

Rajalakshmi Engineering College

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NeoColab_REC_CS23221_Python Programming

REC_Python_Week 4_CY

Attempt : 1
Total Mark : 40
Marks Obtained : 40

Section 1 : Coding

1. Problem Statement

Develop a text analysis tool that needs to count the occurrences of a specific substring within a given text string.

Write a function `count_substrings(text, substring)` that takes two inputs: the text string and the substring to be counted. The function should count how many times the substring appears in the text string and return the count.

Function Signature: `count_substrings(text, substring)`

Input Format

The first line of the input consists of a string representing the text.

The second line consists of a string representing the substring.

Output Format

The output should display a single line of output containing the count of occurrences of the substring in the text string.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: programming is fun and programming is cool
programming

Output: The substring 'programming' appears 2 times in the text.

Answer

```
def count_substring(string, sub):  
    count = string.count(sub)  
    print(f"The substring '{sub}' appears {count} times in the text.")  
string = input()  
sub = input()  
count_substring(string, sub)
```

Status : Correct

Marks : 10/10

2. Problem Statement

Create a program for a mathematics competition where participants need to find the smallest positive divisor of a given integer n . Your program should efficiently determine this divisor using the `min()` function and display the result.

Input Format

The input consists of a single positive integer n , representing the number for which the smallest positive divisor needs to be found.

Output Format

The output prints the smallest positive divisor of the input integer in the format:

"The smallest positive divisor of [n] is: [smallest divisor]".

Refer to the sample output for the exact format.

Sample Test Case

Input: 24

Output: The smallest positive divisor of 24 is: 2

Answer

```
n = int(input())
if n == 1:
    min = 1
else:
    min = n
    i = 2
    while i * i <= n:
        if n % i == 0:
            min = i
            break
        i += 1
print("The smallest positive divisor of", n, "is:", min)
```

Status : Correct

Marks : 10/10

3. Problem Statement

Imagine you are tasked with developing a function for calculating the total cost of an item after applying a sales tax. The sales tax rate is equal to 0.08 and it is defined as a global variable.

The function should accept the cost of the item as a parameter, calculate the tax amount, and return the total cost.

Additionally, the program should display the item cost, sales tax rate, and total cost to the user.

Function Signature: `total_cost(item_cost)`

Input Format

The input consists of a single line containing a positive floating-point number representing the cost of the item.

Output Format

The output consists of three lines:

"Item Cost:" followed by the cost of the item formatted to two decimal places.

"Sales Tax Rate:" followed by the sales tax rate in percentage.

"Total Cost:" followed by the calculated total cost after applying the sales tax, formatted to two decimal places.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 50.00

Output: Item Cost: \$50.00

Sales Tax Rate: 8.0%

Total Cost: \$54.00

Answer

#

```
SALES_TAX_RATE = 0.08
```

```
item_cost = float(input())
```

```
def total_cost(item_cost):
```

```
    tax_amount = item_cost * SALES_TAX_RATE
```

```
    total = item_cost + tax_amount
```

```
    return total
```

```
total_cost = total_cost(item_cost)
```

```
print(f"Item Cost: ${item_cost:.2f}")
```

```
print(f"Sales Tax Rate: {SALES_TAX_RATE * 100}%")
```

```
print(f"Total Cost: ${total_cost:.2f}")
```

Status : Correct

Marks : 10/10

4. Problem Statement

Arjun is working on a mathematical tool to manipulate lists of numbers. He needs a program that reads a list of integers and generates two lists: one containing the squares of the input numbers, and another containing the cubes. Arjun wants to use lambda functions for both tasks.

Write a program that computes the square and cube of each number in the input list using lambda functions.

Input Format

The input consists of a single line of space-separated integers representing the list of input numbers.

Output Format

The first line contains a list of the squared values of the input numbers.

The second line contains a list of the cubed values of the input numbers.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 1 2 3

Output: [1, 4, 9]

[1, 8, 27]

Answer

```
input_numbers = list(map(int, input().split()))
squares = list(map(lambda x: x ** 2, input_numbers))
cubes = list(map(lambda x: x ** 3, input_numbers))
print(squares)
print(cubes)
```

Status : Correct

Marks : 10/10