

B. New Year and North Pole

time limit per test: 2 seconds
 memory limit per test: 256 megabytes
 input: standard input
 output: standard output

In this problem we assume the Earth to be a completely round ball and its surface a perfect sphere. The length of the equator and any meridian is considered to be exactly 40 000 kilometers. Thus, travelling from North Pole to South Pole or vice versa takes exactly 20 000 kilometers.

Limak, a polar bear, lives on the North Pole. Close to the New Year, he helps somebody with delivering packages all around the world. Instead of coordinates of places to visit, Limak got a description how he should move, assuming that he starts from the North Pole. The description consists of n parts. In the i -th part of his journey, Limak should move t_i kilometers in the direction represented by a string dir_i that is one of: "North", "South", "West", "East".

Limak isn't sure whether the description is valid. You must help him to check the following conditions:

- If at any moment of time (before any of the instructions or while performing one of them) Limak is on the North Pole, he can move only to the South.
- If at any moment of time (before any of the instructions or while performing one of them) Limak is on the South Pole, he can move only to the North.
- The journey must end on the North Pole.

Check if the above conditions are satisfied and print "YES" or "NO" on a single line.

Input

The first line of the input contains a single integer n ($1 \leq n \leq 50$).

The i -th of next n lines contains an integer t_i and a string dir_i ($1 \leq t_i \leq 10^6$, $dir_i \in \{\text{North, South, West, East}\}$) — the length and the direction of the i -th part of the journey, according to the description Limak got.

Output

Print "YES" if the description satisfies the three conditions, otherwise print "NO", both without the quotes.

Examples

input
5 7500 South 10000 East 3500 North 4444 West 4000 North
output
YES

input

Good Bye 2016

Finished

Practice



→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ACM-ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ Submit?

Language: Microsoft Visual C++ 2010 ▼
 Choose file: Choose File No file chosen
 Be careful: there is 50 points penalty for submission which fails the pretests or resubmission (except failure on the first test, denial of judgement or similar verdicts). "Passed pretests" submission verdict doesn't guarantee that the solution is absolutely correct and it will pass system tests.



Submit

→ Problem tags

implementation

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→ Contest materials

- Announcement 
- Tutorial 

2
15000 South
4000 East

output

NO

input

5
20000 South
1000 North
1000000 West
9000 North
10000 North

output

YES

input

3
20000 South
10 East
20000 North

output

NO

input

2
1000 North
1000 South

output

NO

input

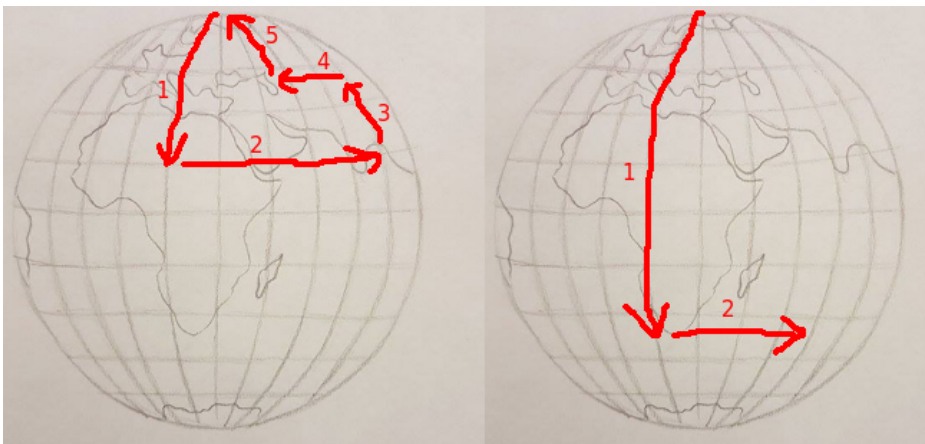
4
50 South
50 North
15000 South
15000 North

output

YES

Note

Drawings below show how Limak's journey would look like in first two samples. In the second sample the answer is "NO" because he doesn't end on the North Pole.



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