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Encryption

Problem

Submissions

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Editorial 

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:

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

For example, the sentence $s = \text{if man was meant to stay on the ground god would have given us roots}$, 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 $\text{rows} \times \text{columns} \geq L$
- If multiple grids satisfy the above conditions, choose the one with the minimum area, i.e. $\text{rows} \times \text{columns}$.

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

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C++



```
1  #include <bits/stdc++.h>
2
3  using namespace std;
4
5  // Complete the encryption function below.
6  string encryption(string s) {
7
8
9  }
10
11 int main()
12 {
13     ofstream fout(getenv("OUTPUT_PATH"));
14
15     string s;
16     getline(cin, s);
17
18     string result = encryption(s);
19
20     fout << result << "\n";
21
22     fout.close();
23
24     return 0;
25 }
26
```

Line: 1 Col: 1

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