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## Word search

P19854\_en

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You must solve a word search. ¿does it seem easy? It is, except for a little detail: we are not only going to allow that the words appear in rows, columns or diagonals, but also that “go round”: when the board ends, the word can “continue” in the opposite side. ¿Look the following instance: do you find the word “abracadabra”?

```
z z a z z a z z d z z
r z z b z z c z z a z
z a z z r z z a z z b
```

A detail: we do not accept that the same letter of the word search corresponds to two or more different letters in the word. For instance, the following word search do *not* contain the word “abracadabra”; instead, it contains the word “zbzzbz” (in diagonal, not in vertical).

```
z z z z z z z z z z
a b r a b r a c a d
z z z z z z z z z z
```

### Input

A test data contains various cases, separated by a line in white. Each case starts with three naturals separated by spaces,  $R$ ,  $C$  and  $N$ . It is fulfilled that  $3 \leq R, C \leq 100$  and  $0 \leq N \leq 100$ . Then,  $R$  lines follow with  $C$  lowercase letters each one of them, describing the word search. Finally,  $N$  lines, each one of them contains a non empty word formed by lowercase letters that you must search in the word search.

### Output

Return the same board marking *all* the appearances of each word. Mark it writing with uppercase letters all the letters that are part of one of the words that you searches. Consider that the same word can appear many times, once or never in the word search. Separate two cases with a line in white.

### Score

- **(40 points)** Some test data will contain word searches where *any* word will appear in diagonal, nor going round the board, as the ones in the instance 1.
- **(20 points)** Some test data will contain word searches where *any* will not be any word that appear in diagonal, as the ones in the instance 2.
- **(40 points)** Other test data will contain cases of all kinds, as the ones in the instance 3.

### Sample input 1

```
6 6 2
zzzzzz
zabcdz
```

```
zbcdez
zdefgz
zdefgz
zzzzzz
g
```

edcb

4 10 5  
asorfliasd  
iievneivja  
aramapolaz  
aifjllalsnd  
amapola  
rosa  
iris  
nenufar  
azahar

## Sample input 2

3 3 1  
aaa  
aaa  
aaa  
aaaa

10 10 5  
ajfmcxzsdf  
afijalifei  
afdi jfwifw  
dafjilji jw  
afijwliejl  
adifjvslid  
ijiljwifwj  
fvjdl sf sfj  
ajeijwli jw  
jilxzvzkqd  
wajeij  
jijmxi  
fsiksfiel  
w  
fvjdl sf sfj f

## Sample input 3

3 10 1  
zzazzazdz  
rzzbzzczzaz  
zazzrzzazzb  
abracadabra

3 10 1  
zzazzazdz  
rzzbzzczzaz  
zazzrzzazzb  
zzzz

3 9 2  
zzzzzzzzzz  
abracad  
zzzzzzzzzz  
abracadabra  
zbzzbz

3 9 1

## Sample output 1

zzzzzz  
zaBcdz  
zBCDEz  
zcDefz  
zdEfGz  
zzzzzz

ASORfliasd  
iIevneivja  
aRAMAPOLAz  
aIfjllalsnd

## Sample output 2

aaa  
aaa  
aaa

ajfMczsdf  
afiJaliFei  
afdI jfWIWf  
dafJilji jW  
afijWliejl  
adifjvsLid  
ijiljWiFWj  
fvjdl sf sfj  
AJEIJWli jW  
jilXzvzKqd

zzzzzzzzzz  
abracad  
zzzzzzzzzz  
zbzzbzzczzazzazzazd

### Sample output 3

zzaZZaZzdz

```
zrZZBZZczz  
azZaZZrzza
```

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### Problem information

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