Experiment 1

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Branch: CSE
Section/Group: 702 A
Semester: 5th
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Subject Name: DAA Lab
Subject Code: 20-CSP-312

1. Aim/Overview of the practical:

Code and analyze to compute the greatest common divisor (GCD) of two numbers.

2. Task to be done/ Which logistics used:

To find the GCD of two numbers.

3. Algorithm/Flowchart (For programming based labs):

4. Steps for experiment/practical/Code:

Simple Method:

```
package com.DAA;

import java.util.*;

public class DAA_exp1_1 {
    public static void main(String[] args) {
        Scanner S = new Scanner(System.in);
        int GCD=0;
        System.out.print("enter the value of x:");
        int x= S.nextInt();
        System.out.print("enter the value of y:");
        int y=S.nextInt();
        System.out.printf("The GCD of %d and %d is ",x,y);
        while(y!=0){
            if(x>y){
                x=x-y;
            }
            else{
                y=y-x;
            }
        }
        GCD=x;
        System.out.printf("%d",GCD);
    }
}
```

Euclidean Method:

```
package com.DAA;

public class DAA_exp1_1_euclidean {
    public static void main(String[] args) {
        int a=4,b=2;
        int c=GCD(a,b);
        System.out.println("The GCD of "+a+" and "+b+" is "+c);
    }
    static int GCD(int x,int y){
        if(x==0){
            return y;
        }
        return GCD(y%x,x);
    }
}
```

5. Observations/Discussions/ Complexity Analysis:

Time complexity of finding GCD of two number using Euclidean method is O(log n).

6. Result/Output/Writing Summary:

Simple Method:

```
enter the value of x:2
enter the value of y:8
The GCD of 2 and 8 is 2
```

Euclidean Method:

```
The GCD of 4 and 2 is 2
```

Learning outcomes (What I have learnt):

1. **Learnt how Euclidean algorithm works.**
2. **Learnt how to use recursion for solving problem.**
3.
4.
5.

Evaluation Grid (To be created as per the SOP and Assessment guidelines by the faculty):

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.			
2.			
3.			