Lab: Functions and Logic Flow

Problems for in-class lab for the "JavaScript Fundamentals" course @ SoftUni.
Submit your solutions in the SoftUni judge system at https://judge.softuni.bg/Contests/1449

1. Multiplication Table

Write a JS function that takes **two integers** as an input.

- **The first parameter** will be the **starting number** that needs to be **multiplied**.
- **The second parameter** will be the **multiplier**.

Your task is to create a **multiplication table** based on the **numbers you have received**. **Note** that if the **first number is bigger than the second** one, you have to **print** the following message:

```
"Try with other numbers."
```

Otherwise, you have to **print the multiplication table** in the following format:

```
{num1} * {num2} = {result}
```

For more information, see the examples below:

Example

Input	Output
2, 9	2 * 9 = 18 3 * 9 = 27 4 * 9 = 36 5 * 9 = 45 6 * 9 = 54 7 * 9 = 63 8 * 9 = 72 9 * 9 = 81
Input	**Output**
8, 3	Try with other numbers.

Hints

First, we need to take the two values and parse them into numbers:

```
function solve() {
  let numberToBeMultiplied = Number(document.getElementById("num1").value);
  let multiplier = Number(document.getElementById("num2").value);


}
```

Next, we have to take the result div in order to give it a value later.

```
function solve() {
  let numberToBeMultiplied = Number(document.getElementById("num1").value);
  let multiplier = Number(document.getElementById("num2").value);

  let divResult = document.getElementById('result');

}
```

Now let us implement the function that checks if the inputs are correct:

```
function solve() {
  let numberToBeMultiplied = Number(document.getElementById("num1").value);
  let multiplier = Number(document.getElementById("num2").value);

  let divResult = document.getElementById('result');

  function findWrongInput(numberToBeMultiplied, multiplier) {
    if (numberToBeMultiplied > multiplier) {
      document.getElementById("result").innerHTML = "Try with other numbers.";
    }
  }
}
```

Now, we are going to write the function that produces the result.

```
function solve() {
  let numberToBeMultiplied = Number(document.getElementById("num1").value);
  let multiplier = Number(document.getElementById("num2").value);

  let divResult = document.getElementById('result');

  function findWrongInput(numberToBeMultiplied, multiplier) {
    if (numberToBeMultiplied > multiplier) {
      document.getElementById("result").innerHTML = "Try with other numbers.";
    }
  }

  function printTable(numberToBeMultiplied, multiplier) {

    for (let i = numberToBeMultiplied; i <= multiplier; i++) {
      let result = multiplier * i;
      let p = document.createElement('p');
      p.innerHTML = `${i} * ${multiplier} = ${result}`;
      divResult.appendChild(p);
    }

  }
}
```

And finally, we make sure that the result div is empty, then we call that functions that checks for errors, and the function that calculates the result

```
  divResult.innerHTML = '';

  findWrongInput(numberToBeMultiplied, multiplier);
  printTable(numberToBeMultiplied, multiplier);
```

2. Temperature Converter

Write a JS function that receives **two arguments** as an input.

- **The first parameter** will be the **degrees** that need to be converted.
- **The second parameter** will be either **Fahrenheit** or **Celsius** (**case-insensitive**). Every other type of input is considered **invalid** and the following message should be printed: **`"Error!"`**

The **output** should consist of **one number** - the **converted** degrees, in case of a **valid** input. Note that you need to **round the degrees to the nearest integer**.

Otherwise, you should just print "**Error!**"

For more information, see the example below:

Example

Input	Output
`79, 'celsius'`	`174`
Input	**Output**
`45, 'Fahrenheit'`	`7`
Input	**Output**
`15, 'gosho'`	`Error!`

Hints

First, let us get all the needed information from the DOM and create some variables we are going to need:

```
function solve() {
  let degrees = Number(document.getElementById("num1").value);
  let type = document.getElementById("type").value;
  let result = '';
  let convertedTemperature = 0;
  let correctType = false;
}
```

Next, we are going to implement a function called convert:

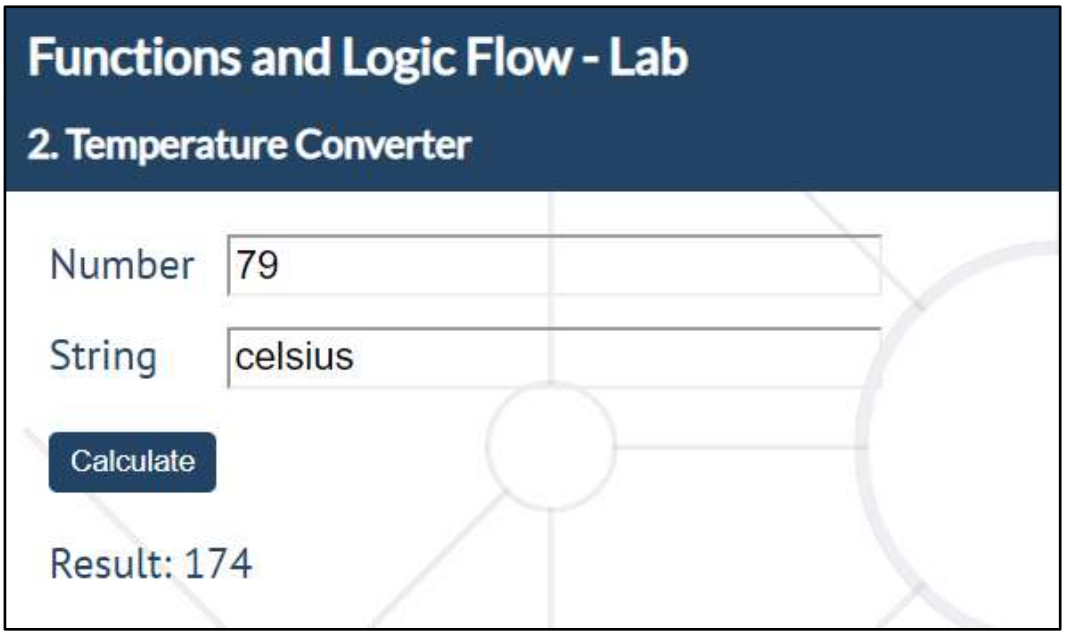
```
function convert(degrees, type) {
  if (type.toLowerCase() === "fahrenheit") {
    convertedTemperature = (((degrees - 32) * 5) / 9);
    correctType = true;

  } else if (type.toLowerCase() === "celsius") {
    convertedTemperature = ((degrees * 9) / 5) + 32;
    correctType = true;
  }
}
```

After that, we are going to need a function that displays the result on the DOM:

```
function print() {
  if (correctType) {
    result = Math.round(convertedTemperature);
  } else {
    result = "Error!";
  }
}
```

Finally, we have to call that functions and display the result:

```
convert(degrees, type);
print(degrees, type);
document.getElementById("result").innerHTML = result;
```



3. Count Occurrences of a Given Character

Write a JS function that takes **two parameters** as an input.

- **The first parameter** will be a **string**.
- **The second parameter** will be a **character**.

Your task is to find **each occurrence** of the **character** in the string and **print** if the **total count** is **even** or **odd** in the following format:

`Count of ${char} is even/odd.`

There will **always** be **at least one** char **occurrence** in the string.

For more information, see the examples below:

Example

Input	Output
`'HoHoHoHo Merry Crisis', 'H'`	`Count of H is even.`
Input	**Output**
`'Is this real life?', 'f'`	`Count of f is odd.`

Hints

We start by taking all the elements from the DOM that we are going to need and we create some variables we are going to use later:

```
function solve() {
  let string = document.getElementById("string").value;
  let char = document.getElementById("character").value;
  let count = 0;
  let result = '';
}
```

After that, we create the function that will find the count of the occurrences

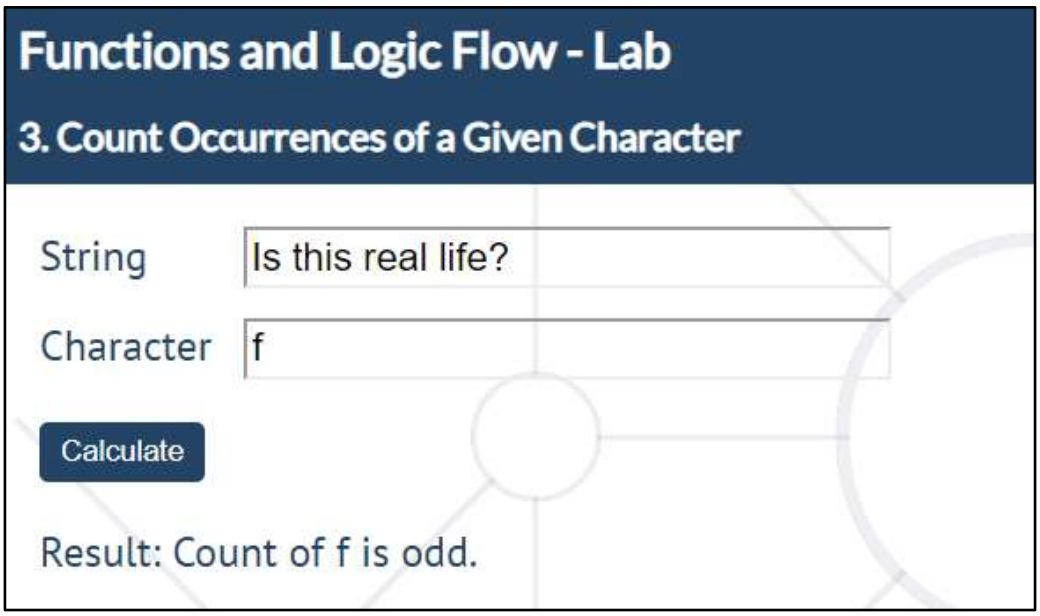
```
function solve() {
  let string = document.getElementById("string").value;
  let char = document.getElementById("character").value;
  let count = 0;
  let result = '';

  function findCharacterCount(string, char) {
    for (let i = 0; i < string.length; i++) {
      if (string[i] === char) {
        count++;
      }
    }
  }
}
```

Then the function that will determinate whether that count is even or odd:

```
function solve() {
  let string = document.getElementById("string").value;
  let char = document.getElementById("character").value;
  let count = 0;
  let result = '';

  function findCharacterCount(string, char) {
    for (let i = 0; i < string.length; i++) {
      if (string[i] === char) {
        count++;
      }
    }
  }

  function evenOrOddCount(string, char) {
    if (count % 2 === 0) {
      result = `Count of ${char} is even.`;
    } else {
      result = `Count of ${char} is odd.`;
    }
  }
}
```

Finally, we call those functions and set the result:

```
findCharacterCount(string, char);
evenOrOddCount(string, char);
document.getElementById("result").innerHTML = result;
```



4. Unique Characters

Write a JS function that takes **one string parameter** as an input.

Your task is to **extract** only the **unique characters** from the string **except for whitespaces**.

For more information, see the examples below:

Example

Input	Output
'Doggos are FunnNn'	Dogs are FunN
Input	**Output**
'This is a random Sentence'	This a rndom Setc

Hints

First, we create a string uniqueChars, which will hold all of the unique characters that we find and we get the string by its id:

```
function solve() {
  let uniqueChars = "";
  let string = document.getElementById("string").value;
}
```

After that, we implement a function that checks whether a given character is white space:

```
function solve() {
  let uniqueChars = "";
  let string = document.getElementById("string").value;

  function isCharWhiteSpace(i) {
    if (string[i] === " ") {
      uniqueChars += string[i];
    }
  }
```

And a function that checks if a given character is unique:

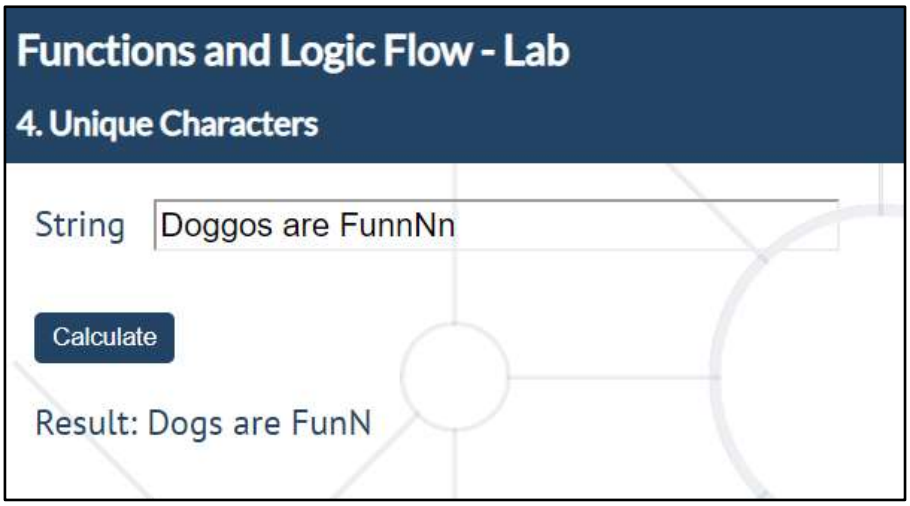
```
  function isCurrentCharUnique(i) {
    if (uniqueChars.indexOf(string[i]) === -1) {
      uniqueChars += string[i];
    }
  }
```

Then we use another function that uses both of them:

```
function findUniqueChars(string) {
  for (let i = 0; i < string.length; i++) {
    isCharWhiteSpace(i);
    isCurrentCharUnique(i);
  }
}
```

And finally, we call that function and set the result:

```
findUniqueChars(string);
document.getElementById("result").innerHTML = uniqueChars;
```



5. Special Words

Write a JS function that receives **five parameters** as an input.

- The **first and the second parameter** will be **integers**.
- The **third, fourth and fifth** will be **strings**.

Your task is to **iterate from the first parameter to the second** one.

- For **numbers** which are **multiples** of **both three and five**, print **all three strings separated by a space**.
- For **multiples only of three**, print the **second string** (the **fourth** input **parameter**).
- For **multiples only of five**, print the **third string** (the **fifth** input **parameter**).

For more information, see the examples below:

Example

Input	Output

`9, 15, "doggo", "pesho", "test"`	`9 pesho`
	`10 test`
	`11`
	`12 pesho`
	`13`
	`14`
	`15 doggo-pesho-test`

Hints

First, we need to get all of the input fields:

```
function solve() {
  let startNum = Number(document.getElementById("firstNumber").value);
  let endNum = Number(document.getElementById("secondNumber").value);
  let firstWord = document.getElementById("firstString").value;
  let secondWord = document.getElementById("secondString").value;
  let thirdWord = document.getElementById("thirdString").value;
  let divResult = document.getElementById("result");
}
```

Then, let us write a function that will take an element and will make some checks:

```
function checkCurrentNumber(i) {
  if (i % 3 === 0 && i % 5 === 0) {
    let p = document.createElement('p');
    p.innerHTML = `${i} ${firstWord}-${secondWord}-${thirdWord}`;
    divResult.appendChild(p);
  } else if (i % 3 === 0) {
    let p = document.createElement('p');
    p.innerHTML = `${i} ${secondWord}`;
    divResult.appendChild(p);
  } else if (i % 5 === 0) {
    let p = document.createElement('p');
    p.innerHTML = `${i} ${thirdWord}`;
    divResult.appendChild(p);
  } else {
    let p = document.createElement('p');
    p.innerHTML = i;
    divResult.appendChild(p);

  }
}
```

Since the function checks a single number, we have to loop through each digit and call the function with that digit:

```
for (let i = startNum; i <= endNum; i++) {
  checkCurrentNumber(i);
}
```