

Packages

Imagine you are a package manager. You have a list of dependencies and a user asks you to install some package.

Your task is to list the dependencies of a package when asked for a package.

Input

- Read from the standard input
- On the first, there will be the number **M**
 - The number of dependencies
- On the next **M** lines, there will be a couple of numbers
 - **P** and **D**
 - **P** depends on **D**
- On the **M+2th** line there will the number **K**
 - The number of packages, you are asked to install
- On the next **K** lines find a single number
 - The package to install

Output

- Print to the standard output
- For every of the **K** lines, print the dependencies and the package itself
 - Ordered lexicographically

Constraints

- There won't be circular dependencies
 - i.e. A depends on B, B depends on C, C depends on A
- The names of the packages will always be non-negative integer numbers
- **M** will always be less than 1024
- **K** will always be less than 300

Sample tests

Input

```
6
4 8
5 3
2 1
5 1
5 8
3 2
4
5
2
8
1
```

Output

```
1 2 3 5 8
1 2
8
1
```

Input

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

Output

1
2
1 3
2 4
5 7
7