

Bus Trouble

Source file name: bus.c, bus.cpp, bus.java, bus.py
 Input: Standard
 Output: Standard

Harry is waiting in the bus station, and he wants to go quickly home, the problem is that he dint know what route is the proper, but thankfully, somebody give he a table whit all routes times and how long takes to reach hes home, there is two types of routes, one who drop Harry directly in hes home, and other who drop he in a x amount of time that is needed to walk.

Input

In the first input line you get the number of test cases $N(0 \leq N \leq 10)$, in the second line you have two numbers, the routes $R(0 \leq R \leq 2 \times 10^3)$, and the start time in minutes $T(60 \leq T \leq 360)$ after 12:00. (Example: 60 minutes is equals to 01:00, this is the time Harry start waiting). The next R lines contains the name of the route S , the time where the route reach the bus station $M("T/60" \leq M \leq 360)$, a value X who represent the type of route (1 for direct drop, 2 for indirect drop), for case one the only value you receive is the time needed to get home $D(10 \leq D \leq 360)$, for case two you receive $D(10 \leq D \leq 360)$ who is the time to reach the drop point and $H(1 \leq H \leq 360)$ who is the time from D to home.

Output

For the N cases will be N output lines, each line contains: " \langle Test case \rangle : \langle Route name \rangle takes \langle Total time \rangle minutes, Harry reach hes home at \langle Time harry reach home \rangle pm." Replacing \langle Test case \rangle whit the respective test case, \langle Route name \rangle whit the name of the route who takes the less time to get Harry home, \langle Total time \rangle whit the respective time who took Harry to reach hes home and \langle Time harry reach home \rangle whit the time moment of the day harry reach hes home; if two or more routes get the same amount of time, harry select the first one reach the bus station.

Example

Input	Output
2 4 90 Oak 100 1 20 UTP 96 2 10 8 Pines 90 2 20 10 Invico 120 1 30 3 230 Virginia 230 1 50 La_38 290 2 10 5 Nacaderos 240 2 20 5	(1): UTP takes 20 minutes, Harry reach hes home at 1:54pm. (2): Nacaderos takes 35 minutes, Harry reach hes home at 4:25pm.