**Enhancing Passwords**

Chris struggles with coming up with his own passwords. Do you think you can help him make his password valid with the following conditions?

* It must be at least 6 characters long and at most 20 characters long.
* It contains at least one lowercase letter, one uppercase letter, and one digit.
* It does not contain any characters that repeat three or more times (**EX**: “…aaa…” is illegal but “…aa…a…” is fine).

Given a password that Chris has made, can you output the minimum number of steps to make his password pass all these requirements? In each step, you can:

* Insert a character
* Delete a character
* Replace a character for another.

**Input:** The first line of input contains **T**, the number of test cases. The next **T** lines contain a string which is Chris’ password. The only characters that will appear are lowercase and uppercase letters, and digits.

**Output:** You will first output “CASE #(case number): “ followed by the minimum number of steps needed to make the password valid. If the password is already valid, you will output 0.

**Example Input:**

3

a

aA1

1337Cad1

**Example Output:**

CASE #1: 5

CASE #2: 3

CASE #3: 0