

## 23 Matrix Code

15 points

### Introduction

You work as a technical consultant for the new upcoming sci-fi film “Matrix Code”.

In the movie, a white hat hacker named “Robt” is studying an unknown new malware (malicious software) that is obfuscating all the internet communications. During the investigation Robt gets absorbed into the machine computing world by the malware and he will have to fight it from the inside.

This movie will use a lot of special effects related to how the computers interact with the real world and the director and art team want to include subliminal messages in the representation of the obfuscated transmissions.

You are asked to develop a prototype to allow the movie team to obfuscate text communications. Since the movie will be set in the 1990's, the output will have to be represented in 4:3 screen format, to simulate the old CRT monitors.

At the moment, only one obfuscating algorithm is requested. This one, should change all the letters from the text by the next one in the alphabet. If the obfuscated text message does not fill the whole screen, the character “ ” should be shown, except in those pixels that are located in the screen's diagonal, where # should be shown instead.

### Important notes

- Format 4:3 means, only character displays of 4x3, 8x6, 12x9, 16x12, etc, are allowed
- Only letters should change, any other symbol should remain the same.
- The diagonal is formed by the positions (x, y) where  $x=y$
- Each element should be separated by a space.

### Input

A text of any length in a single line (only ASCII characters)

### Output

The output will be the minimum matrix of format 4:3 showing the obfuscated text with the requested restrictions

### Example 1

**Input**

Hi Robt, the matrix has you and you will not escape!

**Output**

```
I j S p c u , u i f
n b u s j y i b t
z p v b o e z p v
x j m m o p u f t d
b q f ! # " " " " " " "
" " " " " # " " " " " "
" " " " " " # " " " " "
" " " " " " " # " " " "
" " " " " " " " # " " " "
```

### Example 2

**Input**

Hi Robt, to be able to exit from the matrix you must analyze the data prompted in the screen. Then you will fully understand the code. Zzz.

**Output**

```
I j S p c u , u p c f b
c m f u p f y j u g s p n
u i f n b u s j y z p v
n v t u b o b m z A f u i f
e b u b q s p n q u f e j
o u i f t d s f f o . U i
f o z p v x j m m g v m m
z v o e f s t u b o e u i f
d p e f . a A A . " " " " "
" " " " " " " " " # " " " " " "
" " " " " " " " " # " " " " "
" " " " " " " " " # " " " " "
```