Problem 5 – Bad Cat!

I had a **number** (with distinct digits) written on a sheet of paper.

My cat (Sid) ate it (she loves to eat paper)!

Now I can only remember that some digits were before or after others. My memory is good and the order of digits I remember are always correct.

Please help me **find the smallest possible number that corresponds to the digits order I remember**.

The number was valid integer number with no leading zeroes.

There is always a possible solution.

Input

The input data should be read from the console.

On the first line there will be the number **N**.

On each of the next **N** lines there will be a string in the format "**X is before Y**" or "**X is after Y**". **X** and **Y** will be valid digits ('0' – '9').

The input data will always be valid and in the format described. There is no need to check it explicitly.

Output

The output data should be printed on the console.

On the only output line write the smallest possible number that corresponds to the rules described in the input.

Constraints

- **N** will be between 1 and 20.
- Allowed working time for your program: 0.05 seconds. Allowed memory: 16 MB.

Examples

Example input	Example output
5 1 is before 2 4 is after 2 3 is before 4 6 is after 4 6 is before 8	123468
6 8 is before 7 6 is before 5 3 is after 4 1 is after 2 2 is before 1 1 is after 2	21436587

Mew.