Power Distribution

Time limit: 0.6s **Memory limit:** 64M

After years of combing through the archive of the Ancients, **Phoenix1369** has finally found an interesting problem for the Don Mills Programming Club:

> Given the x-coordinates of N houses arranged in a row, some of which can generate their own power, output the minimum length of electrical wire required to connect every home to a source of power, either directly or indirectly.

Input Specification

The first line of the input contains an integer T denoting the number of test cases.

The first line of a case contains an integer N, denoting the number of homes arranged in a line.

The next N lines of a case each contain 2 space-separated integers: x_i and p_i $(1 \leq i \leq N)$ denoting the x-coordinate of the i^{th} house, and whether it generates its own power, respectively.

Output Specification

Output T lines, each containing a single integer on a line by itself, the j^{th} of which represents the minimum length of wire needed to supply power to all houses for the j^{th} case.

Constraints

$1 \leq T \leq 10$

$1 \leq x_1 < x_2 < \cdots < x_N \leq 10^9$

$p_i \in \{0, 1\}$

It is guaranteed that at least one home will be able to generate its own electricity.

Subtask 1 [30%]

$1 \leq N \leq 1000$

Subtask 2 [70%]

$1 \leq N \leq 10^5$

Sample Input

```
2
3
1 1
2 0
5 0
3
1 1
8 0
9 1
```

Sample Output

```
4
1
```

Explanation

In the first case, wires can be added between houses #1 and #2 and houses #2 and #3 for a total length of $1 + 3 = 4$. House #3 gets power because it is indirectly connected to house #1 (via house #2).

In the second case, house #2 is the only house which requires power. Since it is closer to house #3, the length of the wire required is $9 - 8 = 1$.

Original Problem Author: admin2; Problem Resource: CodeChef