Menus

A catering firm mainly produces food that is selled by delivery, as individual packed dishes: appetizer (A), soup (C), main course (P), desert(D). Each of the dishes can have nine variants, labeled from 1 to 9 (A1 = appetizer of type 1, D5 = desert of type 5, etc). The firm sells **menus;** a menu must contain between 2 and 4 dishes, all different (for instance appetizer+desert, soup+main course+desert, etc). For the final packing and delivery, the individual dishes come on a conveyor belt on which an automatic system recognizes the plates, generând labels of type A2, C6, P1, D7, etc, according to the coding rules explained before. If the recognizing system does not recognize the particular variant of the dish, the label is given as 0; The system recognizes allways the type of the dish (that is if it is soup or desert, etc); as such we can have labels of type C0 (soup of type unknown).

The dishes that compuse a menu must come on the conveyor belt only in the standard order: appetizer (A), soup (C), main course (P), desert (D). Is considered the menu having the most dishes (that is: a menu ACP is corect, but, if on the conveyor belt after the dish P comes a dish D, one will consider as menu the sequence ACPD).

Requirements

Given a a series of labels that code the individual plates that pass on the conveyor belt, presumed in the correct packing order (that is in the explained standard order), one must count the number of menius that are correctly formed (which means formed by 2 up to 4 dishes, arriving in the correct order), the number of menius that are correctly formed that contain a dish which was not recognized (its label containing the digit 0) and the number of extra plates (that are not part of any correct menu).

Input data

One will read from the keyboard (the stdin stream) the a series of labels, each label being composed of one of the letter A, C, P, D and a digit between 0 and 9, in the format:
<label> < label >...< label >
The labels are separated by a blank space. The series of labels ends with a newline character ('\n'). Example input series: A2 C6 P1 D7 D0 A3 C3 '\n'

Output data

The program will display on screen (the standard output stream) on three successive lines, each ended with a newline character ('\n'), the number of correct menus, the number of correct menus that contain unrecognized plates, the number of extra plates (that are not part of any correct menu).

ATTENTION to the compliance to the problem requirements: the display of results must be done EXACTLY as required! In other words, on the standard output stream there will be nothing displayed in addition to the problem requirements; following the automatic evaluation, any supplemental character displayed, or any display different than the requirements, will produce an eroneous result and will lead to the „Reject" of the solution.

Restrictions and remarks

1. The number of labels is smaller than 1000.

2. **Caution**: Depending on the programming language you have chosen, the file containing the code must have one of the .c, .cpp, .java, or .m extensions. The web editor will not automatically add these extensions and their lack leads to the impossibility of compiling the program!
3. **Caution**: for those working in MATLAB, it is recommended that the source file be named by the candidate in the form of: <name>.m where *name* is the candidate's surname.
4. **Caution**: There may be spaces or other white characters at the beginning or end of any input lines. The reading of the data must be carried out with this in mind!

Examples

Input	Output	Explanation
C1 A2 C6 P1 D7 D0 A0 C3 D2 C1 D2 P7	3 1 3	Appetizerul A2 cannot be after the soup C1, thus soup C1 is a singular dish, it cannot be part of a correct menu. A2 C6 P1 D7 form a correct menu corect, with all dishes recognized. Desert D0 is not part of the previous menu (a manu contains a single desert); no menu starts with desert, thus D0 is a singular dish, it cannot be part of a correct menu. A0 C3 D2 form a correct menu, in which one dish is not recognized (A0). C1 D2 form a correct menu corect, with all dishes recognized. The main corse P7 is a singular dish, is not part of a correct menu. In total we have 3 correct menus, and 1 menu contains dishes that were not recognized and there are 3 singular dishes that are not part of any menu.
C0 A0 C1 A0 P1 D5 D9 C8 P1	3 2 2	C0 A0 is not an correct succession of dishes, thus C0 is a singular dish. A0 C1 is a correct menu which contains unrecognized dishes. A0 P1 D5 is a correct menu which contains unrecognized dishes. D9 C8 is not an correct succession of dishes, thus D9 is a singular dish. C8 P1 is a correct menu. In total we have 3 correct menus, and 2 menus contain dishes that were not recognized and there are 2 singular dishes that are not part of any menu.
D4 P0 C1 A9 A3 A0	0 0 6	All the 6 dishes are singular, nu menu can be formed.

Worktime: 150 minutes