

# Rajalakshmi Engineering College

Name: Devadharshini K  
Email: 240701626@rajalakshmi.edu.in  
Roll no: 2116240701626  
Phone: 8248408481  
Branch: REC  
Department: I CSE FF  
Batch: 2028  
Degree: B.E - CSE

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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

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**

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

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

```
# Output result
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***

```
#
```

```
# You are using Python
```

```
# Global constants
```

```
DOMESTIC_RATE = 5.0
```

```
INTERNATIONAL_RATE = 10.0
```

```
REMOTE_RATE = 15.0
```

```
def calculate_shipping(weight, destination):
```

```
    if weight <= 0:
```

```
        print("Invalid weight. Weight must be greater than 0.")
```

```
    return None
```

```

if destination == "Domestic":
    rate = DOMESTIC_RATE
elif destination == "International":
    rate = INTERNATIONAL_RATE
elif destination == "Remote":
    rate = REMOTE_RATE
else:
    print("Invalid destination.")
    return None

return weight * rate

# Input
try:
    weight = float(input())
    destination = input()

    # Compute shipping cost
    shipping_cost = calculate_shipping(weight, destination)

    # Footer snippet for clean output

except ValueError:
    print("Invalid weight. Weight must be greater than 0.")

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

```

**Status :** Correct

**Marks :** 10/10

### 3. Problem Statement

Amrita is developing a password strength checker for her website. She wants the checker to consider the length and the diversity of characters used in the password. A strong password should be long and include a mix of character types: uppercase, lowercase, digits, and special symbols.

She also wants the feedback to be user-friendly, so she wants to include the actual password in the output. Help Amrita finish this password

checker using Python's built-in string methods.

### Character Types Considered:

Lowercase letters (a-z) Uppercase letters (A-Z) Digits (0-9) Special characters (from string.punctuation, e.g. @, !, #, \$)

### ***Input Format***

The input consists of a single string representing the user's password.

### ***Output Format***

The program prints the strength of the password in this format:

If the password length < 6 characters or fewer than 2 of the 4 character types, the output prints "<password> is Weak"

If password length  $\geq 6$  and at least 2 different character types, the output prints "<password> is Moderate"

If Password length  $\geq 10$  and all 4 character types present, the output prints "<password> is Strong"

Refer to the sample output for formatting specifications.

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

Input: password123

Output: password123 is Moderate

### ***Answer***

```
import string
```

```
def check_password_strength(password):
```

```
    has_lower = any(char.islower() for char in password)
```

```
    has_upper = any(char.isupper() for char in password)
```

```
    has_digit = any(char.isdigit() for char in password)
```

```
    has_special = any(char in string.punctuation for char in password)
```

```
types_present = sum([has_lower, has_upper, has_digit, has_special])
```

```
if len(password) < 6 or types_present < 2:  
    print(f"{password} is Weak")  
elif len(password) >= 10 and types_present == 4:  
    print(f"{password} is Strong")  
else:  
    print(f"{password} is Moderate")
```

```
password_input = input()  
check_password_strength(password_input)
```

**Status :** Correct

**Marks :** 10/10

#### 4. 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
```

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

```
# Input  
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