

## W3 PRACTICE

### JS – ES6 Arrays + NPM

 *At the end of this practice, you should be able to...*

- ✓ **Create, update** and **remove** items in array
- ✓ Use the **arrow syntax** to define functions as parameters: `f = () => {}`
- ✓ Use ES6 arrays methods such as: **find, map, filter, foreach** for effective array operations


 *How to work?*

#### BEFORE THE PRACTICE

- ✓ First watch and understand the **following pages and videos**:  
[basic operations](#), [map](#), [find](#), [filter](#), [foreach](#)  
[video 1](#), [video 2](#)
- ✓ Then complete the **following quiz** (you can re-do it until you have 100% score)  
<https://forms.gle/56qZcmEbHnsuQzKE6>

#### DURING THE PRACTICE

- ✓ To start the practice. **download the start code** from Google classroom

 *How to submit?*

- ✓ **Create a new folder on your GitHub repository** with the name of this practice:  
 Ex: `C1-S2-PRACTICE`
- ✓ **Push your final code** on this GitHub repository (if you are lost, [follow this tutorial](#))
- ✓ Finally, submit on **Google classroom** your GitHub repository URL  
 Ex: `https://github.com/ronan/react-course/C2-S1-PRACTICE`



# About Node JS



## What is Node.js?

Node.js is a JavaScript runtime environment that can run on Windows, Linux, Unix, macOS, and more.

Node.js is able to **execute JavaScript** code **outside a web browser**.

We need to be able to run our JS and our ReactJS code using Node.js during this course.

## How to run JavaScript with Node.js?

Check node is installed

```
node -v
```

If not, you need to re-install Node or update it.

Create a new JS file, index.js with:

```
console.log("Hello !")
```

Open the VS code terminal and run

```
node ./index.js
```

## Are you lost?

You can read the following documentation:

<https://nodejs.org/en/learn/getting-started/differences-between-nodejs-and-the-browser>

<https://nodejs.org/en/download>

# UNDERSTAND THE CONCEPTS...

Before starting the exercise, complete this table with some code examples, to show you understood the theory.



Let's say we have the following start code:

```
Let numbers = [1, 2, 3, 4, 5]
```

Usage	Example of code
<b>Add</b> an element at the end of the array	<code>numbers.push(6)</code>
<b>Loop</b> on all array elements	<code>Number.forEach(ele=&gt;console.log(ele))</code>
<b>Access</b> to the array element with its index	<code>Number.at(2)</code>
<b>Remove</b> an array element with its index	<code>Number.slice(0,1)</code>
<b>Filter</b> array elements	<code>Number.filter(ele =&gt; ele===2)</code>
<b>Transform each array element</b> by applying a function on them	<code>Const doubleNumber = number.map(ele=&gt;ele*2)</code>

# EXERCISE 1

Your task is to add the missing logic to a `transformToObjects()` function that should transform a list of numbers into a list of objects.

In the newly returned array, every object must have a `val` key and the input array's number as a value.

```
/**
 * Creates transform a list of numbers into a list of objects.
 * @param {array} listOfNumbers - a list of numbers
 * @returns a list of objects
 */
function transformToObjects(listOfNumbers) {
  result = [];
  // Write your code here
  return result;
}
```

*Examples of inputs/outputs:*

INPUT	OUTPUT
[1, 2, 3]	[{val: 1}, {val: 2}, {val: 3}]
[44]	[{val: 44}]

## EXERCISE 2

We are managing a data structure of students - representing a student with `first Name` and `age` properties.

```
const STUDENTS_DATA = [  
  { firstName: "An", age: 20 },  
  { firstName: "Bình", age: 22 },  
  { firstName: "Cẩm", age: 21 },  
  { firstName: "An", age: 19 }, // Duplicate first name !  
];
```

The `updateStudentAge` function is supposed to update the age of a student his/her first name  
However, some students **have the same first name!**



Your task is to **update the data structure and the function** to manage the last name and the batch, and fix our problem!

## EXERCISE 3



In order to manage an online store, we have 2 data structures:

- **A list of products in the shop:** *each product having a unique id, name and unit price*

```
const PRODUCTS = [  
  { id: 1, name: "Apple", price: 2.5 },  
  { id: 2, name: "Banana", price: 1.5 },  
  { id: 3, name: "Orange", price: 3 },  
  { id: 4, name: "Rice", price: 1.5 },  
  { id: 5, name: "Chocolate", price: 3 },  
];
```

- **A shopping cart:** which contain the **items the customer wants** to buy and their **quantity**

```
const SHOPPING_CART = [  
  { id: 1, quantity: 2 },  
  { id: 3, quantity: 1 },  
];
```

**Q1** - Complete the `getCartTotalAmount()` function to get the total amount of the current shopping cart.

*Example:*

- The cart contains 2 apples and 1 orange:

```
const SHOPPING_CART = [  
  { id: 1, quantity: 2 },  
  { id: 3, quantity: 1 },  
];
```

- Each apple costs 2.5 \$
- Each orange costs 3 \$
- The function return value shall be: 8 \$

**Q2 -** Complete the `addProductToCart()` function to add a product to the shopping cart.

- If the product **id already exists** in the cart, just **increment** its quantity:

```
addProductToCart(1)
[ { id: 1, quantity: 2 } ] ---> [ { id: 1, quantity: 3 } ]
```

- If the product id **does NOT exist** in the cart, **add a new item**, with a quantity 1

```
addProductToCart(2)
[ { id: 1, quantity: 2 } ] ---> [ { id: 1, quantity: 2 }, { id: 2, quantity: 1 } ]
```

**Q3 -** Complete the `removeProductFromCart()` function to remove a product from the shopping cart.

- If the product id already exists in the cart, and quantity is  $\geq 2$  : just decrement its quantity

```
removeProductToCart(1)
[ { id: 1, quantity: 2 } ] ---> [ { id: 1, quantity: 1 } ]
```

- if the product id already exists in the cart, and quantity is 1 : remove the item from the cart

```
removeProductToCart(1) :
[ { id: 1, quantity: 1 } ] -----> [ ]
```

- if the product id does not exist in the cart, do nothing !