

Rajalakshmi Engineering College

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NeoColab_REC_CS23221_Python Programming

REC_Python_Week 2_COD_Updated

Attempt : 1
Total Mark : 50
Marks Obtained : 50

Section 1 : Coding

1. 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

```
start = int(input())
end = int(input())
for num in range(start, end + 1):
    sum_of_divisors = 0
    for i in range(1, num):
        if num % i == 0:
            sum_of_divisors += i
    if sum_of_divisors == num:
        print(num, end=" ")
    else:
        pass
```

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

```
# Get user input for 'n'
n = int(input())
```

```
# Iterate through numbers from 1 to n
for num in range(1, n + 1):
    if num % 2 == 0: # Only process even numbers
        print(num ** 2)
```

Status : Correct

Marks : 10/10

3. 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

```
# Read input
start = int(input())
```

```
end = int(input())

# Initialize total sum
total_sum = 0

# Iterate through numbers in the range
for num in range(start, end + 1):
    original_num = num
    reversed_num = 0
    temp = num

    # Reverse the number
    while temp > 0:
        reversed_num = reversed_num * 10 + (temp % 10)
        temp //= 10

    # Skip palindromes
    if original_num == reversed_num:
        continue

    # Sum the digits of the non-palindromic number
    temp = original_num
    while temp > 0:
        total_sum += temp % 10
        temp //= 10

# Print the final sum
print(total_sum)
```

Status : Correct

Marks : 10/10

4. 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

```
# Get input from the user
input_sentence = input()

# Initialize variables
index = 0
output = ""
space_added = False # Track whether space needs to be added

# Iterate through each character in the input sentence
while index < len(input_sentence):
    char = input_sentence[index]

    # Check if the character is an alphabet
    if ('a' <= char <= 'z') or ('A' <= char <= 'Z'):
        is_vowel = (char == 'a' or char == 'e' or char == 'i' or char == 'o' or char == 'u'
or
                    char == 'A' or char == 'E' or char == 'I' or char == 'O' or char == 'U')

        # If the character is a consonant
        if not is_vowel:
            if space_added:
                output += " " # Add space before adding the consonant
            output += char # Append consonant
            space_added = True # Ensure spaces are added between consonants
```

```
index += 1 # Move to the next character
# Print the final consonant string
print(output)
```

Status : Correct

Marks : 10/10

5. 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

```
start = int(input())
end = int(input())
count = 0
```

```
for num in range(start, end + 1):  
    x = 5 * num * num + 4  
    y = 5 * num * num - 4  
    s1 = int(x**0.5)  
    s2 = int(y**0.5)  
    if s1 * s1 == x or s2 * s2 == y: # Fibonacci check  
        continue  
    count += 1  
print(count)
```

Status : Correct

Marks : 10/10