Task

Eljmike Mang is making a comeback with a new hacking contest. Based on feedback from the previous challenge, the rules are a bit different this time:

1. At the beginning every hacker creates their own signature virus and loads it onto their computer. They also choose some subset of all the hacker participants to hack. This is called their target list.
2. Every iteration, copies of all the computer viruses on a hacker's computer are transferred to all the participants they chose to hack. This time, a backdoor is left open such that all of these participants are able to send all the computer viruses on their computer back to the original hacker.
    a. Between any hacker and target pair, the two transfer operations: viruses from the hacker to the target and viruses from the target to the hacker, happen simultaneously.
    b. If the same virus is transferred to a computer more than once, the computer's antivirus recognizes it and destroys the extra copy. The original copy of the virus still remains however.
3. These iterations continue until no viruses end up being transferred from one computer to another

This time Eljmike wants to take some precautions. He has gone through the target lists of each of the participants and assigned each hacker target pair a contagion rating. Eljmike's dream scenario is that in which every contestant experiences every other contestant's virus AND the sum of the contagion ratings (known as the deadly rating) from each of the participants in each of the target lists is at a minimum. After each participant has chosen their target lists, you have the ability to go in and remove any set of participants from any target list before the contest starts. Your job is to report to Eljmike the minimum possible deadly rating for a contest that satisfies both of Eljmike's conditions. In addition, Eljmike will be running five chapters, and you must help him with all of them!

You may assume that it is always possible to satisfy these two conditions by removing some set of targets from each of the target lists for all the hackers.

Interaction Details

The grader will start by outputting the test case number, **t**. The next line will contain one number, **n**, such that **10 ≤ n ≤ 250.** The next **n** lines will contain a sequence of many pairs of numbers. The pairs will be separated by a space and the numbers inside the pair will separated by a comma. If the **nth** line contains a pair with numbers **m** and **c** respectively, with **1 ≤ m ≤ n** and **1 ≤ c ≤ 1000**, then this corresponds to the **mth** hacker being on the **nth** hacker's target list with Eljmike assigning the pair a contagion rating of **c**. In the next line the grader will prompt you for the answer to that test case.

Once the test case is answered, the grader will output either: "Congrats, onto the next test case:" followed by an extra newline, or "Boohoo Eljmike is disappointed in you ?:(" depending on whether you are correct or not.

If you pass all five test cases, you will receive the flag

Sample Interaction:

Test case: 1
7
4,100 6,20 3,100 2,60 5,40
1,40 7,50 3,50 6,90 5,30
1,80
5,20

7,20 4,50 6,10
4,90 3,20 7,90 2,90 1,20
3,10 4,70 5,50
Answer: **110**
Congrats, onto the next case:

Test case: 2
7
3,90 4,90 7,100 6,90
1,10 6,60 7,20
4,60 7,30 2,80
2,80 6,40
6,20
4,60
5,70 1,40 2,40 6,60 4,60
Answer: **180**
Congrats, onto the next case:

(Three more cases follow)…

flag{sample_flag}