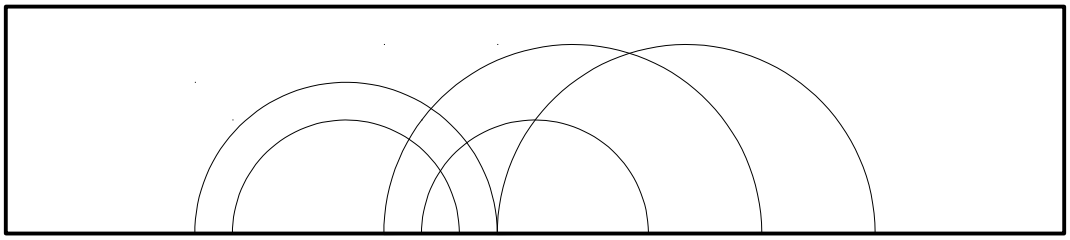
Crossings

Time limit: 3s

The scientists have performed experiments on tiny particles leaving **N** tracks on the experimental plate. Each track is a perfect half-circle whose center is at the bottom side of the plate. More specifically, track **i** is specified by its center location $\mathbf{X_i}$ and its radius $\mathbf{R_i}$. A sample figure below shows 5 tracks on a plate.



To evaluate the successfulness of the experiments, the scientists have to count the number of pairs of tracks that cross each other. Two tracks cross each other if there is a point **inside** the plate that belongs to both tracks. Note that we do not consider two tracks that share a point at the boundary of the plate crossing. In the above example, the number of pairs of tracks that cross each other is 6.

Write a program that reads the track information and compute the number of pairs of tracks that cross each other.

Input

The first line contains an integer **T** (**1 <= T <= 5**), the number of test cases. Then **T** test cases follow.

- The first line of each test case contains an integer **N** (1<=**N**<=100,000), the number of tracks.
- Then the next **N** lines describe the tracks. That is, on line 1 + **i**, there will be two integers $\mathbf{X_i}$ and $\mathbf{R_i}$ (0 <= $\mathbf{X_i}$ <= 1,000,000; 1 <= $\mathbf{R_i}$ <= 10,000,000). There will be no two tracks that have the same center and radius.

Output

For each test case, your program should output a single integer, the number of pairs of tracks that cross each other.

Example

Input	Output
2 3 10 10 15 10 20 10 4 10 100 20 100 30 100 40 100	2 6