

ASSIGNMENT 3:

Module 4: Functions & Modules in Python

Task 1: Calculate Factorial Using a Function

Problem Statement: Write a Python program that:

1. Defines a function named factorial that takes a number as an argument and calculates its factorial using a loop or recursion.
2. Returns the calculated factorial.
3. Calls the function with a sample number and prints the output.

Code:

```
TuteDude Assignment 3.py > ...
1  # Task 1
2  def factorial(n):
3      if n < 0:
4          return "Factorial not defined for negative numbers"
5      if n == 0 or n == 1:
6          return 1
7
8      result = 1
9      for i in range(2, n + 1):
10         result *= i
11     return result
12
13 number = int(input("Enter a non-negative integer to compute its factorial: "))
14 print(f"Factorial of {number} is: {factorial(number)}")
```

Output:

```
P5 C:\Users\VG\Desktop\TuteDude Python> & C:/Users/VG/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/VG/Desktop/TuteDude Python/TuteDude Assignment 3.py"
Enter a non-negative integer to compute its factorial: 5
Factorial of 5 is: 120
P5 C:\Users\VG\Desktop\TuteDude Python> 
```

Task 2: Using the Math Module for Calculations

Problem Statement: Write a Python program that:

1. Asks the user for a number as input.
2. Uses the math module to calculate the:
 - Square root of the number
 - Natural logarithm (log base e) of the number
 - Sine of the number (in radians)
3. Displays the calculated results.

Code:

```
18 # Task 2
19 number = float(input("Enter a number: "))
20
21 sqrt_result = math.sqrt(number)
22 ln_result = math.log(number)
23 sin_result = math.sin(number)
24
25 print(f"Square root of {number}: {sqrt_result}")
26 print(f"Natural logarithm of {number}: {ln_result}")
27 print(f"Sine of {number} (in radians): {sin_result}")
```

Output:

```
PS C:\Users\VG\Desktop\TuteDude Python> & C:/Users/VG/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/VG/Desktop/TuteDude Python/TuteDude Assignment 3.py"
Enter a number: 5
Square root of 5.0: 2.23606797749979
Natural logarithm of 5.0: 1.6094379124341003
Sine of 5.0 (in radians): -0.9589242746631385
PS C:\Users\VG\Desktop\TuteDude Python> █
```

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