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NeoColab_REC_CS23221_Python Programming

REC_Python_Week 1_COD

Attempt : 3
Total Mark : 5
Marks Obtained : 5

Section 1 : Coding

1. 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

```
# You are using Python
# Read inputs
D = int(input().strip())  # Day of the month
S = int(input().strip())  # Number of items left in stock

# Compute the offer code using bitwise XOR
offer_code = D ^ S

# Output the result
print("Offer code:", offer_code)
```

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

```
# You are using Python
# Read inputs
n = int(input().strip())  # Number of chores by older child
m = int(input().strip())  # Number of chores by younger child

# Calculate allowances
older_allowance = 50 + (n * 5)
younger_allowance = 30 + (m * 3)

# Calculate total
total_allowance = older_allowance + younger_allowance

# Output results
print("Older child allowance: Rs." + str(older_allowance))
print("Younger child allowance: Rs." + str(younger_allowance))
print("Total allowance: Rs." + str(total_allowance))
```

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

3. 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

```
# You are using Python
# Read input
a = int(input().strip())

# Calculate the four consecutive integers
b = a
c = a + 1
d = a + 2
e = a + 3
```

```
# Calculate the sum of their fourth powers
sum_fourth_powers = (b**4 + c**4 + d**4 + e**4)

# Calculate the average
average = sum_fourth_powers / 4

# Calculate the product of the first and last number
product = a * (a + 3)

# Compute the constant value
constant_value = average - product

# Output the result
print("Constant value: " + str(constant_value))
```

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

```
# You are using Python
# Read inputs
N = int(input().strip())       # Alice's salary (integer)
F = float(input().strip())     # Bob's salary (float)

# Display initial salaries
print("Initial salaries:")
print("Alice's salary = {}".format(N))
print("Bob's salary = {}".format(F))

# Swap the salaries
X = F      # Alice's new salary
Y = N      # Bob's new salary

# Display new salaries after swapping
print("\nNew salaries after swapping:")
print("Alice's salary = {}".format(X))
print("Bob's salary = {}".format(Y))
```

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

```
# You are using Python
# Read the floating point number
F = float(input().strip())

# Convert to integer
result = int(F)

# Print the result with the specified format
print("The integer value of {} is: {}".format(F, result))
```

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