

# Level 7 - Multiple routes

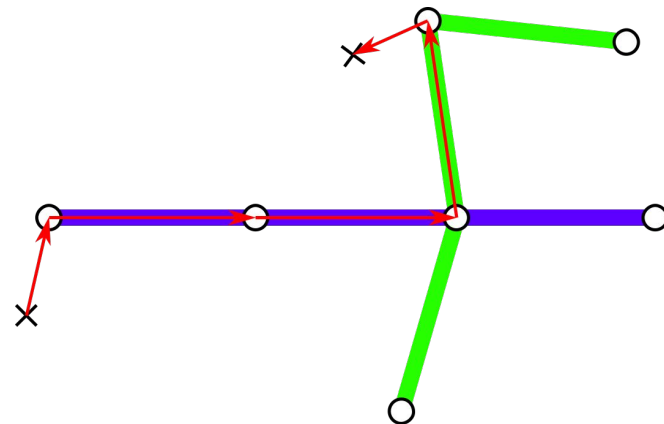
A hyperloop system is more useful when there are multiple routes. Your task is to estimate the total duration of a journey using a hyperloop system with multiple routes.

Only one hyperloop interchange can be built and the location for this interchange has already been fixed. We call this location the **hub**.

The input is similar to Level 5, except that a hub location and multiple hyperloop routes are given.

It takes **300 seconds** to change at the hub, as well as the 200 seconds waiting time for the new line. If the traveller does not have to change lines, then of course they do not have to wait for the extra 300 seconds. They also don't have to wait the extra 300 seconds if the closest stop to their start or end location is the hub.

You should output the duration of the journey (in seconds), rounded to the nearest integer.



# Notes



Every hyperloop route will include the hub location precisely once. Only the hub location will be used multiple times in the set of hyperloop routes.

As before, the travellers are lazy and always start a journey with the hyperloop by driving from their start location to the closest stop on the hyperloop network and finish it by driving to their end location from the closest stop on the hyperloop network.

# Data format



## Input

A text file consisting of the following lines:

*Single line:* <NumberOfLocations>

*NumberOfLocations lines:* <LocationName> <LocationX> <LocationY>

*Single line:* <JourneyStartLocationName> <JourneyEndLocationName>

***Single line:* <HubLocationName>**

*Single line:* <NumberOfHyperloopRoutes>

*NumberOfHyperloopRoutes lines:* <NumberOfHyperloopLocations> <HyperloopLocationName> ... <HyperloopLocationName>

## Output

*Single line:* <JourneyTime>

# Example



## Input

```
5
Prague 0 286100
Brno 152440 194430
Vienna 126350 78010
Bratislava 183680 71710
Budapest 318860 0
Prague Vienna
Bratislava
2
3 Brno Bratislava Budapest
2 Vienna Bratislava
```

## Output

```
13296
```

## Explanation

```
closest hyperloop stop to start = Brno
closest hyperloop stop to end = Vienna

drivingTime(Prague Brno) = 11858.7

hyperloopTime(Brno Bratislava) = 706.5

hubChangeTime = 300.0

hyperloopTime(Bratislava Vienna) = 430.7

drivingTime(Vienna Vienna) = 0.0

journeyTime = 11858.7 + 706.5 + 300.0 + 430.7 + 0.0
              = 13295.9
```