SUMMARY: LAB_6

R E C U R S I O N

ARITHMETIC AND GEOMETRIC PROGRESSION
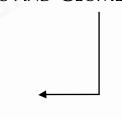
GREATEST COMMON DIVISOR

```java
import java.util.*;
class AG_array_recursion {
    public static void main(String[] args) {
        Scanner scan = new Scanner(System.in);
        /*Arithmetic sequence*/
        System.out.print("Insert how many elements of arithemtic sequence you want to present, n=");
        int n = scan.nextInt();
        System.out.print("Insert first element of your geometric sequence, a1=");
        int a1 = scan.nextInt();
        System.out.print("Insert diference, d=");
        int d = scan.nextInt();
        System.out.print("First element of arithmetic sequence is "+a1+", and "+n+". element is "+ArithmeticRecursive(a1,n,d));
        System.out.println();
        System.out.print("First element of arithmetic sequence is (NO RECURSION) "+a1+", and "+n+". element is "+ArithmeticNONrecursive(a1,n,d));
        System.out.println();
                /*for(int i = 1; i<=n; i++) {
                System.out.print(aritmeticki_rec_2(a1,i,d)+" ");
                }*/
        System.out.println();
        for(int i = 1; i<=n; i++) {
            System.out.print(geom(a1,i,d)+" ");
        }
    }
    public static long ArithmeticRecursive(int a1,int n,int d) {
        if(n==1) {
            return a1;
        }
        else {
            return ArithmeticRecursive(a1,n-1,d)+d;
        }
    }
    public static long ArithmeticNONrecursive(int a, int n, int d) {
        long res=a;
        for(int i=1;i<n;i++) {
            res=res+d;
        }
        return res;
    }
    public static long geom(int a1,int n,int d) {
        if(n==1) {
            return a1;
        }
        else {
            return geom(a1,n-1,d)*d;
        }
    }
}
```

```java
import java.util.*;
class GratestCommonDivisor {
    public static void main(String[] args) {
        Scanner scan = new Scanner(System.in);
        System.out.print("Insert 1st number: ");
        int a = scan.nextInt();
        System.out.print("Insert 2nd number: ");
        int b = scan.nextInt();
        if (b > a) {
            int an=b;
            int bn=a;
            System.out.println("Greatest common divisor of numbers "+a+" and "+b+" is "+qcd(an, bn));
        }
        else
            System.out.println("Greatest common divisor of numbers "+a+" and "+b+" is "+qcd(a, b));
    }
    public static int qcd(int a1, int b1) {
        if (b1==0)
            return a1;
        else
            //System.out.println(+a1+"="+b1+"*"+(a1-a1%b1)/b1+"+"+a1%b1);
            return qcd(b1, a1%b1);
    }
}
```