DESIGN AND ANALYSIS OF ALGORITHMS LAB

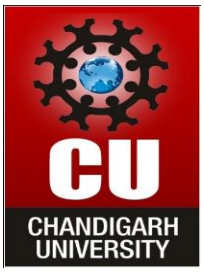
20CSP-312

Submitted for the requirement of

Lab course

BACHELOR OF ENGINEERING

COMPUTER SCIENCE & ENGINEERING



Submitted to:
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20BCSWM_906B

LABINDEX

NAME: YANA SRIVASTAVA

SUBJECT NAME: Design and Analysis of Algorithms Lab

UID: 20BCS2279

SUBJECT CODE:20 CSP-312

SECTION: 20BCSWM_906 B

Sr. No	Program	Date	Evaluation				Sign
			LW (12)	VV (8)	FW (10)	Total (30)	
1.	To find GCD of two numbers	01.08.2022					
2.	To find power of a number.	08.08.2022					
3.	To find frequency of an element in an array using for loop.	10.08.2022					
4.	Insert and delete an element from a doubly circular linked list.	22.08.2022					

Experiment 1

Student Name: Yana Srivastava
UID: 20BCS2279
Branch: BE CSE
Section/Group: 20BCSWM_906 B
Semester: 5th
Date of Performance: 01.08.2022
Subject Name: Design And Analysis of Algorithms Lab
Subject Code: 20CSP_312

1. **Aim/Overview of the practical:**

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

   Example: GCD of 20 and 30 is 10 (As, 10 is the largest number which divides 20 & 30 both with remainder 0).

2. **Task to be done/ Which logistics used:**

   To find GCD of two numbers.

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

   Pseudo Code of the Algorithm-
   Step 1: Let a, b be the
   two numbers.
   Step 2: a mod b = R.
   Step 3: Let a = b and b = R.
   Step 4: Repeat Steps 2 and 3 until a mod b is
   greater than 0.Step 5: GCD = b.
   Step 6: Finish.

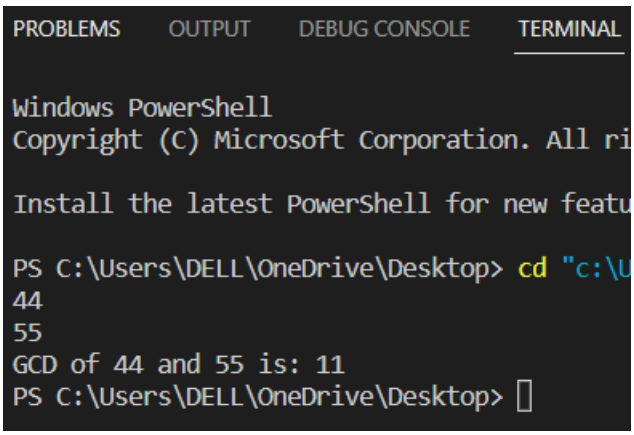
4. Steps for experiment/practical/Code:

```
#include<bits/stdc++.h>
using namespace std;
int gcd(int x,int y)
{
if(y==0)
   return x;
else
   return gcd(y,x%y);
}
int main()
{
   int a,b;
   cin>>a>>b;
   cout<<"GCD of "<<a<<" and "<<b<<" is: "<<gcd(a,b);
   return 0;
}
```

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:



Learning outcomes (What I have learnt):

a. To know how Euclidean algorithm works.
b. To learn how to use recursion for solving problems.

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.			