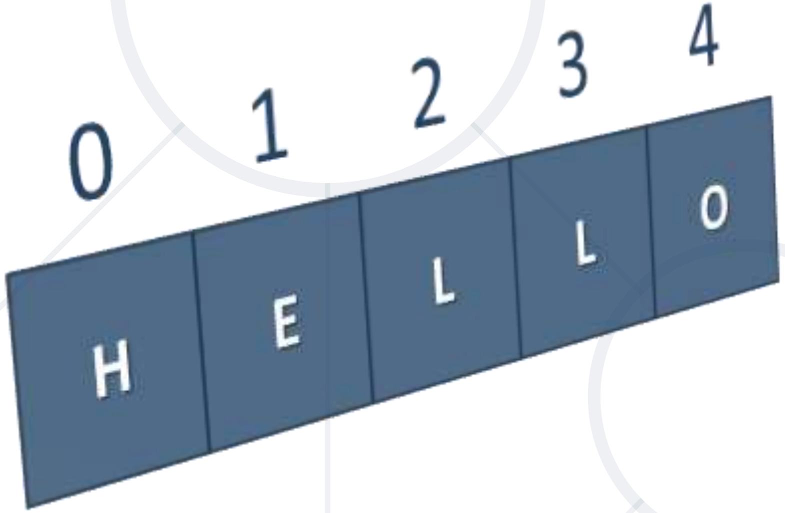
Strings and Text Processing



SoftUni Team

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Software University

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Questions?

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SoftUni Foundation

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Strings

What is String?

What is String?

- Strings are sequences of characters (texts)
- Strings hold a sequence of characters
  - Like arrays, they have **length** (access by index)
- Strings are enclosed in three types of quotes:

```
let str = "Hello"; | let str = 'Hello'; | let str = `Hello`;
```

- Concatenated using the "**+**" operator:

```
let s = "Hello" + " " + "JS";
```

Strings are Immutable

- Strings are **immutable** (read-only) sequences of characters
- Accessible by index

```
let str = "Hello, JS";
let ch = str[2]; //l
ch = str.charAt(2); //l
```

Both declarations are the same

Problem: Print Characters

- Write a function that receives a string and prints all the characters on separate lines

Input	Output
AWord	A W o r d

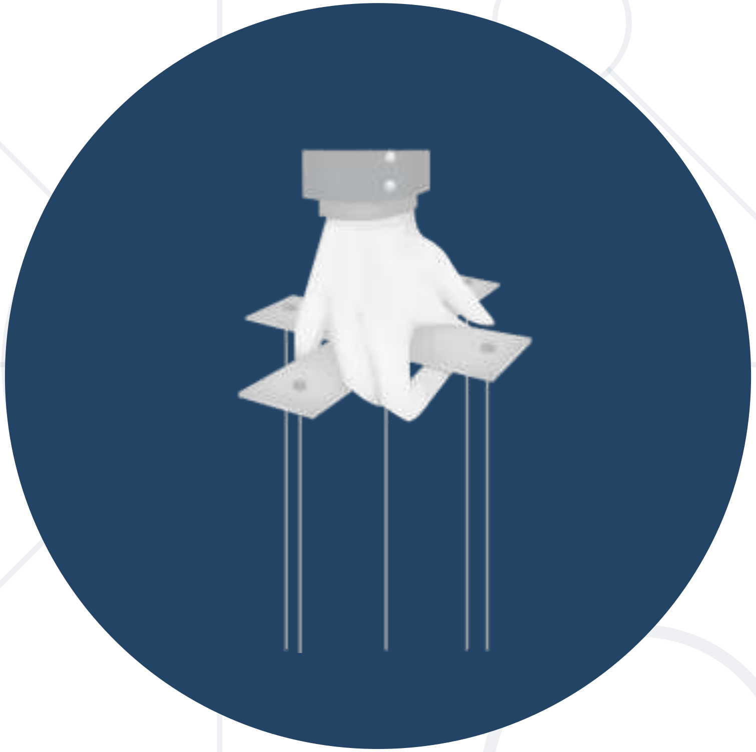
Solution: Print Characters

- Loop through the string and print each character

```
function solve(string) {
    for (let ch of string) {
        console.log(ch);
    }
}
```

- Test the function by calling it

```
solve("AWord");
```



Manipulating Strings

Concatenating

- Use the + or the += operators

```
let text = "Hello" + ", " + "JS!"; //"Hello, JS!"
```

```
let text = "Hello, ";
text += "John";                    //"Hello, John"
```

- Use the concat() method

```
let greet = "Hello, ";
let name = "John";
let result = greet.concat(name);
console.log(result); //"Hello, John"
```

Problem: Concatenation

- Write a function that receives an array of strings and prints a resulting string containing all of them

Input	Output
["First", "Second", "Third"	FirstSecondThird

Solution: Concatenation

- Loop through the array and add each element to a resulting string

```
function solve(arr) {
    let result = '';
    for (let word of arr) {
        //TODO: concatenate
    }
    console.log(result);
}
```

Searching for Substrings

- **Index of**:

```
let str = "I am JavaScript developer";
console.log(str.indexOf("Java")); // 5
console.log(str.indexOf("java")); // -1
```

- **Last index of:**

```
let str = "Intro to programming";
let last = str.lastIndexOf("o");
console.log(last); // 11
```

Extracting Substrings

- **Substr**:

```
let str = "I am JavaScript developer";
let sub = str.substr(5, 10);
console.log(sub); // JavaScript
```

Receives **start index** and **count**

- **Substring**:

```
let str = "I am JavaScript developer";
let sub = str.substring(5, 10);
console.log(sub); // JavaS
```

Receives **start index** and **end index** (exclusive)

Problem: Substring

- Write a function that receives a string and two numbers. The numbers will be a starting index and count of elements to substring

Input	Output
ASentance 1 8	Sentnace

Solution: Substring

- Create a new string that takes the needed amount of elements from the given string

```
function solve(string, startIndex, count) {
    let result = //TODO
    console.log(result)
}
```

String Operations (2)

- **Split**:

```
let text = "I love fruits";
let words = text.split(' ');
console.log(words); // ['I', 'love', 'fruits']
```

- **Includes**:

```
let text = "I love fruits.";
console.log(text.includes("fruits")); //True
console.log(text.includes("banana")); //False
```

String Operations (3)

- **Replace** – replaces first occurrence
  - The result is a new **string**

```
let text = "Hello, john@softuni.bg, you have been using
john@softuni.bg in your registration.";
    let replacedText = text.replace(".bg", ".com");
    console.log(replacedText);
//Output:
//Hello, john@softuni.com, you have been using
john@softuni.bg in your registration.
```

Problem: Censored Words

- Write a function that receives a text and a word. Find all occurrences of that word in the text and replace them with the corresponding amount of '*'

Input

`A small sentence with some words`
`small`

Output
`A ***** sentence with some words`

Solution: Censored Words

- Save the new text in a new variable

```
function solve(text, word) {
    let censored = text.replace(word, repeat(word));
    while (censored.includes(word)) {
        censored = censored
            .replace(word, repeat(word));
    }
    //TODO: create the repeat function
}
```

- The repeat function should take the length of the word and return that amount of stars '*'

Additional Functions

Checking, Padding, Removing Spaces

Starts with/Ends with

- Use **startsWith()** to determine whether a string **begins** with the characters of a specified substring

```
let text = "My name is John";
console.log(text.startsWith('My')); // true
```

- Use **endsWith()** to determine whether a string **ends** with the characters of a specified substring

```
let text = "My name is John";
console.log(text.endsWith('John')); // true
```

Padding at the Start and End

- Use **padStart()** to add to the current string **another substring** at the **start** until a **length** is reached

Receives **length** and **substring**

```
let bitAsStr = "010";
console.log(text.padStart(8, '0')); // 00000010
```

- Use **padEnd()** to add to the current string **another substring** at the **end** until a **length** is reached

```
let sentence = "He passed away";
console.log(text.padEnd(20, '.'));
// He passed away......
```

Trimming Strings

- Use **trim()** method to remove **whitespaces** (spaces, tabs, no-break space, etc.) from **both ends** of a string

```
let text = "   Annoying spaces       ";
console.log(text.trim()); // "Annoying spaces"
```

- Use **trimStart()** or **trimEnd()** to remove whitespaces **only** at the beginning or at the end

```
let text = "   Annoying spaces       ";
text = text.trimStart(); text = text.trimEnd();
console.log(text); // "Annoying spaces"
```

Repeating Strings

- Use **repeat()** to construct and return a **new string** which contains the **specified number** of copies of the string on which it was called

```
let n = 3;
for(let i = 1; i <= n; i++) {
  console.log('*'.repeat(i));
}
```

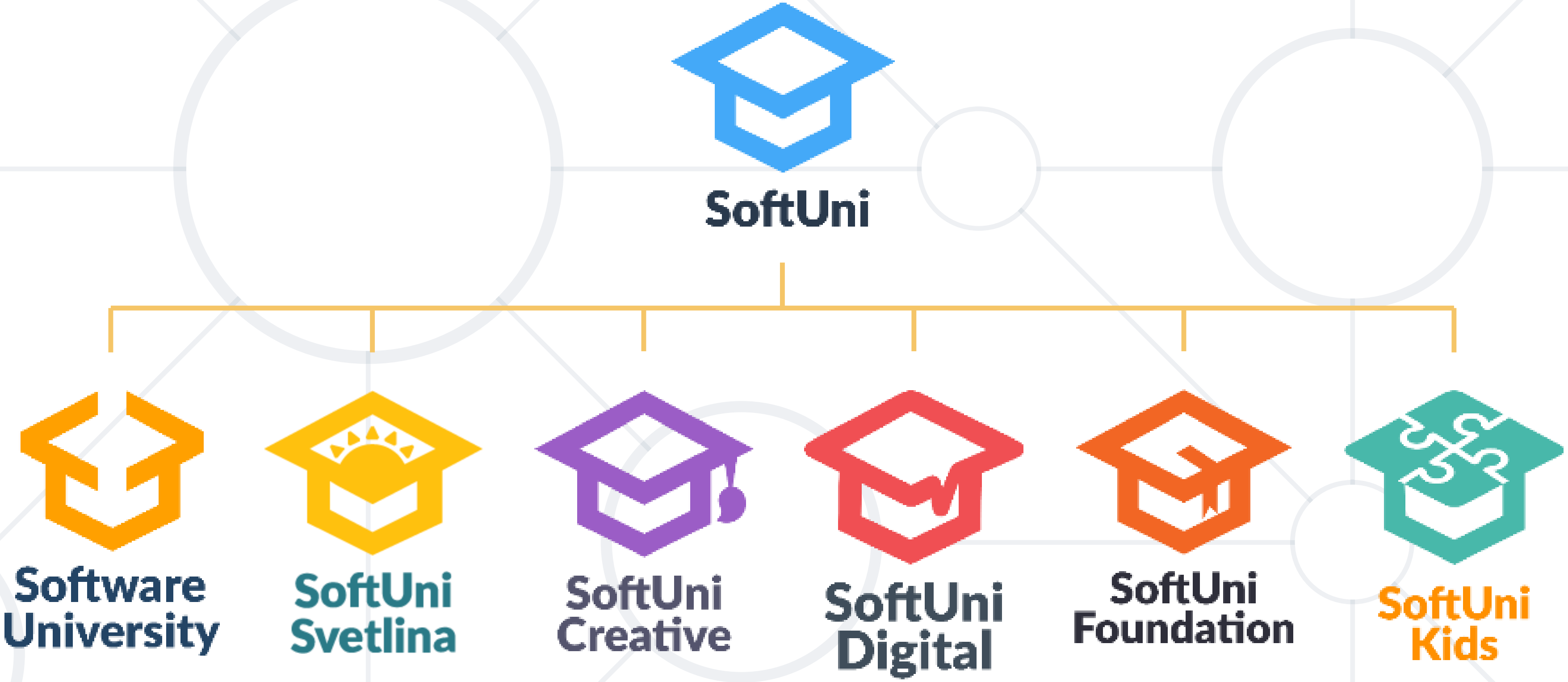
```
// *
// **
// ***
```

Live Exercises

Summary

- Strings are **immutable** sequences of Unicode characters
- String processing methods
  - concat()
  - indexOf()
  - includes()
  - substring()

Questions?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