T9 Spelling

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

$1 \leq N \leq 100$.

$1 \leq$ length of message in characters ≤ 1000.

Sample

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