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# Algorithms Lab

## Exercise – *Boats*

Every year all the wizards of the world gather at the Algwarts School of Magic to celebrate the fact that their magic is still not replaced by science.

They can come with boats, among other ways. The organizers have reserved a ring for every participant, so he can tie his boat to the ring assigned uniquely to him. Every magician has sent the length of his boat to the organizers. The boat has to be tied so that the ring is somewhere on the length of the boat, including the endpoints of the boat. The ends of two boats can touch each other, but boats cannot overlap (see the picture). Because of this restriction it is possible that all boats cannot be tied at the same time.

The organizing committee of the Wizard Assembly asked you to write the program BOATS that finds the maximal number of boats which can be tied at the same time to the assigned ring.
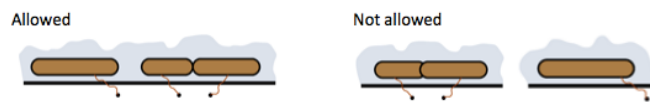


**Input** The first line of the input file will contain an integer $1 \leq t \leq 10$ giving the number of test cases that follow.

Each test case starts with a line containing the number $n$ of wizards ($1 \leq n \leq 10^5$). In each of the following $n$ lines there are exactly two integers $l_i$ and $p_i$ separated by a space ($1 \leq l_i, p_i \leq 10^6, 1 \leq i \leq n$), representing the *length of the boat* and the *position of the assigned ring* along the river bank starting from the school building. No two rings have the same position. While the positions of the rings are always positive, the left endpoints of the boats can be negative.

**Output** For each test case, on a single line output the maximal number of boats that can be attached to their ring without collisions.

**Points** There are two test sets, giving a total of 100 points.

- For the first test set, worth 50 points, you may assume that $n \leq 2000$.
- For the second test set, worth 50 points, there are no additional assumptions.

| Sample Input | Sample Output |
| --- | --- |
| 1 | 5 |
| 7 | |
| 5 9 | |
| 2 17 | |
| 6 10 | |
| 3 11 | |
| 2 16 | |
| 4 13 | |
| 5 6 | |