IOI Training Camp 2015

Finding the nearest hospital!

There are N towns in Bangalore, named $1, 2, .., N$. These towns are connected with each other by M bi-directional roads. There may be multiple ways to go from a town x to another town y. Of the N towns, P towns have hospitals and Q towns don't. The government of Bangalore has asked its officials to calculate for each of the Q towns the distance to the nearest hospital. The head official is a lazy guy. He provides you all the data, *i.e.*, the length of roads and the towns which have hospitals and asks you to write a program to calculate the required data. Can you help him?

Input

The first line of input will contain three integers N, M and P.

The next line will contain P integers, *i.e.*, the towns which have hospitals. These integers are in the range $[1, N]$.

Each of the next M lines will contain 3 integers x, y and d, *i.e.*, the towns x and y are connected by a road of length d.

Output

For each of the Q ($Q = N - P$) towns which don't have a hospital, output two integers i and v, *i.e.*, the town's number and the distance to the nearest hospital. If no town with hospital is reachable from a particular town, output -1 for that. Output in order of increasing i.

Test Data

In all the subtasks, the integers x, y and P are in the range $[1, N]$. The integer d is in the range $[1, 10^9]$.

Subtask 1 (30 Points): $N, M \leq 10^3$.

Subtask 2 (70 Points): $N, M \leq 10^5$.

Sample Input

```
5 7 2
1 3
1 2 10
1 4 20
1 5 30
2 3 11
2 4 5
3 5 18
4 5 2
```

Sample Output

```
2 10
4 15
5 17
```

Limits

Time: 3 seconds

Memory: 256 MB

Warning

Large Input/Output. Use suitable I/O methods.