

Questions:

We would love to see your approach in solving and explaining the following questions. Be creative, to the point, and most of all, be you.

Please create a GitHub repository and address questions 1-6 in a Markdown file. For challenges 7 and 8, please use your preferred language or even pseudocode.

1. Explain the difference between a stack and a queue. Provide real life examples of real-life scenarios where each of them are used appropriately.
2. What is the difference between an array and a linked list? Provide advantages and disadvantages of each data structure.
3. What is HTTP? How is it different from HTTPS?
4. Can you give some examples of common HTTP response codes?
5. What is the difference between authorization and authentication?
6. How would you explain to a 5-year-old how the WWW works?
7. This is a staircase of size :

Unset

```
#  
##  
###  
####
```

Its base and height are both equal to  $n$ . It is drawn using `#` symbols and spaces. The

last line is not preceded by any spaces. Write a program that prints a staircase of size  $n$ .

8. 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:

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

### Example

s = if man was meant to stay on the ground god would have given us roots.

After removing spaces, the string 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.

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