523 Minimum Transport Cost

There are N cities in Spring country. Between each pair of cities there may be one transportation track or none. Now there is some cargo that should be delivered from one city to another. The transportation fee consists of two parts:

1. the cost of the transportation on the path between these cities, and
2. a certain tax which will be charged whenever any cargo passing through one city, except for the source and the destination cities.

You must write a program to find the route which has the minimum cost.

Input

The data of path cost, city tax, source and destination cities are given in the input file, which is of the form:

$$
\begin{array}{cccc}
a_{11} & a_{12} & \dots & a_{1N} \\
a_{21} & a_{22} & \dots & a_{2N} \\
\dots & \dots & \ddots & \dots \\
a_{N1} & a_{N2} & \dots & a_{NN} \\
b_1 & b_2 & \dots & b_N \\
c & d & & \\
e & f & & \\
\dots & \dots & & \\
g & h & &
\end{array}
$$

where a_{ij} is the transport cost from city i to city j, $a_{ij} = -1$ indicates there is no direct path between city i and city j. b_i represents the tax of passing through city i. And the cargo is to be delivered from city c to city d, city e to city f, ..., and city g to city h.

Output

You must output the sequence of cities passed by and the total cost, which is of the form:

```
From c to d :
Path: c-->c1-->...-->ck-->d
Total cost : ...

   ...

From e to f :
Path: e-->e1-->...-->ek-->f
Total cost : ...
```

Sample Input

```
0 3 22 -1 4
3 0 5 -1 -1
22 5 0 9 20
-1 -1 9 0 4
4 -1 20 4 0
5 17 8 3 1
1 3
3 5
2 4
```

Sample Output

```
From 1 to 3 :
Path: 1-->5-->4-->3
Total cost : 21

From 3 to 5 :
Path: 3-->4-->5
Total cost : 16

From 2 to 4 :
Path: 2-->1-->5-->4
Total cost : 17
```