B. Permutations

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

You are given n k-digit integers. You have to rearrange the digits in the integers so that the difference between the largest and the smallest number was minimum. Digits should be rearranged by the same rule in all integers.

Input

The first line contains integers n and k — the number and digit capacity of numbers correspondingly ($1 \le n, k \le 8$). Next n lines contain k-digit positive integers. Leading zeroes are allowed both in the initial integers and the integers resulting from the rearranging of digits.

Output

Print a single number: the minimally possible difference between the largest and the smallest number after the digits are rearranged in all integers by the same rule.

Examples

input
6 4 5237 2753 7523 5723 5327 2537
output
2700

input
3 3 010 909 012
output
3

input
7 5 50808 36603 37198 44911 29994 42543 50156
output
20522

Note

In the first sample, if we rearrange the digits in numbers as (3,1,4,2), then the 2-nd and the 4-th numbers will equal 5237 and 2537 correspondingly (they will be maximum and minimum for such order of digits).

In the second sample, if we swap the second digits and the first ones, we get integers 100, 99 and 102.