Qualification Round Africa 2010

Problem C. T9 Spelling

This contest is open for practice. You can try every problem as many times as you like, though we won't keep track of which problems you solve. Read the Quick-Start Guide to get started.

Small input 8 points	Solve C-small
Large input 25 points	Solve C-large

Problem

The Latin alphabet contains 26 characters and telephones only have ten digits on the keypad. We would like to make it easier to write a message to your friend using a sequence of keypresses to indicate the desired characters. The letters are mapped onto the digits as shown below. To insert the character `B` for instance, the program would press `22`. In order to insert two characters in sequence from the same key, the user must pause before pressing the key a second time. The space character `' '` should be printed to indicate a pause. For example, `2 2` indicates `AA` whereas `22` indicates `B`.

Input

The first line of input gives the number of cases, **N**. **N** test cases follow. Each case is a line of text formatted as

```
desired_message
```

Each message will consist of only lowercase characters `a-z` and space characters `' '`. Pressing zero emits a space.

Output

For each test case, output one line containing "Case #**x**: " followed by the message translated into the sequence of keypresses.

Limits

1 ≤ **N** ≤ 100.

Small dataset

1 ≤ length of message in characters ≤ 15.

Large dataset

1 ≤ length of message in characters ≤ 1000.

Sample

Input	Output
4 hi yes foo bar hello world	Case #1: 44 444 Case #2: 999337777 Case #3: 333666 6660 022 2777 Case #4: 4433555 555666096667775553