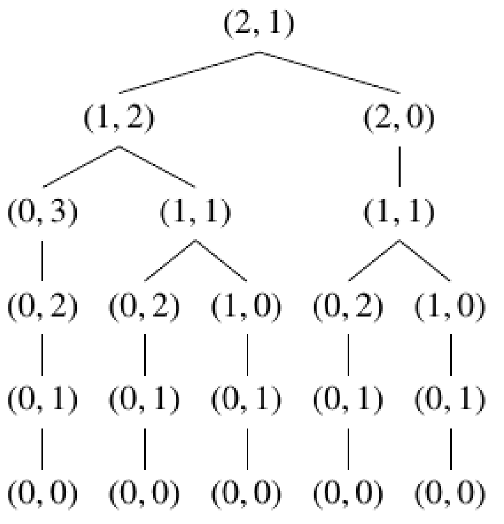
Sometimes, going shopping with grandma can be a very exciting and fun adventure! Eloi is going shopping with grandma this evening because of the holidays; just perfect for his saying: "Sewing, baking, and shopping with grandma, it all goes together... a grandmother, at holiday time, is worth gold." They also are stopping at the pharmacy: granny is losing her memory and her bottle of memory pills is running low ... how sad!

The memory pills come in two sizes: *large* and *small*. The dose in each large pill is equivalent to that in two small ones. Eloi observes granny picks a pill at random from the bottle every day: if it's a small one, she takes it; otherwise, she splits it and takes a half, replacing the other which is from then on considered a small pill.

Given a certain bottle with l large pills and s small pills, we say that the pair (l, s) is the *bottle configuration*. Eloi is interested in the *pill tree* associated with bottle configuration (l, s), in which left or right branching represents a large or small pill being picked, respectively. Formally it's the labeled binary tree with root (l, s) in which a node (u, v) has a *left child* $(u-1, v+1)$ if $u > 0$ and a *right child* $(u, v-1)$ if $v > 0$.

For example, the pill tree associated with bottle configuration $(2, 1)$ (2 large, 1 small) is depicted on the right:



Eloi then asks himself: how many nodes does the pill tree associated with bottle configuration (l, s) have?

Input

The input consists of several test cases. Each test case consists of a line with two blank-separated integers l and s ($0 \leq l \leq 1000$ and $0 \leq s \leq 1000$).

The end of the input is given by $l = s = 0$, which should not be processed as a test case.

Output

For each l and s, output a line with the number of nodes in the pill tree associated to (l, s). Since this number can be very large, print it modulo 9 999 959 999.

Sample Input

```
2 1
6 5
100 2
19 78
1000 1000
0 0
```

Sample Output

```
21
31654
5306431377
1942584859
4124225148
```