Telerik Master Academy

Ethereum Developer Master Class - September 2019

Task 1 - FizzBuzz

In this challenge, consider a range of positive integers from `1` to a `limit`. For each value, print either a string or the value based on whether the number is a multiple of `3, 5, both or neither`. Determine the string to return based on the following rules for an integer `i`.

- If `i` is a multiple of both `3` and `5`, print `FizzBuzz`.
- If `i` is a multiple of `3` (but not `5`), print `Fizz`.
- If `i` is a multiple of `5` (but not `3`), print `Buzz`.
- For all others, print the value of `i`.

Expected Output

The function print the appropriate response for each value `i ∈ {1, 2, ... n}` in ascending order, each on a separate line.

Constraints

- **0 < n < 2 x 10^5**

Sample Input

```
10
```

Sample Output

```
1
2
Fizz
4
Buzz
Fizz
7
8
Fizz
Buzz
```

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Task 2 - Braces

You are designing a compiler for a C++ program and need to check that braces in any given file are balanced. Braces in a string are considered to be balanced if the following criteria are met:

- All braces must be closed. Braces come in pairs of the form `()`, `{}` and `[]`. The left brace opens the pair, and the right one closes it.
- In any set of nested braces, the braces between any pair must be closed.

For example, `[{}]` is a valid grouping of braces but `[}]{}` is not.

Expected Output

The function must return an array of strings where the string at each index `i` denotes whether or not the braces were balanced in a values . The array should consist of strings "YES" or "NO" aligned with their indexes in values.

Constraints

- **1 ≤ n ≤ 15**
- **1 ≤ length of values ≤ 100**
- It is guaranteed that each values consists of **(**, **)**, **{**, **}**, **[**, and **]** only

Sample Input

```
3
{[()]}
{[(])}
{{[[(())]]}}
```

Sample Output

```
YES
NO
YES
```

Explanation

- The string `{[()]}` meets both criteria for being a balanced string, so we print YES on a new line.
- The string `{[(])}` is not balanced because the brackets enclosed by the matched pair { and } are not balanced: [(]).
- The string `{{[[(())]]}}` meets both criteria for being a balanced string, so we print YES on a new line.

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Task 3 - Movie Titles

To solve this challenge, you are required to write an HTTP GET method to retrieve information from a movie database.

- https://jsonmock.hackerrank.com/api/movies/search/?Title=harry

Expected Output Given a string `searchTitle`, `getMovieTitles` must perform the following tasks:

- Query `https://jsonmock.hackerrank.com/api/movies/search/?Title=searchTitle` (replace `searchTitle`).
- Initialize the titles array to store total string elements. Store the Title of each movie meeting the search criterion in the titles array.
- Sort titles in ascending order and return it as your answer.

API Description

The query response from the website is a JSON response with the following five fields:

- **page** : The current page.
- **per_page** : The maximum number of results per page.
- **total** : The total number of movies in the search result.
- **total_pages** : The total number of pages which must be queried to get all the results.
- **data** : An array of JSON objects containing movie information where the `Title` field denotes the title of the movie.

```
{
  "Title": "Harry Potter and the Sorcerer's Stone",
  "Year": 2001,
  "imdbID": "tt0241527"
}
```

In order to get all results, you may have to make multiple page requests.

To request a page by number, your query should read `https://jsonmock.hackerrank.com/api/movies/search/?Title=searchTitle&page=pageNumber` , replacing `searchTitle` and `pageNumber`.

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Sample Input

```
spiderman
```

Sample Output

```
Amazing Spiderman Syndrome
Fighting, Flying and Driving: The Stunts of
Spiderman 3
Hollywood's Master Storytellers: Spiderman Live
Italian Spiderman
Spiderman
Spiderman
Spiderman 5
Spiderman and Grandma
Spiderman in Cannes
Superman, Spiderman or Batman
The Amazing Spiderman T4 Premiere Special
The Death of Spiderman
They Call Me Spiderman
```

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Task 4 - Music

Mark likes to listen to music while travelling. His iPod™ contains N songs and he wants to listen to L (not necessarily different) songs during a trip.

So he creates a playlist such that:

- Every song is played at least once.
- A song can be played again only if at least K other songs have been played

Mark wants to know how many different playlists are possible. Can you help Mark determine this number? As the number can be very large, display number modulo `1,000,000,007`, or `(10e9+7)`.

For example, if N = 3, K = 1, and L = 3, there are 6 playlists where all of the songs are played at least once and repeats don't occur before 1 other song has been played:

- [1,2,3], [1,3,2], [2,1,3], [2,3,1], [3,1,2], and [3,2,1].

Expected Output

The function print the appropriate response for each given N, K and L.

Constraints

- **N** lies between **1** and **100**, inclusive.
- **K** lies between **0** and **N**, inclusive.
- **L** lies between **N** and **100**, inclusive.

Sample Input

```
1
0
3
```

Sample Output

```
1
```

Explanation

N = 1, so there is only 1 song in the iPod™. K = 0 so the song can be played as often as you want. L = 3, and the only valid 3-song playlist is:

- {song_1, song_1, song_1}

Sample Input

```
1
1
3
```

Sample Output

```
0
```

Explanation Again, there is only 1 song in the iPod™, but it cannot be played twice in a row because K = 1. No valid playlists can be generated that are longer than 1 which is less than the requested L = 3.