University of Oum El Bouaghi

Advanced Web Programming

JavaScript Reminders

Concerned students

Faculty	Department	Level	Speciality
ESNL	MI	B3	ISSE

Functions

- A function returns, always, something. By default the function returns undefined.

```
function badsquare(x) {
var y = x * x;
        // The developper forgot to write return y;
}
badsquare(2);
        // → undefined
```

- A function can take a function as argument

```
function boum() {alert('Boum!');}
setTimeout(boum,2000);
// setTimeout executes the function in the variable 'boum'
after 2 seconds.
```

Main Functions

- **eval(string)** : Evaluates the Javascript code.
- **Number(var)** : Convert to a number.
- **String(var)** : Convert to a string.
- **int parseInt(string[,radix])** : Convert to an integer based on the specified radix(base).
- **float parseFloat(string)** : Convert to a real.
- **encodeURI(uri)**
- **decodeURI(uri)**

JavaScript timers

- **setInterval() and clearInterval()**
- The logic is the same, exept that here we are calling a function at regular intervals.

```
window.setInterval("mafonction()",1000);
```

- This code will call myfunction() function every second until the page is closed or the timer is stopped by the **clearInterval()** function.
- It is necessary to name the timer.

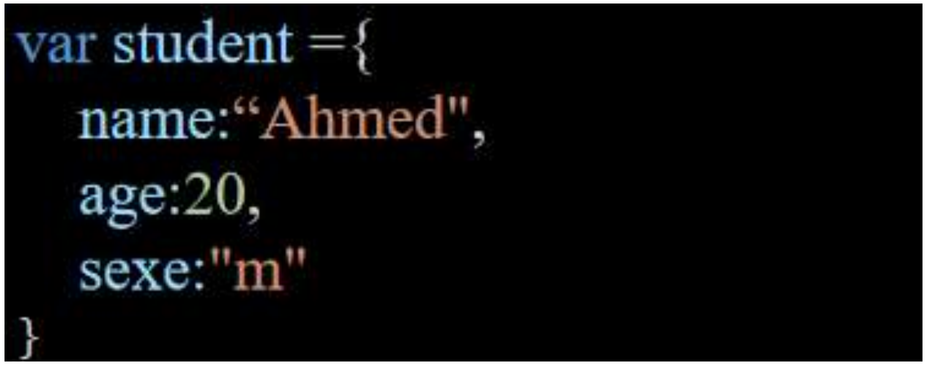
```
mytimer=window. setInterval("myfunction()",5000);
window.clearInterval(mytimer);
```

Object creation

Several ways are possible to create objects in Javascript

Choose the method that best suits the needs based on the object's complexity and srtucture.

- **Object Literal:**

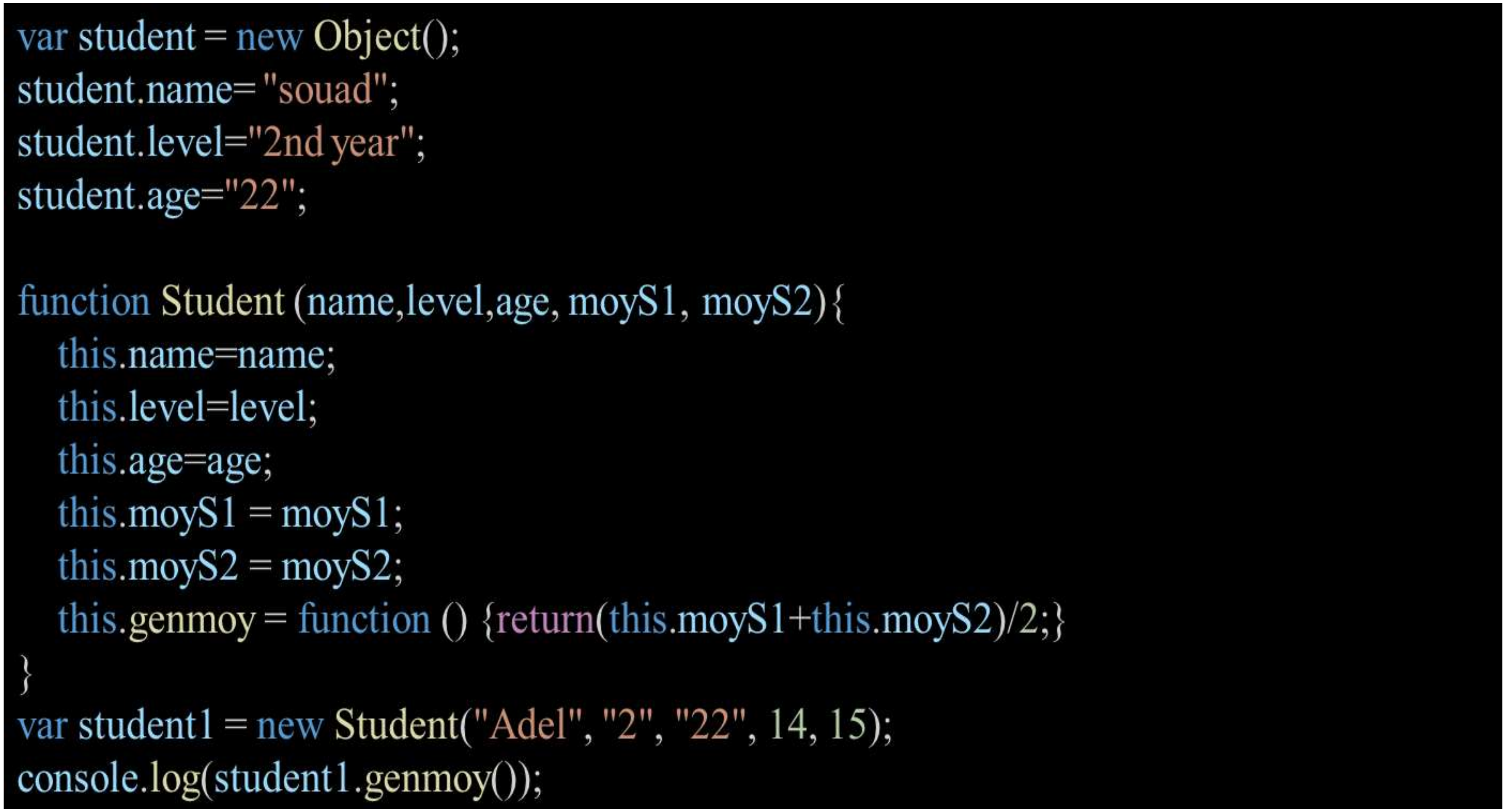


```
var student ={
   name:“Ahmed",
   age:20,
   sexe:"m"
}
```

JavaScript

Object creation

- Using **new** keyword

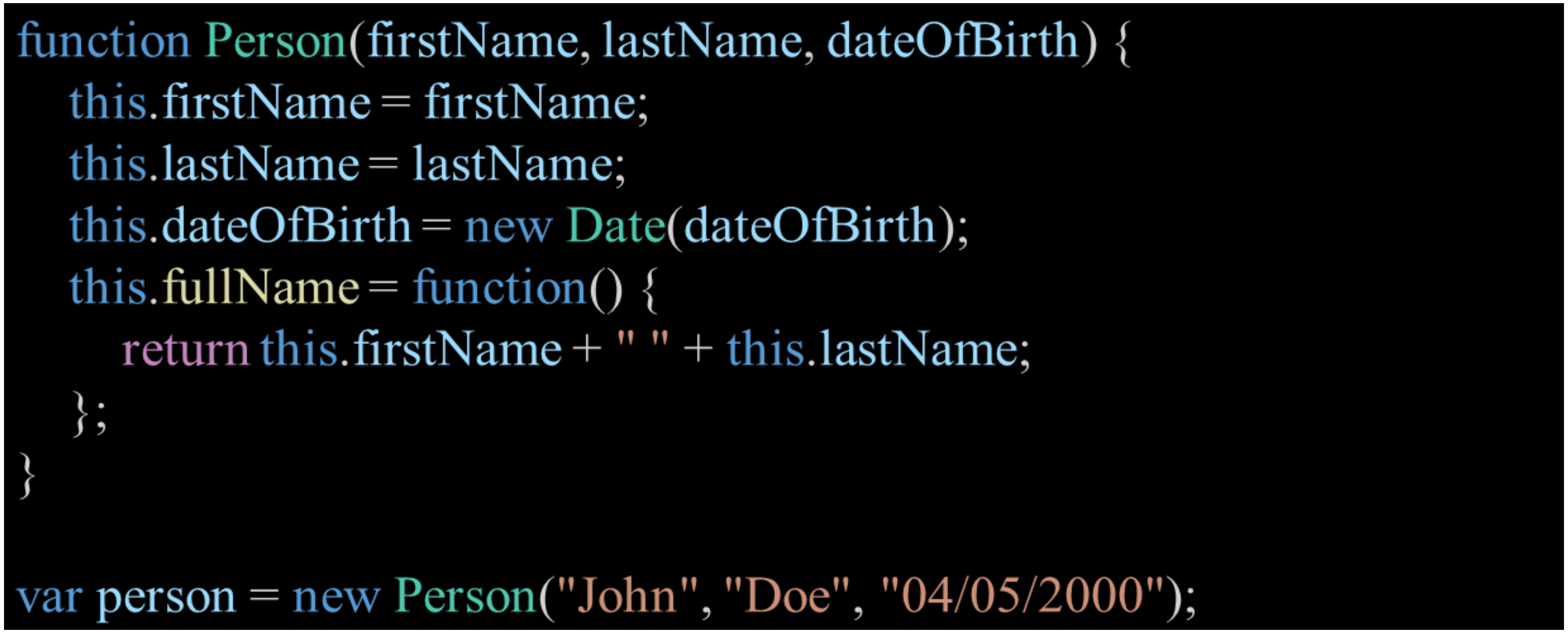


```
var student = new Object();
student.name= "souad";
student.level="2nd year";
student.age="22";

function Student (name,level,age, moyS1, moyS2){
    this.name=name;
    this.level=level;
    this.age=age;
    this.moyS1 = moyS1;
    this.moyS2 = moyS2;
    this.genmoy = function () {return(this.moyS1+this.moyS2)/2;}
}
var student1 = new Student("Adel", "2", "22", 14, 15);
console.log(student1.genmoy());
```

Object creation

- **Using a constructor function**



```
function Person(firstName, lastName, dateOfBirth) {
    this.firstName = firstName;
    this.lastName = lastName;
    this.dateOfBirth = new Date(dateOfBirth);
    this.fullName = function() {
        return this.firstName + " " + this.lastName;
    };
}

var person = new Person("John", "Doe", "04/05/2000");
```

Note: Choose the method that best suits your needs based on the structure and complexity of the object you want to create.

Javascript

Creating instance using **JSON** format:

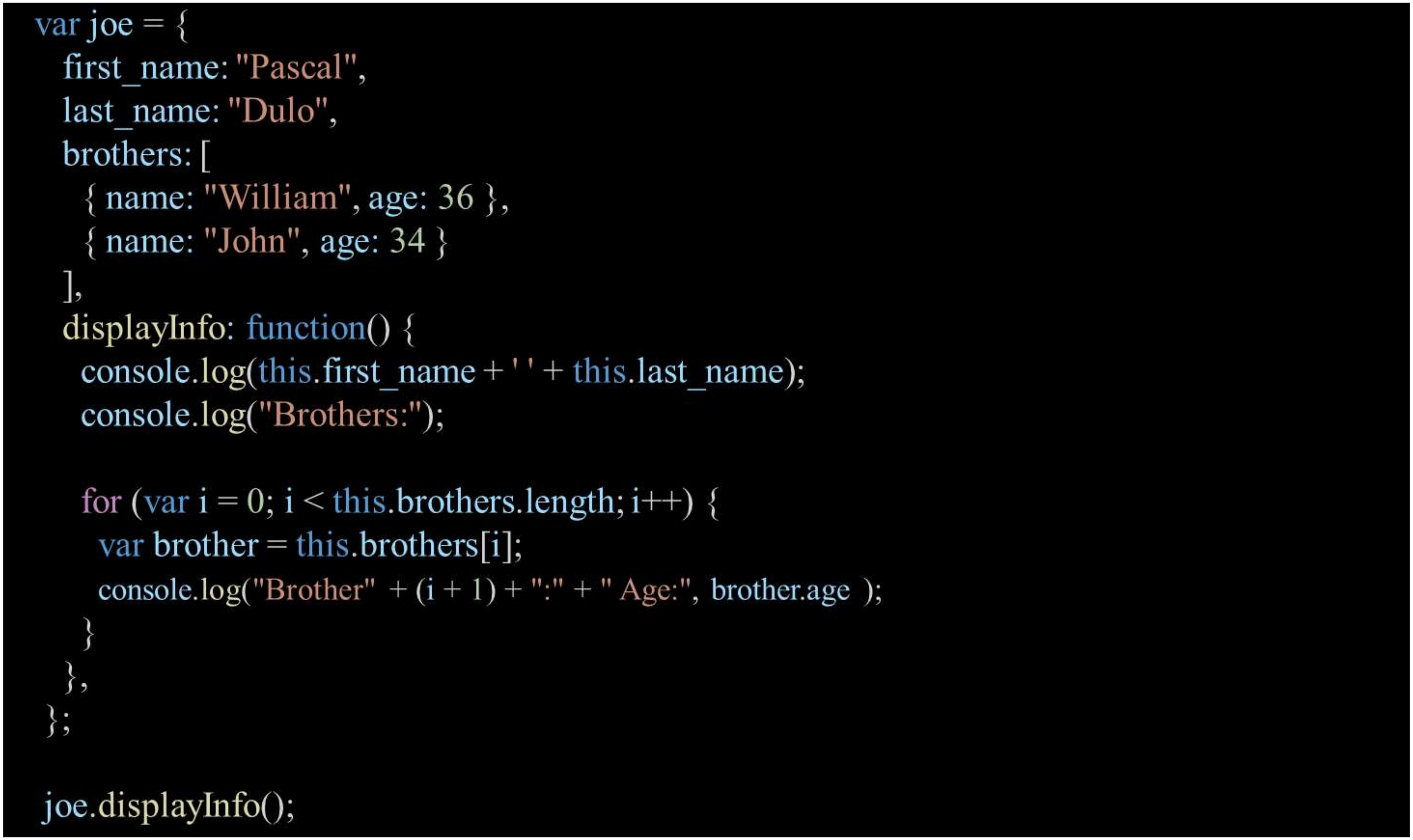
- Definition (JSON –JavaScript Object Notation)
- JSON: data format that allows the serializetion of objects.
- Simplified implementation (compared to XML).
- Natively recognized by JavaScript.

https://json.org/example.html

{JSON}

JavaScript Objects

- **Using JSON format:**



```
var joe = {
  first_name: "Pascal",
  last_name: "Dulo",
  brothers: [
    { name: "William", age: 36 },
    { name: "John", age: 34 }
  ],
  displayInfo: function() {
    console.log(this.first_name + ' ' + this.last_name);
    console.log("Brothers:");

    for (var i = 0; i < this.brothers.length; i++) {
      var brother = this.brothers[i];
      console.log("Brother" + (i + 1) + ":" + " Age:", brother.age );
    }
  },
};

joe.displayInfo();
```

JavaScript Objects

- Objects **as associative Arrays**.

- In JavaScript, an object is an associative array, with attributes and methods identified by their names.

Javascript Objects

- **Access to Object Properties**

```
person1 = new Person("Jack", "Dulo", 18);
var firstName = person1.firstName; // dot notation
var lastName = person1["lastName"]; // associative array notation

// Accessing all properties:
for (var i in person1) {
    alert("Attribute: " + i + ", value: " + person1[i]);
}
```

Javascript Objects

Basic Objects

Object	Description
Array	Enables the manipulation of arrays
String	Allows to manipulate strings.
Math	Offers methods for handling common mathematical functions (log, exp, etc).
Date	Allows manipualtion of current date and provides methods for performing operations on date, hours, minutes and seconds.
Boolean	Manipulation of logic values.
Number	Manipulation of numeric values and constants.
Function	Code designed to perform a task.

JavaScript Objects

POOP

- **Pseudo Object-Oriented Programming: POOP**

  – Refers to the **use of *OOP techniques in JavaScript***.

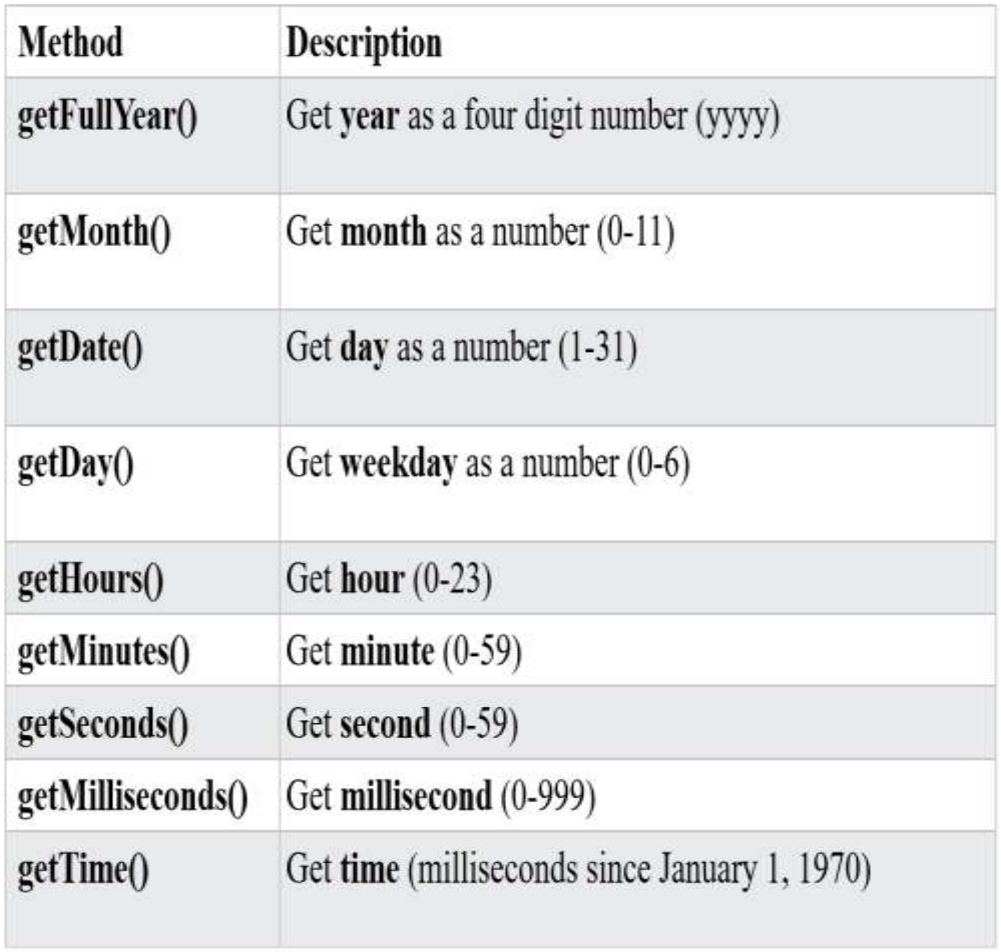
  – Pseudo-classes can be created with properties and methods because in JS, there is no concept of inheritance and polymorphism.

  – There are predefined pseudo-classes that can be:

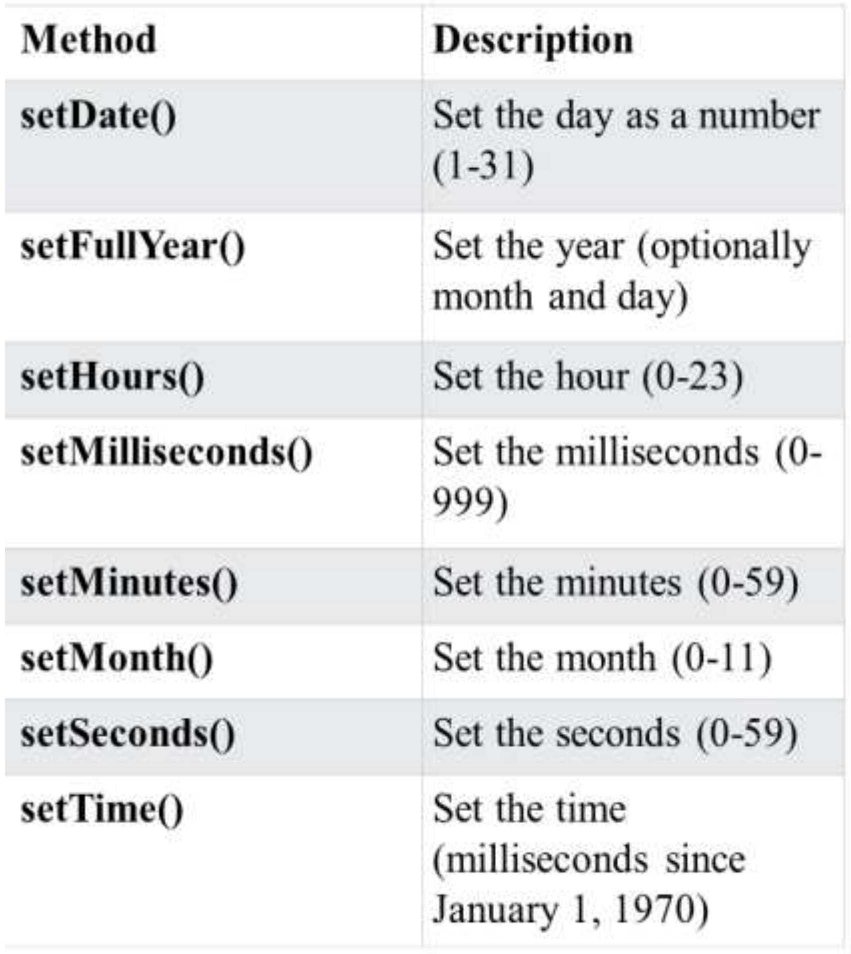
    - **Usual pseudo-classes**: String, Date, Math, Array.
    - **Window relates pseudo-classes:** window, document, history, location.

JavaScript Objects

- **Usual pseudo-classes: "Date"**
  - **Allows manipulation of dates; it only has methods (no properties).**



Method	Description
getFullYear()	Get **year** as a four digit number (yyyy)
getMonth()	Get **month** as a number (0-11)
getDate()	Get **day** as a number (1-31)
getDay()	Get **weekday** as a number (0-6)
getHours()	Get **hour** (0-23)
getMinutes()	Get **minute** (0-59)
getSeconds()	Get **second** (0-59)
getMilliseconds()	Get **millisecond** (0-999)
getTime()	Get **time** (milliseconds since January 1, 1970)



Method	Description
setDate()	Set the day as a number (1-31)
setFullYear()	Set the year (optionally month and day)
setHours()	Set the hour (0-23)
setMilliseconds()	Set the milliseconds (0-999)
setMinutes()	Set the minutes (0-59)
setMonth()	Set the month (0-11)
setSeconds()	Set the seconds (0-59)
setTime()	Set the time (milliseconds since January 1, 1970)

JavaScript Objects

- **Usual pseudo-classes: "Array"**
  - Allows the definition of arrays with a single index.

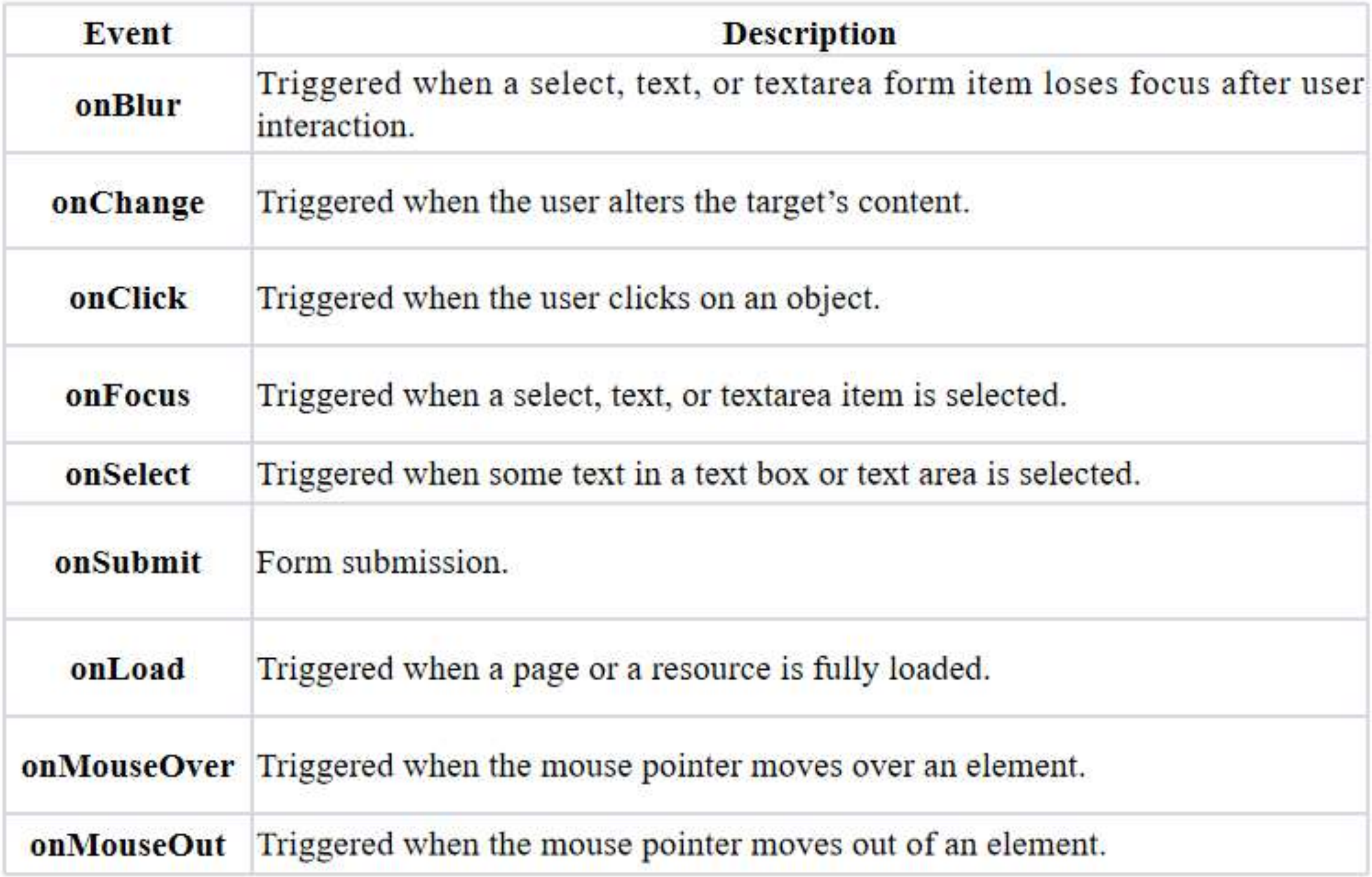
```
matrix = new Array(20); // defines an array with 20 elements numbered from 0 to 19
matrix[15] = 4.56; // value of an element in the array
```

  - This pseudo-class has only one property: **length**, and three methods:
  - **join():** concatenation of all elements into a string (separator to be specified, otherwise a comma).
  - **sort():** sorting with an optional criterion to be specified.
  - **reverse():** transposition.

JavaScript Objects

- **Window pseudo-classes:** Related to the display objects manipulated by the browser. The key classes include:
  - The pseudo class **window**: Display area.
  - The pseudo class **document**: Content of the window.
  - The pseudo class **history**: Stores the sequence of sites visited by their URLs.
  - The pseudo class **location:** Getting the current URL of the page and redirect the browser.

Event Driven Programming



Event	Description
onBlur	Triggered when a select, text, or textarea form item loses focus after user interaction.
onChange	Triggered when the user alters the target's content.
onClick	Triggered when the user clicks on an object.
onFocus	Triggered when a select, text, or textarea item is selected.
onSelect	Triggered when some text in a text box or text area is selected.
onSubmit	Form submission.
onLoad	Triggered when a page or a resource is fully loaded.
onMouseOver	Triggered when the mouse pointer moves over an element.
onMouseOut	Triggered when the mouse pointer moves out of an element.

Event Driven Programming

- **Establishing an event handler:**
  - Use a tag and add the event keyword with javaScript code that specifies the action to be executed if the event occurs.

```
<TAG onSomething="javascript code">
```

References

https://www.cs.uct.ac.za/mit_notes/web_programming/pdfs/chp13.pdf

https://www.heelpbook.net/2014/javascript-events-onblur-onchange-onclick-onfocus-onselect-onsubmit/

https://www.w3schools.com/js/js_syntax.asp