

## 12158 Irreducible Fractions

A fraction is irreducible if its numerator and denominator don't have any common factor greater than 1. For example  $\frac{3}{1}$ ,  $\frac{4}{7}$ ,  $\frac{1}{10}$ ,  $\frac{9}{25}$  are all irreducible fractions. But there are some fractions like

$$\frac{21n + 10}{14n + 7}$$

which is irreducible for any integer value of  $n$ . It is not quite straightforward to identify such fractions.

Now consider the fraction with general form,

$$\frac{an + x}{bn + y}$$

where  $a, b, x, y$  are always integers satisfying  $0 \leq x, y \leq 10^7$  and  $(0 \leq a, b \leq 32000, (a + b) > 0)$ . If values of  $a$  and  $b$  are given then we will be able to find some pair of values  $(x, y)$  such that for any integer value of  $n$ , fraction  $\frac{an+x}{bn+y}$  is irreducible.

One possible way of finding some of such pairs  $(x, y)$  is by using the **theorem**: "If there exist integers  $p$  and  $q$  such that  $rp + sq = 1$  ( $r$  and  $s$  are also integers), then  $r$  and  $s$  are relatively prime".

So if  $(an + x)$  and  $(bn + y)$  are relative prime then we can write

$$(an + x)p + (bn + y)q = 1 \implies n(ap + bq) + (px + qy) = 1 \quad (1)$$

The relation (1) above can hold for any value of  $n$ , if  $ap + bq = 0$  and  $px + qy = 1$ . Given the value of  $a$  and  $b$  your job is to count how many different  $(x, y)$  pairs there are such that there exist integers  $p, q$  satisfying  $ap + bq = 0$  and  $px + qy = 1$ .

### Input

There can be up to 100000 lines of inputs. Each line contains two non-negative integers which denote the value of  $a$  and  $b$  ( $0 \leq a, b \leq 32000, (a + b) > 0$ ) respectively.

Input is terminated by a line containing two zeroes. These two zeroes need not be processed.

### Output

For each line of input except the last one, produce one line of output. This line contains an integer  $P$ . This  $P$  denotes the total number of different pair of integer values for  $x$  and  $y$ , which ensures that  $ap + bq = 0$  and  $px + qy = 1$ , where  $(0 \leq x, y \leq 10^7)$ .

### Sample Input

```
100 223
2300 1000
0 0
```

### Sample Output

```
89686
869565
```

