Passwords
Problem ID: p04passwords

Write a program which allows the user to repeatedly input a password until the input is `"q"`. Each password p should be error-checked according to the following conditions:

1. $6 \leq |p| \leq 20$, where $|p|$ denotes the length of the password p.
2. p must contain at least one lowercase letter.
3. p must contain at least one uppercase letter.
4. p must contain at least one numeric letter.

Conditions 2–4 should only be checked if the password fulfills condition no. 1.

In each iteration, an appropriate error message is printed depending on whether the password is valid or invalid. Finally, the count of passwords and how many of them are valid/invalid is printed.

Note that the numbers 6 and 20, which stand for the minimum and maximum lengths of a password, as well as the string `"q"` (denoting quit), should be implemented with **constants**. A constant in a Python program is a variable whose value should not be changed. It is a good rule to use capital letters for names of constants and define them at the start of the program.

Input

The input consists of n lines, where $1 \leq n \leq 50$ and the last line is the string `"q"`. Each line contains a string s, where $1 \leq |s| \leq 30$. Each character in the input has an ASCII value between 48 and 122, inclusive. This includes lowercase letters, uppercase letters, digits and some special symbols.

Note: Your program is not supposed to validate this input, or refuse other input. This is just for your information about the input in the test cases. You do not need to expect input that does not meet these restrictions.

Output

For each input line (except `"q"`), containing a password p, at most three lines are printed:

- If p is valid, the string "{p}: Valid password of len {l}." is printed and nothing else.
- If p is of invalid length, the string "{p}: Ìnvalid length." is printed and nothing else.
- If p does not contain at least one lower case letter, the string "{p}: Missing lower case letter." is printed.
- If p does not contain at least one upper case letter, the string "{p}: Missing upper case letter." is printed.
- If p does not contain at least one numeric letter, the string "{p}: Missing numeric letter." is printed.

In the above, {p} is a placeholder for password p and {l} is a placeholder for the length of p. In the case that many lines are printed, their ordering should match the one in the list above.

Finally, the following string is printed: "You tried {c} passwords, {v} valid, {i} invalid.", where {c}, {v}, and {i} are placeholders for the correct values.

Note: You MUST use **f-strings/format strings** for all the output.

Sample Input 1	**Sample Output 1**
abcd abcdef q	abcd: Invalid length. abcdef: Missing upper case letter. abcdef: Missing numeric letter. You tried 2 passwords, 0 valid, 2 invalid.

Sample Input 2

```
123456
A1bcde
sjfd5jfsdlABC9
q
```

Sample Output 2

```
123456: Missing lower case letter.
123456: Missing upper case letter.
A1bcde: Valid password of length 6.
sjfd5jfsdlABC9: Valid password of length 14.
You tried 3 passwords, 2 valid, 1 invalid.
```

Sample Input 3

```
PASSW
PASSWORD
PASSWORd
PaSSWorD23
q
```

Sample Output 3

```
PASSW: Invalid length.
PASSWORD: Missing lower case letter.
PASSWORD: Missing numeric letter.
PASSWORd: Missing numeric letter.
PaSSWorD23: Valid password of length 10.
You tried 4 passwords, 1 valid, 3 invalid.
```

Sample Input 4

```
q
```

Sample Output 4

```
You tried 0 passwords, 0 valid, 0 invalid.
```