

Problems

Problem	JOZO	LIST
Source file	jozo.pas jozo.c jozo.cpp	list.pas list.c list.cpp
Input file	jozo.in	list.in
Output file	jozo.out	list.out
Time limit per test	5 seconds	5 seconds
Number of tests	10	10
Points per test	10	10
Total points	100	100
	200	

JOZO

Homeless Jozo bought a monthly railway ticket so he could sleep in worm wagons and dream of a better life.

You are given a list of all stations and railways that connect them and their length (times it takes train to travel between to given stations). Railways are two-way and traveling in both ways last the same.

You are also given a list of all trains and the times of their departures and stations they are passing through. Train stops at each station that it is passing through.

At the beginning (in 1st second) Jozo is on the **station number 1** and he has to **return** at that same station **between** T1 and T2 second. If there are two trains in the same time at the same station, he can jump from one train to another without losing time.

You have to write a program that will choose a route such that Jozo can drive around and **spend minimum total amount of time at the stations**.

Input data

First row of input file contains integers N, P, V, T1 i T2, $2 \leq N \leq 1000$, $1 \leq V \leq 1000$, $1 \leq T1 \leq T2 \leq 50,000$. N is number of stations, P is number of railways, V is number of trains, T1 and T2 are times explained in problem statement.

Each of next P rows contains data about one railway. It contains three integers S1, S2 and T. It means that journey from S1 to S2 (and vice versa) lasts T seconds, $1 \leq T \leq 600$.

Each of next V rows contains data about one train. First number in that row is T0, time of departure from first station, second number is NS, $1 \leq NS \leq 1000$, number of stations on train's route (including starting and finishing station), next NS numbers are consecutively stations train passes through. Train goes from first to the last station where all passengers leave the train and train stays at the finishing station.

All numbers in the same row are separated by exactly one space character.

JOZO

Output data

First and only row of output file must contain time asked for in problem statement.

Examples

jozo.in

```
4 4 3 30 35
1 2 5
2 3 2
2 4 7
3 4 3
2 4 1 2 4 3
14 4 3 4 2 3
28 3 3 2 1
```

jozo.out

6

jozo.in

```
4 6 5 80 100
4 2 6
2 1 16
1 3 17
1 4 19
4 3 9
3 2 10
25 3 1 3 2
25 3 1 2 4
4 4 1 2 3 4
52 4 4 2 1 4
64 4 2 3 4 1
```

jozo.out

22

jozo.in

```
4 6 7 80 100
4 1 8
1 3 7
3 2 15
1 2 2
2 4 1
4 3 3
50 7 2 4 1 2 4 1 3
25 10 4 3 1 2 4 3 1 2 4 1
6 6 2 1 3 4 2 1
11 5 4 2 3 1 4
52 6 1 2 4 3 2 1
23 5 3 2 4 1 2
21 5 4 2 1 3 2
```

jozo.out

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LIST

Mirko and Slavko are playing one very interesting game.

On piece of paper Mirko draws a **tree (acyclic connected undirected graph)** with N vertexes that are numbered from 1 to N .

Then he removes vertexes from tree as follows: checks what **leaf** (vertex that has connection with **only one** other vertex) is numbered with **smallest** number, **removes that leaf** and writes vertex number **from which leaf was taken**.

He does that until there is only one vertex and list of $(N-1)$ numbers.

Then Slavko tries to reconstruct that tree using that list only. In case of success, he wins the game.

Write a program that will help Slavko win.

Input data

In first row of input file there is integer N , $2 \leq N \leq 100.000$, number of vertexes in tree.

In second row there is $N-1$ numbers separated with space. That numbers are one written by Marko.

Output data

In $N-1$ rows of output file you should write resulting tree edges **in any order**. To write edges you have to write vertexes (**in any order**) which make that edge.

Examples

list.in

```
5
4 3 4 5
```

list.out

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

list.in

```
7
1 2 2 2 1 7
```

list.out

```
3 1
1 7
2 1
4 2
5 2
6 2
```

list.in

```
10
6 2 7 9 2 9 4 4 10
```

list.out

```
8 4
7 5
3 2
9 6
9 4
10 4
1 6
2 9
2 7
```