

Problem D. Split in Sets

Input file: *standard input*
Output file: *standard output*
Time limit: 1 second
Memory limit: 256 mebibytes

Zenyk is given n balls with integers a_1, \dots, a_n on them, and also k boxes. You have to put each ball in a box, and each box must have at least one ball in it. The value of a box is the bitwise AND of all integers on the balls in it.

Find the maximum total sum (regular) of all boxes and the number of ways to put balls in boxes that achieve the maximum sum. Note that the order of balls in a particular box is not important. However, all boxes are different, and all balls are also different, even if some balls have the same integer on them.

Input

The first line contains two integers n and k ($1 \leq k \leq n \leq 10^5$). The next line contains n integers a_1, \dots, a_n ($0 \leq a_j \leq 10^9$).

Output

Print two integers. The first integer should be the maximum total sum of all boxes. The second integer should be the number of ways to put balls in boxes modulo $10^9 + 7$.

Examples

| standard input | standard output |
|--------------------|-----------------|
| 3 2 4 7 5 | 11 2 |
| 4 1 44 47 74 77 | 8 1 |
| 4 4 44 47 74 77 | 242 24 |