# Problem 2. Closest pair

## Problem Statement

Closest pair is one of the important application on geometric problems. In this assignment, you need to implement program that find closest pair among given set of points.

There are two kind of well known function to compute the distance of two points: The Euclid and Manhattan distance. In this assignments, we use the Manhattan distance, which is simple sum of the distance bewteen each dimension. For example, the distance between two points $x = (1, 1, 6)$ and $y = (5, -1, 0)$ is $|1 - 5| + |1 - (-1)| + |6 - 0| = 12$. We define the Manhattan distance $D(p, q)$ of two points $p = (p_1, p_2, p_3)$ and $q = (q_1, q_2, q_3)$ in 3-dimension as $D(p, q) = \sum_{i=1}^{3} |p_i - q_i|$.

Your goal is to implement a program that find closest pair over 3-dimensional space using divide and conquer way.

## Input Statement

First line contains an integer $t$, which is the number of test cases.
First line of each test case has an integer $N (\leq 30000)$.
Each 2nd,..., $(N + 1)$-th line contains three numbers which describe a point.
Each number is separated by a space, and each test case is separated by a line.

## Output Statement

For each test case, prints out the minimum distance of the problem.
Each test case should be separated by a line.

## Input Example

```
2
3
3 0 0
2 0 0
1 0 0
3
5 7 0
10 2 0
11 3 0
```

## Output Example

```
1
2
```