# Projeto em Design Digital

Introduction to JavaScript

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# JavaScript

- A programming language for the Web
- Make web pages interactive
- Access and modify content in real time

# HTML, CSS, and JavaScript


**Content**

.html

**Presentation**

.css

**Behavior**

.js

# Script

- JavaScript is a scripting language
- A script is a series of instructions that a computer can follow to achieve a goal
- Instructions are followed one-by-one in the specified order

# *Including JavaScript files*

- Use the *script* tag to include JavaScript files
- Place JavaScript files before the closing of the *body* tag

```
    ...
    <script src="js/scripts.js"></script>
  </body
</html>
```

# JavaScript syntax

## *Statements*

- Each individual instruction or step is called a statement
- Each statement should start on a new line and end with a semicolon
- JavaScript is case sensitive

```
document.write("Hello World");
```

# *Comments*

- Write comments to explain what the code does

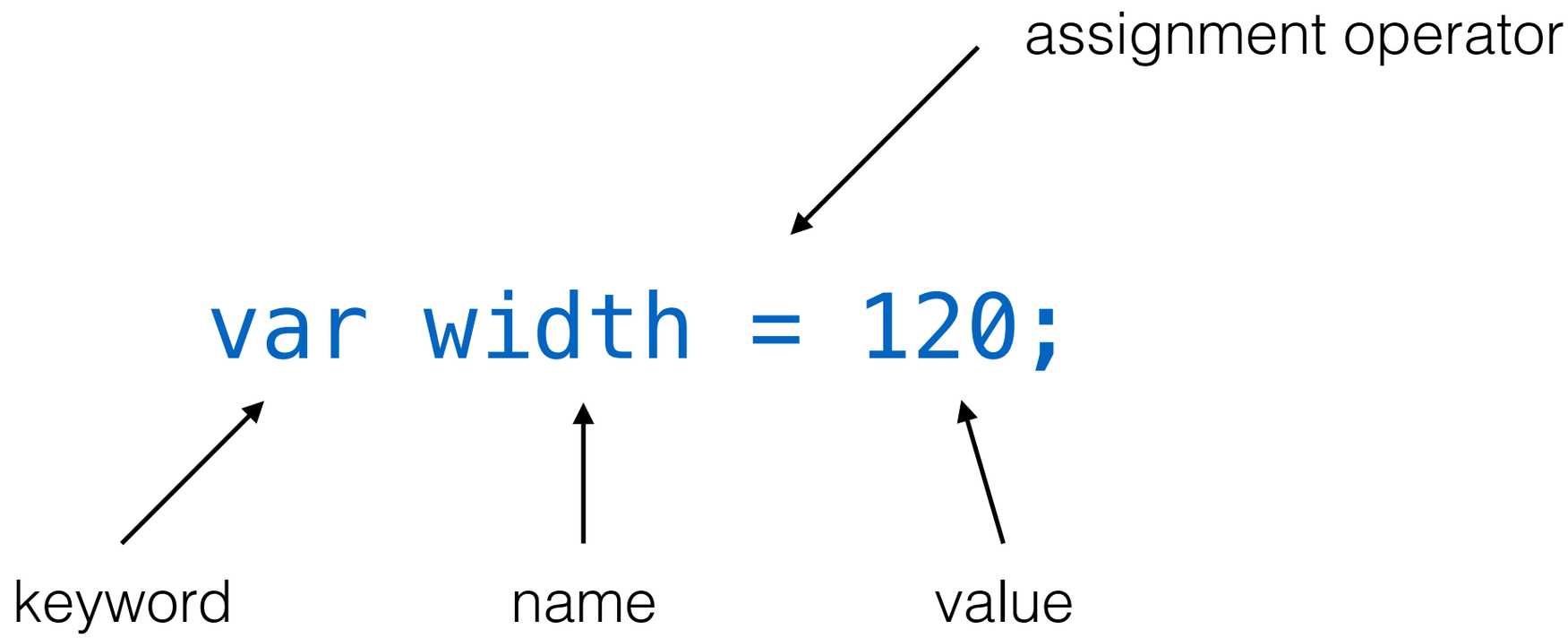
```
/*
  Block comment
  It can take several lines
*/

// Single line comment
```

# *Variable*

- Variables store pieces of information temporarily
- Variables names must begin with a letter, & or _
- They can contain letter, numbers, $, or _
- Variables are case sensitive
- If a variable is made up of more than one word use *camelCase*

How to declare a variable



Changing the value of a variable

```
width = 40;
```

## *Data types*

- Numeric: `0.75`
- String: `"Hello world"` or `'Hello world'`
- Boolean: `true` or `false`

## *Arrays*

- Are used to store a list of values
- Use them to keep related information together
- Values are put in square brackets and separated by a comma

```
var colors = ['red', 'green', 'blue'];

var sizes = [10, 30, 60];
```

Accessing values in an array:

- Values is an array are accessed as if they were in a numbered list
- Index values start at 0

```
var colors = ['red', 'green', 'blue'];

colors[0]; // => red
colors[1]; // => green
colors[2]; // => blue
```

# *Operators*

| Name | Operator | Example | Result |
|---|---|---|---|
| Addition | + | 10 + 5 | 15 |
| Subtraction | − | 10 - 5 | 5 |
| Multiplication | * | 10 * 5 | 50 |
| Division | / | 10 / 5 | 2 |
| Increment | ++ | i++ | 11 |
| Decrement | −− | i-- | 9 |
| Modulo | % | 10 % 3 | 1 |

## *String operator*

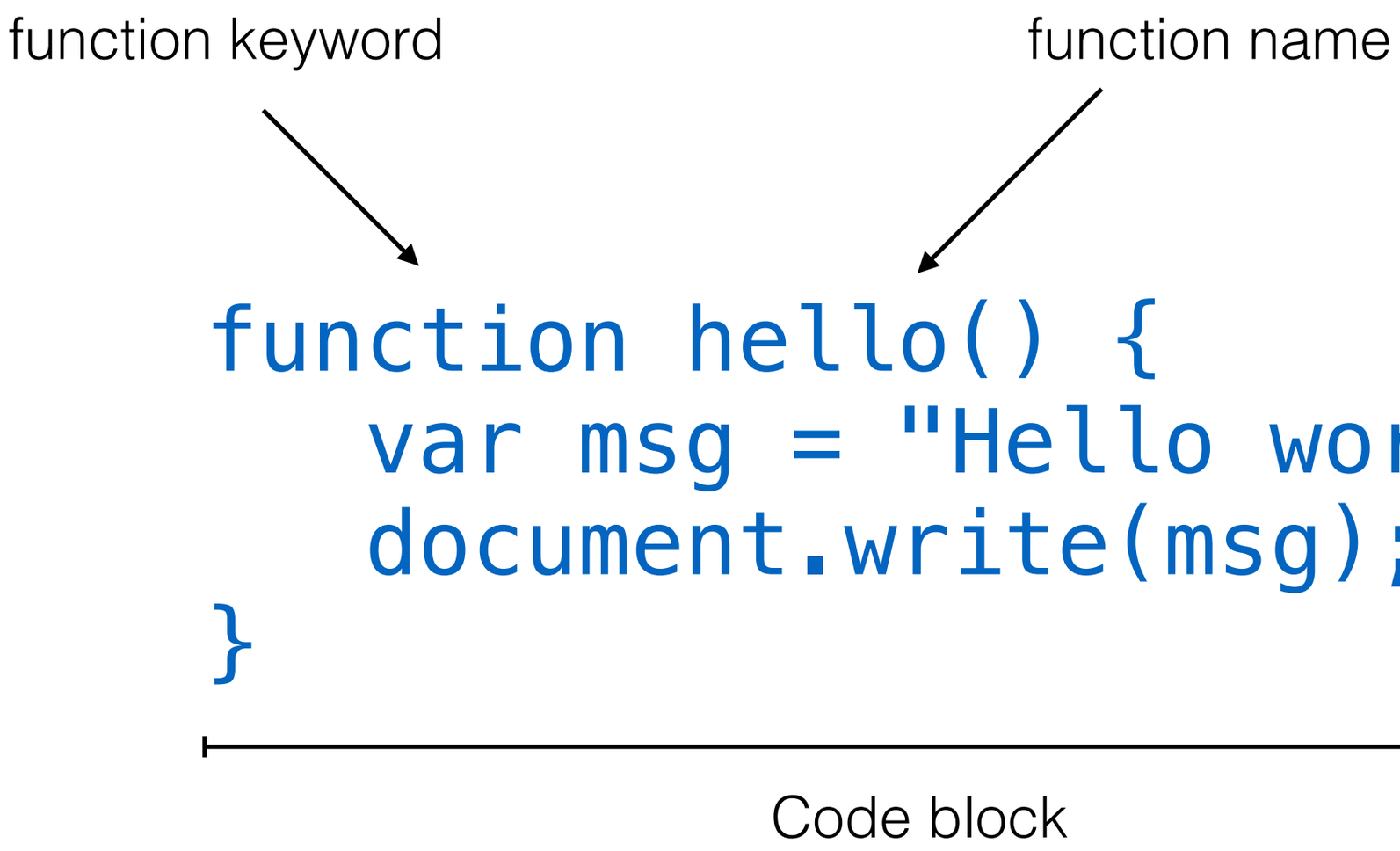
- Use the + symbol to join strings

```
var name = 'John';
var greeting = 'Hello ' + name;
document.write(greeting) // => Hello John
```

# *Functions*

- Functions let you group a series of statements together
- Functions allow you to reuse code
- Each function should perform a single task
- A function is declared once, but can be called as many times as necessary

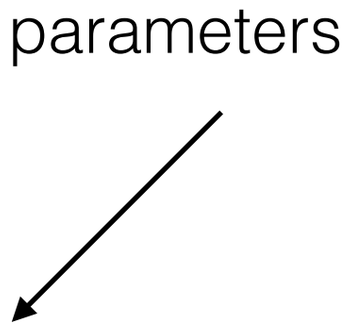
# How to declare a function



Calling a function

```
hello();
```

## *Functions parameters*




```
function getFullName(first, last) {
    var fullName = first + " " +  last;
    document.write(fullName);
}
```

# Calling a function with parameters

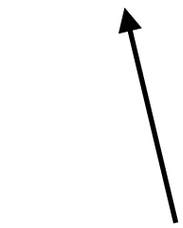
```
var firstName = "John";
var lastName = "Doe";

getFullName(firstName, lastName);

// => John Doe
```

## *Return statement*

```
function getFullName(first, last) {
    var fullName = first + " " +  last;
    return fullName;
}
```



return value

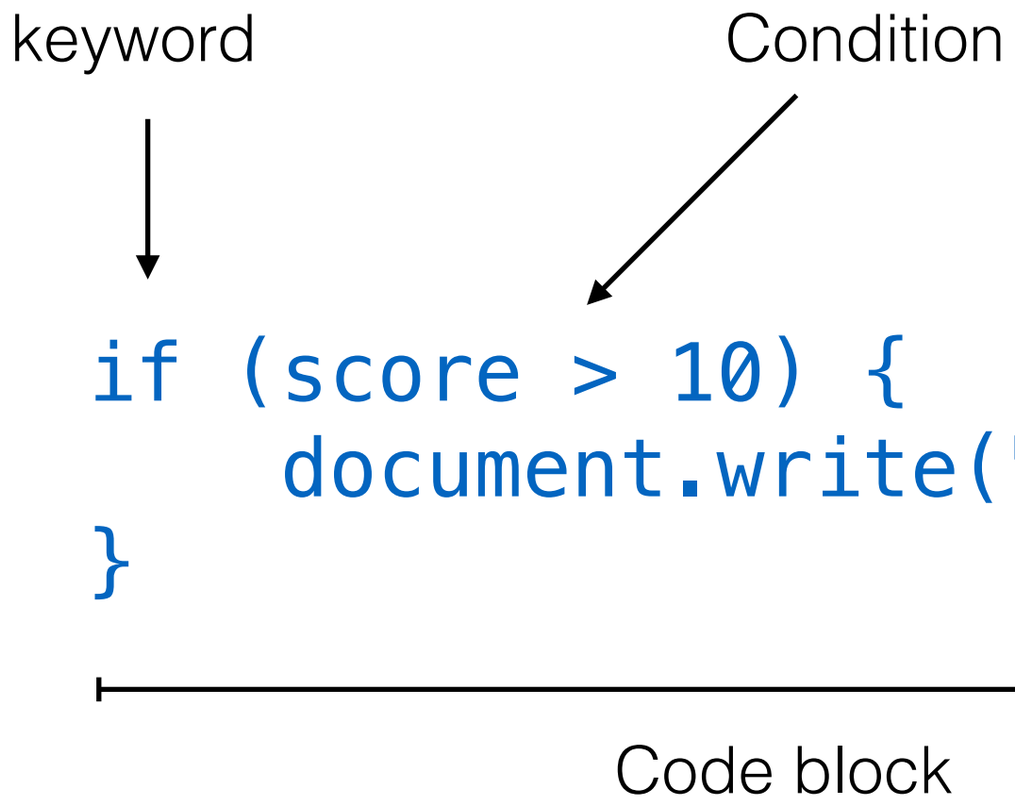
# Returning a value

```
var firstName = "John";
var lastName = "Doe";

var fn = getFullName(firstName, lastName);
document.write(fn);

// => John Doe
```

# *Conditions: if statements*



# *Conditions: if...else statements*

Code to be executed if the condition is true

```
if (score > 10) {
    document.write("Great!");
} else {
    document.write("Try again");
}
```

Code to be executed if the condition is false

# *Comparison operators*

| | **Operator** |
|---|---|
| Is equal  to | == |
| Is not equal to | != |
| Greater than | > |
| Less than | < |
| Greater than or equal to | >= |
| Less than or equal to | <= |

# *Logical operators*

| | Operator | Example | Result |
|---|---|---|---|
| And | && | x > 3 && x < 6 | TRUE |
| Or | \|\| | x > 3 \|\| x < 1 | TRUE |
| Not | ! | !(x < 1) | TRUE |

```
var x = 4
```

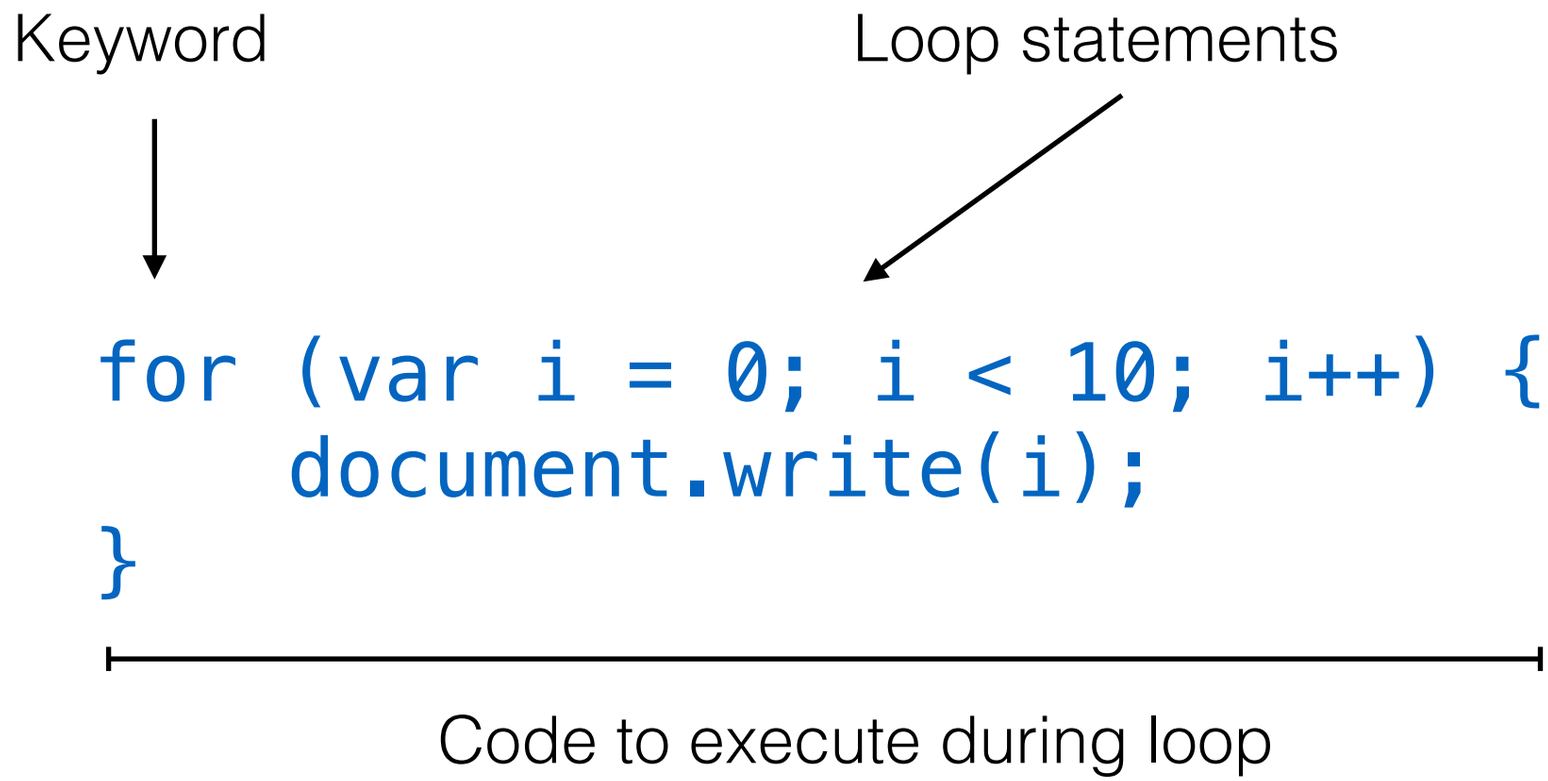
# Example

```
if (score > 10 && score <= 12) {
    document.write("Keep going!");
}
```

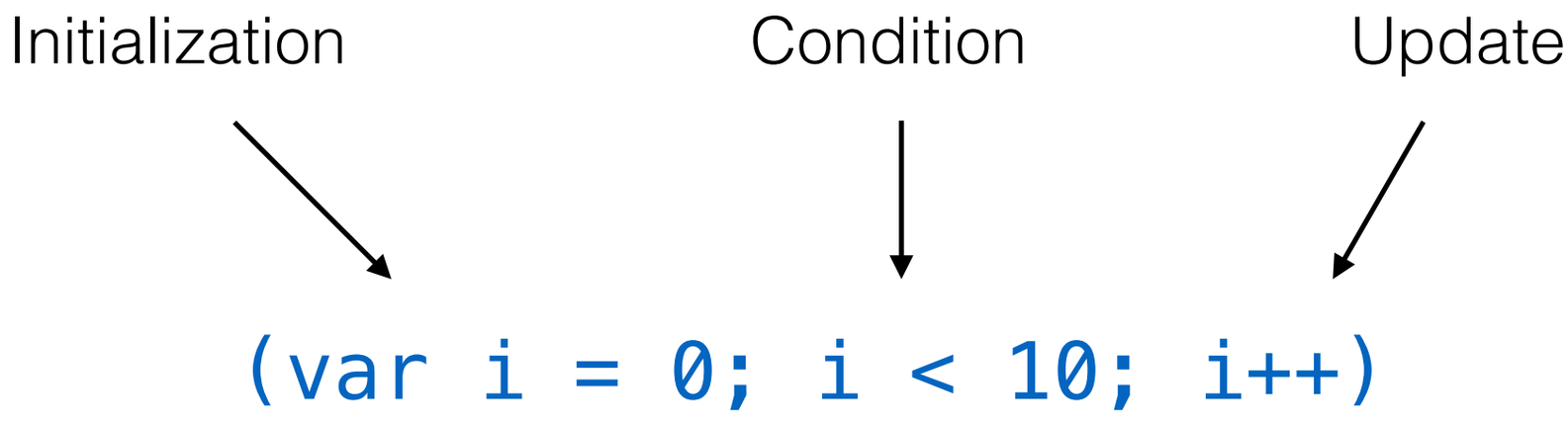
## *Conditions: switch*

```
switch(level) {
case 'one':
    document.write('Level 1');
    break;
case 'two':
    document.write('Level 2');
    break;
case 'three':
    document.write('Level 3');
    break;
default:
    document.write('Level does not exit');
    break;
}
```

## *Loops: for*


Keyword
Loop statements
for (var i = 0; i < 10; i++) {
document.write(i);
}
Code to execute during loop

## *Loop statements*



## Example

```
for (var i = 0; i < 10; i++) {
    document.write(i + '<br>');
}

// Output
0
1
2
3
4
5
6
7
8
9
```

# *Objects*

An object is a collection of related data or functionality, consisting of a set of variables and functions

- Variables are known as **properties**
- Functions are known as **methods**

```
var objectName = {
   key: value
}
```

# *Creating an object*

```
var user = {
   name: 'Steve Jones',
   age: 34,
   gender: 'male',
   greeting: function() {
      return 'hello' + this.name;
   }
}
```

Properties

Method

## *Accessing an object*

```
var userName = user.name;

user.greeting();
```

## *“this” keyword*

Refers to the current context

```
var user = {
   name: ‘Steve Jones’,
   age: 34,
   gender: ‘make’,
   greeting: function() {
      return ‘hello’ + this.name;
   }
}
```

# Exercises

1. Write a script that creates an HTML list with 100 elements.
2. Write a script that calculates the sum of all numbers from 1 to 100.
3. Write a function that takes a number *n* and sums all numbers from 1 to *n*
4. Write a function to calculate the area of a rectangle.
5. Write a function that takes the width and height as arguments and returns if a image is in portrait or in landscape.
6. Write a function that tells if a number is odd or even.
7. Write a script that iterates through an array with five different colors and writes the name of those colors.

8. Write a script to convert to convert temperatures to and from Celsius/ Fahrenheit.

9. Write a function that takes an array of numbers and returns the largest element.

10. Write a function that computes the first 100 fibonacci numbers.

11. Write a script to determine if a year is a leap year.