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COURSE: CCC634 (A Gentle Intro to Python)

ASSIGNMENT: 2

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# 1

'''Sanyam cannot seem to figure out how to print decimal integers with two decimal places.
Please assist him in writing the software without utilizing the round function.'''

num=eval(input("Enter a decimal number: "))
print("%.2f" % num)
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```
Enter a decimal number: 12.234
12.23
```

```
# 2

'''A Teacher asks her students to perform various operations on complex numbers. She told the
students to perform
• Sum of two complex numbers
• Difference of real and imaginary part of the numbers
• Evaluate conjugate of the numbers.'''

real_part1 = float(input("Enter the real part: "))
imaginary_part1 = float(input("Enter the imaginary part: "))
real_part2 = float(input("Enter the real part: "))
imaginary_part2 = float(input("Enter the imaginary part: "))

complex1 = complex(real_part1, imaginary_part1)
complex2 = complex(real_part2, imaginary_part2)

sum_result = complex1 + complex2
print(f"Sum of {complex1} and {complex2} is: {sum_result}")


real_difference = complex1.real - complex2.real
imaginary_difference = complex1.imag - complex2.imag
print(f"Difference of real parts: {real_difference}")
print(f"Difference of imaginary parts: {imaginary_difference}")

conjugate1 = complex1.conjugate()
conjugate2 = complex2.conjugate()
print(f"Conjugate of {complex1} is: {conjugate1}")
print(f"Conjugate of {complex2} is: {conjugate2}")
```

```
Enter the real part: 12
Enter the imaginary part: 3
Enter the real part: 5
Enter the imaginary part: 6
Sum of (12+3j) and (5+6j) is: (17+9j)
Difference of real parts: 7.0
Difference of imaginary parts: -3.0
Conjugate of (12+3j) is: (12-3j)
Conjugate of (5+6j) is: (5-6j)
```

```
# 3

'''Ishan and Hari are good friends, while Charu and William are good friends. Take the net
income of all four of them and verify the following:
1. "Is ishan +hari < Charu+william ?"
2. "Is ishan +hari = Charu+william ?"
3. "Is ishan +hari > Charu+william ?" '''

ishan=int(input("Enter Ishan's income: "))
hari=int(input("Enter Hari's income: "))
charu=int(input("Enter Charu's income: "))
william=int(input("Enter William's income: "))

sum1=ishan+hari
sum2=charu+william

if sum1<sum2:
  print("ishan +hari < Charu+william")
```

```
elif sum1==sum2:
  print("ishan +hari = Charu+william")

elif sum1>sum2:
  print("ishan +hari > Charu+william")
```

```
Enter Ishan's income: 10
Enter Hari's income: 20
Enter Charu's income: 15
Enter William's income: 15
ishan +hari = Charu+william
```

```
# 4

'''The grey kangaroo can jump 13.5 meters in one step. Take the input of the distance to be
travelled from the user and find out the number of steps (integer value) required for the grey
kangaroo.'''

import math
distance=eval(input("Enter the distance to be travelled: "))

steps=distance/13.5
print(math.ceil(steps))
```

```
Enter the distance to be travelled: 30
3
```

```
# 5

''' Rajesh has a long wire of length L. Out of this wire, he wants to create an n-sided polygon
with sides of equal length. Given n and L, find out the length of each side. Round off your
answer to 2 decimal places.'''
""
n=int(input("Enter sides of polygon: "))
L=eval(input("Enter length of wire: "))

side=L/n
print("%.2f" % side)
```

```
Enter sides of polygon: 3
Enter length of wire: 100
33.33
```

```
# 6

'''Mohit is a software developer, and his task is to convert a given amount of seconds into hours,
minutes, and seconds. Can you help him do this?'''

total_seconds=int(input("Enter seconds:"))
hours = total_seconds // 3600
minutes = (total_seconds % 3600) // 60
seconds = total_seconds % 60
print("Hours:", hours)
print("minutes:", minutes)
print("seconds:", seconds)
```

```
Enter seconds:101
Hours: 0
minutes: 1
seconds: 41
```

```
# 7

'''Nishant wants his younger sister, Ruhi to learn the python program for logical operators so he
asks her to perform the program by taking the input value in terms of true and false, and print
the results for And, Or, and Not operator. Write a python program to help Ruhi in writing the
code.'''

a = input("Enter True or False for a: ").strip().capitalize() == "True"
b = input("Enter True or False for b: ").strip().capitalize() == "True"

print("a AND b:", a and b)
print("a OR b:", a or b)
print("NOT a:", not a)
print("NOT b:", not b)
```

```
Enter True or False for a: true
Enter True or False for b: false
a AND b: False
a OR b: True
NOT a: False
NOT b: True
```

```
# 8

''' A group of 5 teachers wants to go for some special python training session. The entire group
is only eligible if their research score on average is greater than 75 and they have a letter of
invitation from the organizers or permission letter from HOD. You are asked to get the
percentage of 5 teachers. Now the task is to design a program that figures out the average
percentage of all 5 teachers and check whether they can participate in the special python
training session or not.
Three conditions:
1. Only when their avg. % is greater than 75 and
2. They have permission from HOD or
3. Letter of invitation'''


teacher1 = float(input("Enter the percentage of teacher 1: "))
teacher2 = float(input("Enter the percentage of teacher 2: "))
teacher3 = float(input("Enter the percentage of teacher 3: "))
teacher4 = float(input("Enter the percentage of teacher 4: "))
teacher5 = float(input("Enter the percentage of teacher 5: "))

average_percentage = (teacher1 + teacher2 + teacher3 + teacher4 + teacher5) / 5
print(f"Average Percentage: {average_percentage}")

permission = input("Do you have permission from HOD? (1 for yes and 0 for no): ")
invitation = input("Do you have a letter of invitation? (1 for yes and 0 for no): ")

eligible = average_percentage > 75 and (permission or invitation)

if eligible:
    print("The group is eligible for the special Python training session.")
else:
    print("The group is not eligible for the special Python training session.")
```

```
Enter the percentage of teacher 1: 43
Enter the percentage of teacher 2: 75
Enter the percentage of teacher 3: 100
Enter the percentage of teacher 4: 100
Enter the percentage of teacher 5: 12
Average Percentage: 66.0
Do you have permission from HOD? (1 for yes and 0 for no): 1
Do you have a letter of invitation? (1 for yes and 0 for no): 0
The group is not eligible for the special Python training session.
```

```
# 9

''' Write a program to surface area of a maximum size cone that can be inscribed in a cylinder of
height ‘h’ and radius ‘r’. Compute the result up to two decimal points.
Input Format:
First line contains an integer r that represents the radius of the cylinder
Second line contains an integer h that represents the height of the cylinder
Output format:
float value that represents the required calculated result up to two decimal points.'''

import math

r = int(input("Enter the radius: "))
h = int(input("Enter the height: "))
```

```
cone_radius = r
cone_height = h
slant_height = math.sqrt(cone_radius**2 + cone_height**2)

surface_area = math.pi * cone_radius * (cone_radius + slant_height)

print(f"{surface_area:.2f}")
```

```
Enter the radius: 12
Enter the height: 23
1430.39
```

```
# 10

''' In a water tank, the tap leaks at a rate of one drop/second where 600 drops = 100 ml. Write a
program to find the litre count of water wasted in N days? N will be input in the test cases.'''

N = int(input("Enter the number of days: "))

leak_rate_second = 1
drops_ml = 600 / 100
ml_litre = 1000

total_seconds = N * 24 * 60 * 60
total_drops = total_seconds * leak_rate_second
total_litres = total_drops / drops_ml / ml_litre

print(f"Water wasted in {N} days: {total_litres:.2f} litres")
```

```
Enter the number of days: 10
Water wasted in 10 days: 144.00 litres
```