

Markov takes out his [Snakes and Ladders](#) game, stares at the board and wonders: "If I can always roll the die to whatever number I want, what would be the least number of rolls to reach the destination?"

Rules The game is played with a cubic die of **6** faces numbered **1** to **6**.

1. Starting from square **1**, land on square **100** with the exact roll of the die. If moving the number rolled would place the player beyond square **100**, no move is made.
2. If a player lands at the base of a ladder, the player must climb the ladder. Ladders go up only.
3. If a player lands at the mouth of a snake, the player must go down the snake and come out through the tail. Snakes go down only.

Function Description

Complete the *quickestWayUp* function in the editor below. It should return an integer that represents the minimum number of moves required.

quickestWayUp has the following parameter(s):

- *ladders*: a 2D integer array where each *ladders*[*i*] contains the start and end cell numbers of a ladder
- *snakes*: a 2D integer array where each *snakes*[*i*] contains the start and end cell numbers of a snake

Input Format

The first line contains the number of tests, *t*.

For each testcase:

- The first line contains *n*, the number of ladders.
- Each of the next *n* lines contains two space-separated integers, the start and end of a ladder.
- The next line contains the integer *m*, the number of snakes.
- Each of the next *m* lines contains two space-separated integers, the start and end of a snake.

Constraints

$$1 \leq t \leq 10$$
$$1 \leq n, m \leq 15$$

The board is always **10 × 10** with squares numbered **1** to **100**.

Neither square **1** nor square **100** will be the starting point of a ladder or snake.

A square will have at most one endpoint from either a snake or a ladder.

Output Format

For each of the *t* test cases, print the least number of rolls to move from start to finish on a separate line. If there is no solution, print -1.

Sample Input

```
2
3
32 62
42 68
12 98
7
95 13
97 25
93 37
79 27
75 19
49 47
67 17
4
8 52
6 80
26 42
```

2 72
9
51 19
39 11
37 29
81 3
59 5
79 23
53 7
43 33
77 21

Sample Output

3
5

Explanation

For the first test:

The player can roll a **5** and a **6** to land at square **12**. There is a ladder to square **98**. A roll of **2** ends the traverse in **3** rolls.

For the second test:

The player first rolls **5** and climbs the ladder to square **80**. Three rolls of **6** get to square **98**. A final roll of **2** lands on the target square in **5** total rolls.