



acm International Collegiate
Programming Contest



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Tree Inspections

Input: Standard Input
Output: Standard Output



Fruit fly, like *Drosophila suzukii*, is a fruit crop pest and is a serious economic threat to soft summer fruits. The fertilized female fruit fly searches for ripe fruit, inserts its serrated ovipositor to pierce the skin and deposits a clutch of eggs per insertion. The larvae hatch and grow in the fruit and destroy the fruit's commercial value. Regular inspection of fruit farms are required to detect infected trees and destroy them as a way of stopping the spread of infestation to other farms.

In our region, fruit trees are planted in rectangular shaped farms with planned walking paths for fruit collectors and tree inspectors. The location of each tree is described by its x- and y-coordinates. Each walking path is either a horizontal line or a vertical line that stretches from one side of the farm to the other side. Horizontal and vertical paths are described by their y- and x-coordinates, respectively.

It is required, by law, that at least 60% of the trees in a farm be visible, where a tree is visible only if it can be viewed by an inspector standing on some path and facing perpendicular to the path. There must be no intervening trees that obstruct the inspector's view.

Your task is to write a program to test if a fruit farm passes the 60% visibility requirement.

Input

The input starts with an integer F ($1 < F \leq 10$), on a line by itself, that indicates the number of farms to be processed. The description for each farm starts with a line that contains two integers T , and P . T represents the number of trees and P represents the number of paths. Each of the following T lines contains two integers that represent the x-coordinate followed by the y-coordinate of one tree. Each of the following P lines starts with the letter H (indicating a horizontal path) or the letter V (indicating a vertical path) followed by an integer that represents the corresponding coordinate.

$1 \leq (T, P) \leq 100000$, and all coordinates lie between -1000000 and 1000000 , inclusive.

Output

For each farm, the output consists of a single line that contains either

1. PASSED (if the farm satisfies the 60% rule), or
2. FAILED

Sample Input	Output for the Sample Input
1 6 3 -1 3 4 2 6 2 6 3 6 4 4 3 H -1 V 0 H 5	PASSED