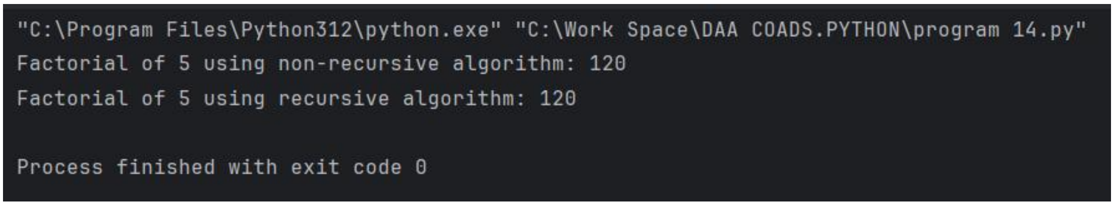
14. Write C programs that demonstrate the mathematical analysis of non-recursive and recursive algorithms.

Program:

```
def factorial_non_recursive(n):
    """
    Non-recursive algorithm to compute the factorial of a number.
    """
    result = 1
    for i in range(1, n + 1):
        result *= i
    return result

# Example usage
number = 5
print("Factorial of", number, "using non-recursive algorithm:", factorial_non_recursive(number))
def factorial_recursive(n):
    """
    Recursive algorithm to compute the factorial of a number.
    """
    if n == 0 or n == 1:
        return 1
    else:
        return n * factorial_recursive(n - 1)
# Example usage
number = 5
print("Factorial of", number, "using recursive algorithm:", factorial_recursive(number))
```

Output:



```
"C:\Program Files\Python312\python.exe" "C:\Work Space\DAA COADS.PYTHON\program 14.py"
Factorial of 5 using non-recursive algorithm: 120
Factorial of 5 using recursive algorithm: 120

Process finished with exit code 0
```

Time complexity:

O(n) for non-recursive algorithm

O(n) for recursive algorithm