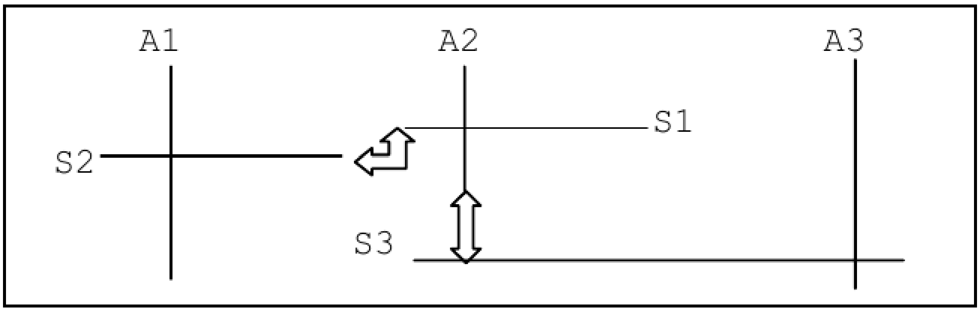
4419 Full Connectivity

Full connectivity of network of roads in a new developing industrial city does not exist. Due to existing partial connectivity it is not always possible to reach a location on a road from another location on another road. It is considered desirable to connect all unconnected existing network of roads with minimum cost. You are required to write a program to determine the total minimum cost required for connecting all unconnected roads.

At the time of development of each sector, axes parallel roads are constructed in the sector, parallel to either of the two mutually perpendicular axes passing through the city center. The x-axis extends from west to east while the y-axis extends from south to north. The roads extending from west to east are called Streets while the roads extending from south to north are called avenues. A pair of points with the same y-coordinate identifies the extremities of each street. Likewise a pair of points with the same x-coordinate identifies the extremities of each avenue. Assume for simplicity that integer coordinates represent each extremity and the cost of construction of roads is equal, in certain unit, to the length of the road constructed.

For illustration consider the connectivity of the network of roads shown in the figure below, with three streets S1, S2, S3 and three avenues A1, A2, A3. The network is not fully connected. However, connection with minimum cost can be established by construction of additional roads at locations indicated by block arrows:

1. Extend either S1 or S2 and join the two streets constructing a new avenue.
2. Extend the avenue A2 and connect it to S3.



Input

Input may contain multiple test cases. Each case contains two lines.

The first line identifies all streets in an arbitrary order while the second line identifies all avenues, again in an arbitrary order. Each street is represented by three integers: the x-coordinate x_0 of the extremity towards west, the x-coordinate x_1 of the extremity towards east and the common y-coordinate y_c. Likewise, each avenue is represented by three integers: the common x-coordinate x_c, the y-coordinate y_0 of the extremity towards south and the y-coordinate y_1 of the extremity towards north.

Input terminates with a line containing '0' as the first input for a test case.

Output

For each test case, print the total minimum cost required for connecting all unconnected roads.

Sample Input

```
6 20 0 1 15 10 -9 -2 8
-7 2 10 8 3 11 19 -4 2
-6 20 10 -16 12 -6 -12 12 4
-8 -4 8 8 -12 8
0
```

Sample Output

```
8
2
```