Level 3 - Connection evaluation

A hyperloop connection has been proposed. Your task is to help work out whether this connection is worthwhile.

The input is similar to Level 2, except that many journeys are provided. In addition, the time in seconds required to complete each journey using existing transport options (the **current time**) is provided. The current time is always shorter than the direct driving time, using our driving model.

Drivers are expected to switch to using the hyperloop line if it makes their journey faster.

You should output the number of journeys for which the hyperloop journey is faster than the current time.

Data format

Input

A text file consisting of the following lines:

Single line: <NumberOfLocations>
NumberOfLocations lines: <LocationName> <LocationX> <LocationY>
***Single line:* <NumberOfJourneys>**
***NumberOfJourneys lines:* <LocationName> <LocationName> <CurrentTime>**
Single line: <HyperloopLocationName> <HyperloopLocationName>

Output

Single line: <NumberOfFasterJourneys>

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Example

Input

```
5
Prague 0 286100
Brno 152440 194430
Vienna 126350 78010
Bratislava 183680 71710
Budapest 318860 0
3
Prague Bratislava 14564
Bratislava Vienna 3290
Vienna Budapest 8654
Bratislava Brno
```

Output

```
1
```

Explanation

```
Prague -> Bratislava
Faster with hyperloop

Bratislava -> Vienna
Slower with hyperloop

Vienna -> Budapest
Slower with hyperloop

Number of faster journeys = 1
```


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