Wiring

Maryam is an electrical engineer. She is designing wiring on a communication tower. On the tower there are some connection points, placed at distinct heights. A wire can be used to connect any two connection points. Each connection point can be connected to an arbitrary number of wires. There are two types of connection points: red and blue.

For the purpose of this problem the tower should be viewed as a line and the connection points as blue and red points that are at non-negative integer coordinates on this line. The length of a wire is the distance between the two connection points it connects.

Your goal is to help Maryam find a wiring scheme such that:

1. Each connection point has at least one wire to a connection point of a different color.
2. The total length of the wires is minimized.

Implementation details

You should implement the following procedure:

```c
int64 min_total_length(int[] r, int[] b)
```

- \(r\): array of length \(n\) containing the positions of the red connection points in increasing order.
- \(b\): array of length \(m\) containing the positions of the blue connection points in increasing order.
- This procedure should return the minimum total length of wires, among all valid wiring schemes.
- Note that the return type of this procedure is `int64`.

Example

```c
min_total_length([1, 2, 3, 7], [0, 4, 5, 9, 10])
```

The figure below illustrates this example.
The tower is shown horizontally.

In the black-and-white printed version of the problem statement the red connection points are dark and the blue ones are light.

- There are 4 red connection points, located at positions 1, 2, 3, and 7.
- There are 5 blue connection points, located at positions 0, 4, 5, 9, and 10.
- One optimal solution is shown in the figure above.
- In this solution, the total length of the wires is 1 + 2 + 2 + 2 + 3 = 10, which is optimal. So, the procedure should return 10.
- Note that two wires are connected to the connection point at position 7.

Constraints

- 1 \leq n, m \leq 100\,000,
- 0 \leq r[i] \leq 10^9 \text{ (for all } 0 \leq i \leq n - 1),
- 0 \leq b[i] \leq 10^9 \text{ (for all } 0 \leq i \leq m - 1),
- Each of the arrays \( r \) and \( b \) is sorted in ascending order.
- All \( n + m \) values in the arrays \( r \) and \( b \) are distinct.

Subtasks

1. (7 points) \( n, m \leq 200 \),
2. (13 points) All red connection points have positions smaller than any blue connection points.
3. (10 points) There is at least one red connection point and one blue connection point among every 7 consecutive connection points.
4. (25 points) All connection points have different positions in the range \([1, n + m]\).
5. (45 points) No additional constraints.

Sample grader

The sample grader reads the input in the following format:

- line 1: \( n \ \ m \)
- line 2: \( r[0] \ r[1] \ldots \ r[n - 1] \)
- line 3: \( b[0] \ b[1] \ldots \ b[m - 1] \)

The sample grader prints a single line containing the return value of \texttt{min_total_length}. 

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