JavaScript
Intro for Web Development
Lab 3

1 Objects

1.1 Basics

File to use: `objects-basic.js`

Objects are complex data types that allow us to group together related basic data types.
In JavaScript, an object is an unordered collection of key-value pairs. Each key-value pair is called a property. The key of a property is usually a string type, while its value can be of any type: a string, a number, an array, a function or even another object. The most common approach to create an object in JavaScript is through object literal notation.

1.2 Methods

File to use: `object-methods-basic.js`
Exercise: `objects-question.js`
Answer: `objects-answer.js`

When a function is a property of an object, we call that function a method. The method can be invoked in exactly the same way as a normal, standalone object.

1.3 Destructuring syntax

File to use: `destructuring-objects.js`

ES6 provides a simplified syntax known as destructuring to help extract properties from an object directly and also when passing an object as a parameter to a function.

1.4 Spread operator syntax

File to use: `spread-operator-objects.js`

ES6 provides a simplified syntax known as spread operator that help to extract properties from an object, clone an object (with or without a new property added) and also merge two or more objects together.

2 Arrays

2.1 Basics

File to use: `arrays-basic.js`

Arrays are a collection of values. Each value is called an element of the array and is located at a specific position called an index. The index numbering for arrays start from 0. So, the 1st element of the array is stored at index 0, the 2nd element of the array is stored at index 1, and so on.

A JavaScript array has the following characteristics:

- An array can hold values of mixed types. For example, you can have an array that stores elements with the types number, string, and boolean.
- The size of an array is dynamic. You don't need to specify the array size upfront.

We can use a normal for loop to iterate through the contents of an array, or we can use the ES6 feature of for..of loop

2.2 Array operations

File to use: `array-operations.js`

Arrays are objects that have a variety of methods that allow us to perform useful operations on the elements contained in them. One of the most useful methods is the splice method that allows us to delete existing elements, insert new elements, and replace elements in an array

2.3 Higher order Array methods

File to use: `array-higher-order.js`

There are a variety of higher order array methods which accept another function as their parameter. The most widely used ones are map and filter.

2.4 Destructuring syntax

File to use: `destructuring-arrays.js`

ES6 provides a simplified syntax known as destructuring to help extract values from an array directly or when it is returned from a function

2.5 Spread operator syntax

File to use: `spread-operator-arrays.js`

ES6 provides a simplified syntax known as spread operator that help to extract items from an array directly, clone an array, combine two or more arrays together, receive multiple arguments in a function as a single array, etc.

3 Working with strings

File to use: `string-operations.js`
Exercise: `string-question.js`
Exercise: `string-answer.js`

A String is essentially an array of characters and we can access the individual characters using basic array notation.
The ES6 string template allows us to work with strings in a more flexible way.
In JavaScript, a string is an object which provides a variety of methods for us to do operations on the string.