

5699 Rescue the Rabbit

Dr. X is a biologist, who likes rabbits very much and can do everything for them. 2012 is coming, and Dr. X wants to take some rabbits to Noah's Ark, or there are no rabbits any more.

A rabbit's genes can be expressed as a string whose length is l ($1 \leq l \leq 100$) containing only 'A', 'G', 'T', 'C'. There is no doubt that Dr. X had a in-depth research on the rabbits' genes. He found that if a rabbit gene contained a particular gene segment, we could consider it as a good rabbit, or sometimes a bad rabbit. And we use a value W to measure this index.

We can make a example, if a rabbit has gene segment 'ATG', its W would plus 4; and if has gene segment 'TGC', its W plus -3. So if a rabbit's gene string is 'ATGC', its W is 1 due to ATGC contains both 'ATG'(+4) and 'TGC'(-3). And if another rabbit's gene string is 'ATGATG', its W is 4 due to one gene segment can be calculate only once.

Because there are enough rabbits on Earth before 2012, so we can assume we can get any genes with different structure. Now Dr. X want to find a rabbit whose gene has highest W value. There are so many different genes with length l , and Dr. X is not good at programming, can you help him to figure out the W value of the best rabbit.

Input

There are multiple test cases. For each case the first line is two integers n ($1 \leq n \leq 10$), l ($1 \leq l \leq 100$), indicating the number of the particular gene segment and the length of rabbits' genes.

The next n lines each line contains a string DNA_i and an integer w_i ($|w_i| \leq 100$), indicating this gene segment and the value it can contribute to a rabbit's W .

Output

For each test case, output an integer indicating the W value of the best rabbit. If we found this value is negative, you should output 'No Rabbit after 2012!'.

Hint:

case 1 : we can find a rabbit whose gene string is ATGG(4), or ATGA(4) etc.

case 2 : we can find a rabbit whose gene string is TGCTGC(4), or TGCCCC(4) etc.

case 3 : any gene string whose length is 1 has a negative W .

Sample Input

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2 4
ATG 4
TGC -3
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```
1 6
TGC 4
```

```
4 1
A -1
T -2
G -3
C -4
```

Sample Output

4

4

No Rabbit after 2012!