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| CS 2420 Program 6 – 20 points Fall 2014  High School Reunion  **Description**  It is time to plan the class reunion for those going to Logan High. Students have signed up on a Facebook page, but somehow the classmates from two high schools with the same name (A and B) have been combined.  The organizing committee needs to decide who went to which high school. The present question is, given two individuals, did they go to the same school? You must give your judgment based on incomplete information.  Assume N (N <= 1000) individuals are in the collection, numbered from 1 to N. You will be given M (M <= 1000) messages in sequence, which are in the following two kinds:   1. D [a] [b]  where [a] and [b] are the numbers of two individuals. This statement tells you that a and b went to different high schools. 2. A [a] [b]  where [a] and [b] are the numbers of two individuals. This “ask” inquiry” requires you to decide whether a and b went to the same school.  You are to solve this problem using Union/Find. Make sure you use smart unions and path compression. Your code should be original and not copied from any other source.  **Input**  The first line of the input contains a single integer T (1 <= T <= 20), the number of test cases. Then T cases follow. Each test case begins with a line with two integers N and M. N is the number of people you have in the school and M is the number of message lines. This is followed by M lines each containing one message as described above. The input file is named highschool.txt.  **Output**  For each message "A [a] [b]" in each case, your program should give the judgment based on the information input before. The answers might be one of "Went to the same school.", "In different schools" and "Not sure yet." There could also be “BAD DATA” if the input gives conflicting information. For any data that yields “BAD DATA”, **ignore only that one item of data,** and continue processing.  **Sample Input**  1  5 5  A 1 2  D 1 2  A 1 2  D 2 4  A 1 4  D 1 5  D 2 5  **Sample Output**  Person 1 and 2: Not sure yet.  Person 1 and 2: In different schools.  Person 1 and 4: Went to the same school.  Different 2 5: BAD DATA |

**Hint**

Every group needs to know a member of the group it is NOT in. When I learn 4 is NOT in the same group as 2. I union 4 with the NOT\_IN(2)