

4.write a program that demonstrate the mathematical analysis of non-recursive and recursive algorithms.

Code:

```
def non_recursive_factorial(n):
```

```
    result=0
```

```
    for i in range(1,n+1):
```

```
        result+=i
```

```
    return result
```

```
def recursive_factorial(n):
```

```
    if n==0:
```

```
        return 0
```

```
    return n+recursive_factorial(n-1)
```

```
n=5
```

```
print("Non-Recursive Algorithm Result:", non_recursive_factorial(n))
```

```
print("Recursive Algorithm Result:", recursive_factorial(n))
```

output:2

time complexity:

$f(n)=O(\log n)$