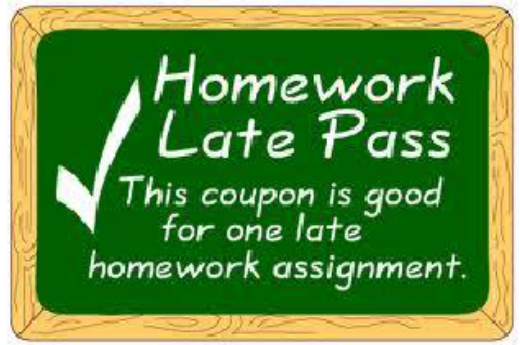These days Soha is so busy that he doesn't have time to do his own homework. But this is not a big problem since he has got many friends who are willing to help. One if his friend's name is Sparrow. Whenever Soha is assigned any homework, he turns to Sparrow for her help.

Sparrow has given a list of subjects that she is comfortable with along with the number of days it will take her to complete an assignment for each subject. Soha has got only D days to complete his next assignment. However, the professor of this subject is a little flexible and allows late submissions up to 5 days. That means he will not accept any submission that is after $D + 5$ days from now. Will Sparrow be able to do it for Soha this time?

Input

First line of input is a positive integer T ($T \le 100$) that determines the number of test cases. Each case starts with a line containing an integer N that represents the number of subjects Sparrow is comfortable with. Each of the next N lines contain the name of a subject followed by the number of days it will take Sparrow to complete an assignment of that subject. All these subject names will be distinct. The next line contains an integer D. The meaning of D is described above. The following line contains the name of the subject whose homework is due. All the subjects' names consist of lowercase letters and the length of each is at least 1 and at most 20. All the integer inputs are positive in the range [1,100].

Output

For each case, first output the case number first starting from 1. If Sparrow doesn't take more than D days to completely the assignment, output 'Yesss'; if she takes more than D days but not more than $D + 5$, output 'Late'; if she takes more than $D + 5$ days or if she isn't comfortable with the subject, output 'Do your own homework!'. Quotes are for clarify only and don't need to be part of the output. Look at the samples for more details. Be careful about the spelling.

Sample Input

```
3
3
compiler 4
cplusplus 1
java 8
5
compiler
2
algorithm 3
math 9
4
math
2
java 8
ai 3
6
calculus
```

Sample Output

```
Case 1: Yesss
Case 2: Late
Case 3: Do your own homework!
```