

2713 - Poisonous Gas

Description

Mayuri Kurotsuchi the **Captain** of 12th division of Gotei 13 is developing a new poisonous gas for avoiding the Hollows attacks. When finished, the gas should be released in the Hollow World, specifically in the main chambers of the Hollow Castles. The Hollow Castles are composed by chambers which are connected by brokers. Brokers have a special system that allow the air to flow in only one direction. The gas infests all the adjacent chambers per minute. This is, in the first minute the main chamber is infested, in the second minute all adjacent chambers to the main chamber are infested, in the third minute all adjacent chamber to the previously infested are infested, and so on.

Nenu Kurotsuchi the smart daughter of Mayuri is developing a software for calculating the minimum time for reaching any specific chamber in a Hollow Castle with the poisonous gas released into the main chamber. She requested you for some help.

Input specification

First line contains an integer $1 \leq T \leq 100$ which is the number of test cases (castles). Following this T -cases exist.

For each test case the first line contains three integers: $1 \leq N \leq 50$, $1 \leq L \leq 500$, and $1 \leq Q \leq N$, denoting the number of chambers (conveniently numbered between 1 and N , the main chamber is always the number one), the number of brokers, and the number of queries respectively. Following this L lines exist: each line consist of two space separated integer numbers $1 \leq S \leq N$ and $1 \leq D \leq N$ denoting the source and the destiny chambers of one broker. Following this Q lines exist: each line consist of an integer number $1 \leq P \leq N$ denoting any chamber, selected for calculating the minimum time to reach it with the poisonous gas released into the main chamber.

Output specification

For each chamber selected you must print one line with an integer number representing the minimum time to reach it, or -1 if that chamber is impossible to reach.

Sample input

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

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

Sample output

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

Hint(s)

Source	The 1st Jamaican Programming Cup - Yonny Mondelo Hernández
Added by	ymondelo20
Addition date	2014-02-26
Time limit (ms)	5000
Test limit (ms)	1000
Memory limit (kb)	256000
Output limit (mb)	64
Size limit (bytes)	15000
Enabled languages	Bash C C# C++ Java Pascal Perl PHP Python Ruby Text