Problem 8C - Christmas Market

You are visiting your friend John, who is living in New York. As it is pre-Christmas time, you decide to visit the Christmas market of New York. Unfortunately, you can't get a taxi and the way is quite long. To have a nice walking time, you propose the German "Kastenrennen" to John. This means, you take a box of beer with you and drink it while walking. As you are very thirsty and you like beer very much, one bottle of beer gets empty every 50 meters. But there is only space for 20 bottles in the box, so beer will be empty before reaching the market.

Fortunately, there are stores on the way, where you can buy beer. In each store you can return the empty bottles and refill your box with full bottles, but you can never carry more than 20 bottles.

Now the question is: Can you reach the Christmas Market without running out of beer?

Input

Input starts with one line containing the number of test cases t ($t \leq 50$).

Each test case starts with one line, containing the number of n of stores selling beer (with $0 \leq n \leq 100$). The next $n + 2$ lines contain (in this order) the location of John's home, the stores, and of the Christmas Market. The location is given with two integer coordinates x and y (both in meters, $-32768 \leq x, y \leq 32767$).

As New York is a rectangularly laid out city, the distance between two locations is the difference of the first coordinate plus the difference of the second coordinate (appropriately also called Manhatten-Metric).

Output

For each test case print out one line, containing either `happy`, if you can happily reach the Christmas Market still having beer, or `sad`, if you will run out of beer on the way.

Sample Input 1	**Sample Output 1**
2 2 0 0 1000 0 1000 1000 2000 1000 2 0 0 1000 0 2000 1000 2000 2000	happy sad