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**Subject: Data Structures**

## **Practical – 4**

**Aim:** Program to find GCD of two numbers using factorial method.

**Program:**

```
#include <stdio.h>

int main() {
    int num1, num2, gcd=0;
    printf("Enter two natural numbers: ");
    scanf("%d%d", &num1, &num2);

    for(int i=1;i<=num1 && i<=num2;i++){
        if(num1%i==0 && num2%i==0){
            gcd=i;
        }
    }
    printf("GCD of %d and %d = %d", num1, num2, gcd);
}
```

**Output:**

Enter two natural numbers: 20 16

GCD of 20 and 16 = 4

## Screenshot:

The screenshot displays the Visual Studio Code editor with a C program named `Practical_4.c` open. The program calculates the Greatest Common Divisor (GCD) of two numbers using a loop and a conditional statement. The code is as follows:

```
1 #include <stdio.h>
2
3 int main() {
4     int num1, num2, gcd=0;
5     printf("Enter two natural numbers: ");
6     scanf("%d", &num1, &num2);
7
8     for(int i=1; i<=num1 && i<=num2; i++){
9         if(num1%i==0 && num2%i==0){
10             gcd=i;
11         }
12     }
13     printf("GCD of %d and %d = %d", num1, num2, gcd);
14 }
```

The terminal window shows the execution of the program. The user enters two natural numbers, 20 and 16, and the program outputs the GCD of 20 and 16, which is 4.

```
PS C:\Users\Admin\Desktop\Notes\Data Structure Lab> cd "c:\Users\Admin\Desktop\Notes\Data Structure Lab\" ; if ($?) { gcc Practical_4.c -o Practical_4 } ; if ($?) { .\Practical_4 }
Enter two natural numbers: 20 16
GCD of 20 and 16 = 4
PS C:\Users\Admin\Desktop\Notes\Data Structure Lab>
```

**Conclusion:** I have successfully done practical 4.