Minimetro

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	1024 megabytes

Bunnyland consists of N districts in a line. Each district has one of M different specialities. For example, one district may be a farming district, while another may be a technology district. Formally, the district i has speciality S_i, where $1 \leq S_i \leq M$. It is possible that some specialities are not found at all in the districts of Bunnyland.

Whiterabbit, the mayor of Bunnyland, wants to build a metro system to connect the districts together by train. The cost of building train tracks between districts i and $i+1$ is given by C_i for all $1 \leq i < N$. The metro system will consist of one or more metro lines. A metro line is defined as a subset of districts and the train tracks between them, such that any district in the subset is directly or indirectly connected by train tracks to all other districts in the subset, but not to any district not in the subset. It is possible for a metro line to contain a single district.

Whiterabbit wants the metro system to be effective but not *too* effective, because he wants citizens and tourists to continue using the roads he built in 2019. Specifically, each district must lie on a metro line that contains districts of between L and R **distinct** specialities, inclusively.

Since Whiterabbit is busy with mayor duties, he has tasked you with finding the minimum cost to build the train tracks while satisfying his condition. If this is not possible, output `-1`.

Input

The first line of input contains 4 space-separated integers — N, M, L and R.

The second line contains N space-separated integers — $S_1, S_2, \ldots, S_N$.

The third line contains $N-1$ space-separated integers — $C_1, C_2, \ldots, C_{N-1}$.

Output

The first line of output should contain 1 integer, the minimum cost to satisfy Whiterabbit's condition.

If this is not possible, output `-1`.

Scoring

For all subtasks, it is guaranteed that:

- $2 \leq N \leq 200\,000$
- $1 \leq L \leq R \leq M \leq 200\,000$
- $1 \leq S_i \leq M$
- $1 \leq C_i \leq 10^9$

Subtask	Score	Additional constraints
1	0	Sample test cases
2	4	$N = M = L = R$
3	11	$R = M$, $S_i = (i - 1 \pmod M) + 1$; $S = [1, 2, \ldots, M, 1, 2, \ldots]$
4	19	$R = M$
5	10	$M = 2$
6	16	$M = 3$
7	15	$2 \leq N \leq 2000$
8	25	-

Examples

standard input	standard output
9 5 2 4 2 1 4 3 2 5 1 5 2 3 14 12 6 5 4 7 6	30
5 6 3 3 4 5 6 2 3 8 6 8 9	-1
7 7 7 7 1 2 3 4 5 6 7 1 1 1 1 1 1	6
14 6 5 6 1 2 3 4 5 6 1 2 3 4 5 6 1 2 4 2 3 2 4 1 4 2 3 3 2 4 3	33
2 2 1 2 1 1 999999	0
10 3 2 2 3 1 1 2 2 2 2 2 1 1 2 1 2 2 72 7 1 6 2	22

Note

The first sample test case satisfies the constraints of Subtasks 7 and 8. A solution is to build four metro lines covering districts 1 to 2, 3 to 4, 5 to 7 and 8 to 9. They cost 3, 12, $5+4$ and 6 to build, respectively.

The second sample test case satisfies the constraints of Subtasks 7 and 8. There is no metro system that satisfies Whiterabbit's condition.

The third sample test satisfies the constraints of Subtasks 2, 3, 4, 7 and 8. A solution is to build one metro line covering all districts.

The fourth sample test case satisfies the constraints of Subtasks 3, 4, 7 and 8. A solution is to build two metro lines covering districts 1 to 5 and 6 to 14.

The fifth sample test case satisfies the constraints of Subtasks 4, 5, 7 and 8. A solution is to build two metro lines covering one district each.

The sixth sample test case satisfies the constraints of Subtasks 6, 7 and 8. A solution is to build three metro lines covering districts 1 to 2, 3 to 5 and 6 to 10.