Rajalakshmi Engineering College

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NeoColab_REC_CS23221_Python Programming

REC_Python_Week 1_MCQ

Attempt : 1
Total Mark : 15
Marks Obtained : 15

Section 1 : MCQ

1. What is the output of the following number conversion?

```
z = complex(1.25)
print(z)
```

Answer

(1.25+0j)

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

2. What will be the output for the below code?

```
x=15
y=12
print(x&y)
```

Answer

12

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

3. What is the value of x in the following program?

```
x = int(43.55+2/2)
print(x)
```

Answer

44

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

4. What is the output of the following program?

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

Answer

(1, 2, 3, 4)

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

5. What is the value of the following expression?

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

Answer

(1.0,4.0)

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

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

Answer

Class

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

7. What will be the value of the following Python expression?

4 + 3 % 5

Answer

7

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

8. What does 3 ^ 4 evaluate to?

Answer

7

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

9. What is the value of the following expression?

float(22//3+3/3)

Answer

8.0

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

10. What will the following code output?

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

Answer

5.0

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

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

Answer

^

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

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

Answer

int('10.8')

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

13. Evaluate the expression given below if A= 16 and B = 15

A % B // A

Answer

0

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

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

```
X = 2+9*((3*12)-8)/10
print(X)
```

Answer

27.2

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

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

Answer

All of the above

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())
a4 = a ** 4
a1_4 = (a + 1) ** 4
a2_4 = (a + 2) ** 4
a3_4 = (a + 3) ** 4

average = (a4 + a1_4 + a2_4 + a3_4) / 4

product = a * (a + 3)
result = average - product
```

```
print("Constant value:", result)
```

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

2. 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

```
num = float(input())

int_num = int(num)

print("The integer value of", num, "is:", int_num)
```

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

```
day = int(input())
stock = int(input())


offer_code = day ^ stock


print("Offer code:", offer_code)
```

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

4. 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

```
older_base_allowance = 50
older_rate_per_task = 5
younger_base_allowance = 30
younger_rate_per_task = 3

older_tasks_completed = int(input())
younger_tasks_completed = int(input())

older_allowance = older_base_allowance + (older_tasks_completed *
older_rate_per_task)
younger_allowance = younger_base_allowance + (younger_tasks_completed *
younger_rate_per_task)

total_allowance = older_allowance + younger_allowance
print(f"Older child allowance: Rs.{older_allowance}")
print(f"Younger child allowance: Rs.{younger_allowance}")
print(f"Total allowance: Rs.{total_allowance}")
```

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

5. 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

```
alice_salary = int(input())
bob_salary = float(input())
print("Initial salaries:")
print("Alice's salary =", alice_salary)
print("Bob's salary =", bob_salary)

temp_salary = alice_salary
alice_salary = bob_salary
bob_salary = temp_salary


print("\nNew salaries after swapping:")
print("Alice's salary =", alice_salary)
print("Bob's salary =", bob_salary)
```

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 : 40

Section 1 : Coding

1. Problem Statement

Alex is an air traffic controller who needs to record and manage flight delays efficiently. Given a flight number, the delay in minutes (as a string), and the coordinates of the flight's current position (as a complex number),

Help Alex convert and store this information in a structured format.

Input Format

The first line of input consists of an integer N, representing the flight number.

The second line consists of a string representing the delay in minutes.

The third line consists of two floats separated by a space, representing the real and imaginary parts of the complex number for the flight's position.

Output Format

The first line of output displays the complex number.

The second line displays a string with the flight number, delay, and the real and imaginary parts of the complex number, separated by commas.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 12345
30.5
12.3 45.6
Output: (12.3+45.6j)
12345, 30.5, 12.3, 45.6

Answer

```
flight_number = int(input())
delay_str = input()
real_part, imag_part = map(float, input().split())

position = complex(real_part, imag_part)

print(position)
print(f"{flight_number}, {delay_str}, {position.real}, {position.imag}")
```

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

2. Problem Statement

Liam and his friends are sharing the cost of a group purchase. The total cost of the purchase is subject to a 10% discount. One of the friends receives a 35% bonus, which means they will pay a larger portion of the discounted cost. The remaining cost is then divided equally among the other friends.

Write a program to:

Calculate the total cost after applying a 10% discount.Determine the amount paid by the friend who receives a 35% bonus.Calculate the amount each of the other friends will pay.

Input Format

The first line of input consists of a float value f, representing the total cost.

The second line contains an integer value n, representing the total number of friends.

Output Format

The first line of output displays "Cost after a 10% discount: " followed by the discounted cost of the ticket package as a float value formatted to two decimal places.

The second line displays "Friend with a 35% bonus pays: " followed by the amount paid by the friend with the bonus as a float value formatted to two decimal places.

The third line displays "Each of the other friends pays: " followed by the individual share of the remaining cost as a float value formatted to two decimal places.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 10000.0
5
Output: Cost after a 10% discount: 9000.00
Friend with a 35% bonus pays: 3150.00
Each of the other friends pays: 1462.50

Answer

```
total_cost = float(input())
num_friends = int(input())

discounted_price = total_cost - (0.10 * total_cost)
```

```
print(f"Cost after a 10% discount: {discounted_price:.2f}")


bonus_friend_payment = 0.35 * discounted_price
print(f"Friend with a 35% bonus pays: {bonus_friend_payment:.2f}")


remaining_cost = discounted_price - bonus_friend_payment
individual_share = remaining_cost / (num_friends - 1)
print(f"Each of the other friends pays: {individual_share:.2f}")
```

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

3. 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

```
user_name = input()
total_steps = int(input())
calories_burned = float(input())
workout_duration = float(input())

print("User Name:", user_name)
print("Total Steps:", total_steps)
print(f"Calories Burned: {calories_burned:.1f}")
print(f"Workout Duration: {workout_duration:.1f} hours")
```

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

```
principal = float(input())
rate_real = float(input())
monthly_contribution = float(input())
months = int(input())

P = float(principal)
rate = rate_real
r = rate / 100
n = 12
t = months / 12

A = P * (1 + r / n) ** (n * t) + monthly_contribution * (((1 + r / n) ** (n * t) - 1) / (r / n))

print(f"Final amount after {months} months: Rs.{A:.2f}")
```

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

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NeoColab_REC_CS23221_Python Programming

REC_Python_Week 1_PAH

Attempt : 1
Total Mark : 6
Marks Obtained : 6

Section 1 : Coding

1. Problem Statement

Liam works at a car dealership and is responsible for recording the details of cars that arrive at the showroom. To make his job easier, he wants a program that can take the car's make, model, and price, and display the information in a formatted summary.

Assist him in the program.

Input Format

The first line of input contains a string, representing the car make.

The second line contains a string, representing the car model.

The third line contains a float value, representing the car price.

Output Format

The first line of output prints "Car Make: ", followed by the car make.

The second line prints "Car Model: ", followed by the car model.

The third line prints "Price: ", followed by the car price, formatted to two decimal places.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: Toyota
Camry
23450.75
Output: Car Make: Toyota
Car Model: Camry
Price: Rs.23450.75

Answer

```
car_make = input()
car_model = input()
price = float(input())

print(f"Car Make: {car_make}")
print(f"Car Model: {car_model}")
print(f"Price: Rs.{price:.2f}")
```

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

2. Problem Statement

Ella, an avid TV show enthusiast, is planning a binge-watching marathon for a new series. She has a specific routine: after watching a set number of episodes, she takes a short break.

She is provided with the following information:

Each episode of the series has a fixed duration of 45 minutes.After a certain number of episodes, there is a break of 15 minutes.

Ella wants to know the total time she will need to watch the entire series, including the breaks. Your task is to help Ella by calculating the total viewing time.

Input Format

The first line of input consists of an integer E, representing the total number of episodes in the series.

The second line consists of an integer B, representing the number of episodes watched before taking a break.

Output Format

The output prints an integer representing the total viewing time required to watch the entire series, including the breaks.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 5
2
Output: 255 minutes

Answer

```
total_episodes = int(input())
episodes_before_break = int(input())
episode_duration = 45 # in minutes
break_duration = 15   # in minutes

full_breaks = (total_episodes - 1) // episodes_before_break # Calculate full breaks
remaining_episodes = total_episodes - (full_breaks * episodes_before_break) # Calculate remaining episodes

total_duration = (full_breaks * (episodes_before_break * episode_duration + break_duration) + (remaining_episodes * episode_duration)) * (full_breaks > 0) +
```

```
(total_episodes * episode_duration) * (full_breaks == 0)

print(f"{total_duration} minutes")
```

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

3. Problem Statement

Oliver is planning a movie night with his friends and wants to download a high-definition movie. He knows the file size of the movie in megabytes (MB) and his internet speed in megabits per second (Mbps). To ensure the movie is ready in time, Oliver needs to calculate the download time.

Your task is to write a program that calculates the download time and displays it in hours, minutes, and seconds.

Example

Input:

MB = 800

mbps = 40

Output:

Download Time: 0 hours, 2 minutes, and 40 seconds

Explanation:

Convert the file size to bits (800 MB * 8 bits/byte = 6400 megabits) and divide it by the download speed (6400 Mbps / 40 Mbps = 160 seconds).Now, convert the download time in seconds to hours, minutes, and seconds: 160 seconds is equal to 2 minutes and 40 seconds.So, the download time is 0 hours, 2 minutes and 40 seconds.

Input Format

The first line of input consists of an integer N, representing the file size in megabytes (MB).

The second line consists of an integer S, representing the network speed in

megabits per second(mbps).

Output Format

The output prints "Download Time: X hours, Y minutes, and Z seconds", where X, Y, and Z are integers representing the hours, minutes, and seconds respectively.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 180
3
Output: Download Time: 0 hours, 8 minutes, and 0 seconds

Answer

```
file_size_MB = int(input())
download_speed_Mbps = int(input())

download_time_seconds = (file_size_MB * 8) // download_speed_Mbps

hours = download_time_seconds // 3600
remaining_seconds = download_time_seconds % 3600
minutes = remaining_seconds // 60
seconds = remaining_seconds % 60

print(f"Download Time: {hours} hours, {minutes} minutes, and {seconds} seconds")
```

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

4. Problem Statement

A smart home system tracks the temperature and humidity of each room. Create a program that takes the room name (string), temperature (float), and humidity (float).

Display the room's climate details.

Input Format

The first line of input consists of a string, representing the room name.

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

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

Output Format

The first line of output prints "Room: " followed by the room name (string).

The second line prints "Temperature: " followed by the temperature (float) formatted to two decimal places.

The third line prints "Humidity: " followed by the humidity (float) formatted to two decimal places and a percentage sign (%).

Refer to the sample output for formatting specifications.

Sample Test Case

Input: Living Room
23.45
45.78
Output: Room: Living Room
Temperature: 23.45
Humidity: 45.78%

Answer

```
room_name = input()
temperature = float(input())
humidity = float(input())

print(f"Room: {room_name}")
print(f"Temperature: {temperature:.2f}")
print(f"Humidity: {humidity:.2f}%")
```

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

5. Problem Statement

Shawn, a passionate baker, is planning to bake cookies for a large party. His original recipe makes 15 cookies, with the following ingredient quantities: 2.5 cups of flour, 1 cup of sugar, and 0.5 cups of butter.

Write a program to calculate the amounts of flour, sugar, and butter needed for a different number of cookies. Provide the ingredient quantities for a specified number of cookies, maintaining the original proportions of the recipe.

Input Format

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

Output Format

The first line prints "Flour: X cups" where X represents the amount of flour required for n cookies, as a double value rounded to two decimal places.

The second line prints "Sugar: Y cups" where Y represents the amount of Sugar required for n, as a double value rounded to two decimal places.

The third line prints "Butter: Z cups" where Z represents the amount of flour required for n, as a double value rounded to two decimal places.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 15
Output: Flour: 2.50 cups
Sugar: 1.00 cups
Butter: 0.50 cups

Answer

```
x = int(input())

flour_per_12_cupcakes = 2.5
sugar_per_12_cupcakes = 1.0
```

```
butter_per_12_cupcakes = 0.5

flour_needed = (x / 15.0) * flour_per_12_cupcakes
sugar_needed = (x / 15.0) * sugar_per_12_cupcakes
butter_needed = (x / 15.0) * butter_per_12_cupcakes

print(f"Flour: {flour_needed:.2f} cups")
print(f"Sugar: {sugar_needed:.2f} cups")
print(f"Butter: {butter_needed:.2f} cups")
```

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

6. Problem Statement

Mandy is debating with her friend Rachel about an interesting mathematical claim. Rachel asserts that for any positive integer n, the ratio of the sum of n and its triple to the integer itself is always 4. Mandy, intrigued by this statement, decides to validate it using logical operators and basic arithmetic.

She wants to confirm if the statement holds true for any positive integer n.

Input Format

The input consists of a positive integer n, representing the integer to be tested.

Output Format

The first line of output displays "Sum:" followed by an integer representing the calculated sum.

The second line displays "Rachel's statement is: " followed by a Boolean value indicating whether Rachel's statement is correct.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 12

Output: Sum: 48
Rachel's statement is: True

Answer

```
n = int(input())

sum_with_triple = n + 3 * n

ratio = sum_with_triple / n

# Validate Rachel's statement using a logical comparison
rachel_statement_correct = (ratio == 4)

# Output the result and the validation
print("Sum:", sum_with_triple)
print("Rachel's statement is:", rachel_statement_correct)
```

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