EX 11 EXCEPTIONS

Ex. No. : 11.1 **Date:**

Register No.: 230701357 **Name: SWETHA.J**

Problem Description:

Develop a Python program that safely calculates the square root of a number provided by the user. Handle exceptions for negative inputs and non-numeric inputs.

Input Format:

User inputs a number.

Output Format:

Print the square root of the number or an error message if an exception occurs.

For example:

Input	Result
16	The square root of 16.0 is 4.00
-4	Error: Cannot calculate the square root of a negative number.
rec	Error: could not convert string to float

Program

```
import math

def sqrt(a):

    if(a>-1):

        print("The square root of",a,'is',"%0.2f"%math.sqrt(a),sep=' ')

try:

    a=float(input())

    sqrt(a)

except ValueError:
```

```
    print("Error: could not convert string to float")
else:
    if(a<0):
        print("Error: Cannot calculate the square root of a negative number. ")
```

Input
Expected
Got

```
16
The square root of 16.0 is 4.00
The square root of 16.0 is 4.00
0
The square root of 0.0 is 0.00
The square root of 0.0 is 0.00
-4
Error: Cannot calculate the square root of a negative number.
Error: Cannot calculate the square root of a negative number.
```

Ex. No. : 11.2 **Date:**

Register No.: 230701357 **Name: SWETHA.J**

Write a Python program that performs division and modulo operations on two numbers provided by the user. Handle division by zero and non-numeric inputs.

Input Format:

Two lines of input, each containing a number.

Output Format:

Print the result of division and modulo operation, or an error message if an exception occurs.

For example:

Input	Result
10 2	Division result: 5.0 Modulo result: 0
7 3	Division result: 2.3333333333333335 Modulo result: 1
8 0	Error: Cannot divide or modulo by zero.

Program

```
try:
    num1 = float(input())
    num2 = float(input())
    if num2 == 0:
        print("Error: Cannot divide or modulo by zero.")
    else:
        print(f"Division result: {num1 / num2}")
```

```
        print(f"Modulo result: {int(num1 % num2)}")
except ValueError:
    print("Error: Non-numeric input provided.")
```

Input
Expected
Got

```
10
2
Division result: 5.0
Modulo result: 0
Division result: 5.0
Modulo result: 0
7
3
Division result: 2.3333333333333335
Modulo result: 1
Division result: 2.3333333333333335
Modulo result: 1
8
0
Error: Cannot divide or modulo by zero.
Error: Cannot divide or modulo by zero.
abc
5
Error: Non-numeric input provided.
Error: Non-numeric input provided.
```

Ex. No. : 11.3 **Date:**

Register No.: 230701357 **Name: SWETHA.J**

Problem Description:

Write a Python script that asks the user to enter a number within a specified range (e.g., 1 to 100). Handle exceptions for invalid inputs and out-of-range numbers.

Input Format:

User inputs a number.

Output Format:

Confirm the input or print an error message if it's invalid or out of range.

For example:

Input	Result
1	Valid input.
101	Error: Number out of allowed range
rec	Error: invalid literal for int()

Program

```
def get_number_in_range():
    try:
        number = int(input())
        if 1 <= number <= 100:
            print("Valid input.")
        else:
            print("Error: Number out of allowed range")

    except ValueError:
```

print("Error: invalid literal for int()")

get_number_in_range()

Input
Expected
Got

```
1
Valid input.
Valid input.
100
Valid input.
Valid input.
101
Error: Number out of allowed range
Error: Number out of allowed range
```

Ex. No. : 11.4 Date:

Register No.: 230701357 Name: SWETHA.J

Develop a Python program that safely performs division between two numbers provided by the user. Handle exceptions like division by zero and non-numeric inputs.

Input Format: Two lines of input, each containing a number.

Output Format: Print the result of the division or an error message if an exception occurs.

For example:

Input	Result
10 2	5.0
10 0	Error: Cannot divide or modulo by zero.
ten 5	Error: Non-numeric input provided.

Program

```
def safe_division():
    try:
        num1 = float(input())
        num2 = float(input())

        result = num1 / num2

        if num2 == 0:
            raise ZeroDivisionError
```

```
        print(result)

    except ValueError:
        print("Error: Non-numeric input provided.")
    except ZeroDivisionError:
        print("Error: Cannot divide or modulo by zero.")

if __name__ == "__main__":
    safe_division()
```

Input
Expected
Got

```
10
2
5.0
5.0
10
0
Error: Cannot divide or modulo by zero.
Error: Cannot divide or modulo by zero.
ten
5
Error: Non-numeric input provided.
Error: Non-numeric input provided.
```

Ex. No. : 11.5 **Date:**

Register No.: 230701357 **Name: SWETHA.J**

Write a Python program that asks the user for their age and prints a message based on the age. Ensure that the program handles cases where the input is not a valid integer.

Input Format: A single line input representing the user's age.

Output Format: Print a message based on the age or an error if the input is invalid.

For example:

Input	Result
twenty	Error: Please enter a valid age.
25	You are 25 years old.
-1	Error: Please enter a valid age.

Program

```
try:
    age = input()
    age = int(age)
    if age < 0:
        print("Error: Please enter a valid age.")
    else:
        print(f"You are {age} years old.")
except ValueError:
    print("Error: Please enter a valid age.")
```

except EOFError:

    print("Error: Please enter a valid age.")

Input
Expected
Got

```
twenty
Error: Please enter a valid age.
Error: Please enter a valid age.
25
You are 25 years old.
You are 25 years old.
-1
Error: Please enter a valid age.
Error: Please enter a valid age.
150
You are 150 years old.
You are 150 years old.
Error: Please enter a valid age.
Error: Please enter a valid age.
```