30 days has September,
April, June and November
All the rest have 31
And Februarys great with 28
And Leap Years Februarys fine with 29

The Gregorian calendar, the current standard calendar in most part of the world, adds a 29-th day to February in all years evenly divisible by 4, except for centennial years (those ending in -00) which are not evenly divisible by 400. Thus 1600, 2000 and 2400 are leap years but 1700, 1800, 1900, 2100, 2200 and 2300 are not.

In this problem, we are concerned with dates. You will be given a date and an integer K. You have to find the date in the calendar after K days from the given date.

Input

The first line of input is an integer T ($T < 50$) that represents the number of test cases. Each case contains two lines. The first line is a date in the format '*yyyy-month-dd*'. *year* is an integer in the range [1900, 3000], *month* is a string from the set {`January, February, March, April, May, June, July, August, September, October, November and December`} and *dd* is an integer in the range [01,31]. The second line contains an integer K ($0 < K < 10000$).

The input date will be a valid one.

Output

For each input, output the case number followed by the date after K days in the same format as that of input. Look at the sample for exact format.

Sample Input

```
2
1984-December-30
2
1984-October-12
318
```

Sample Output

```
Case 1: 1985-January-01
Case 2: 1985-August-26
```