

7461 Separating Pebbles

Dr. Y has travelled to an ancient ruin in which a large number of circular-shaped ('o') and cross-shaped ('+') pebbles are scattered on an open field. Being a puzzle enthusiast, Dr. Y tried to figure out if she can draw one straight line so that circular-shaped pebbles and cross-shaped pebbles are on the opposite side of the line and no pebbles on the line. For example, in Fig. 1 (left), Dr. Y can draw a straight line to separate the two types of pebbles, whereas in Fig. 1 (right), it would not be possible. Please write a program to determine if a given group of pebbles can be separated by a single straight line.

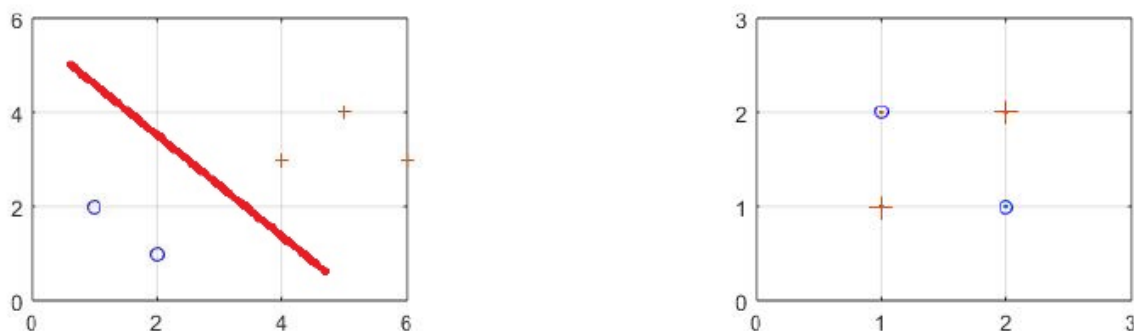


Figure 1: (left), pebbles can be separated by a straight line. (right), pebbles can not be separated by a straight line.

Input

The first line of the input contains an integer K ($K \leq 20$) indicating the number of test cases. The first line of each test case consists of an integer N ($N \leq 250$) indicating the number of pebbles. The next N lines each contains a triplet (x, y, c) , where x and y represent the x and y coordinates (all integers, $0 \leq x, y \leq 150$) of a pebble point, and c represents the type of pebble: 'o' denoted by '0' and '+' denoted by '1'.

Output

For each test case, output '1' if Dr. Y can separate the pebbles with a single straight line; if not, output '0'.

Sample Input

```

2
5
1 2 0
2 1 0
4 3 1
5 4 1
6 3 1
4
1 2 0
2 1 0
1 1 1
2 2 1
  
```

Sample Output

1
0