

## Problem F. Find the MST for Grid

Input file: *standard input*  
Output file: *standard output*  
Time limit: 2 seconds  
Memory limit: 512 mebibytes

Consider a grid graph: the vertices are lined up into a grid of  $H$  rows by  $W$  columns. Let us denote the vertex in the  $i$ -th row and  $j$ -th column as  $(i, j)$ .

To define the weights of the graph edges, we will consider four non-decreasing sequences,  $A$ ,  $B$ ,  $C$ , and  $D$ , consisting of  $H - 1$ ,  $W$ ,  $H$ , and  $W - 1$  positive integers, respectively:

- there is a bidirectional edge connecting vertices  $(i, j)$  and  $(i + 1, j)$  of weight  $A_i + B_j$  for all  $i$  and  $j$  such that  $1 \leq i \leq H - 1$  and  $1 \leq j \leq W$ ;
- there is a bidirectional edge connecting vertices  $(i, j)$  and  $(i, j + 1)$  of weight  $C_i + D_j$  for all  $i$  and  $j$  such that  $1 \leq i \leq H$  and  $1 \leq j \leq W - 1$ ;
- the graph contains no other edges.

Find the total weight of the edges in the minimal spanning tree of this graph.

### Input

The first line of input contains two positive integers  $H$  and  $W$  ( $2 \leq H, W \leq 10^5$ ).

The second line contains  $H - 1$  integers  $A_i$ : the elements of the sequence  $A$ .

The third line contains  $W$  integers  $B_i$ : the elements of the sequence  $B$ .

The fourth line contains  $H$  integers  $C_i$ : the elements of the sequence  $C$ .

The fifth line contains  $W - 1$  integers  $D_i$ : the elements of the sequence  $D$ .

It is guaranteed that  $A_{i-1} \leq A_i$ ,  $B_{i-1} \leq B_i$ ,  $C_{i-1} \leq C_i$ , and  $D_{i-1} \leq D_i$  for  $i > 1$ , and additionally,  $1 \leq A_i, B_i, C_i, D_i \leq 10^6$ .

### Output

Print the total weight of the edges in the minimal spanning tree of the given graph. Note that the answer may not fit into a 32-bit integer.

### Examples

standard input	standard output
2 3 1 1 3 6 1 4 1 2	17
4 3 1 13 15 3 6 11 3 6 6 11 9 17	173