

STA Online Computer Programming Contest (DWITE)
January 2004

Problem 5

Waiting at the Bank

Even with the invention of the bank card, that can be used at ATM's, it is sometimes necessary to go into a bank to see a bank representative. When this happens, you usually wait in a single line and then go to the next available representative.

In this particular bank, that is open for business from 9:00 am until 5:00 pm, there is only one bank representative. As a customer enters the bank, they form a line by going to the tail of the line. They wait in line until the representative is available, at which time the person at the head of the line goes to the representative. If the representative is available and there is no one in line, the customer can go directly to the representative without waiting. No customer is allowed in the bank before 9:00 am (09:00) or after 5:00 pm (17:00).

Your job is to determine how many people are in the line at any given time and the name of the person who is at the head of the line at that time.

The input file (DATA5) contains one large set of data.

- The first line contains the number of customers, N , who went to the bank to see the representative during a given day. $0 < N \leq 250$
- The next N lines contain information about each customer. For each customer the following three pieces of information is given, 1) their time of arrival at the bank, in 24 hour time, HH:MM, 2) the number of minutes, M , that they will meet with the bank representative, $0 < M \leq 25$, and 3) the first name of the customer, upper case, with a maximum length of 20 characters. These three pieces of information are separated by a single space. The N lines of customer information will be in the order that the customers arrive. The number of minutes, M , that the customer spends with the representative, includes the minute that the representative is first available. For example, from the sample below, Jim arrives at 9:15 and can see the representative immediately. Since he requires 6 minutes, he will be with the representative during 9:15, 9:16, 9:17, 9:18, 9:19 and 9:20. At 9:21 the representative becomes available for the next customer, which would be Bob. Bob, who requires 10 minutes, would then be with the representative from 9:21 until 9:30 inclusive.
- After the N lines of information about the customers, there are five lines of data, each with a time in 24 hour time, HH:MM. These times will be in chronological order.

For each of the last five lines of the input file, the output file (OUT5) will contain how many people are in line at that time and the name of the person at the head of the line. Separate this information with a single space. If there are no people in line at the time, do not output the single space nor a name. The number of people in line at this time will take into account those customers that leave the line and those customers that are added to the line at that minute.

Sample Input

```
9
09:15 6 Jim
09:20 10 Bob
09:21 4 Karen
09:26 6 Sam
09:45 2 Julie
09:48 2 Mary
09:48 5 Joanne
09:49 12 Linda
10:15 2 Ferris
09:01
09:22
09:49
09:51
10:10
```

Sample Output

```
0
1 Karen
2 Joanne
1 Linda
0
```

Understanding the Sample Input

Time	Person at Representative	Queue	Time	Person at Representative	Queue
9:15	Jim		9:48	Mary	Joanne
9:16	Jim		9:49	Mary	Joanne, Linda
9:17	Jim		9:50	Joanne	Linda
9:18	Jim		9:51	Joanne	Linda
9:19	Jim		9:52	Joanne	Linda
9:20	Jim	Bob	9:53	Joanne	Linda
9:21	Bob	Karen	9:54	Joanne	Linda
9:22	Bob	Karen	9:55	Linda	
9:23	Bob	Karen	9:56	Linda	
9:24	Bob	Karen	9:57	Linda	
9:25	Bob	Karen	9:58	Linda	
9:26	Bob	Karen, Sam	9:59	Linda	
9:27	Bob	Karen, Sam	10:00	Linda	
9:28	Bob	Karen, Sam	10:01	Linda	
9:29	Bob	Karen, Sam	10:02	Linda	
9:30	Bob	Karen, Sam	10:03	Linda	
9:31	Karen	Sam	10:04	Linda	
9:32	Karen	Sam	10:05	Linda	
9:33	Karen	Sam	10:06	Linda	
9:34	Karen	Sam	10:07		
9:35	Sam		10:08		
9:36	Sam		10:09		
9:37	Sam		10:10		
9:38	Sam		10:11		
9:39	Sam		10:12		
9:40	Sam		10:13		
9:41			10:14		
9:42			10:15	Ferris	
9:43			10:16	Ferris	
9:44			10:17		
9:45	Julie		10:18		
9:46	Julie		10:19		
9:47			10:20		