***//Assignment-13 Data Structures Lab***

***//WAP to calculate GCD of 2 number (i) with recursion (ii) without recursion***

#include<iostream>

#include<conio.h>

using namespace std;

long gcd\_Recursion(long a,long b)

{

if (b == 0)

return a;

return gcd\_Recursion(b, a % b);

}

long gcd(long a,long b)

{

long i;

for(i=2;i<=a&&i<=b;i++)

{

if(a%i==0&&b%i==0)

return i;

}

return 1;

}

int main()

{

long x,y,c;

cout<<"Menu\nFind gcd of two numbers\n1.Using recursion\n2.Using iteration\nEnter your choice : ";

cin>>c;

cout<<"Enter two numbers : ";

cin>>x>>y;

if(c==1)

cout<<"GCD of "<<x<<" and "<<y<<" is : "<<gcd\_Recursion(x,y);

else if(c==2)

cout<<"GCD of "<<x<<" and "<<y<<" is : "<<gcd(x,y);

else

cout<<"You entered wrong choice ";

getch();

return 0;

}

**OUTPUT:**

**Sample: 1**

Menu

Find gcd of two numbers

1.Using recursion

2.Using iteration

Enter your choice : 1

Enter two numbers : 3 4

GCD of 3 and 4 is : 1

**Sample: 2**

Menu

Find gcd of two numbers

1.Using recursion

2.Using iteration

Enter your choice : 2

Enter two numbers : 3 6

GCD of 3 and 6 is : 3