

# A - UOIAUAI

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Time Limit: 2 sec / Memory Limit: 256 MB

Score : 100 points

## Problem Statement

Given a lowercase English letter  $c$ , determine whether it is a vowel. Here, there are five vowels in the English alphabet: a, e, i, o and u.

## Constraints

- $c$  is a lowercase English letter.
- 

## Input

The input is given from Standard Input in the following format:

$c$

## Output

If  $c$  is a vowel, print `vowel`. Otherwise, print `consonant`.

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## Sample Input 1

a

## Sample Output 1

vowel

Since a is a vowel, print `vowel`.

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## Sample Input 2

z

## Sample Output 2

consonant

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## Sample Input 3

s

## Sample Output 3

consonant

# B - Thin

Time Limit: 2 sec / Memory Limit: 256 MB

Score : 200 points

## Problem Statement

There is an image with a height of  $H$  pixels and a width of  $W$  pixels. Each of the pixels is represented by either `.` or `*`. The character representing the pixel at the  $i$ -th row from the top and the  $j$ -th column from the left, is denoted by  $C_{i,j}$ .

Extend this image vertically so that its height is doubled. That is, print a image with a height of  $2H$  pixels and a width of  $W$  pixels where the pixel at the  $i$ -th row and  $j$ -th column is equal to  $C_{(i+1)/2,j}$  (the result of division is rounded down).

## Constraints

- $1 \leq H, W \leq 100$
- $C_{i,j}$  is either `.` or `*`.

## Input

The input is given from Standard Input in the following format:

```
H W
C1,1...C1,W
:
CH,1...CH,W
```

## Output

Print the extended image.

## Sample Input 1

```
2 2
*.  
.*
```

# Sample Output 1

```
*.  
*.  
. *  
. *
```

# Sample Input 2

```
1 4  
***.
```

# Sample Output 2

```
***.  
***.
```

# Sample Input 3

```
9 20  
.....***.....***.....  
.....*...*...*...*...  
...*.....**.....*...  
...*.....*.....*...  
.....*.....*.....*...  
.....**...*...**...  
.....*...*...*...  
.....**...*...  
.....**.....
```

# Sample Output 3

```
.....***.....***.....
.....***.....***.....
.....*.....*.....*.....*.....
.....*.....*.....*.....*.....
...*.....**.....*.....
...*.....**.....*.....
...*.....*.....*.....*.....
...*.....*.....*.....*.....
...*.....*.....*.....*.....
...*.....*.....*.....*.....
.....**.....*.....**.....
.....**.....*.....**.....
.....*.....*.....*.....
.....*.....*.....*.....
.....**.....*.....
.....**.....*.....
.....**.....
.....**.....
```

# C - Daydream

Time Limit: 2 sec / Memory Limit: 256 MB

Score : 300 points

## Problem Statement

You are given a string  $S$  consisting of lowercase English letters. Another string  $T$  is initially empty. Determine whether it is possible to obtain  $S = T$  by performing the following operation an arbitrary number of times:

- Append one of the following at the end of  $T$ : dream, dreamer, erase and eraser.

## Constraints

- $1 \leq |S| \leq 10^5$
- $S$  consists of lowercase English letters.

## Input

The input is given from Standard Input in the following format:

$S$

## Output

If it is possible to obtain  $S = T$ , print YES. Otherwise, print NO.

## Sample Input 1

erasedream

## Sample Output 1

YES

Append erase and dream at the end of  $T$  in this order, to obtain  $S = T$ .

## Sample Input 2

```
dreameraser
```

## Sample Output 2

```
YES
```

Append dream and eraser at the end of  $T$  in this order, to obtain  $S = T$ .

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## Sample Input 3

```
dreamerer
```

## Sample Output 3

```
NO
```

# D - Connectivity

Time Limit: 2 sec / Memory Limit: 256 MB

Score : 400 points

## Problem Statement

There are  $N$  cities. There are also  $K$  roads and  $L$  railways, extending between the cities. The  $i$ -th road bidirectionally connects the  $p_i$ -th and  $q_i$ -th cities, and the  $i$ -th railway bidirectionally connects the  $r_i$ -th and  $s_i$ -th cities. No two roads connect the same pair of cities. Similarly, no two railways connect the same pair of cities.

We will say city  $A$  and  $B$  are *connected by roads* if city  $B$  is reachable from city  $A$  by traversing some number of roads. Here, any city is considered to be connected to itself by roads. We will also define *connectivity by railways* similarly.

For each city, find the number of the cities connected to that city by both roads and railways.

## Constraints

- $2 \leq N \leq 2 * 10^5$
- $1 \leq K, L \leq 10^5$
- $1 \leq p_i, q_i, r_i, s_i \leq N$
- $p_i < q_i$
- $r_i < s_i$
- When  $i \neq j$ ,  $(p_i, q_i) \neq (p_j, q_j)$
- When  $i \neq j$ ,  $(r_i, s_i) \neq (r_j, s_j)$

## Input

The input is given from Standard Input in the following format:

```

N  K  L
p1 q1
:
pK qK
r1 s1
:
rL sL
```



## Output

Print  $N$  integers. The  $i$ -th of them should represent the number of the cities connected to the  $i$ -th city by both roads and railways.

### Sample Input 1

```
4 3 1
1 2
2 3
3 4
2 3
```

### Sample Output 1

```
1 2 2 1
```

All the four cities are connected to each other by roads.

By railways, only the second and third cities are connected. Thus, the answers for the cities are 1, 2, 2 and 1, respectively.

### Sample Input 2

```
4 2 2
1 2
2 3
1 4
2 3
```

### Sample Output 2

```
1 2 2 1
```

## Sample Input 3

```
7 4 4
1 2
2 3
2 5
6 7
3 5
4 5
3 4
6 7
```

## Sample Output 3

```
1 1 2 1 2 2 2
```