Problem of the Week
Problem D
The Number You Have Reached is ...

Maryam remembers a few things about a friend's cell phone number but cannot completely remember all ten digits. Maryam is absolutely certain that the first seven digits of the number are (122) 578 8.

Maryam does remember a few interesting things about the number. With regard to the numeric keypad, she remembers the following things:

- Any digit in the phone number that is different from the previous digit somehow touches the next digit of the phone number. For example, the digit 1 on the keypad touches digits 2, 4 and 5. The digit 5 on the keypad touches every digit but 0.

1	2	3
4	5	6
7	8	9
*	0	#

- The phone number contains three distinct pairs of repeating consecutive digits, but three digits in a row are never the same. (Of the numbers Maryam remembers, there are already two distinct pairs of repeating digits, so the third pair cannot be 22 or 88.)

Maryam's phone plan has unlimited free local calling. She will try different combinations until the friend is reached. How many different phone numbers could Maryam possibly end up trying until the correct number is reached?