Week-11

1. Problem Description:

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** |
| --- | --- |
| 25 | You are 25 years old. |
| rec | Error: Please enter a valid age. |
| -5 | Error: Please enter a valid age. |

Program:

try:

a=input()

if int(a)>=0:

print("You are",a,"years old.")

else:

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

except:

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

output:

|  | **Input** | **Expected** | **Got** |  |
| --- | --- | --- | --- | --- |
|  | 25 | You are 25 years old. | You are 25 years old. |  |
|  | rec | Error: Please enter a valid age. | Error: Please enter a valid age. |  |
|  | !@# | Error: Please enter a valid age. | Error: Please enter a valid age. |  |

Passed all tests!

**Correct**

2. 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:

a=input()

if int(a)>=0:

print("You are",a,"years old.")

else:

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

except:

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

output:

|  | **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. |  |

Passed all tests!

**Correct**

3. 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:

a=input()

b=input()

c=int(a)/int(b)

d=int(a)%int(b)

except ZeroDivisionError:

print("Error: Cannot divide or modulo by zero.")

except:

print("Error: Non-numeric input provided.")

else:

print("Division result:",c)

print("Modulo result:",d)

output:

|  | **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. |  |

Passed all tests!

**Correct**

4. 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:

try:

a=input()

if(int(a)>0 and int(a)<101):

print("Valid input.")

else:

print("Error: Number out of allowed range")

except:

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

output;

|  | **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 |  |

Passed all tests!

**Correct**

5. 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 main():

# Prompt the user for input

num\_input = input()

try:

# Try to convert the input to a float

num = float(num\_input)

# Check if the number is non-negative

if num < 0:

print("Error: Cannot calculate the square root of a negative number.")

else:

# Calculate the square root

sqrt\_result = math.sqrt(num)

print(f"The square root of {num} is {sqrt\_result:.2f}")

except ValueError:

# Handle the case where the input is not a valid number

print("Error: could not convert string to float")

if \_\_name\_\_ == "\_\_main\_\_":

main()

output:

|  | **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. |  |

Passed all tests!

**Correct**