886   Named Extension Dialing

The marketing research group of the S&TC (String & Tin Can) telephone company recently concluded its analysis of leading-edge services that could be developed for its CENTREX (business user) customers. The analysis showed that "Named Extension Dialing" (NED) has the highest profit potential. To maximize profit by minimizing non-recurring expenses, S&TC has contracted your team to develop a module for the automated attendant system that implements NED.

1	ABC 2	DEF 3
GHI 4	JKL 5	MNO 6
PQRS 7	TUV 8	WXYZ 9
*	0	#

Currently when a call is placed to a business' primary number, the caller is greeted with the pleasant, and almost human, message "You have reached XYZ Corporation. If you know your party's extension, please dial it now, or stay on the line for an operator." NED will allow the sentence, "If you know your party's name, dial the first letter of the first name followed by the first letters of the last name of your party now," to be added to the message.

Input

Input to your software module will be a directory of names and extensions, one per line, followed by lines containing arbitrary numeric strings dialed by people calling XYZ Corporation. Each directory entry consists of a first name, one space, a last name, one space, and a 4-digit phone extension. Names can contain any combination of up to twenty lower and upper case letters. No input line will exceed 80 characters.

Output

For each dialed number, the program is to output, on one line starting in the first column, the list of extensions to which the number could be referring. If the dialed number exactly matches an extension, output the extension; otherwise, output the list of extensions that correspond with names that match the dialed number. Multiple extensions that match a dialed number are to be separated from each other by single spaces. The dialed number must match the characters in the name exactly. (Homophonic matching of names was already completed in an earlier contest.) If the input fails to match any names or extensions, output '0'.

Sample Input

```
Barry Charles 4384
John Smith 2315
Susan Small 5764
Alexis Baxter 4652
Kim Rohde 6678
22
5764
2345
22298
```

Sample Output

```
4384 4652
5764
0
4652
```