

Experiment 1.1

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Branch: CSE

Semester: 5

Subject Name: DAA Lab

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Section/Group: 20BCS_MM-902-B

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Subject Code: 20CSP-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:

Find GCD of two numbers using Euclidian Algorithm

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

Step 1: Let a, b be the two numbers

Step 2: $a \bmod b = R$

Step 3: Let $a = b$ and $b = R$

Step 4: Repeat Steps 2 and 3 until $a \bmod b$ is greater than 0

Step 5: $GCD = b$

Step 6: Finish

```
#include <iostream>
using namespace std;
int gcd(int a, int b)
{ if (a == 0)
    return b;
    return gcd(b % a, a);
} int
main()
```

4. Steps for experiment/practical/Code:

```
{ int a, b; cout << "Enter value of a: "; cin >> a; cout << "Enter  
value of b: "; cin >> b; cout << "GCD of " << a << " and " << b <<  
" is " << gcd(a, b); return 0;  
}
```

5. Observations/Discussions/ Complexity Analysis:

Time Complexity:- $O(\log(\min(a,b)))$

6. Result/Output/Writing Summary:

```
PS E:\Sem 5\Design Algorithm Lab> c  
Enter value of a: 5  
Enter value of b: 10  
GCD of 5 and 10 is 5
```

Learning outcomes (What I have learnt):

1. To calculate GCD of two numbers using Euclidian Algorithm