JS Advanced: Retake Exam 5 September 2017

Problems for exam preparation for the "JavaScript Advanced" course @ SoftUni. Submit your solutions in the SoftUni judge system at https://judge.softuni.bg/Contests/756/.

Problem 2. String Builder (Unit Testing)

You are given the following **JavaScript class**:

string-builder.js

```
class StringBuilder {
  constructor(string) {
    if (string !== undefined) {
      StringBuilder._vrfyParam(string);
      this._stringArray = Array.from(string);
    } else {
      this._stringArray = [];
    }
  }

  append(string) {
    StringBuilder._vrfyParam(string);
    for(let i = 0; i < string.length; i++) {
      this._stringArray.push(string[i]);
    }
  }

  prepend(string) {
    StringBuilder._vrfyParam(string);
    for(let i = string.length - 1; i >= 0; i--) {
      this._stringArray.unshift(string[i]);
    }
  }

  insertAt(string, startIndex) {
    StringBuilder._vrfyParam(string);
    this._stringArray.splice(startIndex, 0, ...string);
  }

  remove(startIndex, length) {
    this._stringArray.splice(startIndex, length);
  }

  static _vrfyParam(param) {
    if (typeof param !== 'string') throw new TypeError('Argument must be string');
  }

  toString() {
    return this._stringArray.join('');
  }
}
```

Functionality

The above code defines a **class** that holds **characters** (strings with length 1) in an array. An **instance** of the class should support the following operations:

- Can be **instantiated** with a passed in **string** argument or **without** anything
- Function **`append(string)`** – **converts** the passed in **string** argument to an **array** and adds it to the **end** of the storage
- Function **`prepend(string)`** – **converts** the passed in **string** argument to an **array** and adds it to the **beginning** of the storage
- Function **`insertAt(string, index)`** – **converts** the passed in **string** argument to an **array** and adds it at the **given** index (there is **no** need to check if the index is in range)
- Function **`remove(startIndex, length)`** – **removes** elements from the storage, starting at the given index (**inclusive**), **length** number of characters (there is **no** need to check if the index is in range)
- Function **`toString()`** – **returns** a string with **all** elements joined by an **empty** string
- All passed in **arguments** should be **strings.** If any of them are **not**, **throws** a type **error** with the following message: "**Argument must be a string**"

Examples

This is an example how this code is **intended to be used**:

Sample code usage

`let str = new StringBuilder('hello');`
`str.append(', there');`
`str.prepend('User, ');`
`str.insertAt('woop',5 );`
`console.log(str.toString());`
`str.remove(6, 3);`
`console.log(str.toString());`

Corresponding output
`User,woop hello, there` `User,w hello, there`

Your Task

Using **Mocha** and **Chai** write **JS unit tests** to test the entire functionality of the **`StringBuilder`** class. Make sure it is **correctly defined as a class** and instances of it have all the required functionality. You may use the following code as a template:

```
describe("TODO …", function() {
    it("TODO …", function() {
        // TODO: …
    });
    // TODO: …
});
```

Submission

Submit your tests inside a **`describe()`** statement.