

# 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

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**

#

# You are using Python

SALES\_TAX\_RATE=0.08

def total\_cost(item\_cost):

    tax\_amt=item\_cost\*SALES\_TAX\_RATE

    final\_cost=item\_cost+tax\_amt

    return final\_cost

item\_cost=float(input())

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

## 2. 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***

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

**Status :** Correct

**Marks :** 10/10

## 3. 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***

```
# You are using Python
n=int(input())
divisors=[i for i in range(2, n+1) if n%i==0]
smallest=min(divisors)
print(f"The smallest positive divisor of {n} is: {smallest}")
```

**Status :** Correct

**Marks :** 10/10

## **4. 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***

```
# You are using Python
def count_substrings(text, substring):
    count=text.count(substring)
    print(f"The substring '{substring}' appears {count} times in the text.")
text=input()
substring=input()
count_substrings(text, substring)
```

**Status :** Correct

**Marks :** 10/10