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K • Stern's Sequence

Stern's Triangle is similar to *Pascal's Triangle* in that some values in each row are the sums of values in the previous row. In this case the previous row values are also copied down:

```
                                   1
                   1               1               1
           1       1       2       1       2       1       1
       1   1   2   1   3   2   3   1   3   2   3   1   2   1   1
     1 1 2 1 3 2 3 1 4 3 5 2 5 3 4 1 4 3 5 2 5 3 4 1 3 2 3 1 2 1 1
1 1 2 1 3 2 3 1 4 3 5 2 5 3 4 1 5 4 7 3 8 5 7 2 7 5 8 3 7 4 5 1 5 4 7 3 8 5 7 2 7 5 8 3 7 4 5 1 4 3 5 2 5 3 4 1 3 2 3 1 2 1 1
```

Row **n** has $2^n - 1$ elements **S(n, k)**. Where:

S(n, k) = 0 for **k ≤ 0** or $k \geq 2^n$

S(1, 1) = 1

S(n+1, 2*k) = S(n, k) for **n ≥ 1**

S(n+1, 2*k+1) = S(n, k) + S(n, k+1)

If we align the **S(n, k)** values so **S(n+1, k)** is directly below **S(n, k)**, we get**:**

```
1
1 1 1
1 1 2 1 2 1 1
1 1 2 1 3 2 3 1 3 2 3 1 2 1 1
1 1 2 1 3 2 3 1 4 3 5 2 5 3 4 1 4 3 5 2 5 3 4 1 3 2 3 1 2 1 1
1 1 2 1 3 2 3 1 4 3 5 2 5 3 4 1 5 4 7 3 8 5 7 2 7 5 8 3 7 4 5 1 5 4 7 3 8 5 7 2 7 5 8 3 7 4 5 1 4 3 5 2 5 3 4 1 3 2 3 1 2 1 1
```

We see that for **n** sufficiently large, **S(n+1, k) = S(n, k)**.

The sequence of these limiting values in called *Stern's Diatomic Sequnce*:

b(1), b(2), b(3), …

It has the property that for every positve rational number, **r**, there is exactly one value **k** for which **r = b(k)/b(k+1).**

For example: **3 / 5 = b(10)/ b(11)**

Write a program which takes as input a rational number **p/q** in lowest terms and outputs the value **k** for which **p = b(k)** and **q = p(k+1)**. This number can get quite large, so out put it modulo the large prime **998,244,353**.

Input

Input consists of a single line containing two relatively prime, space separated decimal integers, **p** and **q** ($1 \le p, q \le 400000$).

Output

The single output line consists of the integer **k**, for which **p = b(k)** and q **= b(k+1)** printed modulo 998,244,353.

Sample 1:

Sample Input	Sample Output
3 5	10

Sample 2:

Sample Input	Sample Output
1234 763	525909