JavaScript is a high-level, prototype-based object-oriented, multi-paradigm, interpreted or just-in-time compiled, dynamic, single-threaded, garbage-collected programming language with first-class functions and a non-blocking event loop concurrency model.

JavaScript is a high-level, prototype-based object-oriented, multi-paradigm, interpreted or just-in-time compiled, dynamic, single-threaded, garbage-collected programming language with first-class functions and a non-blocking event loop concurrency model.

HIGH-LEVEL

GARBAGE COLLECTED

INTERPRETED OR JIT COMPILED

MULTI-PARADIGM

PROTOTYPE-BASED

FIRST-CLASS FUNCTIONS

DYNAMIC

SINGLE-THREADED

EVENT LOOP

high-level

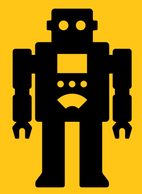
JS

Allocation automatique des ressources

x86 arm

Allocation manuelle des ressources

```
01001000 01100101
01101100
```



low-level

HE VD
IG

HIGH-LEVEL

GARBAGE COLLECTED

INTERPRETED OR JIT COMPILED

MULTI-PARADIGM

PROTOTYPE-BASED

FIRST-CLASS FUNCTIONS

DYNAMIC

SINGLE-THREADED

EVENT LOOP

HIGH-LEVEL

GARBAGE COLLECTED

INTERPRETED OR JIT COMPILED

MULTI-PARADIGM

PROTOTYPE-BASED

FIRST-CLASS FUNCTIONS

DYNAMIC

SINGLE-THREADED

EVENT LOOP

```
function findKey(object, predicate) {
  let result;
  if (object == null) {
    return result;
  }
  Object.keys(object).some((key) => {
    const value = object[key];
    if (predicate(value, key, object)) {
      result = key;
      return true;
    }
  });
  return result;
}

export default findKey;
```

↓

```
00010010010011011001000010010000111100001001000010010000
11110000100000000111000001000000001111000010000000010000000
10000000100000000111100001111000010010000100100001001000
11110000111000000100100001111100010010000111000000101000
01010000000100000000100000000100000111100001000000011100000
10000000111100001010001000000001001100100000000000011010000
00010101001101000000000101111001000011110011100000000000101
01111010000000000100110100000000100000100100010100111010000
```

HIGH-LEVEL

GARBAGE COLLECTED

INTERPRETED OR JIT COMPILED

MULTI-PARADIGM

PROTOTYPE-BASED

FIRST-CLASS FUNCTIONS

DYNAMIC

SINGLE-THREADED

EVENT LOOP

👉 **Paradigme:** Une façon d'approcher la programmation qui dirige le style et la technique du code, ainsi que la façon d'aborder les problèmes.

1. Programmation Procédurale

2. Programmation Orientée Objet

3. Programmation Fonctionnelle

Ce que nous faisons depuis le début du cours.

HE VD IG

HIGH-LEVEL

GARBAGE COLLECTED

INTERPRETED OR JIT COMPILED

MULTI-PARADIGM

PROTOTYPE-BASED

FIRST-CLASS FUNCTIONS

DYNAMIC

SINGLE-THREADED

EVENT LOOP

```
const arr = [1,2,3];
arr.push(4);
const hasZero = arr.indexOf(0) > -1;
```

HE IG VD

HIGH-LEVEL

GARBAGE COLLECTED

INTERPRETED OR JIT COMPILED

MULTI-PARADIGM

PROTOTYPE-BASED

FIRST-CLASS FUNCTIONS

DYNAMIC

SINGLE-THREADED

EVENT LOOP

- HIGH-LEVEL
- GARBAGE COLLECTED
- INTERPRETED OR JIT COMPILED
- MULTI-PARADIGM
- **PROTOTYPE-BASED**
- FIRST-CLASS FUNCTIONS
- DYNAMIC
- SINGLE-THREADED
- EVENT LOOP

HIGH-LEVEL

GARBAGE COLLECTED

INTERPRETED OR JIT COMPILED

MULTI-PARADIGM

PROTOTYPE-BASED

FIRST-CLASS FUNCTIONS

DYNAMIC

SINGLE-THREADED

EVENT LOOP

👉 Dans un langage avec des fonctions de première classes, celles-ci sont traitées comme des variables. Nous pouvons donc passer des fonctions arguments dans d'autres fonctions. Nous pouvons également retourner des fonctions.

```
function sayHello() {
  return "Hello, ";
}
function greeting(helloMessage, name) {
  console.log(helloMessage() + name);
}
greeting(sayHello, "JavaScript!");
```

HIGH-LEVEL

GARBAGE COLLECTED

INTERPRETED OR JIT COMPILED

MULTI-PARADIGM

PROTOTYPE-BASED

FIRST-CLASS FUNCTIONS

DYNAMIC

SINGLE-THREADED

EVENT LOOP

```
let x = 23;
let y = 19;
x = "plage";
```

HE IG VD

HIGH-LEVEL

GARBAGE COLLECTED

INTERPRETED OR JIT COMPILED

MULTI-PARADIGM

PROTOTYPE-BASED

FIRST-CLASS FUNCTIONS

DYNAMIC

SINGLE-THREADED

EVENT LOOP

👉 **Concurrency model:** La façon dont le moteur JavaScript gère plusieurs tâches se déroulant en même temps.

↓ Pourquoi en a-t-on besoin?

👉 JavaScript tourne sur une seule **thread,** donc il ne peut faire qu'une seule chose à la fois.

↓ Et si une tâche prend du temps?

👉 Le moteur utilise un **event loop**: les longues tâches sont exécutées en "arrière-plan" et sont remises dans le thread principal lorsqu'elles sont terminées.

ON EN PARLE EN DÉTAIL PLUS TARD DANS LE SEMESTRE

HEIG VD