**11 - Handling Exceptions**

**Ex. No. : 11.1 Date: 03.06.2024**

**Register no : 231401028 Name: ELAN GUMARAN**

**Invalid inputs and Out-of-range Numbers.**

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.

**Sample Input**

1

**Sample Output**

Valid input.

**For example:**

|  |  |
| --- | --- |
| **Input** | **Result** |
| 1 | Valid input. |
| 100 | Valid input. |
| 101 | Error: Number out of allowed range |

**Answer:**

try:

user\_input = int(input())

if 1 <= user\_input <= 100:

print("Valid input.")

else:

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

except ValueError:

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **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. : 11.2 Date: 03.06.2024**

**Register no : 231401028 Name: ELAN GUMARAN**

**Negative inputs and Non-Numeric Inputs**

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.

**Sample Input**

16

-4

**Sample Output**

The square root of 16.0 is 4.00

Error: Cannot calculate the square root of a negative number.

**For example:**

|  |  |
| --- | --- |
| **Input** | **Result** |
| 0 | The square root of 0.0 is 0.00 |

**Answer:**

import math

def calculate\_square\_root():

number = input()

try:

number = float(number)

if number < 0:

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

else:

sqrt\_value = math.sqrt(number)

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

except ValueError as e:

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

calculate\_square\_root()

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **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. : 11.3 Date: 03.06.2024**

**Register no : 231401028 Name: ELAN GUMARAN**

**Zero and Non-Numeric Inputs**

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.

**Sample Input**

7

3

**Sample Output**

Division result: 2.3333333333333335

Modulo result: 1

**For example:**

|  |  |
| --- | --- |
| **Input** | **Result** |
| 10  2 | Division result: 5.0  Modulo result: 0 |
| 8  0 | Error: Cannot divide or modulo by zero. |

**Answer:**

def perform\_operations():

try:

num1 = float(input())

num2 = float(input())

if num2 == 0:

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

else:

division\_result = num1 / num2

modulo\_result = num1 % num2

print(f"Division result: {division\_result}")

print(f"Modulo result: {int(modulo\_result)}")

except ValueError:

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

perform\_operations()

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **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. : 11.4 Date: 03.06.2024**

**Register no : 231401028 Name: ELAN GUMARAN**

**Invalid Integer Inputs-1**

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.

**Sample Input:**

25

**Sample Output:**

 You are 25 years old.

**For example:**

|  |  |
| --- | --- |
| **Input** | **Result** |
| twenty | Error: Please enter a valid age. |
| 150 | You are 150 years old. |
| -1 | Error: Please enter a valid age. |

**Answer:**

try:

age = int(input().strip())

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. |  |

**Ex. No. : 11.5 Date: 03.06.2024**

**Register no : 231401028 Name: ELAN GUMARAN**

**Invalid Integer Inputs-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.

**Sample Input:**

150

**Sample output:**

 You are 150 years old.

**For example:**

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

**Answer:**

def get\_age\_message():

try:

age\_str = input()

age = int(age\_str)

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.")

get\_age\_message()

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **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. |  |