

**CHANDIGARH UNIVERSITY  
UNIVERSITY INSTITUTE OF ENGINEERING  
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**



<b>Submitted By:</b> Vivek Kumar(21BCS8129)		<b>Submitted To:</b> Neha Dutta(E12830)	
<b>Subject Name</b>	Design and Analysis of Algorithm Lab		
<b>Subject Code</b>	20CSP-312		
<b>Branch</b>	Computer Science and Engineering		
<b>Semester</b>	5 <sup>th</sup>		

## Experiment - 1

**Student Name: Vivek Kumar**

**Branch: BE-CSE(LEET)**

**Semester: 5<sup>th</sup>**

**Subject Name: DAA Lab**

**UID: 21BCS8129**

**Section/Group: 20BCS-WM-616/A**

**Date of Performance: 16/08/2022**

**Subject Code: 20CSP-312**

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

Code and analyse to compute the greatest common divisor (GCD) of two number.

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

Find the GCD of two number using Euclidian Algorithm.

### 3. Requirements (For programming-based labs):

- Laptop or PC.
- Operation system (Mac, Windows, Linux, or any)
- Vs-Code with MinGw or any C++ Compiler

### 4. 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:  $GCD = b$

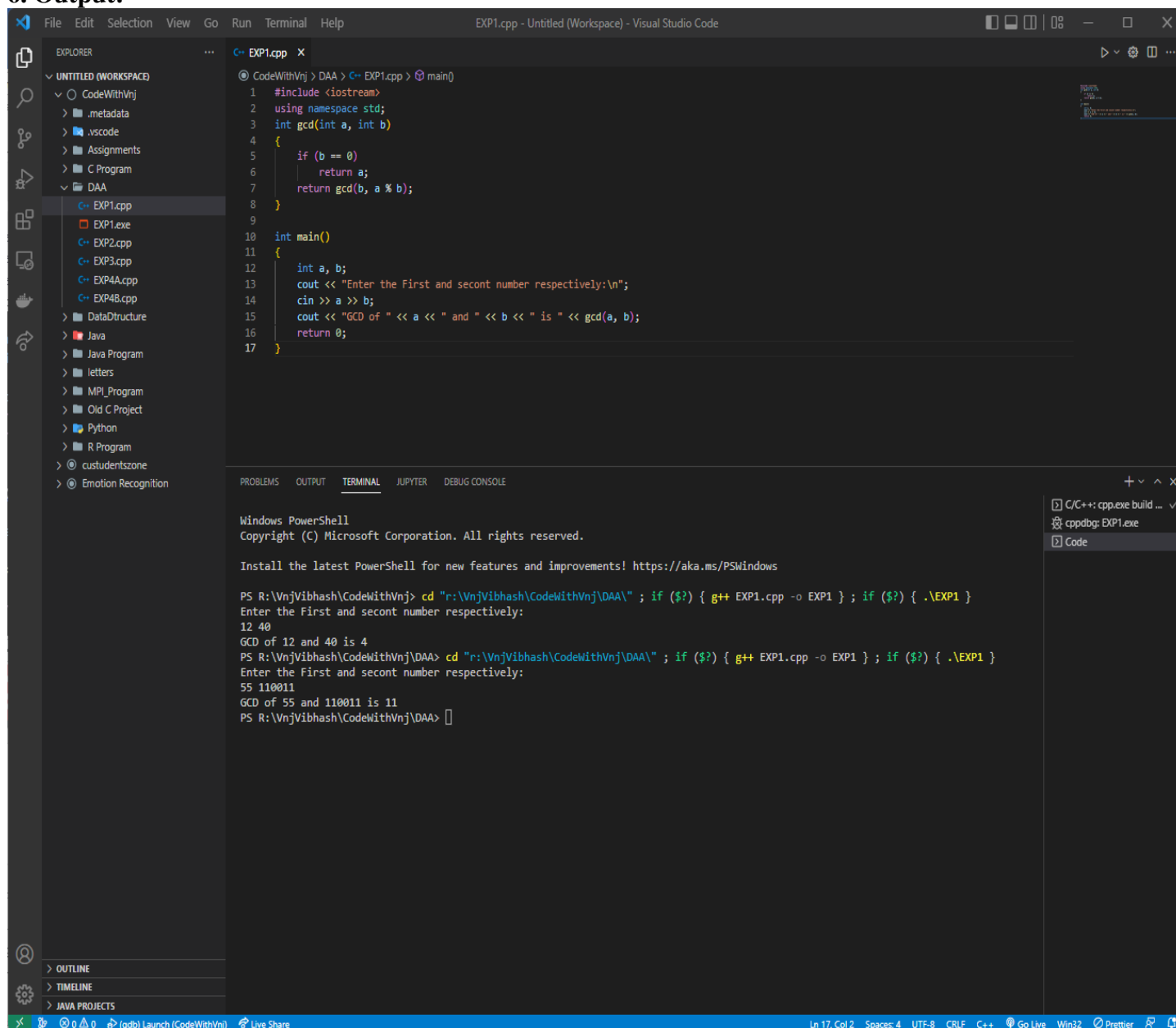
Step 6: Finish

### 5. Steps for experiment/practical/Code:

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

int main()
{
    int a, b;
    cout << "Enter the First and secont number respectively:\n";
    cin >> a >> b;
    cout << "GCD of " << a << " and " << b << " is " << gcd(a, b);
    return 0;
}
```

## 6. Output:



The screenshot shows the Visual Studio Code interface with a C++ file named `EXP1.cpp` open. The code implements a recursive function to find the Greatest Common Divisor (GCD) of two numbers. The terminal window shows the compilation and execution of the program, demonstrating the GCD calculation for two input pairs: (12, 40) and (55, 110011).

```

1  #include <iostream>
2  using namespace std;
3  int gcd(int a, int b)
4  {
5      if (b == 0)
6          return a;
7      return gcd(b, a % b);
8  }
9
10 int main()
11 {
12     int a, b;
13     cout << "Enter the First and second number respectively:\n";
14     cin >> a >> b;
15     cout << "GCD of " << a << " and " << b << " is " << gcd(a, b);
16     return 0;
17 }

```

Windows PowerShell  
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Install the latest PowerShell for new features and improvements! <https://aka.ms/PSWindows>

```

PS R:\VnjVibhash\CodeWithVnj> cd "r:\VnjVibhash\CodeWithVnj\DAA\"; if ($?) { g++ EXP1.cpp -o EXP1 }; if ($?) { .\EXP1 }
Enter the First and second number respectively:
12 40
GCD of 12 and 40 is 4
PS R:\VnjVibhash\CodeWithVnj\DAA> cd "r:\VnjVibhash\CodeWithVnj\DAA\"; if ($?) { g++ EXP1.cpp -o EXP1 }; if ($?) { .\EXP1 }
Enter the First and second number respectively:
55 110011
GCD of 55 and 110011 is 11
PS R:\VnjVibhash\CodeWithVnj\DAA>

```

## Learning outcomes (What I have learnt):

1. How to find the GCD of two number
2. How to Use recursive function.
3. Use of modulus operator

**Evaluation Grid (To be created per the faculty's SOP and Assessment guidelines):**

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.	Worksheet completion including writing learning objectives/Outcomes. (To be submitted at the end of the day).		
2.	Post-Lab Quiz Result.		
3.	Student Engagement in Simulation/Demonstration/Performance and Controls/Pre-Lab Questions.		
	Signature of Faculty (with Date):	Total Marks Obtained:	