2251 James Bond

A terrorist hides in an underground sewage system. Any two pipes have at most one common node that is also an endpoint for both of them. The terrorist hides in one such node and has placed clock-activated bombs at several other nodes. The passage into and through a node becomes impossible after the explosion.

James Bond wants to capture this terrorist and has at his disposal a complete map of the sewage system that also highlights the position of the terrorist, the placement of the bombs, and their timings. At time 0 Bond starts from one of the nodes and must reach the terrorist in the shortest possible time. Bond dies if an explosion at one of the trapped nodes hits him, but otherwise he is unscathed and can pursue his search.

Determine the minimum time that Bonds needs to capture the terrorist, if this is possible.

Input

- Line 1: Four positive integers N, M, S, T. N is the number of nodes and nodes are numbered 1, 2, ...N. M is the number of pipes. There is at most one pipe between each pair of nodes. S is Bond's starting node, and T is the node where the terrorist hides ($1 \leq S, T \leq N \leq 100$, $1 \leq M \leq N^2$).
- Next N Lines: Each line contains '0' if the corresponding node is not trapped. Otherwise it contains a positive integer X giving the time when the bomb will detonate ($1 \leq X \leq 1000$).
- Next M Lines: Each line contains two node numbers representing the pipe's end nodes, and a positive integer giving the travel time Y between its end nodes ($1 \leq Y \leq 1000$).

The above set can be repeated several times. The end is signaled by a line with $N = M = S = T = 0$.

Output

Print one line for each input set, giving the minimum time that Bonds needs to capture the terrorist, if this is possible (thus print 0 if Bond starts at the terrorist node). Otherwise print '0'.

Sample Input

```
4 4 1 4
0
0
5
0
2 1 3
3 4 4
3 2 2
1 3 4
3 2 1 3
0
1
0
```

```
1 2 3
2 3 1
0 0 0 0
```

Sample Output

```
8
0
```