# Problem A
## Cosmic Cabbages

**Input:** Standard Input
**Output:** Standard Output

**CABBAGE**, n.
*A familiar kitchen-garden vegetable about as large and wise as a man's head.*

Ambrose Bierce

Scientists from the planet Zeelich have figured out a way to grow cabbages in space. They have constructed a huge 3-dimensional steel grid upon which they plant said cabbages. Each cabbage is attached to a corner in the grid, where 6 steel cables meet and is assigned Cartesian coordinates. A cosmic ant wants to crawl from cabbage X to cabbage Y along the cables that make the grid. The cosmic ant always chooses the shortest possible path along the grid lines while going from cabbage X to cabbage Y. This distance is called the cosmic distance between two cabbages. Given a collection of cabbages what is the maximum distance between any two of the cabbages?

## Input

The first line of input gives the number of cases, **N (0<N<21)**. **N** test cases follow. Each one starts with a line containing **n** ($2 <= \mathbf{n} <= 10^5$). The next **n** lines will each give the 3-dimensional coordinates of a cosmic cabbage (integers in the range $[-10^8, 10^8]$).

## Output

For each test case, output one line containing "Case #**x**:" followed by the largest cosmic distance between cabbages X and Y, out of all possible choices of X and Y.

| Sample Input | Output for Sample Input |
|---|---|
| 4<br>2<br>1 1 1<br>2 2 2<br>3<br>0 0 0<br>0 0 1<br>1 1 0<br>4<br>0 1 2<br>3 4 5<br>6 7 8<br>9 10 11<br>6<br>0 0 0<br>1 1 1<br>2 2 2<br>0 0 1<br>1 0 0<br>0 1 0 | Case #1: 3<br>Case #2: 3<br>Case #3: 27<br>Case #4: 6 |

**Problem setter: Igor Naverniouk, EPS**
**Special Thanks: Shahriar Manzoor, EPS**

***I liked this problem so much that I said to myself "If I were the problem setter of this problem?"***

***-Shahriar Manzoor***