Assignment 2:

Recursive Function and Efficiency Analysis - Write a recursive function pseudocode and calculate the nth Fibonacci number and use Big O notation to analyze its efficiency. Compare this with an iterative approach and discuss the pros and cons in terms of space and time complexit Fibonacci.

Recursive Approach:

Start

Print “enter num”

Input n

Call Fibonacci(n)

Print Fibonacci

Function Fibonacci(n)

If n<=1

return n

else

return Fibonacci(n-1)+ Fibonacci(n-2)

Iterative Approach:

start

declear nextnum

print "enter number"

input number

first=0

second=1

print first + "," + second

for(int i =2; i<= number; i++)

nextnum=first+second

print nextnum

first=second

second=nextnum

end

Recursive Approach:

Pros: easy to understand and readability.

Cons: poor performance for large values of n, higher space complexity due to recursion

Iterative Approach:

Pros: better performance for large values of n

Cons: More complex implementation compared to the recursive approach.