

Problem D: One Last Ride

Filename: `lastride`

Time limit: 10 seconds

After getting off the Men in Black ride, you realize it is nearing the end of your time at Universal and everyone must meet up to catch the bus in time. However, you and your group want to go on one last ride before you get back. In fact, you are so set on going on one last ride that you no longer care which one it is – the difference in thrill between the Cat in the Hat ride and Velocicoaster, for example, means nothing to you now! However, what does make a difference to you in a situation like this is that each ride still has a wait time, and each walkway takes some time to cross.

Justin, the TA you are currently with, had anticipated a situation like this could come up. Since the last thing he wants is to get lost so late, he came up with a special map of Universal that is easier to read. The map still contains all the attractions Universal has. However, as opposed to the traditional map of universal, Justin's map includes only the minimum number of walkways to allow for a path to exist between any two attractions (he figured by limiting the number of walkways shown on the map, the chances of getting lost go down). Finally, he also added the estimated time it takes to traverse each walkway, as well as the wait times of each attraction.

The path you and your group take to meet with everyone else should visit each attraction at most once. Help Justin figure out the best course of action from here.

Problem

Given Justin's map representing the layout of Universal, as well as some possible locations of your group and the location of the rest of the campers and the time you have left, determine if you can meet with the rest of your group in time and if you can ride an attraction on the way.

Input

Input will begin with a single integer **c** representing the number of test cases.

The first line of each test case contains 2 integers: **n** and **q**, representing the number of attractions and routes for you to consider, respectively.

The second line of each test case contains **n** integers, the i^{th} of which is **w_i**, representing the wait time of the i^{th} ride.

The next **n - 1** lines will each have 3 integers **u**, **v**, and **x**, indicating there is a walkway between attractions **u** and **v** that takes time **x** to cross. (These walkways will be such that one can reach any attraction from any other attraction.)

Following that are **q** lines, each of which has 3 integers: **r**, **s**, and **t**, indicating your current location, the meeting point for everyone, and the amount of time you have, respectively.

Output

For each path, print one of the following 3 on its own line:

- "One last ride!", if you can ride an attraction on the path and make it back in time.
- "We must hurry!", if you can make it back in time only if you don't ride an attraction.
- "Oh no!", if you will be late to the meeting location no matter what.

Input Bounds and Corresponding Credit

30 Points	70 Points
<ul style="list-style-type: none">• $1 \leq c \leq 20$• $3 \leq n \leq 10^3$• $1 \leq q \leq 10^3$• $0 \leq w_i \leq 10^6$• $0 \leq x_i \leq 10^4$• $0 \leq t_i \leq 10^9$	<ul style="list-style-type: none">• $1 \leq c \leq 25$• $3 \leq n \leq 10^5$• $1 \leq q \leq 10^4$• $0 \leq w_i \leq 10^6$• $0 \leq x_i \leq 10^4$• $0 \leq t_i \leq 10^9$

Samples

Input	Output
1 6 5 2 7 3 9 4 1 1 2 3 1 3 1 2 4 5 2 5 7 3 6 4 4 3 13 4 3 10 4 3 8 4 5 16 6 5 15	One last ride! We must hurry! Oh no! One last ride! We must hurry!