1211 – Intersection of Cubes

You are given **n** cubes, each cube is described by two points in 3D space: **(x_1, y_1, z_1)** being one corner of the cube and **(x_2, y_2, z_2)** being the opposite corner. Assume that the sides of each of the cubes are parallel to the axis. Your task is to find the volume of their intersection.

Input

Input starts with an integer **T (≤ 100)**, denoting the number of test cases.

Each case starts with a line containing an integer **n (1 ≤ n ≤ 100)**. Each of the next **n** lines contains six integers **x_1 y_1 z_1 x_2 y_2 z_2 ($1 \le x_1, y_1, z_1, x_2, y_2, z_2 \le 1000$, $x_1 < x_2$, $y_1 < y_2$, $z_1 < z_2$)** where **(x_1, y_1, z_1)** is the co-ordinate of one corner and **(x_2, y_2, z_2)** is the co-ordinate of the opposite corner.

Output

For each case, print the case number and volume of their intersection.

Sample Input	Output for Sample Input
2 2 1 1 1 3 3 3 1 1 1 2 2 2 3 7 8 9 20 20 30 2 2 2 50 50 50 13 14 15 18 30 40	Case 1: 1 Case 2: 450