

## Code a Trie

Input file:            **standard input**  
Output file:           **standard output**  
Time limit:            **1 second**  
Memory limit:         **256 megabytes**

A Trie is a tree data structure used to store strings. Here is Little Rabbit's C++ code for inserting and querying a string in a Trie. The character set is lowercase letters.

```
struct Trie {
    int e[N][26], val[N], tot; // N is a constant
    Trie() {
        tot = 0;
        val[0] = Rand(1, 1000000000);
        memset(e, 0, sizeof e);
    }
    void insert(const char *s, int n) { // n is the length of string s
        for (int i = 0, u = 0; i < n; u = e[u][s[i] - 'a'], i++)
            if (!e[u][s[i] - 'a']) {
                e[u][s[i] - 'a'] = ++tot;
                val[tot] = Rand(1, 1000000000);
                // Rand(1, r) can generate
                // distinct random numbers in the range of [1, r]
            }
    }
    int query(const char *s, int n) { // n is the length of string s
        int u = 0;
        for (int i = 0; i < n; u = e[u][s[i] - 'a'], i++)
            if (!e[u][s[i] - 'a'])
                break;
        return val[u];
    }
};
```

Please note that the integers generated by *Rand* function are all distinct.

Little Rabbit inserts some (possibly zero) strings in the Trie by using the *insert* function. But after a while, he totally forgets those strings he has inserted. So he uses the *query* function  $n$  times to query some strings and gets  $n$  return values. According to these values, you need to tell Little Rabbit how many nodes the Trie has at least. Please note that the root of the Trie should also be counted as a node. In the code above, the number of nodes is  $\text{tot} + 1$ .

## Input

The first line of the input contains an integer  $T$  ( $1 \leq T \leq 5000$ ) — the number of test cases.

The first line of each test case contains an integer  $n$  ( $1 \leq n \leq 10^5$ ) — the number of times Little Rabbit uses the *query* function.

Then in the next  $n$  lines, each line contains a string  $s$  containing only lowercase letters and an integer  $v$  ( $1 \leq v \leq 10^9$ ), which means Little Rabbit queries the string  $s$ , and the return value is  $v$ . The sum of the lengths of the strings in each test case will not exceed  $10^5$ , and the sum of the lengths of the strings in all test cases will not exceed  $5 \times 10^5$ .

## Output

For the  $x$ -th test case, if the answer is  $y$ , output *Case #x: y* in a single line. If no Trie can meet the conditions, output *Case #x: -1* in a single line.

## Example

standard input	standard output
6	Case #1: 3
2	Case #2: 1
aa 1	Case #3: 1
a 2	Case #4: 3
1	Case #5: -1
a 1	Case #6: -1
3	
aa 1	
ab 1	
ac 1	
2	
aa 1	
ac 2	
3	
aaa 1	
ac 1	
aa 3	
3	
aa 1	
ac 1	
a 3	