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Batch : B1
Topic : CNS Assignment 11

Aim : To calculate GCD using Extended Euclidean Algorithm

Theory : Extended Euclidean Algorithm is an extension of the Euclidean Algorithm that computes the greatest common divisor (GCD) of integers a and b. GCD is the largest integer that divides both a and b without any remainder.

Code :

```
#include <bits/stdc++.h>
using namespace std;

int findGCD(int num1, int num2)
{
    if (num1 == 0)
    return num2;
    return findGCD(num2 % num1, num1);
}

int main()
{
    int num1, num2;
    cout << "\n Enter 1st number : ";
    cin >> num1;

    cout << "\n Enter 2nd number : ";
    cin >> num2;

    int gcd = findGCD(num1, num2);
    cout << "\n GCD is " << gcd << endl;

    return 0;
}
```

Output :

```
D:\WCE_ENGINEERING\BTECH_SEM1\CNS lab\LA2>g++ assignment10_extendedEucl.cpp

D:\WCE_ENGINEERING\BTECH_SEM1\CNS lab\LA2>a.exe

 Enter 1st number : 56

 Enter 2nd number : 38
1 56 38 18 1 0 1 0 1 -1
2 38 18 2 0 1 -2 1 -1 3
9 18 2 0 1 -2 19 -1 3 -28
GCD is 2
Value of s : -2 Value of t : 3
```

```
D:\WCE_ENGINEERING\BTECH_SEM1\CNS lab\LA2>g++ assignment10_extendedEucl.cpp

D:\WCE_ENGINEERING\BTECH_SEM1\CNS lab\LA2>a.exe

 Enter 1st number : 78

 Enter 2nd number : 42
1 78 42 36 1 0 1 0 1 -1
1 42 36 6 0 1 -1 1 -1 2
6 36 6 0 1 -1 7 -1 2 -13
GCD is 6
Value of s : -1 Value of t : 2
```