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//
// Rozszerzony algorytm Euklidesa
// www.algorytm.org
// (c)2006 Tomasz Lubinski
//

#include "stdio.h"

int main()
{
    int r, nwd, a, q, b;
    int x, x1, x2;
    int y, y1, y2;
    int nwd_a, nwd_b;

    //get all data
    printf("Podaj pierwsza liczbe\n");
    scanf("%d", &nwd_a);

    printf("Podaj druga liczbe\n");
    scanf("%d", &nwd_b);

    // a must be greater than b
    if (nwd_b > nwd_a)
    {
        nwd = nwd_b;
        nwd_b = nwd_a;
        nwd_a = nwd;
    }

    //initialize a and b
    a = nwd_a;
    b = nwd_b;

    //initialize r and nwd
    q = a/b;
    r = a - q*b;
    nwd = b;

    //initialize x and y
    x2 = 1;
    x1 = 0;
    y2 = 0;
    y1 = 1;
    x = 1;
    y = y2 - (q-1)*y1;

```

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while (r != 0)
{
    a = b;
    b = r;

    x = x2 - q*x1;
    x2 = x1;
    x1 = x;

    y = y2 - q*y1;
    y2 = y1;
    y1 = y;

    nwd = r;
    q = a/b;
    r = a - q*b;
}

//present results
printf("NWD(%d, %d) = %d = %d * %d + %d * %d\n", nwd_a, nwd_b,
       nwd, x, nwd_a, y, nwd_b);

if (nwd == 1)
    printf("%d * %d mod %d = 1", nwd_b, y, nwd_a);

return 0;
}

```