An English text needs to be encrypted using the following encryption scheme.
First, the spaces are removed from the text. Let L be the length of this text.
Then, characters are written into a grid, whose rows and columns have the following constraints:

$$\lfloor\sqrt{L}\rfloor \leq row \leq column \leq \lceil\sqrt{L}\rceil, \text{ where } \lfloor x\rfloor \text{ is floor function and } \lceil x\rceil \text{ is ceil function}$$

For example, the sentence
$s =$ **if man was meant to stay on the ground god would have given us roots**, after removing spaces is 54 characters long. $\sqrt{54}$ is between 7 and 8, so it is written in the form of a grid with 7 rows and 8 columns.

```
ifmanwas
meanttos
tayonthe
groundgo
dwouldha
vegivenu
sroots
```

- Ensure that $rows \times columns \geq L$
- If multiple grids satisfy the above conditions, choose the one with the minimum area, i.e. $rows \times columns$.

The encoded message is obtained by displaying the characters in a column, inserting a space, and then displaying the next column and inserting a space, and so on. For example, the encoded message for the above rectangle is:

```
imtgdvs fearwer mayoogo anouuio ntnnlvt wttddes aohghn sseoau
```

You will be given a message to encode and print.

Function Description

Complete the *encryption* function in the editor below. It should return a single string composed as described.

encryption has the following parameter(s):

- *s*: a string to encrypt

Input Format

One line of text, the string s

Constraints

$1 \leq |s| \leq 81$
s is comprised only of characters in the range ascii[a-z].

Output Format

Print the encoded message on one line as described.

Sample Input

```
haveaniceday
```

Sample Output 0

```
hae and via ecy
```

Explanation 0

$L = 12$, $\sqrt{12}$ is between 3 and 4.
Rewritten with 3 rows and 4 columns:

```
have
```

```
anic
eday
```

Sample Input 1

```
feedthedog
```

Sample Output 1

```
fto ehg ee dd
```

Explanation 1

$L = 10$, $\sqrt{10}$ is between 3 and 4.
Rewritten with 3 rows and 4 columns:

```
feed
thed
og
```

Sample Input 2

```
chillout
```

Sample Output 2

```
clu hlt io
```

Explanation 2

$L = 8$, $\sqrt{8}$ is between 2 and 3.
Rewritten with 3 columns and 3 rows ($2 * 3 = 6 < 8$ so we have to use $3X3$.)

```
chi
llo
ut
```