following code output?

```
z = 3 + 4j
print(abs(z))
```

Answer

5.0

Status : Correct ***Marks : 1/1***

14. Which of the following represents the bitwise XOR operator?

Answer

^

Status : Correct ***Marks : 1/1***

15. What is the value of the following expression?

8/4/2, 8/(4/2)

Answer

(1.0,4.0)

Status : Correct ***Marks : 1/1***

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NeoColab_REC_CS23221_Python Programming

REC_Python_Week 1_COD

Attempt : 1
Total Mark : 5
Marks Obtained : 5

Section 1 : Coding

1. Problem Statement

Quentin, a mathematics enthusiast, is exploring the properties of numbers. He believes that for any set of four consecutive integers, calculating the average of their fourth powers and then subtracting the product of the first and last numbers yields a constant value.

To validate his hypothesis, check if the result is indeed constant and display.

Example:

Input:

5

Output:

Constant value: 2064.5

Explanation:

Find the Average:

Average: (625 + 1296 + 2401 + 4096)/4 = 2104.5

Now, we calculate the product of a and (a + 3):

Product = 5 × (5 + 3) = 5 × 8 = 40

Final result: 2104.5 - 40 = 2064.5

Input Format

The input consists of an integer a, representing the first of four consecutive integers.

Output Format

The output displays "Constant value: " followed by the computed result based on Quentin's formula.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 5
Output: Constant value: 2064.5

Answer

```
a=int(input())
q=a**4
w=(a+1)**4
e=(a+2)**4
r=(a+3)**4
avg=(q+w+e+r)/4
product=a*(a+3)
z=avg-product
print("Constant value: ",z)
```

Status : Correct ***Marks : 1/1***

2. Problem Statement

In a family, two children receive allowances based on the gardening tasks they complete. The older child receives an allowance rate of Rs.5 for each task, with a base allowance of Rs.50. The younger child receives an allowance rate of Rs.3 for each task, with a base allowance of Rs.30.

Your task is to calculate and display the allowances for the older and younger children based on the number of gardening tasks they complete, along with the total allowance for both children combined.

Input Format

The first line of input consists of an integer n, representing the number of chores completed by the older child.

The second line consists of an integer m, representing the number of chores completed by the youngest child.

Output Format

The first line of output displays "Older child allowance: Rs." followed by an integer representing the allowance calculated for the older sibling.

The second line displays "Younger child allowance: Rs." followed by an integer representing the allowance calculated for the youngest sibling.

The third line displays "Total allowance: Rs." followed by an integer representing the sum of both siblings' allowances.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 10
5
Output: Older child allowance: Rs.100

Younger child allowance: Rs.45
Total allowance: Rs.145

Answer

```
n=int(input())
m=int(input())
o=50+(5*n)
y=30+(3*m)
t=o+y
print("Older child allowance: Rs.",o)
print("Younger child allowance: Rs.",y)
print("Total allowance:Rs.",t)
```

Status : Correct ***Marks : 1/1***

3. Problem Statement

Bob, the owner of a popular bakery, wants to create a special offer code for his customers. To generate the code, he plans to combine the day of the month with the number of items left in stock.

Help Bob to encode these two values into a unique offer code.

Note: Use the bitwise operator to calculate the offer code.

Example

Input:

15

9

Output:

Offer code: 6

Explanation:

Given the day of the month 15th day (binary 1111) and there are 9 items left (binary 1001), the offer code is calculated as 0110 which is 6.

Input Format

The first line of input consists of an integer D, representing the day of the month.

The second line consists of an integer S, representing the number of items left in stock.

Output Format

The output displays "Offer code: " followed by an integer representing the encoded offer code.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 15
9

Output: Offer code: 6

Answer

```
d=int(input())
s=int(input())
result=d^s
print("Offer code:",result)
```

Status : Correct ***Marks : 1/1***

4. Problem Statement

A company has hired two employees, Alice and Bob. The company wants to swap the salaries of both employees. Alice's salary is an integer value and Bob's salary is a floating-point value.

Write a program to swap their salaries and print the new salary of each employee.

Input Format

The first line of input consists of an integer N, representing Alice's salary.

The second line consists of a float value F, representing Bob's salary.

Output Format

The first line of output displays "Initial salaries:"

The second line displays "Alice's salary = N", where N is Alice's salary.

The third line of output displays "Bob's salary = F", where F is Bob's salary.

After a new line space, the following line displays "New salaries after swapping:"

The next line displays "Alice's salary = X", where X is the swapped salary.

The last line displays "Bob's salary = Y", where Y is the swapped salary.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 10000
15400.55
Output: Initial salaries:
Alice's salary = 10000
Bob's salary = 15400.55

New salaries after swapping:
Alice's salary = 15400.55
Bob's salary = 10000

Answer

```
n=int(input())
f=float(input())
a=n
b=f
print("Initial salaries:")
print("Alice's salary=",n)
print("Bob's salary=",f)
print("\nNew salaries after swapping:")
```

```
print("Alice's salary=",b)
print("Bob's salary=",a)
```

Status : Correct **Marks : 1/1**

5. Problem Statement

A science experiment produces a decimal value as the result. However, the scientist needs to convert this value into an integer so that it can be used in further calculations.

Write a Python program that takes a floating-point number as input and converts it into an integer.

Input Format

The input consists of a floating point number, F.

Output Format

The output prints "The integer value of F is: {result}", followed by the integer number equivalent to the floating point number.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 10.36
Output: The integer value of 10.36 is: 10

Answer

```
f=float(input())
a=int(f)
print("The integer value of ",f,"is: ",a)
```

Status : Correct **Marks : 1/1**

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NeoColab_REC_CS23221_Python Programming

REC_Python_Week 1_CY

Attempt : 1
Total Mark : 40
Marks Obtained : 30

Section 1 : Coding

1. 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

-

Status : Skipped ***Marks : 0/10***

2. Problem Statement

Olivia is creating a wellness dashboard for her new fitness app, FitTrack. She needs a program that can capture and display key details about a user's workout. The program should read the user's full name, the total steps they ran, the energy they expended in kilojoules, and the duration of their workout in hours. After collecting this information, the program will generate a detailed summary of the user's fitness activity.

Your task is to guide Olivia through the program.

Input Format

The first line of input consists of a string, representing the user's name.

The second line consists of an integer, representing the total steps taken.

The third line consists of a float value, representing the calories burned.

The fourth line consists of a float value, representing the workout duration in hours.

Output Format

The first line of output prints "User Name: " followed by the user's name.

The second line prints "Total Steps: " followed by the total steps.

The third line prints "Calories Burned: " followed by the calories burned, rounded off to one decimal place.

The fourth line prints "Workout Duration: X hours" where X is the workout duration, rounded off to one decimal place.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: Alex
10000
350.5
1.5

Output: User Name: Alex
Total Steps: 10000
Calories Burned: 350.5
Workout Duration: 1.5 hours

Answer

```
n=input()
s=int(input())
c=float(input())
w=float(input())
print("User Name:",n)
print("Total Steps:",s)
print("Calories Burned:",c)
print("Workout Duration:",w,"hours")
```

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

3. 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):
   print("Number of tacos needed: 20")
   print("Total cost: ",20*25)
else:
   print("Number of tacos needed:",(n*2)+5)
   print("Total cost: ",((n*2)+5)*25)
```

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

4. 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

```
z1=complex(input())
z2=complex(input())
sz1=complex(z1.imag,z1.real)
sz2=complex(z2.imag,z2.real)
print(f"New first complex number: {sz1}")
print(f"New second complex number: {sz2}")
```

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