

(Adv.) Competitive Programming

Submit until 10.05.2019 13:30, via the [judge interface](#)



Problem: hogwarts2 (2 second timelimit)

Since being late on his first day of classes at Hogwarts, Harry Potter decided he needed to do something so that this would never happen again. Over the next weeks he started mapping out the castle, assigning names¹ to any intersections and other important places as well as recording which places are directly connected to each other and how long it takes to walk from one to the other².

It is your task to help Harry find the shortest path throughout the day. He always starts his day in the `Gryffindor-Common-Room`.

Input The first line contains n ($0 \leq n \leq 1000$), the number of times Harry will ask you for help today, and the number of corridors $0 < m \leq 21939$. The next m lines contain two strings s_1, s_2 for the endpoints of a corridor and the time t it takes to travel between them ($1 \leq t \leq 1000, 5 \leq |s_i| \leq 50$). Then, for every time he will ask you, there will be a line containing the name of his next destination. If the next destination is not reachable, Harry stays where he is.

Output For every journey print how long it will take Harry to get from his previous location to the next one, given that he takes the shortest path. Print *impossible* if he can not reach his destination.

¹Without knowing that they are called that, Harry has restricted himself to printable, non-whitespace ascii characters.

²Every corridor may of course be used in both directions.

Sample input

```
4 8
West-Wing-Staircase Dungeons 5
Grand-Staircase Gryffindor-Common-Room 10
Entrance-Hall Grand-Staircase 10
Potions-Laboratory Dungeons 5
Gryffindor-Common-Room West-Wing-Staircase 20
Great-Hall Entrance-Hall 2
Grand-Staircase Dungeons 20
West-Wing-Staircase Great-Hall 15
```

Sample output

```
22
25
impossible
25
```

Great-Hall
Potions-Laboratory
Hufflepuff-Girls'-Dormitory
Great-Hall