6787 Going Postal

Pat the Postman is employed to collect the mail from all of the mail boxes in the city each night. He is accompanied on his collections by his white and black cat. The mail boxes are situated on certain street corners and the streets of the city are laid out as a rectangular grid. All streets are open to traffic in both directions and there are no restrictions on which way traffic can turn, so there is always a path along the streets that Pat the Postman can take to get to the next mail box.

The Postal Service guarantees that all mail posted by 6:00 pm will be picked up each night. Along with a regular mail service, the Postal Service provide an express mail service with a later time for pick up. Express mail is always delivered the next day, rain, hail or shine. There is only one express mail box in the city and it sits next to a regular mail box. This pair of mail boxes is situated at the closest point to the Mail Sorting Centre.

Pat the Postman starts by picking up the mail from the regular mail box closest to the Mail Sorting Centre and finishes with the express mail box. Pat times his travel so that he arrives at the first mail box at exactly 6:00 pm.

Given the locations of the mail boxes, the size of each city block, the speed at which Pat drives and the amount of time it takes to clear each mail box, what is the latest time someone could post express mail to ensure that it arrives at its destination the next day?

Input

The first line of input contains a single integer T being the number of test cases. For each test case the first line of input contains a single integer P ($1 \leq P \leq 20$), which is the number of locations where postboxes are situated. The next line consists of four integers: W, H, S and D. W and H ($1 \leq W, H \leq 100$) are the width and height in distance units of each city block. S ($1 \leq S \leq 100$) is the constant average speed in distance units per minute that Pat the Postman drives at. D ($1 \leq D \leq 5$) is the number of minutes it takes to pick up the mail from each mail box.

This line is followed by P lines specifying the mail box locations on the grid of streets. Each location is specified as the number of blocks east and north of the Mail Sorting Centre x_p, y_p ($0 \leq x_p, y_p \leq 100$). The first location is the location of the express mail box.

Output

For each test case output the latest time that express mail can be posted to guarantee it will be picked up. The time must be output in 24 hour format '$HH:MM$' ($00 \leq HH \leq 23$ and $00 \leq MM \leq 59$). If the mail is not in the express mail box by the time Pat the Postman arrives it will not be picked up, though it will be picked up if it is being posted at exactly the same time that Pat arrives.

Sample Input

```
2
4
1 1 10 1
0 0
10 10
```

```
10 0
0 10
4
2 1 1 2
0 5
6 0
10 5
5 10
```

Sample Output

```
18:08
19:08
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