

WEEK 11

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.

PROGRAM:

```
import math
try:
    a=float(input())
    if a>=0:
        b=a**0.5
        c="%0.2f"%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 of a negative number.

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)
    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! ✓

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()")
```

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! ✓

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! ✓				

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