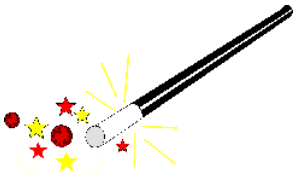
Problem L- Prefix Goodness



The *prefix goodness* of a set of strings is the length of the longest common prefix for the elements in the set, multiplied by the number of strings in the set. For example consider the set $\{000, 001, 0011\}$. The longest common prefix is "00", which means it has a prefix goodness of 6.

You are given a set of binary strings. Find the maximum prefix goodness among all possible subsets of these binary strings.

Input Specification:

The input begins with an integer $T \leq 20$, the number of test cases. Each test case begins with $n \leq 50000$, the number of binary strings, and is followed by n lines of binary strings, no longer than 200 characters each.

Output Specification:

For each test case output the maximum prefix goodness among all possible subsets of n binary strings.

Sample Input:

```
4
4
0000
0001
10101
010
2
01010010101010101010
11010010101010101010
3
01010101010100001000 1010
01010101010100001000 1000
01010101010100001000 1010
5
0101010101010000101001001010 0101
0101010101010000101001101010 1010
00001010101010110101
00010101010110101 01
00010101010101001
```

Sample Output:

```
6
20
66
44
```