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# BATCH: B6

# Euclidian Extended

## **Algorithm:**

Begin

Declare variable a, b, x and y

gcdExtended(int a, int b, int \*x, int \*y)

if (a == 0)

\*x = 0;

\*y = 1;

return b;

Take two variables to store the result

Update x and y using results of recursive call

End

#include <bits/stdc++.h>

using namespace std;

// Function for extended Euclidean Algorithm

int gcdExtended(int a, int b, int \*x, int \*y)

{

    // Base Case

    if (a == 0)

    {

        \*x = 0;

        \*y = 1;

        return b;

    }

    int x1, y1; // To store results of recursive call

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

    // Update x and y using results of

    // recursive call

    \*x = y1 - (b/a) \* x1;

    \*y = x1;

    return gcd;

}

// Driver Code

int main()

{

    int x, y, a = 35, b = 15;

    int g = gcdExtended(a, b, &x, &y);

    cout << "GCD(" << a << ", " << b

        << ") = " << g << endl;

    return 0;

}

**Output:**

