Problem J. K-matching

Input file:	*standard input*
Output file:	*standard output*
Time limit:	9 seconds
Memory limit:	512 mebibytes

Consider a graph G with $n \cdot m$ nodes (i, j) $(1 \le i \le n, 1 \le j \le m)$. There is an edge between two nodes (a, b) and (c, d) if and only if $|a - c| + |b - d| = 1$. Each edge has a weight.

Calculate the minimum weight of a K-matching in G.

An edge set S is a matching of $G = \langle V, E \rangle$ if and only if each node in V is connected to at most one edge in S. A matching S is a K-matching if and only if $|S| = K$. The weight of a matching S is the sum of the weights of the edges in S. And finally, the minimum weight K-matching of G is defined as the K-matching of G with the minimum possible weight.

Input

The first line contains an integer t, the number of test cases $(1 \le t \le 1000)$. It is guaranteed that there are at most 3 test cases with $n > 100$.

For each test case, the first line contains three integers n, m and K $(1 \le n \le 4 \cdot 10^4,\ 1 \le m \le 4,\ 1 \le K \le \lfloor \frac{n \cdot m}{2} \rfloor)$.

Then $n - 1$ lines follow, each of these lines contains m integers $A_{i,j}$: the weights of edges between (i, j) and $(i + 1, j)$ $(1 \le A_{i,j} \le 10^9)$.

If $m > 1$, then n more lines follow, each of these lines contains $m - 1$ integers $B_{i,j}$: the weights of the edge between (i, j) and $(i, j + 1)$ $(1 \le B_{i,j} \le 10^9)$.

Output

For each test case, print a single line with a single integer: the required minimum weight.

Example

standard input	standard output
3 3 3 1 3 4 5 8 9 10 1 2 6 7 11 12 3 3 2 3 4 5 8 9 10 1 2 6 7 11 12 3 3 3 3 4 5 8 9 10 1 2 6 7 11 12	1 5 12