

# ALGO Lab Sheet 07

## 1. Briefly explain Greatest Common Divisor GCD.

- The greatest common divisor (GCD) of two or more numbers is the greatest common factor number that divides them, exactly.

## 2. Explain the steps of the Euclidean Algorithm.

- As parameters of the algorithm, it takes two numbers as number 1 and number 2 where number 1 is always the greater value.
- If number 2 is equal to 0 the GCD value will be returned as number 1.
- Else the GCD (number1, number 2) – GCD (number 1 % number 2)

## 3. Write a function using pseudo or source code to find out the GCD using recursive.

```
1 public class RecursiveGCD {
2
3     public static void main(String[] args) {
4         int num1 = 120;
5         int num2 = 35;
6         System.out.print("GCD (" + num1 + ", " + num2 + ") = ");
7         System.out.print( gcd(num1, num2) );
8     }
9
10    public static int gcd(int num1, int num2) {
11        if (num2 == 0) {
12            return num1;
13        }
14        return gcd(num2, num1 % num2);
15    }
16 }
```

## 4. Try to use the iteration to get the same results.

```
1 public class IterativeGCD {
2
3     public static void main(String[] args) {
4         int num1 = 120;
5         int num2 = 35;
6         System.out.print("GCD (" + num1 + ", " + num2 + ") = ");
7         System.out.print(gcd(num1, num2));
8     }
9
10    public static int gcd(int num1, int num2) {
11        while (num2 != 0) {
12            int temp = num1 % num2;
13            num1 = num2;
14            num2 = temp;
15        }
16        return num1;
17    }
18 }
```

## 5. What is defined by prime factorization?

- Prime factorization is defined as a way of finding the prime factors of a number, such that the original number is evenly divisible by these factors.

6. Graphically represent how to identify the prime factorization.

