

0x03. ES6 data manipulation

JavaScript Planning (/planning/me)



Weight: 1

Projects(/projects/current)



Project over - took place from Jul 1, 2024 6:00 AM to Jul 3, 2024 6:00 AM



An auto-review will automatically make corrections(/to_review)



Evaluation quizzes(/dashboards/my_current_evaluation_quizzes)



Curriculums(/dashboards/my_curriculums)



Concepts(/concepts)



Conference rooms(/dashboards/video_rooms)



Servers(/servers)



Sandboxes(/user_containers/current)

ARRAY...

ARRAY EVERYWHERE

makeameme.org

Resources

Tools(/dashboards/my_tools)

Read or watch:



- Array.prototype.flat (/rltoken/KDAlasokKsF8Xv24sA)
- Typed Array (/rltoken/kpoPupBdDmukQkcKlvnw)
- Set Data Structure (/rltoken/C9x3dhHoOp3uE7S9 EyP9Q)
- Map Data Structure (/rltoken/XR-ql9v9-PWcXnvTc749gw)
- WeakMap (/rltoken/NEy8fk2QRytajR8hgXkCog)



Peers(/users/peers)

Learning Objectives

Discord(<https://discord.com/app>)

At the end of this project, you are expected to be able to explain to anyone (/rltoken/pHP_gg36nEFY-PHOJeeYJA), **without the help of Google**:

- How to use map, filter and reduce on arrays
- Typed arrays
- The Set, Map, WeakSet and WeakMap data structures



Requirements

⚠️ All your files will be executed on Ubuntu 18.04 LTS using NodeJS 12.11.x

- Allowed editors: `vi`, `vim`, `emacs`, `Visual Studio Code`



- All your files should end with a new line
- A `README.md` file, at the root of the folder of the project, is mandatory
- Your code should use the `.js` extension



- Your code will be tested using Jest and the command `npm run test`

- Your code will be verified against lint using ESLint

- Your code needs to pass all the tests and lint. You can verify the entire project running `npm run fulltest`



Projects(/projects/current)

- All of your functions must be exported



QA Reviews I can make(/corrections/to_review)

Setup

Install NodeJS 12.11.x

Evaluation quizzes(/dashboards/my_current_evaluation_quizzes)

(in your home directory):



```
curl -sL https://deb.nodesource.com/setup_12.x -o nodesource_setup.sh
sudo bash nodesource_setup.sh
sudo apt install nodejs -y
```



Concepts(/concepts)

```
$ nodejs -v
v12.11.1
```



```
$ npm -v
6.11.3
```



Servers(/servers)

Install Jest, Babel, and ESLint



in your project directory, install Jest, Babel and ESLint by using the supplied `package.json` and run `npm install`.



Configuration files

Tools(/dashboards/my_tools)



Add the following to the project directory.
Video on demand(/dashboards/videos)

`package.json`

Click to show/hide file contents



Peers(/users/peers)

`babel.config.js`



Click to show/hide file contents
Discord(/https://discord.com/app)

`.eslintrc.js`

Click to show/hide file contents

My Profile(/users/my_profile)



and...

Don't forget to run `$ npm install` when you have the `package.json`



Home(/)

Tasks



My Planning(/planning/me)

0. Basic list of objects

mandatory



Projects(/projects/current)

Create a function named `getListStudents` that returns an array of objects.



Each object should have three attributes: `id` (Number), `firstName` (String), and `location` (String).

The array contains the following students in order:



- Guillaume, `id: 1`, in San Francisco
- James, `id: 2`, in Columbia
- Serena, `id: 5`, in San Francisco



```
bob@dylan:~/dashboards/my_curriculums$  
import getListStudents from "../0-get_list_students.js";
```



```
console.log(getListStudents());
```

```
bob@dylan:~$
```



```
bob@dylan:~$ npm run dev 0-main.js
```



```
[  
  { id: 1, firstName: 'Guillaume', location: 'San Francisco' },  
  { id: 2, firstName: 'James', location: 'Columbia' },  
  { id: 5, firstName: 'Serena', location: 'San Francisco' }  
]
```



```
bob@dylan:~$
```



Repo: Tools(/dashboards/my_tools)

- GitHub repository: `alx-frontend-javascript`
- Directory: `dashboards/videos`
- File: `0-get_list_students.js`



Check submission Peers(/users/peers)



Get a sandbox



Discord(<https://discord.com/app>)

1. More mapping

mandatory

Create a function `getListStudentIds` that returns an array of ids from a list of object.

This function takes an argument which is an array of objects - and this array is the same format as `getListStudents` from the previous task.

If the argument is not an array, the function is returning an empty array.



You must use the `map` function on the array.

(/)

bob@dylan:~\$ cat 1-main.js



```
import getListStudentIds from './1-get_list_student_ids.js';
import Home from './0-get_list_students.js';
```



```
console.log(getListStudentIds('hello'));
console.log(getListStudentIds(getListStudents()));
```



```
bob@dylan:~$
bob@dylan:~$ npm run dev 1-main.js
```

[]

[1, 2, 5]



bob@dylan:~\$



Evaluation quizzes(/dashboards/my_current_evaluation_quizzes)

Repo:

- GitHub repository: alx-frontend-javascript
- Directory: 0x03-ES6_data_manipulation
- File: 1-get_list_student_ids.js



Curriculums(/dashboards/my_curriculums)



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Concepts(/concepts)



Filter

Conference rooms(/dashboards/video_rooms)

mandatory



Create a function `getStudentsByLocation` that returns an array of objects who are located in a specific city.

It should accept a list of students (from `getListStudents`) and a `city` (string) as parameters.



You must use the `filter` function on the array.



```
bob@dylan:~$ cat 2-main.js
import getListStudents from './0-get_list_students.js';
import getStudentsByLocation from './2-get_students_by_loc.js';
```



Video on demand(/dashboards/videos)

```
const students = getListStudents();

console.log(getStudentsByLocation(students, 'San Francisco'));
```



Peers(/users/peers)

```
bob@dylan:~$ npm run dev 2-main.js
```

[



```
{ id: 1, firstName: 'Guillaume', location: 'San Francisco' },
{ id: 5, firstName: 'Serena', location: 'San Francisco' }
]
```

bob@dylan:~\$



Repo:

My Profile(/users/my_profile)

- GitHub repository: alx-frontend-javascript
- Directory: 0x03-ES6_data_manipulation
- File: 2-get_students_by_loc.js



Home(/)

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3. Reduce

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mandatory

Create a function `getStudentIdsSum` that returns the sum of all the student ids.



Projects(/projects/current)

It should accept a list of students (from `getListStudents`) as a parameter.



You must use the `reduce` function on the array.

QA Reviews I can make(/corrections/to_review)

```
bob@dylan:~$ cat 3-main.js
```



```
import getListStudents from "../0-get_list_students.js";
import getStudentIdsSum from "../3-get_ids_sum.js";
```

```
const students = getListStudents();
const value = getStudentIdsSum(students);
```



Curriculumums(/dashboards/my_curriculumums)

```
console.log(value);
```



```
bob@dylan:~$
bob@dylan:~$ npm run dev 3-main.js
8
```



Conference rooms(/dashboards/video_rooms)



Repo: Servers(/servers)

- GitHub repository: alx-frontend-javascript
- Directory: 0x03-ES6_data_manipulation
- File: 3-get_ids_sum.js



Sandboxes(/users/containers/current)



Tools(/dashboards/my_tools)

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Video on demand(/dashboards/videos)

4. Combine

mandatory



Peers(/users/peers)

Create a function `updateStudentGradeByCity` that returns an array of students for a specific city with their new grade



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It should accept a list of students (from `getListStudents`), a `city` (String), and `newGrades` (Array of "grade" objects) as parameters.



`newGrades` is an array of objects with this format:

My Profile(/users/my_profile)



```
{
  studentId: 31,
  (/) grade: 78,
}
```



Home(/)

If a student doesn't have grade in newGrades , the final grade should be N/A .

You must use filter and map combined.



My Planning(/planning/me)

bob@dylan:~\$ cat 4-main.js

```
import getListStudents from './0-get_list_students.js';
```



Projects(/projects/current)

```
import updateStudentGradeByCity from './4-update_grade_by_city.js';
```

```
console.log(updateStudentGradeByCity(getListStudents(), "San Francisco", [{ studentId: 3, grade: 97 }, { studentId: 1, grade: 86 } ]));
```



QA Reviews I can make/corrections/to_review)

```
console.log(updateStudentGradeByCity(getListStudents(), "San Francisco", [{ studentId: 5, grade: 87 }, { studentId: 1, grade: 86 } ]));
```



Evaluation quizzes(/dashboards/my_current_evaluation_quizzes)

bob@dylan:~\$

bob@dylan:~\$ npm run dev 4-main.js



Curriculums(/dashboards/my_curriculums)

```
{
  id: 1,
  firstName: 'Guillaume',
  location: 'San Francisco',
  grade: 86
},
```



Concepts(/concepts)



Conference rooms(/dashboards/video_rooms)

```
{ id: 5, firstName: 'Serena', location: 'San Francisco', grade: 97 }
```



Servers(/servers)

```
{
  id: 1,
  firstName: 'Guillaume',
  location: 'San Francisco',
  grade: 'N/A'
},
```



Sandboxes(/user_containers/current)



Tools(/dashboards/my_tools)

```
{ id: 5, firstName: 'Serena', location: 'San Francisco', grade: 97 }
```

bob@dylan:~\$



Video on demand(/dashboards/videos)

Repo:



- GitHub repository: alx-frontend-javascript
- Directory: 0x03-ES6_data_manipulation
- File: 4-update_grade_by_city.js



Discord(<https://discord.com/app>)

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5. Typed Arrays

mandatory

My Profile(/users/my_profile)

Create a function named `createInt8TypedArray` that returns a new `ArrayBuffer` with an `Int8` value at a specific position.

It should accept three arguments: `length` (Number), `position` (Number), and `value` (Number).

If adding the value is not possible the error `Position outside range` should be thrown.



Home(/)

bob@dylan:~\$ cat 5-main.js



```
import createInt8TypedArray from "../5-typed_arrays.js";
My Planning(/planning/me)
```

```
console.log(createInt8TypedArray(10, 2, 89));
```



Projects(/projects/current)

bob@dylan:~\$
bob@dylan:~\$ npm run dev 5-main.js



```
DataView {
  QA Reviews I can make(/corrections/to_review)
  byteLength: 10,
```



```
  byteOffset: 0,
  buffer: ArrayBuffer {
    Evaluation quizzes (/dashboards/my_current_evaluation_quizzes)
    [Uint8Contents]: <00 00 39 00 00 00 00 00 00 00>
    byteLength: 10
  }
}
```



bob@dylan:~\$
Curriculums(/dashboards/my_curriculums)



epo: Concepts(/concepts)

- GitHub repository: `alx-frontend-javascript`
- Directory: `003-ES6(/data-manipulation/rooms)`
- File: `5-typed_arrays.js`



Servers(/servers)

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Sandboxes(/user_containers/current)

6. Set data structure

mandatory



Create a function named `setFromArray` that returns a `Set` from an array.

It accepts an argument (Array, of any kind of element).



Video on demand(/dashboards/videos)

bob@dylan:~\$ cat 6-main.js
import setFromArray from "../6-set.js";

```
console.log(setFromArray([12, 32, 15, 78, 98, 15]));
```



Peers(/users/peers)

bob@dylan:~\$
bob@dylan:~\$ npm run dev 6-main.js



Set { Discord (https://discord.com/app)

bob@dylan:~\$



Repo:

- GitHub repository: `alx-frontend-javascript`

- Directory: 0x03-ES6_data_manipulation



- File: 6-set.js

(/)

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7. More set data structure

mandatory



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Create a function named `hasValuesFromArray` that returns a boolean if all the elements in the array exist within the set.



Projects(/projects/current)

It accepts two arguments: a set (`Set`) and an array (`Array`).



bob@dylan:~\$ cat 7-main.js

```
import hasValuesFromArray from "../7-has_array_values.js";
```



```
console.log(hasValuesFromArray(new Set([1, 2, 3, 4, 5]), [1]));
console.log(hasValuesFromArray(new Set([1, 2, 3, 4, 5]), [10]));
console.log(hasValuesFromArray(new Set([1, 2, 3, 4, 5]), [1, 10]));
```

bob@dylan:~\$



bob@dylan:~/databases/my_curriculums

true

false



false Concepts(/concepts)

bob@dylan:~\$



Conference rooms(/dashboards/video_rooms)

Repo:



Servers(/servers)

- GitHub repository alx-frontend-javascript

- Directory: 0x03-ES6_data_manipulation

- File: 7-has_array_values.js



Sandboxes(/user_containers/current)



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>_ Get a sandbox

Tools(/dashboards/my_tools)



Video on demand(/dashboards/videos)

8. Clean set

mandatory



Create a function named `cleanSet` that returns a string of all the set values that start with a specific String (`startString`).

Peers(/users/peers)

It accepts two arguments: a set (`Set`) and a `startString` (`String`).



Discord(<https://discord.com/app>)

When a value starts with `startString` you only append the rest of the string. The string contains all the values of the set separated by `- .`



My Profile(/users/my_profile)


```
bob@dylan:~$ cat 8-main.js
import cleanSet from './8-clean_set.js';

(
  console.log(cleanSet(new Set(['bonjovi', 'bonaparte', 'bonappetit', 'banana']),
    'bon')));
console.log(cleanSet(new Set(['bonjovi', 'bonaparte', 'bonappetit', 'banana']),
  ''));

bob@dylan:~$ npm run dev
bob@dylan:~$ npm run dev 8-main.js
jovi-aparte-appetit
Projects(/projects/current)
bob@dylan:~$
```

✓ QA Reviews I can make(/corrections/to_review)

Repo:

- Evaluation quizzes(/dashboards/my_current_evaluation_quizzes)
- Directory: 0x03-ES6_data_manipulation
- File: 8-clean_set.js

Curriculums(/dashboards/my_curriculums)

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5. Map data structure

mandatory

Create a function named `groceriesList`, that returns a map of groceries with the following items (name, quantity):

```
Apples Servers(/servers)
Tomatoes, 10
Pasta, 1
Rice, 5
Banana, 5
```

Result: Tools(/dashboards/my_tools)

```
bob@dylan:~$ cat 9-main.js
import groceriesList from './9-groceries_list.js';

console.log(groceriesList());
```

```
bob@dylan:~$ npm run dev
bob@dylan:~$ npm run dev 9-main.js
Map {
  'Apples' => 10,
  'Tomatoes' => 10,
  'Pasta' => 1,
  'Rice' => 1,
  'Banana' => 5
}
bob@dylan:~$
```

My Profile(/users/my_profile)



Repo:

- GitHub repository: alx-frontend-javascript
- Directory: 0x03-ES6_data_manipulation
- File: 9-groceries_list.js



Check submission

My Planning (/planning/me)

Get a sandbox



10. More map data structure

Projects (/projects/current)

mandatory

Create a function named `updateUniqueItems` that returns an updated map for all items with initial quantity at 1.

It should accept a map as an argument. The map it accepts for argument is similar to the map you create in the previous task.

For each entry of the map where the quantity is 1, update the quantity to 100. If updating the quantity is not possible (argument is not a map) the error `cannot process` should be thrown.



```
bob@dylan:~$ cd my_curriculums/dashboard/my_curriculums)
import updateUniqueItems from "../10-update_uniq_items.js";
import groceriesList from "../9-groceries_list.js";
```



```
  Concepts(/concepts)
  const map = groceriesList();
  console.log(map);
```



```
  Conference rooms(/dashboards/video_rooms)
  updateUniqueItems(map)
  console.log(map);
```



```
  Servers(/servers)
bob@dylan:~$
bob@dylan:~$ npm run dev 10-main.js
```



```
Map { Sandboxes(/user_containers/current)
  'Apples' => 10,
  'Tomatoes' => 10,
  'Pasta' => 1,
  'Rice' => 1,
  'Banana' => 5
```



```
Tools(/dashboards/my_tools)
  'Rice' => 1,
  'Banana' => 5
```



```
}
Map { Video on demand(/dashboards/videos)
  'Apples' => 10,
  'Tomatoes' => 10,
  'Pasta' => 100,
```



```
Peers(/users/peers)
  'Banana' => 5
}
```



```
bob@dylan:~$ discord https://discord.com/app)
```



Repo:

- GitHub repository: alx-frontend-javascript
- Directory: 0x03-ES6_data_manipulation

• File: 10-update_uniq_items.js



(/)

Check submission

> Get a sandbox



Home(/)



My Planning(/planning/me)



Projects(/projects/current) Done with the mandatory tasks? Unlock 1 advanced task now!



QA Reviews I can make(/corrections/to_review)



Evaluation quizzes(/dashboards/my_current_evaluation_quizzes)



Curriculums(/dashboards/my_curriculums)

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Concepts(/concepts)



Conference rooms(/dashboards/video_rooms)



Servers(/servers)



Sandboxes(/user_containers/current)



Tools(/dashboards/my_tools)



Video on demand(/dashboards/videos)



Peers(/users/peers)



Discord(<https://discord.com/app>)



My Profile(/users/my_profile)