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JavaScript Introduction +

Coding Style + JSDoc + ESLint

First, manners, this is our team

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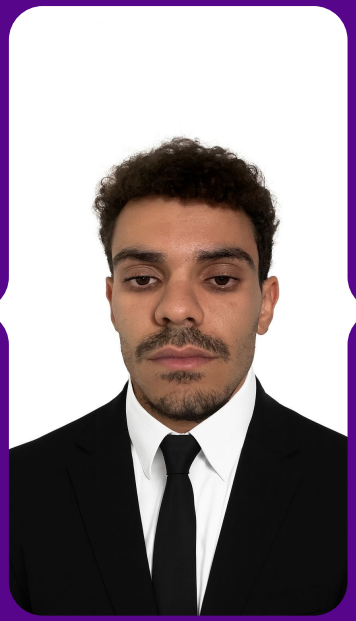

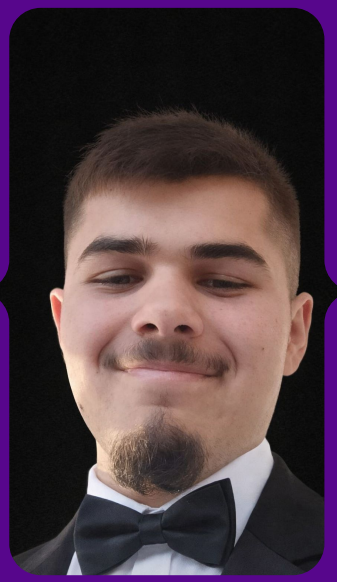

Diego García Hernández
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What we will Cover

- JavaScript Introduction
- Google Style guide and best practices
- JSDoc
- ESLint

What we will MISS

- Basic coding structures (while, if, switch…)
- Details about software installation
- OOP
- Most content already available in the virtual classroom presentations.

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JavaScript Introduction

Operators + Behaviours + Functions + Jutge tips

JS - Stack functionality

- Should be trivial…

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```
function greet(who) {
  console.log("Hi " + who);
}
greet("Mawi");
console.log("Bye");
```

JS - Stack functionality

- Should be trivial…

```
function saludar(quien) {
  console.log("Hola " + quien);
}
saludar("Harry");
console.log("Adiós");
```

Stack.js

JS - Paradox…?

- What came first?

JS - Paradox…?

- What came first?
- The chicken or the egg?

JS - Paradox…?

- What came first?
- The chicken or the egg?

Let's check

JS - Declarative Functions

- Doesn’t matter where its defined.

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- Doesn’t matter where its defined.

```
console.log("Future says:", future());

function future() {
  return "You will pass PAI";
}
```

JS - Declarative Functions

- Doesn't matter where its defined.

```
console.log("Future says:", future());

function future() {
  return "You will pass PAI";
}
```

Go ahead and execute it

JS - No return?

- What does a “returnless” function return?

JS - No return?

- What does a “returnless” function return?

```
function noReturn () {
 let elcheTeam = 'I am not doing anything';
}
```

JS - No return?

- And an empty return?

JS - No return?

- And an empty return?

```
function emptyReturn () {
 let oviedoTeam = 'Me neither';
 return
}
```

JS - No return?

- And an empty return?

```
function emptyReturn () {
 let oviedoTeam = 'Me neither';
 return
}
```

Did you hit or miss?

JS - Arrow Functions

- An elegant alternative

JS - Arrow Functions

- An elegant alternative
- Flexible syntax

JS - Arrow Functions

- An elegant alternative
- Flexible syntax

```
const isEven = n => {
  if (n % 2 === 0) return true;
  return false;
};
```

JS - Arrow Functions

- An elegant alternative
- Flexible syntax

```
const isEven = n => {
  if (n % 2 === 0) return true;
  return false;
};
```

More syntax examples

JS - Arrow Functions

- Looks familiar…?

JS - Arrow Functions

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```
let doubled = input.map(x => x * 2);
```

JS - Arrow Functions

- Looks familiar…?

```
let doubled = input.map(x => x * 2);
```

.map() & .forEach()

JS - Closure

- Function that remembers the scope

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```
function multiplier(factor) {
  return number => number * factor;
}
```

JS - Closure

- Function that remembers the scope

```
function multiplier(factor) {
  return number => number * factor;
}
```

Let's check how it works

JS - VAR

- **ONLY DIDACTIC PURPOSES**

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- Special scope behaviour

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- **ONLY DIDACTIC PURPOSES**
- Special scope behaviour
- Global or function scope

JS - VAR

- **ONLY DIDACTIC PURPOSES**
- Special scope behaviour
- Global or function scope

```
const GLOBALNUM = 10;   // global

if (true) {
  let localNum = 20; // local
  var globalVar = 30; // global
}
```

JS - VAR

```
function dummy () {
  var invisible = 40; // only in function
  console.log(invisible);
}

console.log(invisible); // not visible
```

JS - VAR

```
function dummy () {
  var invisible = 40; // only in function
  console.log(invisible);
}

console.log(invisible); // not visible
```

Var file

JS - File System

- Standard module of Node.js

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- Focus on Jutge

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- For more information check:

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File System

JS - File System

- Useful functions of the File System:

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- Useful functions of the File System:
- .trim()

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- .split()

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- .map()

JS - File System

- Useful functions of the File System:
- .trim()
- .split()
- .map()

Check the examples: The value of .trim()

JS - Spread Operator “…”

- Sometimes useful for Arrays

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```
const a = [1, 2, 3];
const b = [...a, 4, 5];

console.log(b);
```

JS - Spread Operator "…"

- Sometimes useful for Arrays
- Creates modified copy, doesn't alter original

```
const a = [1, 2, 3];
const b = [...a, 4, 5];

console.log(b); // [1, 2, 3, 4, 5]
```

JS - Spread Operator "..."

- Sometimes useful for Arrays
- Creates modified copy, doesn't alter original

```
const a = [1, 2, 3];
const b = [...a, 4, 5];

console.log(b); // [1, 2, 3, 4, 5]
```

Check an interesting use

JS - Arguments

- Very friendly syntax

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- Just: `process.argv`

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- Very friendly syntax
- Just: `process.argv`

Experiment with this example

JS - Distinct “for” usage

- Which gets the value?

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- Which gets the value?

```
for (let member in list) {
  console.log(member);
}

for (let member of list) {
  console.log(member);
}
```

JS - Distinct “for” usage

- Which gets the value?

```
for (let member in list) {
  console.log(member);
}

for (let member of list) {
  console.log(member);
}
```

Here is the answer

JS - operator ??

```
console.log( 0 || 100 );
 // → 100
```

JS - operator ??

```
console.log( 0 || 100 );
 // → 100
console.log( 0 ?? 100 );
 // → 0
```

JS - operator ??

```
console.log( 0 || 100 );
 // → 100
console.log( 0 ?? 100 );
 // → 0
console.log( null ?? 100 );
 // → 100
```

JS - operator ??

```
console.log( 0 || 100 );
 // → 100
console.log( 0 ?? 100 );
 // → 0
console.log( null ?? 100 );
 // → 100
console.log( undefined ?? 100);
 // → 100
```

JS - operator ??

```
console.log( 0 || 100 );
 // → 100
console.log( 0 ?? 100 );
 // → 0
console.log( null ?? 100 );
 // → 100
console.log( undefined ?? 100);
 // → 100
```

operator_interrogation.js

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Google Style Guide

Best Practices

Style guide: index

- Statements
- Braces
- Indentation
- White spaces

Statements

- Only one statement per line.

Statements

- Only **one statement** per line.

```
let numero = '5';
let otroNumero = 11;
```

Statements

- Only **one statement** per line.

```
let numero = '5';
let otroNumero = 11;
```


```
let numero = '5', let otroNumero = 11;
```

Statements: semicolons ;

- They are **MANDATORY**

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- Relying on *Automatic Semicolon Insertion* is **FORBIDDEN**

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- Relying on *Automatic Semicolon Insertion* is **FORBIDDEN**

Semicolons-example.js

Statements - Column limit

- JavaScript has a column limit of 80 characters

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- If this is exceeded, **line wrapping** must be performed

Statements - Column limit

- No single formula or rule exists.

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- No single formula or rule exists.
- Same code, multiple valid ways to style it.

Statements - Column limit

- No single formula or rule exists.
- Same code, multiple valid ways to style it.

Check some examples!

Braces

- Braces { } are **MANDATORY**

Braces

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- Applies to if, else, do, while, for, …

Braces

- Braces { } are **MANDATORY**
- Applies to if, else, do, while, for, …
- **Sole Exception**: Single-line if (no else) for readability.

Braces - bad examples

```
if (someVeryLongCondition())
  doSomething();

for (let i = 0; i < 10; i++) bar(foo[i]);
```

Braces - bad examples

```
if (someVeryLongCondition())
  doSomething();

for (let i = 0; i < 10; i++) bar(foo[i]);
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- **Exception:**

```
if (shortCondition()) foo();
```

Braces - bad examples

```
if (someVeryLongCondition())
  doSomething();

for (let i = 0; i < 10; i++) bar(foo[i]);
```

- **Exception:**

```
if (shortCondition()) foo();
```

The_value_of_braces.js

Braces - K&R style

- **Kernighan and Ritchie style** for nonempty blocks and block-like constructs

Braces - K&R style

- **Kernighan and Ritchie style** for nonempty blocks and block-like constructs

Check here the rules ;)

Indentation

- The body of a function is **always** indent +2 spaces inward.

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- Indentation can be relative to:

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Indentation

- The body of a function is **always** indent +2 spaces inward.

- Indentation can be relative to:
  - The statement prefix (start of line).
  - The function call (visual alignment).
  - function_indentation.js

Indentation - arrays

- Which of these is correct?

Indentation - arrays

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```
const a = [
  0,
  1,
  2,
];
```

Indentation - arrays

- Which of these is correct?

```
const a = [
  0,
  1,
  2,
];
```

```
const b =
    [0, 1, 2];
```

Indentation - arrays

- Which of these is correct?

```
const a = [
  0,
  1,
  2,
];
```

```
const b =
    [0, 1, 2];
```

```
const c = [0, 1, 2];
```

White Spaces - vertical

- **MANDATORY**: Between class methods.
- **Optional**: In object literals (to group fields).

White Spaces - vertical

- **MANDATORY**: Between class methods.
- **Optional**: In object literals (to group fields).
- **Inside methods**: Use to separate logical steps.
- **FORBIDDEN**: At start or end of function body.

White Spaces - vertical

- **MANDATORY**: Between class methods.
- **Optional**: In object literals (to group fields).
- **Inside methods**: Use to separate logical steps.
- **FORBIDDEN**: At start or end of function body.

hey you, click me!

White Spaces - horizontal

- **Leading:** Start of line (Indentation).

White Spaces - horizontal

- **Leading:** Start of line (Indentation).

- **Internal:** Inside lines (Formatting).

White Spaces - horizontal

- **Leading:** Start of line (Indentation).
- **Internal:** Inside lines (Formatting).
- **Trailing:** End of line. **STRICTLY FORBIDDEN.**

White Spaces - horizontal MUST do

- **Space** after if, else, catch **before** (.

White Spaces - horizontal MUST do

- **Space** after if, else, catch **before (.**

- **Exception:** No space for function or super.

White Spaces - horizontal MUST do

- **Space** after if, else, catch **before (.**
- **Exception:** No space for function or super.
- **Space before {** (except objects as arguments).

White Spaces - horizontal MUST do

- Space after commas, semicolons, and colons.

White Spaces - horizontal MUST do

- Space after commas, semicolons, and colons.

- NEVER before punctuation.

White Spaces - horizontal MUST do

- Space after commas, semicolons, and colons.
- NEVER before punctuation.
- Surround ternary operators.

Final boss guide style

- Let’s analyze this code:
  - incorrect-guide-style.js

Final boss guide style

- Let’s analyze this code:
  - incorrect-guide-style.js

- Here is the correct version:
  - correct-guide-style.js

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JSDoc

comments + tags

JSDoc

- API documentation generator for JavaScript

JSDoc

- API documentation generator for JavaScript
- Similar to Doxygen

JSDoc

- API documentation generator for JavaScript
- Similar to Doxygen
- //, /** */

JSDoc

- @desc
- @author
- @param
- @return
- @link

JSDoc

- @desc
- @author
- @param
- @return
- @link

JSDoc

JSDoc

```
/**
 * @desc This function prints
 * 'Hello, World'
 * @return 'Hello, World'
 *
 */
function foo() {
  return 'Hello, World!';
}
```

JSDoc

```
/**
 * @desc This function prints
 * 'Hello, World'
 * @return 'Hello, World'
 *
 */
function foo() {
  return 'Hello, World!';
}
```

JSDoc-style.js

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ESLint

Linter + AutoFix + ESLint for TS

Linter

- Improve source code

Linter

- Improve source code
- Origin in C

Linter

- Improve source code
- Origin in C
- “Remove the lint”

ESLint

- JavaScript Linter

ESLint

- JavaScript Linter
- Display errors

ESLint

- JavaScript Linter
- Display errors
- 3 parts

ESLint

- JavaScript Linter
- Display errors
- 3 parts
  - Praser

ESLint

- JavaScript Linter
- Display errors
- 3 parts
  - Praser
  - Rules

ESLint

- JavaScript Linter
- Display errors
- 3 parts
  - Praser
  - Rules
  - Result

ESLint

- Install
  - $ npm install -D eslint

ESLint

```
import globals from "globals";
import pluginJs from "@eslint/js";

export default [
  { languageOptions: { globals: globals.node } },
  pluginJs.configs.recommended,
];
```

ESLint

- Interesting URL:
  - ESLint_rules

ESLint

- Interesting rules

ESLint

- Interesting rules
  - no-seft-compare

ESLint

- Interesting rules
  - no-seft-compare
  - no-unreachable

ESLint - Google Style Guide

- Dependencies
  - $ npm install -D eslint eslint-config-google @eslint/eslintrc globals

ESLint - Google Style Guide

- Dependencies
  - $ npm install -D eslint eslint-config-google @eslint/eslintrc globals

Google Style Guide config

ESLint - AutoFix

- AutoFix:
  - $ npx eslint --fix

ESLint

- Example:
  - ESLint_example.js

ESLint for TypeScript

- Install

ESLint for TypeScript

- Install
  - $ npm install --save-dev eslint @typescript-eslint/parser

ESLint for TypeScript

- Install
  - $ npm install --save-dev eslint @typescript-eslint/parser
  - $ touch .eslintrc

ESLint for TypeScript

```
{
 "root": true,
 "parser": "@typescript-eslint/parser",
 "plugins": [ "@typescript-eslint" ],
 "extends": [
   "eslint:recommended",
   "plugin:@typescript-eslint/eslint-recommended",
   "plugin:@typescript-eslint/recommended"
 ]
}
```

ESLint for TypeScript

- touch .eslintignore

ESLint for TypeScript

- touch .eslintignore
  - /build
    /students

ESLint for TypeScript

- touch .eslintignore
  - /build
    /students
- npm run lint

ESLint for TypeScript

- Rules for TypeScript:
  - Overview | typescript-eslint

Thanks for the attention

Doubts, questions?

References

- Coding Style
- Google JavaScript Style Guide
- JSDoc
- ESLint: Linter Javascript - Javascript en español
- Pasos para instalar y configurar ESLint en nuestro proyecto con Typescript

References

- Eloquent JavaScript (chapter 1 - 4)
- The Modern JavaScript Tutorial
- Presentations-Tips.ppt
- Oral-Presentations-Tips