Encryption

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:

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

For example, the sentence `if man was meant to stay on the ground god would have given us roots` after removing spaces is 54 characters long, 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 in English with no spaces between the words. The maximum message length can be 81 characters. Print the encoded message.

Here are some more examples:

Sample Input:

```
haveaniceday
```

Sample Output:

```
hae and via ecy
```

Sample Input:

```
feedthedog
```

Sample Output:

```
fto ehg ee dd
```

Sample Input:

chillout

Sample Output:

clu hlt io