Assignment-1.1

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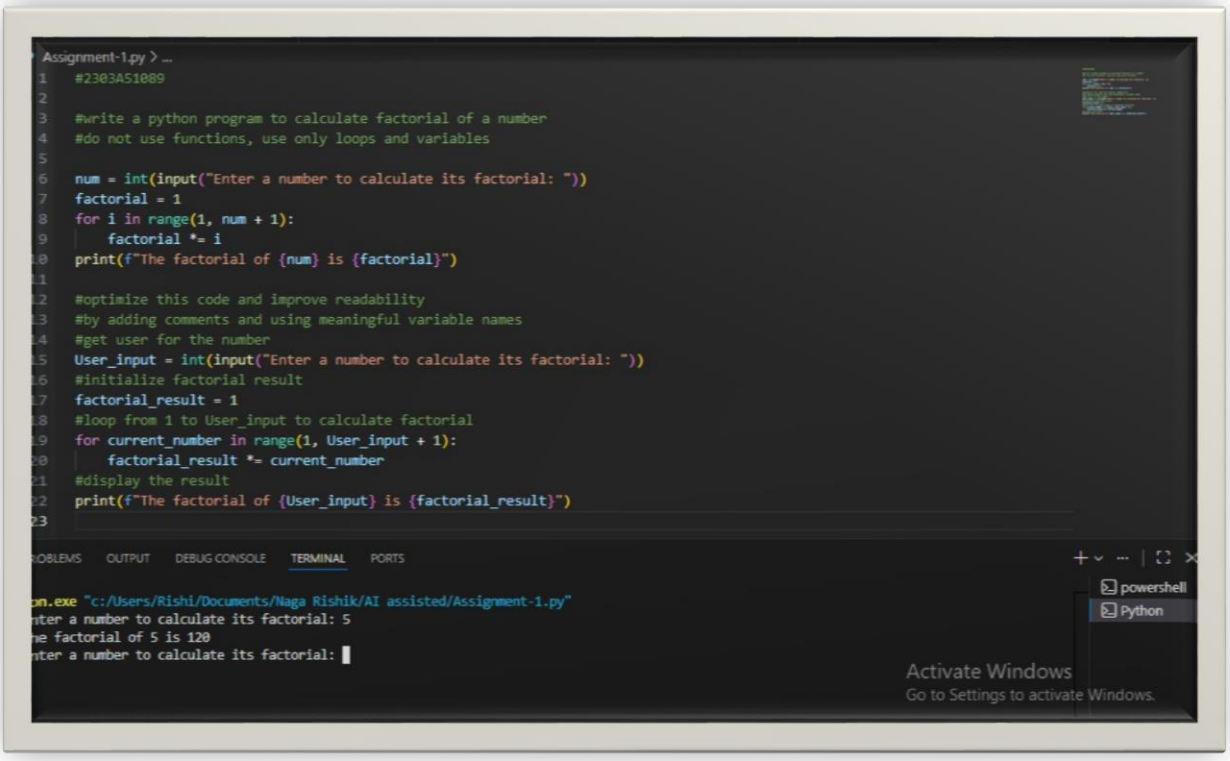
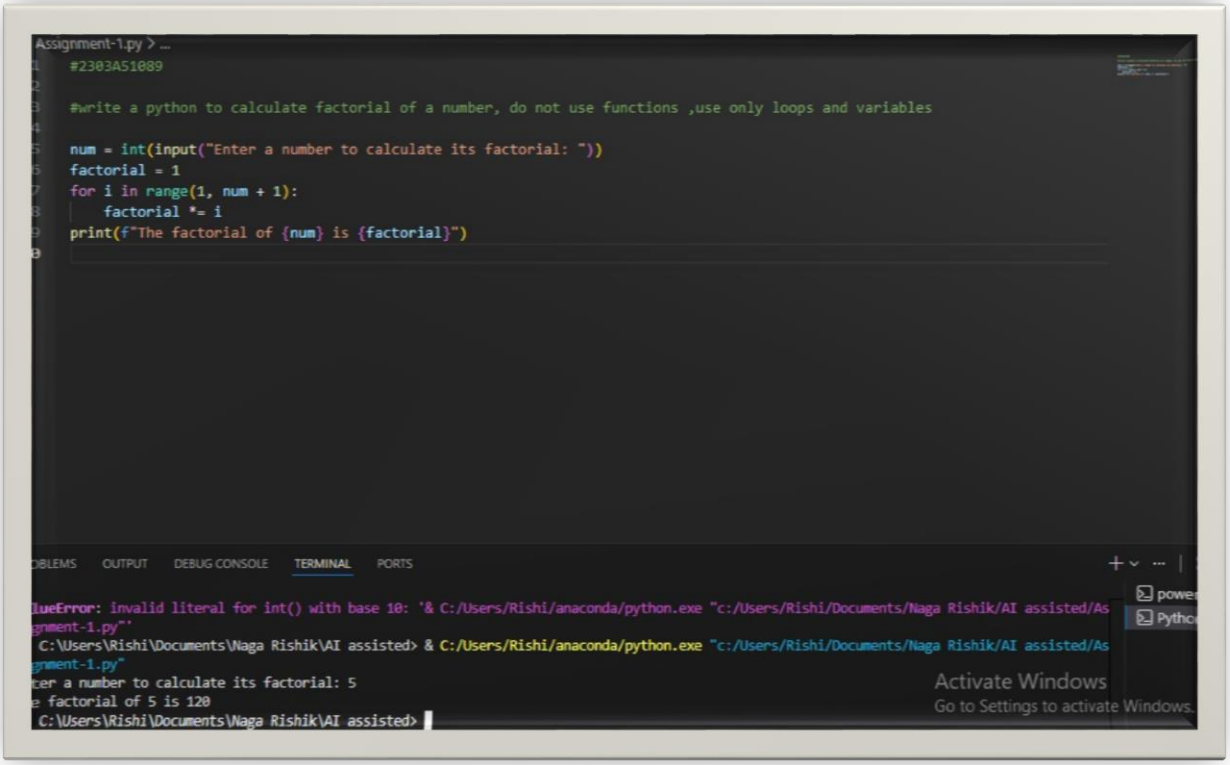
Batch no: 2

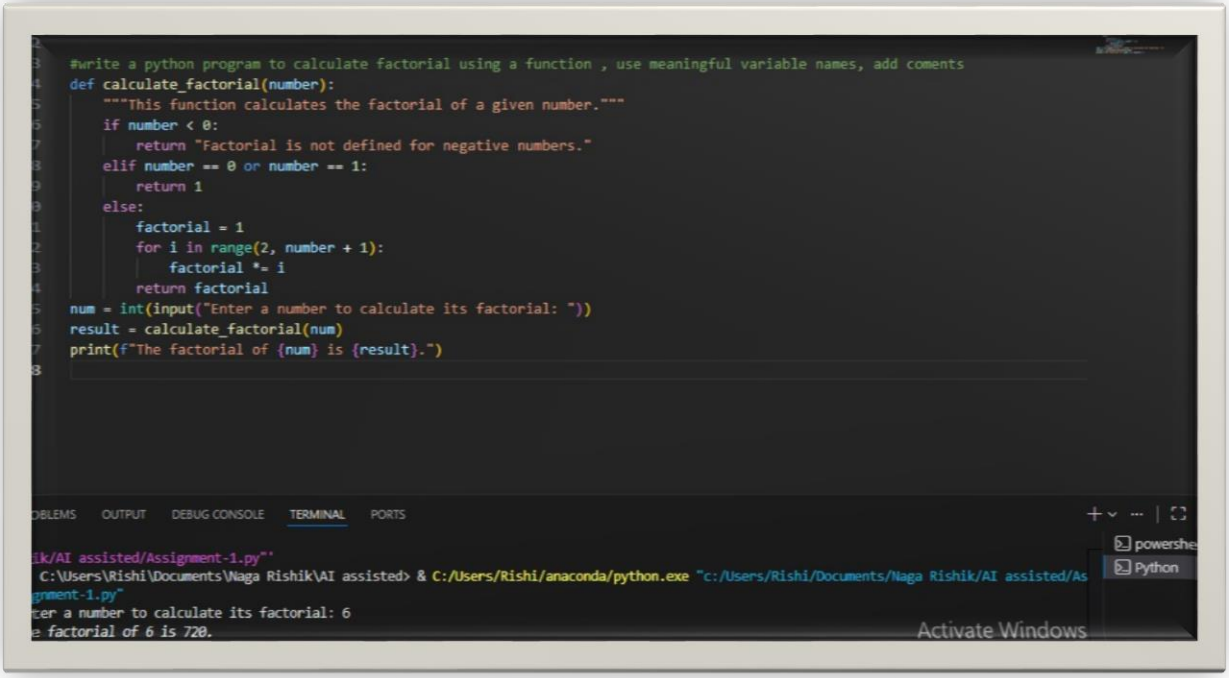
Task-1: AI-Generated logic without Modularization (Factorial without functions)



Task-2: AI code Optimization and cleanup (Improving Efficiency)



Task-3: Modular Design using AI assistance (Factorial with functions)



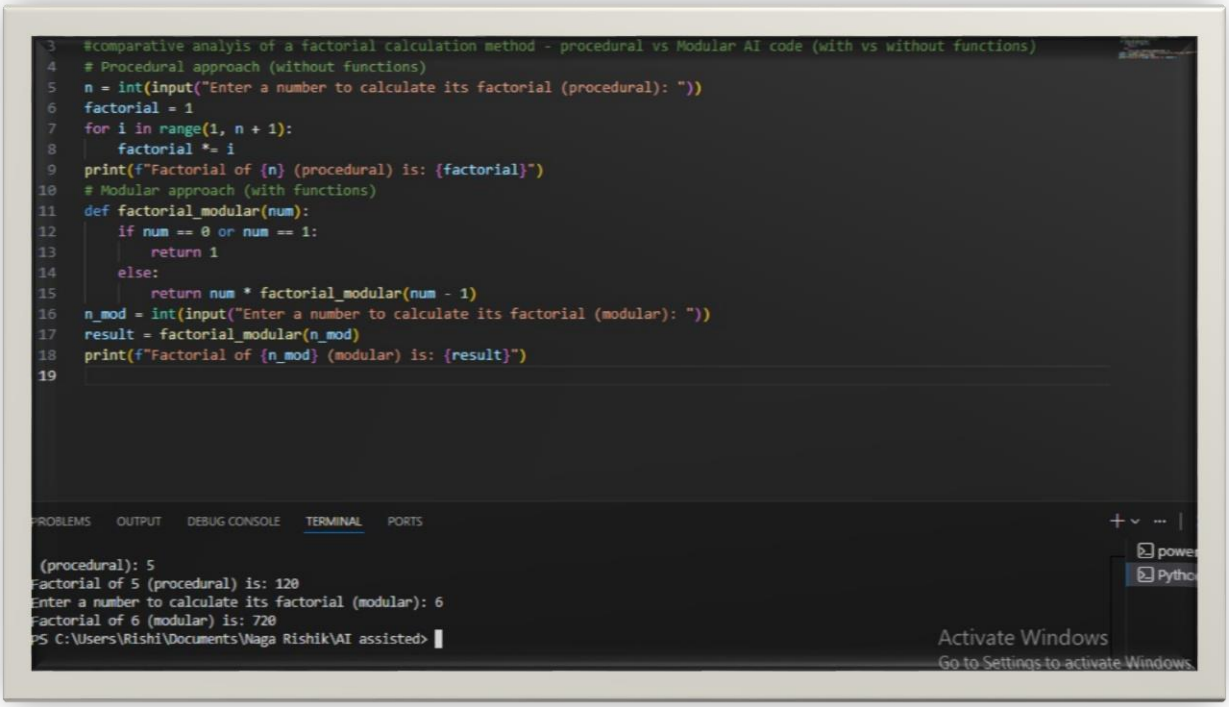
```python
#write a python program to calculate factorial using a function , use meaningful variable names, add coments
def calculate_factorial(number):
    """This function calculates the factorial of a given number."""
    if number < 0:
        return "Factorial is not defined for negative numbers."
    elif number == 0 or number == 1:
        return 1
    else:
        factorial = 1
        for i in range(2, number + 1):
            factorial *= i
        return factorial
num = int(input("Enter a number to calculate its factorial: "))
result = calculate_factorial(num)
print(f"The factorial of {num} is {result}.")
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

ik/AI assisted/Assignment-1.py"'
 C:\Users\Rishi\Documents\Naga Rishik\AI assisted> & C:/Users/Rishi/anaconda/python.exe "c:/Users/Rishi/Documents/Naga Rishik/AI assisted/As
gnment-1.py"
ter a number to calculate its factorial: 6
e factorial of 6 is 720.
```

Activate Windows

Task-4: Comparative Analysis-Procedural vs Modular AI Code(with vs without functions)



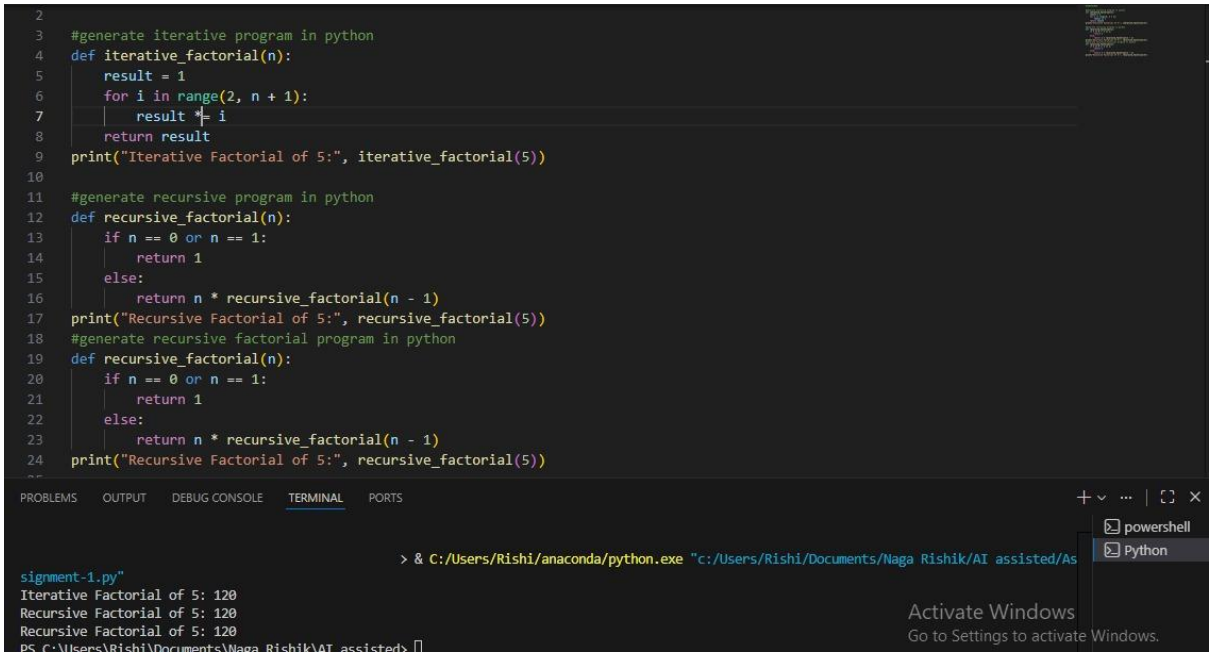
```python
#comparative analyis of a factorial calculation method - procedural vs Modular AI code (with vs without functions)
# Procedural approach (without functions)
n = int(input("Enter a number to calculate its factorial (procedural): "))
factorial = 1
for i in range(1, n + 1):
    factorial *= i
print(f"Factorial of {n} (procedural) is: {factorial}")
# Modular approach (with functions)
def factorial_modular(num):
    if num == 0 or num == 1:
        return 1
    else:
        return num * factorial_modular(num - 1)
n_mod = int(input("Enter a number to calculate its factorial (modular): "))
result = factorial_modular(n_mod)
print(f"Factorial of {n_mod} (modular) is: {result}")
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

 (procedural): 5
Factorial of 5 (procedural) is: 120
Enter a number to calculate its factorial (modular): 6
Factorial of 6 (modular) is: 720
PS C:\Users\Rishi\Documents\Naga Rishik\AI assisted>
```

Activate Windows
Go to Settings to activate Windows.

Task-5:AI-Generated iterative vs Recursive thinking



```
#generate iterative program in python
def iterative_factorial(n):
    result = 1
    for i in range(2, n + 1):
        result *= i
    return result
print("Iterative Factorial of 5:", iterative_factorial(5))

#generate recursive program in python
def recursive_factorial(n):
    if n == 0 or n == 1:
        return 1
    else:
        return n * recursive_factorial(n - 1)
print("Recursive Factorial of 5:", recursive_factorial(5))
#generate recursive factorial program in python
def recursive_factorial(n):
    if n == 0 or n == 1:
        return 1
    else:
        return n * recursive_factorial(n - 1)
print("Recursive Factorial of 5:", recursive_factorial(5))
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

> & C:/Users/Rishi/anaconda/python.exe "c:/Users/Rishi/Documents/Naga Rishik/AI assisted/Assignment-1.py"
Iterative Factorial of 5: 120
Recursive Factorial of 5: 120
Recursive Factorial of 5: 120
PS C:\Users\Rishi\Documents\Naga Rishik\AI assisted>
```

powershell
Python