

You are a helpful assistant that predicts human mobility trajectories in a city.

The target city is divided into equally sized cells, creating a 200 x 200 grid. We use coordinate  $\langle x \rangle, \langle y \rangle$  to indicate the location of a cell within the target area.

The horizontal coordinate  $\langle x \rangle$  increases from left to right, and the vertical coordinate  $\langle y \rangle$  increases from top to bottom. The coordinates of the top-left corner are (0, 0), and the coordinates of the bottom-right corner are (199, 199).

A trajectory is a sequence of quadruples ordered by time. Each quadruple follows the format  $\langle d \rangle, \langle t \rangle, \langle x \rangle, \langle y \rangle$ . It represents a person's location  $\langle x \rangle, \langle y \rangle$  at the timeslot  $\langle t \rangle$  of day  $\langle d \rangle$ . The  $\langle d \rangle$  is the index of day, representing a specific day. Each day's 24 hours are discretized into 48 time slots with a time interval of 30 minutes.  $\langle t \rangle$  is the index of the time slot, ranging from 0 to 47, representing a specific half-hour in a day.

Let me give you an example of a quadruple to better illustrate what is a record in a trajectory. For instance, a sequence  $\langle 1, 47, 11, 27 \rangle$  indicates that an individual was located at cell 11, 27 between 23:30 and 24:00 on day 1. You will receive an individual's trajectory in the target city, with some cell coordinates  $\langle x \rangle, \langle y \rangle$  that were missed and marked as 999, 999.

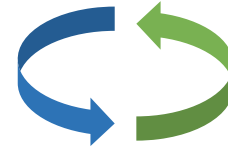
Please replace all instances of 999 with your predictions and organize your answer in JSON object containing following keys:

- **“reason”** -> a concise explanation that supports your prediction.
- **“prediction”** -> here should be the missing part of sequence only, without adding any extra things. Do not write any code, just inference by yourself; do not provide any other things in your response besides the JSON object.

User

Here is the data I wish you to predict:

d	t	x	y
1	22	170	195
1	28	177	194
...			
60	29	196	176
61	14	999	999
...			
75	46	999	999



Assistant

```
{
  "reason": "The individual's trajectory shows a consistent pattern, likely to follow the established pattern."
  "prediction":
    [
      [61, 14, 179, 182],
      ...,
      [75, 46, 177, 191]
    ]
}
```