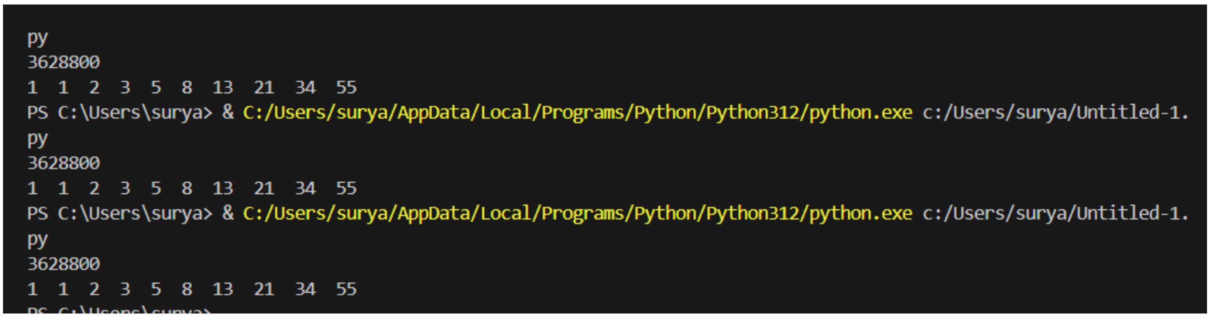
14. Write C programs that demonstrate the mathematical analysis of non recursive and recursive algorithms

PROGRAM:

```
def factorial_iterative(n):
result = 1
for i in range(1, n + 1):
result *= i
return result
def fibonacci_recursive(n):
if n <= 1:
return n
else:
return fibonacci_recursive(n-1) + fibonacci_recursive(n-2)
a=10
print(factorial_iterative(a))
for i in range(1,a+1):
print(fibonacci_recursive(i)," ",end="")
```

OUTPUT:



```
py
3628800
1  1  2  3  5  8  13  21  34  55
PS C:\Users\surya> & C:/Users/surya/AppData/Local/Programs/Python/Python312/python.exe c:/Users/surya/Untitled-1.
py
3628800
1  1  2  3  5  8  13  21  34  55
PS C:\Users\surya> & C:/Users/surya/AppData/Local/Programs/Python/Python312/python.exe c:/Users/surya/Untitled-1.
py
3628800
1  1  2  3  5  8  13  21  34  55
PS C:\Users\surya>
```

TIME COMPLEXITY:

Time complexity for the above code is

O(n)+O(2n)