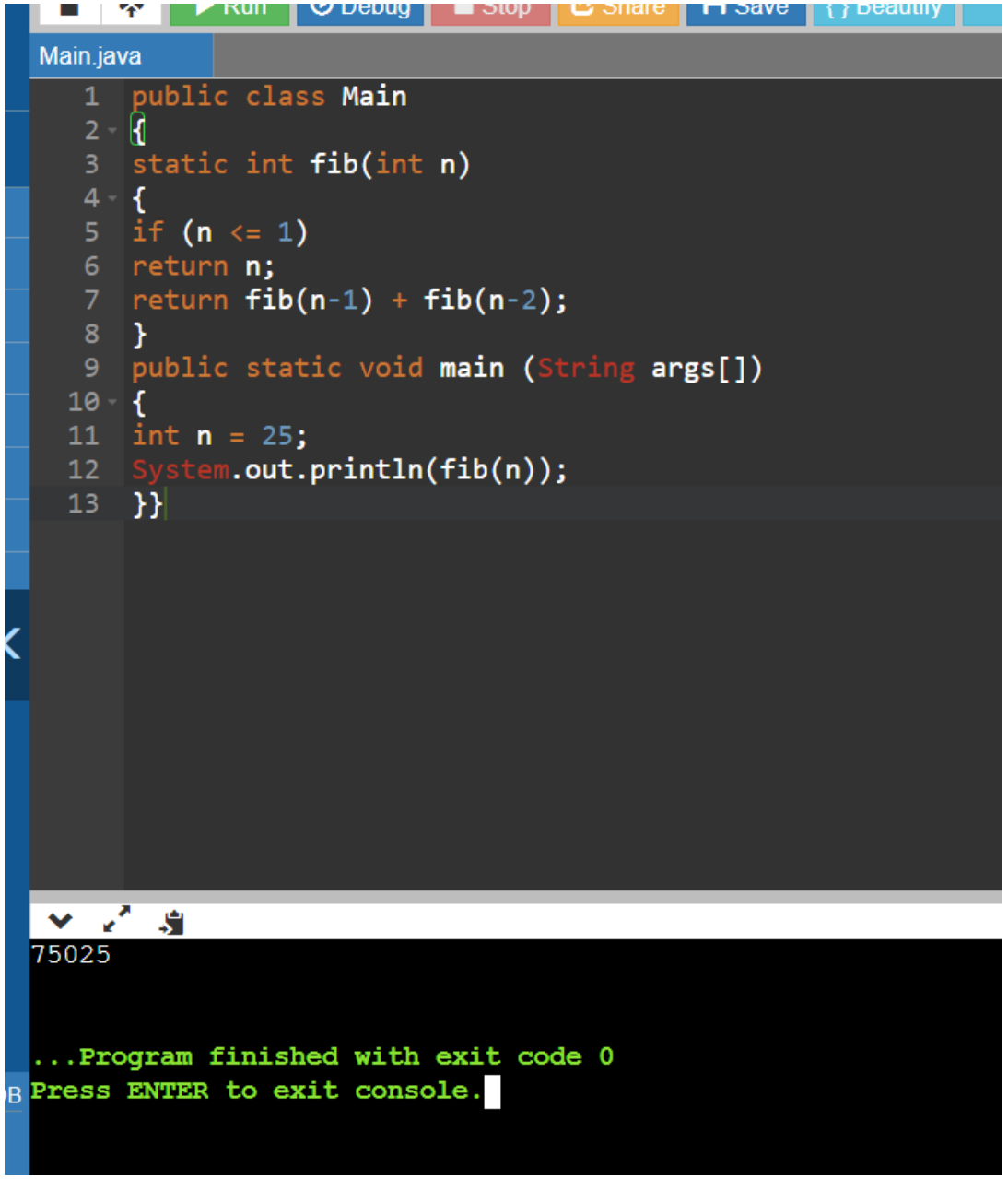
TARUN

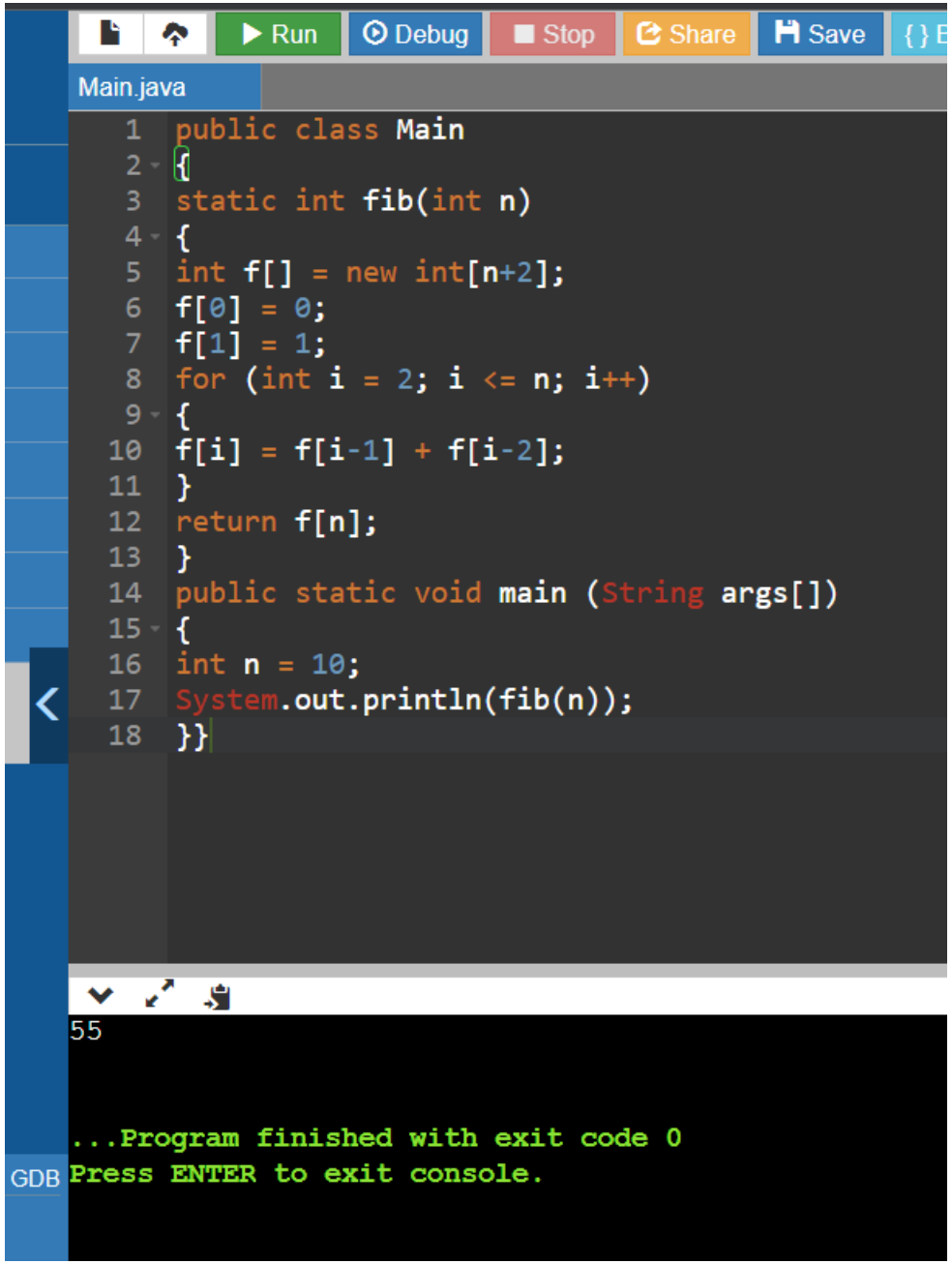
19BCE7578

CSE3004

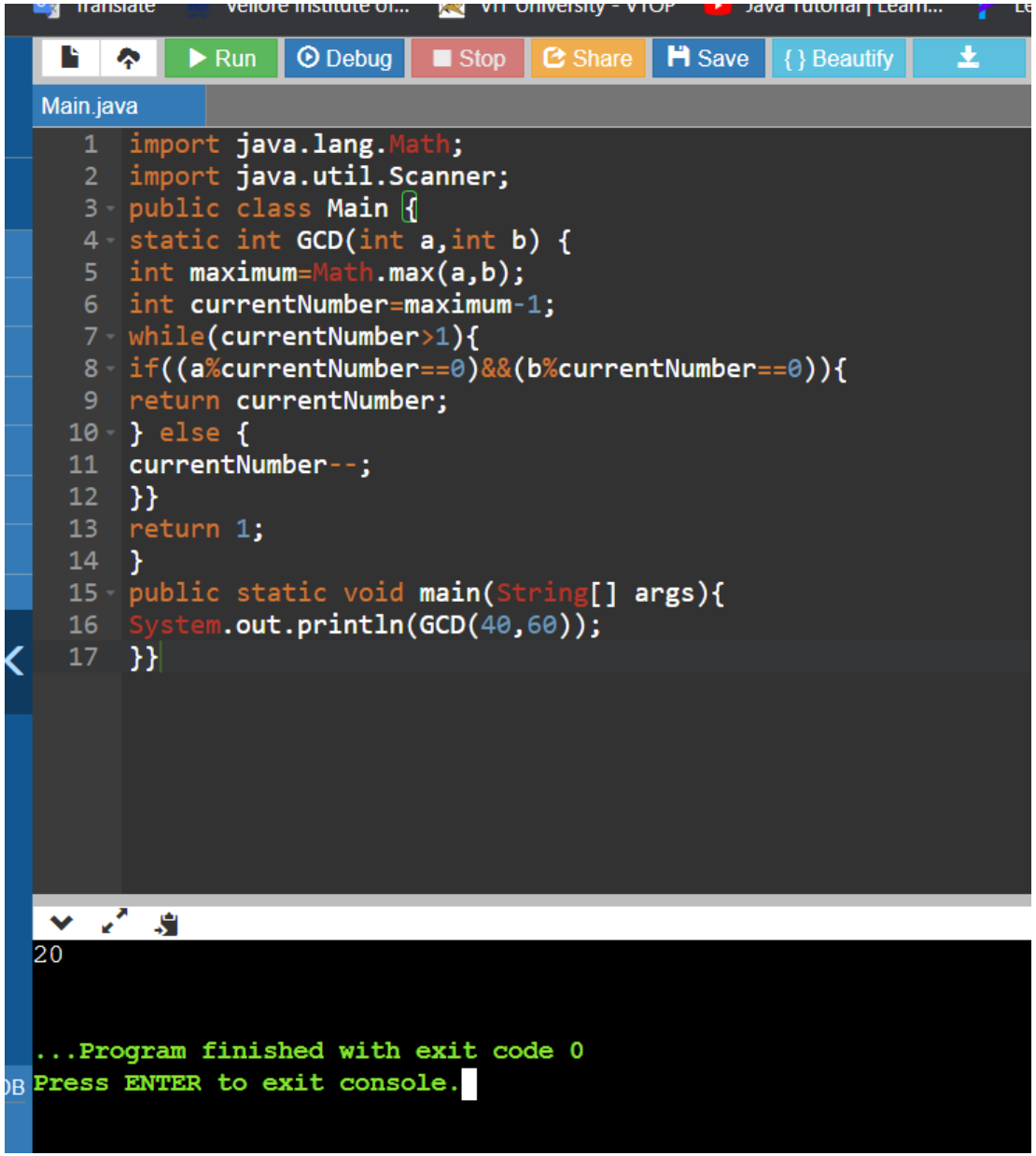
FIBONACCI:

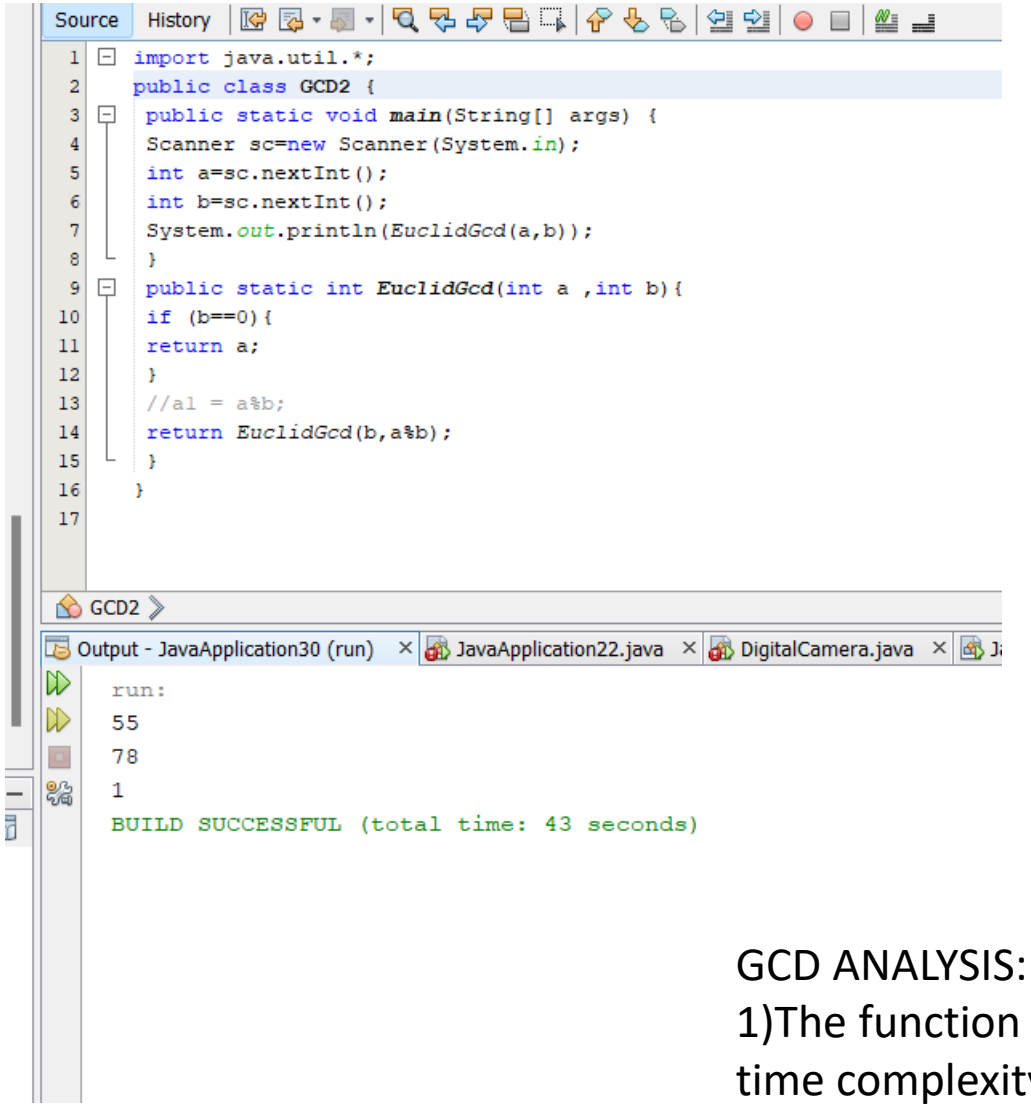

Main.java
1 public class Main
2 {
3 static int fib(int n)
4 {
5 if (n <= 1)
6 return n;
7 return fib(n-1) + fib(n-2);
8 }
9 public static void main (String args[])
10 {
11 int n = 25;
12 System.out.println(fib(n));
13 }}
75025
...Program finished with exit code 0
Press ENTER to exit console.

EFFICIENCY:


Run
Debug
Stop
Share
Save
Main.java
public class Main
{
static int fib(int n)
{
int f[] = new int[n+2];
f[0] = 0;
f[1] = 1;
for (int i = 2; i <= n; i++)
{
f[i] = f[i-1] + f[i-2];
}
return f[n];
}
public static void main (String args[])
{
int n = 10;
System.out.println(fib(n));
}}
55
...Program finished with exit code 0
Press ENTER to exit console.
GDB

ANALYSIS: 1)Here(DP) we are saving the values of f(5),f(4)..etc in array so we call it at O(n) times





GCD ANALYSIS:

1)The function is called n times in this case(navie) the time complexity is o(n)

2)here the time complexity is O(logn)