Rajalakshmi Engineering College

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NeoColab_REC_CS23221_Python Programming

REC_Python_Week 2_PAH_Updated

Attempt : 1
Total Mark : 60
Marks Obtained : 60

Section 1 : Coding

1. Problem Statement

Sophia, a primary school teacher, wants to calculate the sum of numbers within a given range, excluding those that are multiples of 3.

Write a program to help Sophia compute the sum of all numbers between start and end (inclusive) that are not divisible by 3 using the continue statement.

Input Format

The first line of input consists of an integer, representing the starting number of the range.

The second line of input consists of an integer, representing the ending number of the range.

Output Format

The output prints a single integer, representing the sum of numbers in the range that are not multiples of 3.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 1
10

Output: 37

Answer

```
# You are using Python
s=int(input())
e=int(input())
sum=0
for i in range(s,e+1):
   if(i%3!=0):
      sum+=i
print(sum)
```

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

2. Problem Statement

Kamali recently received her electricity bill and wants to calculate the amount she needs to pay based on her usage. The electricity company charges different rates based on the number of units consumed.

For the first 100 units, there is no charge. For units consumed beyond 100 and up to 200, there is a charge of Rs. 5 per unit. For units consumed beyond 200, there is a charge of Rs. 10 per unit.

Write a program to help Kamali calculate the amount she needs to pay for her electricity bill based on the units consumed.

Input Format

The input consists of an integer, representing the number of units.

Output Format

The output prints the total amount of the electricity bill, an integer indicating the amount Kamali needs to pay in the format "Rs. amount".

Refer to the sample output for the exact format.

Sample Test Case

Input: 350
Output: Rs. 2000

Answer

```
# You are using Python
n=int(input())
if n>100 and n<=200:
   print("Rs. {}".format((n-100)*5))
elif n>200:
   print("Rs. {}".format(500+(n-200)*10))
else:
   print("Rs. 0")
```

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

3. Problem Statement

Aarav is fascinated by the concept of summing numbers separately based on their properties. He plans to write a program that calculates the sum of even numbers and odd numbers separately from 1 to a given positive integer.

Aarav wants to input an integer value to represent the upper limit of the range. Help Aarav by developing a program that computes and displays the sum of even and odd numbers separately.

Input Format

The input consists of a single integer N, where N is the upper limit of the range.

Output Format

The output consists of two lines:

- The first line displays the sum of even numbers from 1 to N.
- The second line displays the sum of odd numbers from 1 to N.

Refer to the sample output for the exact format.

Sample Test Case

Input: 10

Output: Sum of even numbers from 1 to 10 is 30
Sum of odd numbers from 1 to 10 is 25

Answer

```
# You are using Python
n=int(input())
ec,oc=0,0
for i in range(1,n+1):
    if i%2==0:
        ec+=i
    else:
        oc+=i
print("Sum of even numbers from 1 to {} is {}".format(n,ec))
print("Sum of odd numbers from 1 to {} is {}".format(n,oc))
```

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

4. Problem Statement

As a software engineer, your goal is to develop a program that facilitates the identification of leap years in a specified range. Your task is to create a program that takes two integer inputs, representing the start and end years of the range and then prints all the leap years within that range.

Input Format

The first line of the input consists of an integer, which represents the start year.

The second line consists of an integer, which represents the end year.

Output Format

The output displays the leap years within the given range, separated by lines.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 2000
2053

Output: 2000
2004
2008
2012
2016
2020
2024
2028
2032
2036
2040
2044
2048
2052

Answer

```
# You are using Python
s=int(input())
e=int(input())
for i in range(s,e+1):
    if(i%4==0 and i%100!=0)or(i%400==0):
        print(i)
```

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

5. Problem Statement

Imagine being entrusted with the responsibility of creating a program that simulates a math workshop for students. Your task is to develop an interactive program that not only calculates but also showcases the charm of factorial values.Your program should efficiently compute and present the sum of digits for factorial values of only odd numbers within a designated range. This approach will ingeniously keep even factorials at bay, allowing students to delve into the intriguing world of mathematics with enthusiasm and clarity.

Input Format

The input consists of a single integer, n.

Output Format

The output displays the factorial and sum of digits of the factorial of odd numbers within the given range.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 6
Output: 1! = 1, sum of digits = 1
3! = 6, sum of digits = 6
5! = 120, sum of digits = 3

Answer

```
# You are using Python
def factorial(n):
    if n==0 or n==1:
        return 1
    else:
        return n*factorial(n-1)
def summ(num):
    return sum(int(digit) for digit in str(num))
n=int(input())
for num in range(1,n+1):
```

```
if num%2!=0:
    fact=factorial(num)
    dsum=summ(fact)
    print(f"{num}!={fact},sum of digits = {dsum}")
```

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

6. Problem Statement

Rajesh wants to design a program that simulates a real-time scenario based on a mathematical concept known as the Collatz Conjecture. This concept involves the repeated application of rules to a given starting number until the number becomes 1. The rules are as follows:

If the number is even, divide it by 2.If the number is odd, multiply it by 3 and add 1.

Your task is to write a program that takes a positive integer as input, applies the Collatz Conjecture rules to it, counts the number of steps taken to reach 1, and provides an output accordingly. If the process exceeds 100 steps, the program should print a message indicating so and use break to exit.

Input Format

The input consists of a single integer, n.

Output Format

The output displays the total number of steps taken to reach 1 if it's under 100.

If it's more than 100, it displays "Exceeded 100 steps. Exiting...".

Refer to sample output for the formatting specifications.

Sample Test Case

Input: 6
Output: Steps taken to reach 1: 8

Answer

```
# You are using Python
n=int(input())
step=0
while True:
    if n%2==0:
        n=n/2
    else:
        n=(n*3)+1
    step+=1
    if n==1:
        print("Steps taken to reach 1: {}".format(step))
        break
    if step>100:
        print("Exceeded 100 steps. Exiting...")
        break
```

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

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NeoColab_REC_CS23221_Python Programming

REC_Python_Week 2_CY

Attempt : 1
Total Mark : 40
Marks Obtained : 40

Section 1 : Coding

1. Problem Statement

John is tasked with configuring the lighting for a high-profile event, where different lighting modes affect the ambiance of the venue. He can choose from three distinct lighting modes, each requiring a specific adjustment to the initial light intensity:

Ambient Lighting (Mode 1): The intensity level is multiplied by 1.5.Stage Lighting (Mode 2): The intensity level is multiplied by 2.0.Spotlight (Mode 3): The intensity level is multiplied by 1.8.

In the event that an invalid mode is provided, the program should output an error message indicating the invalid selection.

Your task is to write a program that reads the selected lighting mode and the initial intensity level, applies the appropriate adjustment, and prints the

final intensity.

Input Format

The first line of input is an integer n, representing the lighting mode.

The second line is a floating value m, representing the initial intensity level of the light.

Output Format

The output displays "Intensity: " followed by a float representing the adjusted intensity level, formatted to two decimal places, if the mode is valid.

If the mode is invalid, the output should display "Invalid".

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 1
10.0

Output: Intensity: 15.00

Answer

```
# You are using Python
M=int(input())
intensity=float(input())
if M==1:
    i1=intensity*1.5
    print("Intensity: {:.2f}".format(i1))
elif M==2:
    i1=intensity*2.0
    print("Intensity: {:.2f}".format(i1))
elif M==3:
    i1=intensity*1.8
    print("Intensity: {:.2f}".format(i1))
else:
    print("Invalid")
```

Status : Correct *Marks : 10/10*

2. Problem Statement

Taylor is tasked with a mathematical challenge that requires finding the smallest positive number divisible by all integers from 1 to n.

Help Taylor to determine the smallest positive number that is divisible by all integers from 1 to n. Make sure to employ the break statement to ensure efficiency in the program.

Input Format

The input consists of a single integer, n.

Output Format

The output displays the smallest positive number that is divisible by all integers from 1 to n.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 10

Output: 2520

Answer

```
# You are using Python
import math
n=int(input())
if n==0:
    print(0)
else:
    lcm=1
    for i in range(1,n+1):
        lcm=lcm*i//math.gcd(lcm,i)
    print(lcm)
```

Status : Correct *Marks : 10/10*

3. Problem Statement

Nisha is a mathematics enthusiast, eager to explore the realm of twin prime numbers. The objective is to develop a program that enables the discovery and presentation of twin prime pairs.

The program should take an integer 'n' as input and generate 'n' pairs of twin primes, displaying the pairs with a difference of 2 between them.

Input Format

The input consists of a single integer, n.

Output Format

The output displays the 'n' pairs of twin primes, the pairs with a difference of 2 between them.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 5
Output: 3 5
5 7
11 13
17 19
29 31

Answer

```
# You are using Python
n=int(input())
count=0
num=3
while count<n:
    prime1=2
    prime2=1
```

```
for i in range(2,num):
    if num%i==0:
        prime1=0
        break
for j in range(2,num+2):
    if(num+2)%j==0:
        prime2=0
        break
if prime1 and prime2:
    print(num,num+2)
    count=count+1
num=num+2
```

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

4. Problem Statement

Students are allowed to work on our computer center machines only after entering the correct secret code. If the code is correct, the message "Logged In" is displayed. They are not allowed to log in to the machine until they enter the correct secret code.

Write a program to allow the student to work only if he/she enters the correct secret code.

Note: Here, secret code means the last three digits should be divisible by the first digit of the number.

Input Format

The input consists of an integer n, which represents the secret code.

Output Format

The output displays either "Logged In" or "Incorrect code" based on the given condition.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 2345

Output: Incorrect code

Answer

```
# You are using Python
def secret_code(n):
    nstr=str(n)
    first=int(nstr[0])
    three=int(nstr[-3:])if len(nstr)>2 else int(nstr)
    if three%first==0:
        print("Logged In")
    else:
        print("Incorrect code")
n=int(input())
secret_code(n)
```

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

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NeoColab_REC_CS23221_Python Programming

REC_Python_Week 2_COD_Updated

Attempt : 1
Total Mark : 50
Marks Obtained : 40

Section 1 : Coding

1. Problem Statement

Emma, a mathematics enthusiast, is exploring a range of numbers and wants to count how many of them are not Fibonacci numbers.

Help Emma determine the count of non-Fibonacci numbers within the given range [start, end] using the continue statement.

Input Format

The first line of input consists of an integer, representing the starting number of the range.

The second line consists of an integer, representing the ending number of the range.

Output Format

The output prints a single integer, representing the count of numbers in the range that are not Fibonacci numbers.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 1
10

Output: 5

Answer

```
# You are using Python
a=int(input())
b=int(input())
m,n=0,1
fib=set()
while m<=b:
   fib.add(m)
   m,n=n,m+n
count=0
for num in range(a,b+1):
      if num in fib:
         continue
      count+=1
print(count)
```

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

2. Problem Statement

You work as an instructor at a math enrichment program, and your goal is to develop a program that showcases the concept of using control statements to manipulate loops. Your task is to create a program that takes an integer 'n' as input and prints the squares of even numbers from 1 to 'n', while skipping odd numbers.

Input Format

The input consists of a single integer, which represents the upper limit of the range.

Output Format

The output displays the square of even numbers from 1 to 'n' separated by lines.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 10
Output: 4
16
36
64
100

Answer

```
# You are using Python
n=int(input())
for i in range(1,n+1):
    if i%2!=0:
        continue
    print(i**2)
```

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

3. Problem Statement

Ethan, a curious mathematician, is fascinated by perfect numbers. A perfect number is a number that equals the sum of its proper divisors (excluding itself). Ethan wants to identify all perfect numbers within a given range.

Help him write a program to list these numbers.

Input Format

The first line of input consists of an integer start, representing the starting number of the range.

The second line consists of an integer end, representing the ending number of the range.

Output Format

The output prints all perfect numbers in the range, separated by a space.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 1
100

Output: 6 28

Answer

```
# You are using Python
start=int(input())
end=int(input())
for num in range(start,end+1):
    sumof=sum(i for i in range(1,num)if num%i==0)
    if sumof==num:
        print(num)
```

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

4. Problem Statement

John, a software developer, is analyzing a sequence of numbers within a given range to calculate their digit sum. However, to simplify his task, he excludes all numbers that are palindromes (numbers that read the same backward as forward).

Help John find the total sum of the digits of non-palindromic numbers in the range [start, end] (both inclusive).

Example:

Input:

10

20

Output:

55

Explanation:

Range [10, 20]: Non-palindromic numbers are 10, 12, 13, 14, 15, 16, 17, 18, 19 and 20.

Digit sums: 1+0 + 1+2 + 1+3 + 1+4 + 1+5 + 1+6 + 1+7 + 1+8 + 1+9 + 2+0 = 55.

Output: 55

Input Format

The first line of input consists of an integer, representing the starting number of the range.

The second line of input consists of an integer, representing the ending number of the range.

Output Format

The output prints a single integer, representing the total sum of the digits of all non-palindromic numbers in the range.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 10
20
Output: 55

Answer

```
# You are using Python
start=int(input())
end=int(input())
total=0
for num in range(start,end+1):
    snum=str(num)
    if snum!=snum[::-1]:
        sum=0
    for digit in snum:
        sum+=int(digit)
    total+=sum
print(total)
```

Status : Wrong ***Marks : 0/10***

5. Problem Statement

As a junior developer working on a text analysis project, your task is to create a program that displays the consonants in a sentence provided by the user, separated by spaces.

You need to implement a program that takes a sentence as input and prints the consonants while skipping vowels and non-alphabetic characters using only control statements.

Input Format

The input consists of a string representing the sentence.

Output Format

The output displays space-separated consonants present in the sentence.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: Hello World!

Output: H l l W r l d

Answer

```
# You are using Python
s=input()
v="AEIOUaeiou"
r=" "
for char in s:
    if char.isalpha()and char not in v:
        r+=char+" "
print(r.strip())
```

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