Problem A
AGI

Artificial General Intelligence (AGI for short) seems increasingly inevitable. More and more people no longer ask *if* we will reach this level, but rather *when*. So far, n futurologists have presented their predictions regarding when AGI will appear. The i-th prediction is given as a time interval $[A_i, B_i)$, which means that according to it, AGI will emerge at a time t satisfying $A_i \le t < B_i$.

For each prediction you must decide whether you consider it to be true or not.

Your task is to make these decisions so that, regardless of the actual moment x at which AGI finally appears, you guarantee at least $\left\lfloor \frac{n-1}{2} \right\rfloor$ correct evaluations.

You may assume that the test cases are chosen in a way that guarantees at least one valid answer exists.

You have to solve t independent test cases.

Input

The first line contains an integer t ($1 \le t \le 1000$) — the number of test cases. Each test case consists of a line with an integer n ($1 \le n \le 500\,000$) — the number of predictions, followed by n lines describing the predictions, each containing two integers A_i and B_i ($0 \le A_i < B_i \le 10^9$), denoting the start and end of the time interval of the i-th prediction.

The sum of all n across all test cases does not exceed $500\,000$.

Output

For each test case print a single line containing a string of length n consisting of the letters $\texttt{T}$ and $\texttt{N}$. The j-th character of the string is your evaluation of the j-th prediction:

- $\texttt{T}$ means you affirm this prediction.
- $\texttt{N}$ means you reject this prediction.

If there are multiple answers satisfying the problem requirements, you may print any of them.

Example

For the input:
```
2
4
1 2
2 3
3 4
4 5
5
1 10
2 9
3 8
4 7
5 6
```

a correct output is for example:
```
NNNN
TNTNN
```

Explanation of the examples: In the first test case it suffices to correctly evaluate at least $\left\lfloor \frac{4-1}{2} \right\rfloor = 1$ prediction. The intersection of all intervals is empty, so by rejecting all predictions we will be correct on at least one evaluation.

In the second test case we must be correct on at least $\left\lfloor \frac{5-1}{2} \right\rfloor = 2$ evaluations. For example, if AGI appears at time $x = 2$, then predictions 1 and 2 would be true, so we correctly evaluated predictions $1, 4, 5$. If instead $x = 5.7$, then all predictions turn out to be true, so we correctly evaluated only predictions $1, 3$, which is still sufficient. One can prove that regardless of x, at least 2 predictions will be evaluated correctly.