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

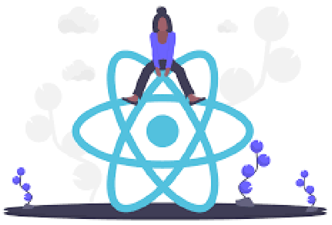
- ✓ Then complete the **quiz** (*you can re-do it until you have 100% score*)

DURING THE PRACTICE

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

How to submit?

- ✓ **Push your final code** on this GitHub repository (if you are lost, follow this tutorial)
- ✓ Finally, submit on **LMS** your GitHub repository URL



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
```

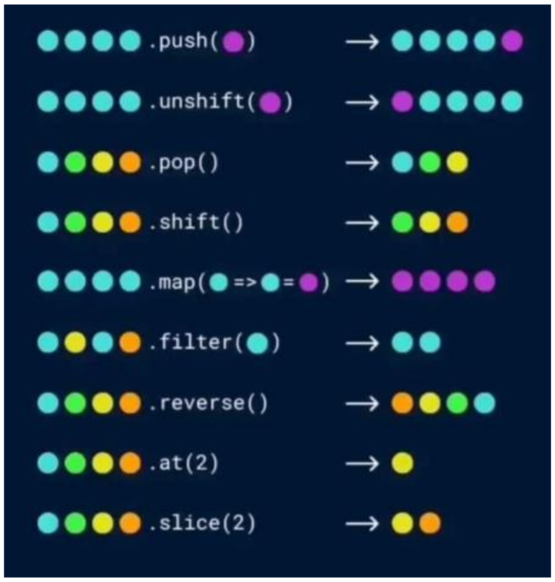
Are you lost?

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
Add an element at the end of the array	*Number.push(6);*

Loop on all array elements	*For(let number){*
	Console.log(number[i]);
	}

Access to the array element with its index	*Console.log(number[1]);*
Remove an array element with its index	*Numbers.pop();*

Filter array elements	*Let result = number.filter(function(item)){*
	Return item > 2;
	}

Transform each array element by applying a function on them	*Let result = numbers.map(numbers=> numbers *2)*

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 cartcart.

- 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 cartcart.

- If the product id already exists in the cart, and quantity if >=2 : just decrement its quantity

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

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

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

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