Day 1 Exercises

Exercise 0

Time: 5mins.

Write a function that takes the base and height of a triangle and `return` its area.

Using the function to write the result into the console.

Use https://es6console.com/ to run your code.

Answer:

```
function triArea(base, height) {
      return ((base*height)/2);
}

console.log("base: 3, height:8 Area="+ triArea(3,8));
```

Exercise 1

Time 5 mins.

Create a function that takes an array containing only numbers and return the second element. Return NaN (Not a Number) if the array has less than two elements.

Answer:

```
function getSecondValue(arr) {
  if(arr.length > 1){
      return arr[1];
  }else{
    return NaN;
  }
}

console.log(getSecondValue([9,4,2]));
```

Exercise 2

Time 15 minutes

Write an HTML page with 2 text fields and two buttons, when pressing one of the buttons show the result of the multiplication and when ressing the other show the result of the division of both numbers.

Answer:

```
<!DOCTYPE html>
<html>
<head>
<meta charset=utf-8 />
<title>JavaScript program to calculate multiplication and division of two numbers
</title>
<script>
function multiplyBy()
{
        num1 = document.getElementById("firstNumber").value;
        num2 = document.getElementById("secondNumber").value;
        document.getElementById("result").innerHTML = num1 * num2;
}

function divideBy()
{
        num1 = document.getElementById("firstNumber").value;
        num2 = document.getElementById("secondNumber").value;
document.getElementById("result").innerHTML = num1 / num2;
}


</script>
</head>
<body>
<form>
1st Number : <input type="text" id="firstNumber" /><br>
2nd Number: <input type="text" id="secondNumber" /><br>
<input type="button" onClick="multiplyBy()" Value="Multiply" />
<input type="button" onClick="divideBy()" Value="Divide" />
</form>
<p>The Result is : <br>
<span id = "result"></span>
</p>
</body>
</html>
```

Exercise 3

Time 30 minuts

Install a web server in your computer (forApache webserver go to: http://httpd.apache.org,download the server and follow the installation instructions). There is no official distribution for Windows, so you must select one alternate.

https://www.apachehaus.com/cgi-bin/download.plx is a place to have the windows version. If you want an alternative webserver try using the Internet Information Server that is part of the Windows Operating System or download NGINX (http://nginx.org/en/docs/windows.html).

You will see what a Promise is later on, what's is important on this exercise is to set the promisse function and link it to a DOM component.

Create a Promise HMTL file called Promise_HTML.html, with a button and that loads a ES6 code file.

The ES6 will have a Promise function that will get a “message” from an JSON file and will return the value of the message on a succesful call.

To get all running from your webserver put the files on a FSDW subdirectory inside on the “webroot” directory of your webserver.

Answer:

HTML file:

```
<!DOCTYPE html>

<html>
<head>
    <meta charset="utf-8">
    <title>JavaScript Promise Exercise</title>
</head>
<body>
    <div id="container">
        <div id="message"></div>
        <button id="btnGet">Get Message</button>
    </div>
    <script src="promise-excercise.js">
    </script>
</body>
</html>
```

ES6 file

```
//Modify this line if you are not running the exercise from other than localhost
const url = 'http://localhost/FSDW/api.json';
const btn = document.querySelector('#btnGet');
const msg = document.querySelector('#message');

function load(URL) {
  return new Promise(function (resolve, reject) {
    const request = new XMLHttpRequest();
    request.onload = function () {
      if (this.status == 200) {
        resolve(this.response);
      } else {
        reject(this.status);
      }
    };
    request.open('GET', URL, true);
    request.send();
  });
}


btn.addEventListener('click', () => {
  load(url)
    .then((data) => {
      console.log("data received" + data);
      const result = JSON.parse(data);
      msg.innerHTML = result.name;
```

```
    })
    .catch((error) => {
      console.log( `Error getting the message, HTTP status: ${error}`);
    });
});
```

JSON file (api.json)

```
{
  "name":"json test"
}
```

Notes to the exercise

AJAX stands for “Asynchronous JavaScript and XML” and is a Microsoft developed JavaScript Object that allows to do asynchronous calls, it has different methods and properties. This objects creates requests that changes with the status of it.

Be sure you use the onload listener of the AJAX request and not the request status change.

Some browsers will cache the api.json document, so if you change it please be sure to reload it using the browser to have the expected result.

Exercise 4

Time 10 minutes

If you use http://picsum.photos/200/300 you will get a random image every time you call the URL.

Create a page that will load an image every time a button is pressed.

Note: The image will not reload unless the URL is different from the actual URL.

Answer:

```
<!DOCTYPE html>
<html>
<head>
    <meta charset="utf-8">
    <title>JavaScript Promise Excersice</title>

</head>
<body>
    <div id="container">
        <div id="ImageContainer">
           <img id="renew"/>
        </div>
        <button id="btnRenew">RenewImage</button>
    </div>
    <script>
    const btn = document.querySelector('#btnRenew');

    btn.addEventListener('click', loadNewImage);
    function loadNewImage(){
    dt = new Date();
        let src="http://picsum.photos/200/300" ;
```

```
        var images = document.getElementById('renew');
                images.src = src + "?" + dt.getTime();
                //javascript:alert(document.lastModified);
    }
    </script>
</body>
</html>
```

Exercise 5

Time: 5 minuts

Write an HTML with a function that updates the name of the user according with the input text fields of name and lastName.

Note: Put the Script AFTER the input boxes.

Answer:

```
<html>
  <head>
    <title></title>
    <meta content="">
    <style></style>
  </head>
  <body>
    <h1>Your full Name</h1>
    <table>
      <tr>
        <td>Name:</td>
        <td><input type="text" name="name" id="name"/></td>
      </tr>
      <tr>
        <td>Last Name:</td>
        <td><input type="text" name="lastName" id="lastName"/></td>
      </tr>
      <tr>
        <td>FullName:</td>
        <td><p id="result"></p></td>
      </tr>
```

```
    </table>
    <script type="text/javascript">
    const nameSource = document.getElementById('name');
      const lastNameSource = document.getElementById('lastName');
      const result = document.getElementById('result');

      const inputHandler = function(e) {
             result.innerHTML = nameSource.value + " " + lastNameSource.value;
      }
      nameSource.addEventListener('input', inputHandler);
      lastNameSource.addEventListener('input', inputHandler);
    </script>
  </body>
</html>
```

Exercise 6

Time: 10 mins.

Create a program that puts on the console the current day and time in a 12 hour format, indicating if it's AM, PM, noon or midnight.

Answer:

```
const today = new Date();
  const day = today.getDay();
  const daylist = ["Sunday","Monday","Tuesday","Wednesday
","Thursday","Friday","Saturday"];
  console.log(`Today is : ${daylist[day]}.`);
  let hour = today.getHours();
  const minute = today.getMinutes();
  const second = today.getSeconds();
  let prepand = (hour >= 12)? " PM ":" AM ";
  hour = (hour >= 12)? hour - 12: hour;
  if (hour===0 && prepand===' PM ')
  {
  if (minute===0 && second===0)
  {
  hour=12;
  prepand=' Noon';
  }
  else
  {
  hour=12;
  prepand=' PM';
  }
```

```
  }
  if (hour===0 && prepand===' AM ')
  {
  if (minute===0 && second===0)
  {
  hour=12;
  prepand=' Midnight';
  }
  else
  {
  hour=12;
  prepand=' AM';
  }
  }
console.log(`Current Time : ${hour}${prepand} : ${minute} : ${second}`);
```

Exercise 7

Time 5 minutes

In a web page print details about the navigator such as:

- The code application of the navigator
- The App name
- Te version of the navigator
- The platform
- The user agent
- Any other property.

Answer:

```
<!doctype html>
        <head>
                <title>JS Navigator Object Properties</title>
        </head>
        <body>
                <h3>Navigator Object Example</h3>

        <script>
            let appc =  navigator.appCodeName;
            let appn =  navigator.appName;
            let appv =  navigator.appVersion;
            let appco = navigator.cookieEnabled;
            let lan   = navigator.language;
            let onl = navigator.onLine;
            let pla = navigator.platform;
            let usra = navigator.userAgent;

            document.write(appc +"<br>");
            document.write(appn +"<br>");
            document.write(appv +"<br>");
            document.write(appco +"<br>");
            document.write(lan +"<br>");
```

```
            document.write(onl +"<br>");
            document.write(pla +"<br>");
            document.write(usra +"<br>");
        </script>

        </body>
</html>
```

Exercise 8

Time 10 mins.

Write a program to find all mondays for January 1st. Between the year 2000 and 2030.

Answer:

```
console.log('--------------------');
for (var year = 2000; year <= 2030; year++)
    {
    var d = new Date(year, 0, 1);
    if ( d.getDay() === 1 )
        console.log("1st January is being a Monday  " + year);
    }
console.log('--------------------');
```

Exercise 9

Time: 20 mins

Create a simple page with several paragraphs.

Put a button that changes the color of the paragraphs to red. (extra can be making an other button to set the paragraph background to yellow)

Answer:

```
<!DOCTYPE html>

<html>

<body>


<h2>JavaScript HTML DOM</h2>


<p>Hello World!</p>


<p>Hello Norway!</p>
```

```
<p>Click the button to change the color of all p elements.</p>

<button onclick="myFunction()">Try it</button>

<script>
function myFunction() {
  const myCollection = document.getElementsByTagName("p");
  for (let i = 0; i < myCollection.length; i++) {
    myCollection[i].style.color = "red";
  }
}
</script>

</body>
</html>
```

Exercise 10

Time 10 Minuts

Create a webpage with a button.

When pressed the button should open a new window (or tab) with the google maps on current location.

Exercise 11

Time 5 minutes for short answer, 45-60 for long-complete answer

Each resistor has a resistance value. Resistors are small - so small in fact that if you printed the resistance value on them, it would be hard to read.

To get around this problem, manufacturers print color-coded bands onto the resistors to denote their resistance values. Each band has a position and a numeric value.

The first 2 bands of a resistor have a simple encoding scheme: each color maps to a single number. For example, if they printed a brown band (value 1) followed by a green band (value 5), it would translate to the number 15.

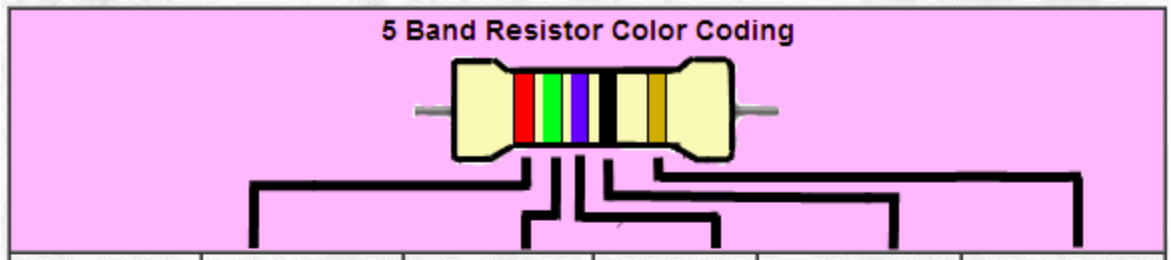
In this exercise you are going to create a helpful program so that you don't have to remember the values of the bands. The program will take color names as input and output a two digit number, even if the input is more than two colors!

The band colors are encoded as follows:

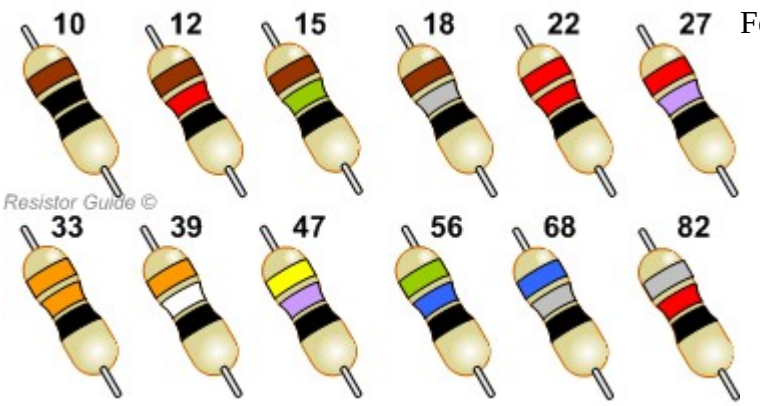
- Black: 0
- Brown: 1
- Red: 2
- Orange: 3
- Yellow: 4
- Green: 5
- Blue: 6
- Violet: 7
- Grey: 8
- White: 9

From the example above: brown-green should return 15 brown-green-violet should return 15 too, ignoring the third color.

Other codes are based on four bands and 5 bands standards



COLOR	1ST BAND	2ND BAND	3RD BAND	MULTIPLIER	TOLERANCE
BLACK	0	0	0	x1Ω	
BROWN	1	1	1	x10Ω	±1%
RED	2	2	2	x100Ω	±2%
ORANGE	3	3	3	x1000Ω	
YELLOW	4	4	4	x10000Ω	
GREEN	5	5	5	x100000Ω	±0.5%
BLUE	6	6	6	x1000000Ω	±0.25
VIOLET	7	7	7	x10000000Ω	±0.10
GREY	8	8	8		±0.05
WHITE	9	9	9		
GOLD					±5%
SILVER					±10%



For example:

Notes

The provided input will be an array of color names and the output should be a number.

Answer (short)

Just create a JavaScript (ES6+) function to calculate the value and set the result in the console (without any user interface).

```
export const decodedValue = (c) => {
  const x = COLORS.indexOf(c[0]);
  const y = COLORS.indexOf(c[1]);
   return parseInt( x + '' + y)
};

export const COLORS = [
  'black',
  'brown',
  'red',
  'orange',
  'yellow',
  'green',
  'blue',
  'violet',
  'grey',
  'white',
];
```

Long answer:

Create an HTML page with selectors to choose the colors of the band, when changing the selectors values the javascript function should update the resistance value.

```
<!DOCTYPE html>
<head>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/css/bootstrap.min.css">
    <script
src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js"></script>
    <script
src="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/js/bootstrap.min.js"></script>
</head>
<style>
    select option {
        margin: 40px;
        color: #fff;
    }

    select option[value="0"] {
        background: Black;
    }
    select option[value="1"] {
        background: brown;
```

```
    }
    select option[value="2"] {
        background:red;
    }
    select option[value="3"] {
        background:orange;
    }
    select option[value="4"] {
        color:black;
        background: yellow;
    }
    select option[value="5"] {
        background: green;
    }
    select option[value="6"] {
        background:blue;
    }
    select option[value="7"] {
        background:violet;
    }
    select option[value="8"] {
        background: grey;
        color:black;
    }
    select option[value="9"] {
        color:black;
        background: white;
    }
    select option[value="10"] {
        background:gold;
        color:black;
    }
    select option[value="11"] {
        background:silver;
        color:black;
    }

</style>
<body>
    <div class="container">
        <br><br>
        <h3>Resistor Color Calculator</h3>
        <div class="container">
            <input type="radio" id="four" name="grp" checked
onchange="check()">Four Band
            <input type="radio" id="five" name="grp" onchange="check()">Five Band
        </div>
        <br>
        <div class="container">
            <label for="sel1">Select 1st Band</label>
            <select id="sel1" onchange="change_color1(this);">
                <option>--</option>
                <option value=0>Black</option>
                <option value=1>Brown</option>
                <option value=2>Red</option>
                <option value=3>Orange</option>
                <option value=4>Yellow</option>
                <option value=5>Green</option>
                <option value=6>Blue</option>
```

```
        <option value=7>Violet</option>
        <option value=8>Grey</option>
        <option value=9>White</option>
  <!--      <option value=10>Gold</option>
        <option value=11>Silver</option>  -->
    </select>
</div>

<div class="container">
    <label for="sel2">Select 2nd Band</label>
    <select id="sel2" onchange="change_color2(this);">
        <option>--</option>
        <option value=0>Black</option>
        <option value=1>Brown</option>
        <option value=2>Red</option>
        <option value=3>Orange</option>
        <option value=4>Yellow</option>
        <option value=5>Green</option>
        <option value=6>Blue</option>
        <option value=7>Violet</option>
        <option value=8>Grey</option>
         <option value=9>White</option>
     <!--   <option value=10>Gold</option>
        <option value=11>Silver</option>  -->
    </select>

</div>

<div class="container">
    <label for="sel5">Select 3rd band</label>
    <select id="sel5" onchange="change_color5(this);" disabled>
        <option>--</option>
        <option value=0>Black</option>
        <option value=1>Brown</option>
        <option value=2>Red</option>
        <option value=3>Orange</option>
        <option value=4>Yellow</option>
        <option value=5>Green</option>
        <option value=6>Blue</option>
        <option value=7>Violet</option>
        <option value=8>Grey</option>
        <option value=9>White</option>
<!--        <option value=10>Gold</option>
        <option value=11>Silver</option>  -->
    </select>

</div>

<div class="container">
    <label for="sel3">Select Multiplier</label>
    <select id="sel3" onchange="change_color3(this);">
        <option>--</option>
        <option value=0>Black</option>
        <option value=1>Brown</option>
        <option value=2>Red</option>
        <option value=3>Orange</option>
        <option value=4>Yellow</option>
        <option value=5>Green</option>
        <option value=6>Blue</option>
```

```
                <option value=7>Violet</option>
                <option value=8>Grey</option>
                <option value=9>White</option>
                <option value=10>Gold</option>
                <option value=11>Silver</option>
            </select>

        </div>


        <div class="container">
            <label for="sel4">Select Tolerance</label>
            <select id="sel4" onchange="change_color4(this);">
                <option>--</option>
                <option value=10>Gold</option>
                <option value=11>Silver</option>
            </select>
        </div>
        <br>
        <button onclick="calculate()">Calculate</button>
        <button onclick="reset()">Reset</button>
    <p id="ans"></p>
</div>
</body>
<script>
    function check(){
        if(document.getElementById("four").checked)
            document.getElementById("sel5").disabled=true;
        if(document.getElementById("five").checked)
            document.getElementById("sel5").disabled=false;
    }

    //http://jsfiddle.net/ozsxj2th/
    function change_color1(select) {

document.getElementById("sel1").style.backgroundColor=select.options[select.selecte
dIndex].textContent;
    }
    function change_color2(select) {

document.getElementById("sel2").style.backgroundColor=select.options[select.selecte
dIndex].textContent;
    }
    function change_color3(select) {

document.getElementById("sel3").style.backgroundColor=select.options[select.selecte
dIndex].textContent;
    }
    function change_color4(select) {

document.getElementById("sel4").style.backgroundColor=select.options[select.selecte
dIndex].textContent;
    }
    function change_color5(select) {

document.getElementById("sel5").style.backgroundColor=select.options[select.selecte
dIndex].textContent;
    }
```

```
    function calculate(){
        var num,tol,mul;
        if(document.getElementById("four").checked)
            num=parseInt(document.getElementById("sel1").value.toString()
+document.getElementById("sel2").value.toString());
        if(document.getElementById("five").checked)
            num=parseInt(document.getElementById("sel1").value.toString()
+document.getElementById("sel2").value.toString()
+document.getElementById("sel5").value.toString());

        if(document.getElementById("sel4").value=="10")
            tol=10;
        if(document.getElementById("sel4").value=="11")
            tol=5;

        var tempMul = parseInt(document.getElementById("sel3").value);
        if (tempMul == 10)
               mul = 0.1;
        else if (tempMul == 11)
               mul = 0.01;
        else
               mul=Math.pow(10,tempMul);

        //console.log(num*mul*(1+tol/100));
        document.getElementById("ans").innerHTML="Required resistance is
<b>"+num*mul+" ohms = "+abbrNum(num*mul,2).toString()+" ohms</b>.<br>Considering
tolerance values it may vary from "+Math.round(num*mul*(1-tol/100))+" -
"+Math.round(num*mul*(1+tol/100))+" ohms.";
    }

    //https://stackoverflow.com/questions/2692323/code-golf-friendly-number-
abbreviator
    function abbrNum(number, decPlaces) {
        // 2 decimal places => 100, 3 => 1000, etc
        decPlaces = Math.pow(10,decPlaces);

        // Enumerate number abbreviations
        var abbrev = [ "K", "M", "B", "T" ];

        // Go through the array backwards, so we do the largest first
        for (var i=abbrev.length-1; i>=0; i--) {

            // Convert array index to "1000", "1000000", etc
            var size = Math.pow(10,(i+1)*3);

            // If the number is bigger or equal do the abbreviation
            if(size <= number) {
                // Here, we multiply by decPlaces, round, and then divide by
decPlaces.
                // This gives us nice rounding to a particular decimal place.
                number = Math.round(number*decPlaces/size)/decPlaces;

                // Add the letter for the abbreviation
                number += abbrev[i];

                // We are done... stop
                break;
            }
```

```
        }

        return number;
    }
    function reset(){
        document.getElementById("four").checked=true;
        document.getElementById("five").checked=false;
        document.getElementById("sel1").value="--";
        document.getElementById("sel1").style.backgroundColor='white';
        document.getElementById("sel2").value="--";
        document.getElementById("sel2").style.backgroundColor='white';
        document.getElementById("sel3").value="--";
        document.getElementById("sel3").style.backgroundColor='white';
        document.getElementById("sel4").value="--";
        document.getElementById("sel4").style.backgroundColor='white';
        document.getElementById("sel5").value="--";
        document.getElementById("sel5").disabled="true";
        document.getElementById("sel5").style.backgroundColor='white';
        document.getElementById("ans").innerHTML="";
    }
</script>
</html>
```