Power the Power Up

Your younger brother's teacher gave him this simple problem.

Given b and c. Evaluate the result of this expression:

$$Result_1 = b^c$$

Your brother definitely was able to solve this easy problem. So his teacher decided to give him a bit harder problem.

Given a,b and c. Evaluate the result of this expression:

$$Result_1 = b^c$$

$$Result_2 = a^{Result1}$$

However, your brother was also able to solve it. It was not that harder. His teacher was excited -though- and gave him this Bonus Programming Assignment.

Write a program that is given a,b and c; calculates the value of $Result_2$. Since the output may be exponentially very large, checking the correctness of solutions will be a bit subtle problem. So, instead of printing the whole value of $Result_2$, just print the reaminder of dividing $Result_2$ by 1,000,000,007 ($10^9 + 7$).

Can you help him solve that task?

Input

The input consists of several test cases. Each case is on a single line. In each case, given three space separated integers a,b and c ($0 <= a, b, c <= 2^{31} - 1$). The input is terminated by $a = b = c = -1$

Output

For each case, print exactly one line containing the value of $Result_2$ modulus $10^9 + 7$

Sample test(s)

Input

```
2 2 2
3 4 5
-1 -1 -1
```

Output

```
16
763327764
```

Note

You can assume that $0^0 = 1$.