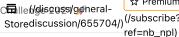
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5844. Minimum Non-Zero Product of the Array Elements

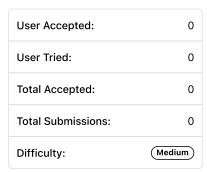
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Back to Contest (/contest/weekly-contest-254/)

You are given a positive integer p. Consider an array nums (1-indexed) that consists of the integers in the **inclusive** range $[1, 2^p - 1]$ in their binary representations. You are allowed to do the following operation any number of times:

- Choose two elements x and y from nums.
- Choose a bit in x and swap it with its corresponding bit in y. Corresponding bit refers to the bit that is in the same position in the other integer.

For example, if x = 1101 and y = 0011, after swapping the 2^{nd} bit from the right, we have x = 1101 $11\underline{1}1$ and $y = 00\underline{0}1$.



Find the **minimum non-zero** product of nums after performing the above operation **any** number of times. Return this product **modulo** $10^9 + 7$.

Note: The answer should be the minimum product before the modulo operation is done.

Example 1:

Input: p = 1Output: 1 **Explanation:** nums = [1]. There is only one element, so the product equals that element.

Example 2:

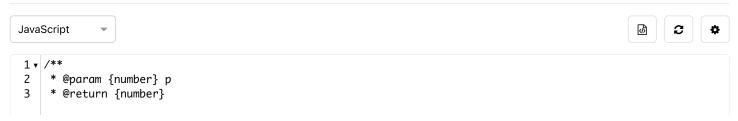
Input: p = 2Output: 6 Explanation: nums = [01, 10, 11]. Any swap would either make the product 0 or stay the same. Thus, the array product of 1 * 2 * 3 = 6 is already minimized.

Example 3:

Input: p = 3Output: 1512 **Explanation:** nums = [001, 010, 011, 100, 101, 110, 111] - In the first operation we can swap the leftmost bit of the second and fifth elements. - The resulting array is [001, <u>1</u>10, 011, 100, <u>0</u>01, 110, 111]. - In the second operation we can swap the middle bit of the third and fourth elements. - The resulting array is [001, 110, 0 $\underline{0}$ 1, 1 $\underline{1}$ 0, 001, 110, 111]. The array product is 1 * 6 * 1 * 6 * 1 * 6 * 7 = 1512, which is the minimum possible product.

Constraints:

• 1 <= p <= 60



```
Minimum Non-Zero Product of the Array Elements - LeetCode Contest
  4
  5 var minNonZeroProduct = function(p) {
  6
   7
      };
☐ Custom Testcase
                         Use Example Testcases
                                                                                                                                   △ Submit
                                                                                                                       Run
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