Problem A. Zero Sum

Input file:	*standard input*
Output file:	*standard output*
Time limit:	7 seconds
Memory limit:	256 mebibytes

You are given a matrix a of size $n \times (2k+1)$, which contains integers, rows are numbered from 1 to n, and columns are numbered from $-k$ to k.

You need to choose the sequence of numbers $x_1, x_2, \ldots, x_n$, such that contraints $(-k \le x_i \le k)$ and $(x_1 + x_2 + \ldots + x_n = 0)$ will hold, and, under this, the value of $a_{1,x_1} + a_{2,x_2} + \ldots + a_{n,x_n}$ will be as small as possible.

Input

The first line contains two integers n and k $(1 \le n \le 35\,000, 1 \le k \le 3)$, separated by a space: the dimensions of the matrix a.

The following n lines contain $(2k+1)$ integers separated by a space: the j-th number in the i-th of these lines denotes $(j-k-1)$-th element of i-th row of the matrix a $(-10^9 \le a_{i,j-k-1} \le 10^9)$.

Output

Print one integer: the minimum possible value of the sum $a_{1,x_1} + a_{2,x_2} + \ldots + a_{n,x_n}$ under the constraints $(-k \le x_i \le k)$ and $(x_1 + x_2 + \ldots + x_n = 0)$.

Examples

standard input	standard output
3 1 3 14 15 -3 -5 -35 2 71 82	-19
5 2 1 2 5 14 42 1 2 3 5 8 1 2 4 8 16 1 2 3 4 5 1 2 6 24 120	16

Note

In the first sample optimal solution is to choose sequence $0, 1, -1$, which will give the required answer, which equals $15 + (-35) + 2 = -19$.