

# Rajalakshmi Engineering College

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## NeoColab\_REC\_CS23221\_Python Programming

### REC\_Python\_Week 4\_CY

Attempt : 1  
Total Mark : 40  
Marks Obtained : 35

### Section 1 : Coding

#### 1. 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
```

```
# Read input
```

```
n = int(input())
```

```
smallest_divisor = min(i for i in range(2, n + 1) if n % i == 0)
```

```
# Print the result in the required format
```

```
print(f"The smallest positive divisor of {n} is: {smallest_divisor}")
```

**Status :** Correct

**Marks : 10/10**

## 2. Problem Statement

You are tasked with designing a shipping cost calculator program that calculates the shipping cost for packages based on their weight and destination. The program utilizes different shipping rates for domestic, international, and remote destinations. The rates for each destination type are provided as global constants.

Constant Values:

DOMESTIC\_RATE = 5.0

INTERNATIONAL\_RATE = 10.0

REMOTE\_RATE = 15.0

Function Signature: calculate\_shipping(weight, destination)

Formula: shipping cost = weight \* destination rate

### ***Input Format***

The first line of the input consists of a float representing the weight of the package.

The second line consists of a string representing the destinations(Domestic or International or Remote).

### ***Output Format***

The program outputs any one of the following:

1. If the input is valid and the destination is recognized, the output should consist of a single line stating the calculated shipping cost for the given weight and destination in the format: "Shipping cost to [destination] for a [weight] kg package: \$[calculated cost]" with two decimal places.
2. If the input weight is not a positive float, print "Invalid weight. Weight must be greater than 0."
3. If the input destination is not one of the valid options, print "Invalid destination."

Refer to the sample output for the formatting specifications.

### ***Sample Test Case***

Input: 5.5

Domestic

Output: Shipping cost to Domestic for a 5.5 kg package: \$27.50

### ***Answer***

```
#
```

```
# Global constants for shipping rates
```

```
DOMESTIC_RATE = 5.0
```

```
INTERNATIONAL_RATE = 10.0
```

```
REMOTE_RATE = 15.0
```

```
weight=float(input())
```

```
destination=input()
```

```
shipping_cost=None
```

```
if weight <= 0 or weight < 1.0 or weight > 1000.0:
    print("Invalid weight. Weight must be greater than 0.")

elif len(destination)<1 or len(destination)>15:
    print("Invalid destination.")
elif destination=="Domestic":
    shipping_cost=weight*DOMESTIC_RATE
elif destination == "International":
    shipping_cost= INTERNATIONAL_RATE
elif destination == "Remote":
    shipping_cost= REMOTE_RATE
else:
    print("Invalid destination.")

if shipping_cost is not None:
    print(f"Shipping cost to {destination} for a {weight} kg package:
    ${shipping_cost:.2f}")
```

**Status :** Partially correct

**Marks :** 5/10

### 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**

#

# Global sales tax rate

SALES\_TAX\_RATE = 0.08

```
def total_cost(item_cost):  
    tax = item_cost * SALES_TAX_RATE  
    total = item_cost + tax  
    return total
```

# Read input

item\_cost = float(input())

# Calculate total

final\_cost = total\_cost(item\_cost)

# Print output

```
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***

```
# Read input
numbers = list(map(int, input().split()))
```

```
squares = list(map(lambda x: x ** 2, numbers))  
cubes = list(map(lambda x: x ** 3, numbers))
```

```
# Print results  
print(squares)  
print(cubes)
```

**Status :** Correct

**Marks :** 10/10