City Management

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	1024 megabytes

You are managing a city. Several factories will be established in your city, and several workers will come to your city looking for jobs. You need to arrange some affairs reasonably to maximize the total profit.

Each factory has a production capacity x_i, which means that in one round of production:

- If there is a worker working in it, it yields a profit of x_i.
- If there is no worker working in it, it yields no profit.
- At most one worker can work in each factory.

You have foreseen that in the next n days, each day one of the following two events will occur:

- A worker comes looking for a job. After this worker arrives, you can reassign the positions of all workers (including the workers currently in a factory). Specifically, for each worker, you can assign him/her to work in any factory or leave him/her idle.
- A factory with production capacity x_i is established. After this factory is established, if there are idle workers, you can choose whether to assign an idle worker to work in this factory. Of course, you can also leave the factory vacant. In particular, if there are no idle workers, this factory can only be left vacant.

After the event of the day is executed, all factories will conduct one round of production and yield profit according to the rules described above.

You need to find the maximum total profit.

Input

There are multiple test cases. The first line of the input contains an integer T ($1 \le T \le 10^6$), indicating the number of test cases. For each test case:

The first line contains an integer n ($1 \le n \le 2 \times 10^5$), indicating the number of days.

For the following n lines, the i-th line first contains a character op_i ($op_i \in \{\texttt{W}, \texttt{F}\}$), indicating the type of event on the i-th day. If $op_i = \texttt{W}$, a worker comes looking for a job on that day; otherwise, if $op_i = \texttt{F}$, another integer x_i follows ($1 \le x_i \le 10^7$), indicating that a factory with production capacity x_i is established on that day.

It is guaranteed that the sum of n of all test cases does not exceed 10^6.

Output

For each test case, output one line containing one integer, indicating the maximum total profit.

Example

standard input	standard output
2 8 F 1 F 2 W F 100 W W F 10000 W 9 W F 51 F 1 F 1 F 1 F 1 F 100 F 100 W	20509 557

Note

We explain the first sample test case below:

Day	Action	Profit of Day
1	/	0
2	/	0
3	Leave a worker idle	0
4	Assign a worker to the new factory	100
5	Reassign workers to factories 2 and 100	102
6	Reassign workers to factories 2 and 100, leaving a worker idle	102
7	Assign a worker to the new factory	10102
8	Reassign workers to all factories	10103

The total profit is $0 + 0 + 0 + 100 + 102 + 102 + 10102 + 10103 = 20509$.