11-Exception Handling

1)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.

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PROGRAM: import math
```

```
a=float(input())
```

if a>=0:

try:

```
b=a**0.5
```

c="%.2f"%b

print("The square root of",float(a),"is",c)

else:

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

except EOFError:

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

except ValueError:

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

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	

2) 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.

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)

OUTPUT:

print("Modulo result:",d)

	Input	Expected	Got	
~	10 2	Division result: 5.0 Modulo result: 0	Division result: 5.0 Modulo result: 0	~
~	7	Division result: 2.3333333333333333 Modulo result: 1	Division result: 2.3333333333333333 Modulo result: 1	~
~	8	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.	~

3) 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.

PROGRAM:
try:
a=input()
b=input()
c=float(a)/float(b)
except ZeroDivisionError:
print("Error: Cannot divide or modulo by zero."
except:
print("Error: Non-numeric input provided.")
else:
print(c)

OUTPUT:

	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.	~
Passed all tests! ✓				

4) 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.

PROGRAM:

```
try:
    n=input()
    if(int(n)>0 and int(n)<101):
        print("Valid input.")
    else:
        print("Error: Number out of allowed range")
except:
    print("Error: invalid literal for int()")</pre>
```

OUTPUT:

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

5) 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.

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! 🗸