Name : Jagtap Nachiket Nitin
En.No.: 21221079

Assignment 1

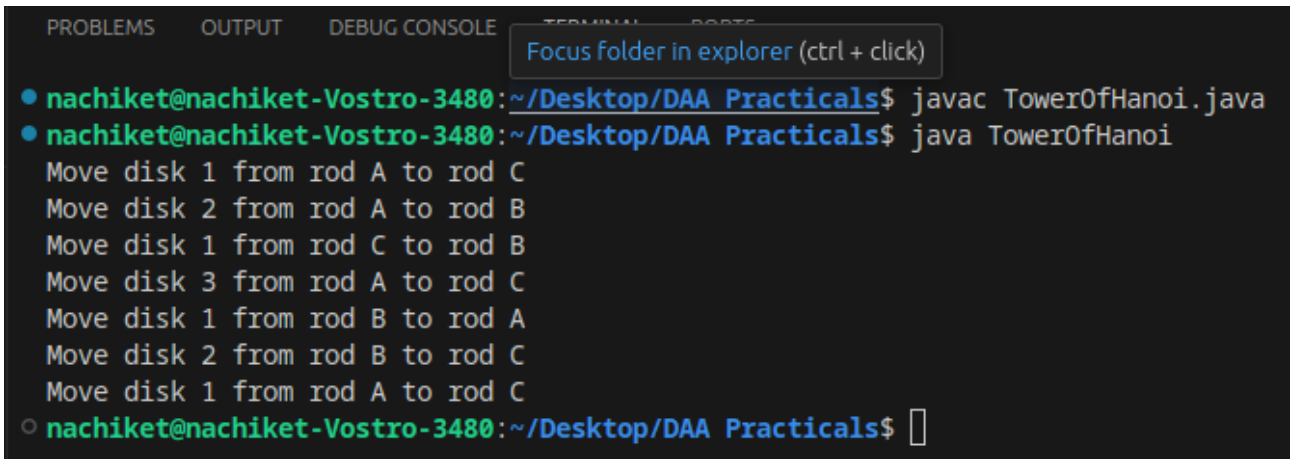
Algorithms and Problem Solving

a. Towers of Hanoi

Java Code :

```
public class TowerOfHanoi {
public static void main(String[] args) {
int numDisks = 3;
char sourceRod = 'A';
char auxiliaryRod = 'B';
char destinationRod = 'C';

towerOfHanoi(numDisks, sourceRod, auxiliaryRod, destinationRod);
}

public static void towerOfHanoi(int numDisks, char source, char auxiliary, char destination)
{
if (numDisks == 1) {
System.out.println("Move disk 1 from rod " + source + " to rod " + destination);
return;
}

// Move n-1 disks from source to auxiliary using destination as the auxiliary rod
towerOfHanoi(numDisks - 1, source, destination, auxiliary);

// Move the nth disk from source to destination
System.out.println("Move disk " + numDisks + " from rod " + source + " to rod " +
destination);

// Move the n-1 disks from auxiliary to destination using source as the auxiliary rod
towerOfHanoi(numDisks - 1, auxiliary, source, destination);
}
}
```

Output :

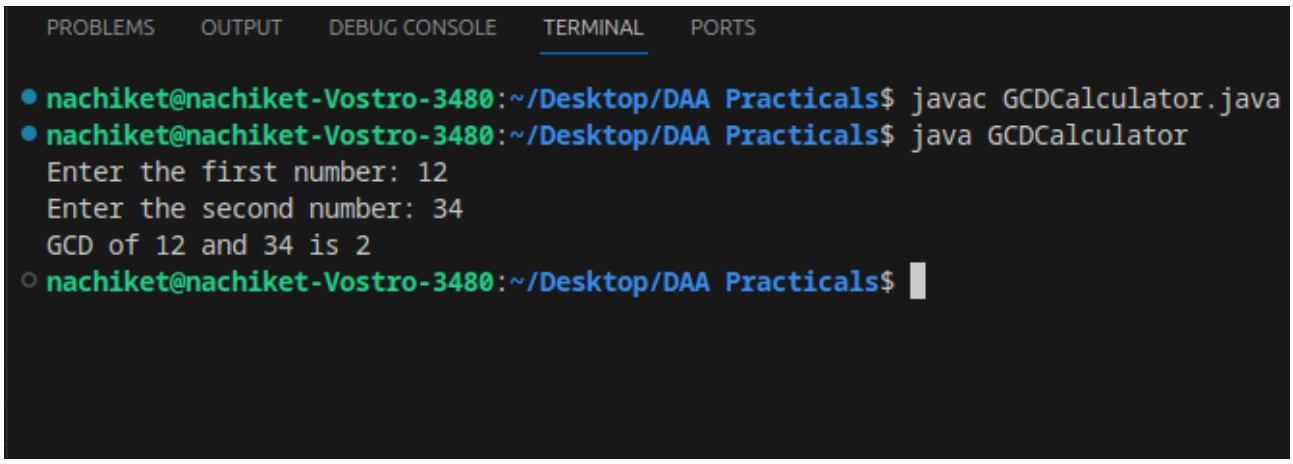


b) GCD of Given Two Numbers :

Java Code:

```
import java.util.Scanner;

public class GCDCalculator {
public static void main(String[] args) {
Scanner input = new Scanner(System.in);

System.out.print("Enter the first number: ");
int number1 = input.nextInt();
System.out.print("Enter the second number: ");
int number2 = input.nextInt();
int gcd = findGCD(number1, number2);

System.out.println("GCD of " + number1 + " and " + number2 + " is " + gcd);
}

public static int findGCD(int a, int b) {
// Ensure both numbers are positive
a = Math.abs(a);
b = Math.abs(b);

while (b != 0) {
int temp = b;
b = a % b;
a = temp;
}

return a;
}
}
```

Output :


PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
nachiket@nachiket-Vostro-3480:~/Desktop/DAA Practicals$ javac GCDCalculator.java
nachiket@nachiket-Vostro-3480:~/Desktop/DAA Practicals$ java GCDCalculator
Enter the first number: 12
Enter the second number: 34
GCD of 12 and 34 is 2
nachiket@nachiket-Vostro-3480:~/Desktop/DAA Practicals$