[GARVIL JAIN](mailto:2022ucp1302@mnit.ac.in) **2022UCP1302 ASSIGNMENT-1**

Program 1: Euclidean Algorithm

#include <iostream>

using namespace std;

int gcd(int a, int b) {

while (b != 0) {

int temp = b;

b = a % b;

a = temp;

}

return a;

}

int main() {

int a, b;

cout << "Enter two integers: ";

cin >> a >> b;

cout << "GCD: " << gcd(a, b) << endl;

return 0;

}

Program 2: Extended Euclidean Algorithm

#include <iostream>

using namespace std;

int extendedGCD(int a, int b, int &x, int &y) {

if (b == 0) {

x = 1;

y = 0;

return a;

}

int x1, y1;

int gcd = extendedGCD(a % b, b, x1, y1);

x = y1;

y = x1 - (a / b) \* y1;

return gcd;

}

int main() {

int a, b, x, y;

cout << "Enter two integers: ";

cin >> a >> b;

int gcd = extendedGCD(a, b, x, y);

cout << "GCD: " << gcd << endl;

cout << "Coefficients x and y: " << x << " " << y << endl;

return 0;

}

