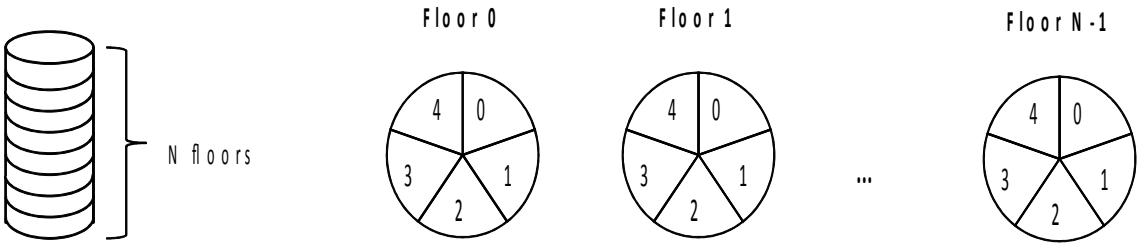
Karin Tower

Time limit: 1 sec

A legend has it that one who climbs the Karin Tower will receive unfathomable power. This may be true because Karin Tower is very high, one who can scale it would already be the strongest living on earth. Nevertheless, we should solve the problem by knowledge, not by brute force. We want to find a shortest path to reach the top of the Karin Tower.

The tower is a vertical tube that is divided vertically into **N** floors (numbered 0 to **N**-1). On each floor, there is **K** rooms where each room is a circular sector of equal size. The room are indexed clockwise by number 0 to **K**-1. Hence, each room can be identified by a pair (A,B) which indicate that it is the A-th room on the B-th floor.



To go from room to room, you have to take a one-way portal that connects two rooms. Every room has exactly 5 portals which connect to other rooms. Two of the portals lead to adjacent room on the same floor and the three remaining portals lead to the adjacent room on the next floor. Specifically, on the room (A,B), the portals let you go to room (A-1,B), (A+1,B), (A-1,B+1), (A,B+1) (A+1,B+1). Since the room on each floor is a circular sector, the room (-1,x) is adjacent to the room (**K**-1,x). For example, let **K** be 5, the room (0,10) has 5 portals leading to (4,10), (1,10), (4,11), (0,11) and (1,11).

To go through a portal, you have to defeat a sentinel guarding the door. A sentinel may has different difficulties to be beaten. Obviously, we would like to use the path that minimize the summation of the difficulties of the sentinels that we have to beat. Luckily, every floor are identical, i.e., the difficulties of the sentinels on room (x,A) will be the same as the fees of portals on room (x,B), regardless of the value of A and B.

Given the dificulties of every sentinel on every rooms on the same floor, your task is to compute the best path to go to the room (**P**, **N**-1) which is at the top of the tower, assuming that you start at the room (0,0).

Input

- The first line contains three integers **N**, **K** and **P** (2 <= **N** <= 1,000,000,000; 3 <= **K** <= 30; 0 <= **P** < **K**) that indicate the number of floors, the number of rooms per floor and the index of the target room.
- The following **K** lines give the difficulties of each sentinel on each room. Specifically, the line (1 + i) contains 5 integers that describe the fees of the room indexed by number i. The 5 integers are the difficulties of the sentinel guarding the portal that lead to room (i-1,B), (i+1,B), (i-1,B+1), (i,B+1) (i+1,B+1) where B is the floor of the room, respectivel. The difficulties are positive integer not exceeding 1,000.

Output

Display one line containing the minimal summation of the difficulties of the sentinels that we have to beat in order to reach the target room. Be noted that, due to a large number of floors, the minimal total fee might exceed 32 bit variable.

Example

Input	Output
2 3 2 3 2 9 9 9 9 1 9 9 9 9 9 9 5 9	8
4 3 1 99 99 1 99 10 99 99 99 99 3 99 2 99 5 99	16

Remark

The first test case has only two floors. To get minimal fee, you start from (0,0) and go to (2,0) and finally to (2,1), paying the fee of 3 and 5 along the way. The second case has 4 floors and the path start from (0,0) and goes to (2,1), (0,1), (2,2), (0,2) and (1,3). You pay fees of 1+2+1+2+10 = 16 along the way.