JavaScript programming language basis

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Main JavaScript Programming Lenguage Properties

What is JavaScript and what can I use it for? In short, JavaScript is a programming language. A **programming language** is nothing more than a "language" that we use to give commands to a microchip or processor. To understand this metaphorically, let's say we make friends with an ally named "Joe". Joe is our friend, and he is willing to do everything we ask him to do, however, Joe does not speak English like us, he speaks "binary", so how do we communicate with Joe and ask him to make food for us and order our room, we use a translator, another friend who can speak our language and also Joe's language. Luckily we have another friend called "Charles", he is able to speak our language and also Joe's, so we tell Charles:

- **We to Charles**: Charles tell Joe to please make some nice pasta and if he can please tidy up my room!!!.

- **Charles to us**: chill dude, I got this!!!!

- **Charles to Joe**: 0100 0100 0100 1010 0101 0010 1010 0010 0010 0001 1110 1011 1010 (Hey Joe, Santi needs you to make some pasta and tidy up his room!!!).

In this example, English would be the programming language we are using, Joe would be the processor of our computer and Charles would be the so-called compiler or interpreter of the programming language. And this is basically all we do when programming, write a series of instructions with a programming language (that series of instructions written in a programming language is called **code** or **source code**), pass those instructions to a compiler or an interpreter (if we use a compiler or an interpreter this depends on the programming language we are using, there are hundreds of programming languages, but don't worry, you don't have to learn all of them), and this compiler translates the source code to binary code also called **machine code** (which would be, according to the example, the language that Joe speaks). Here I leave an illustration for you to visualize it better.
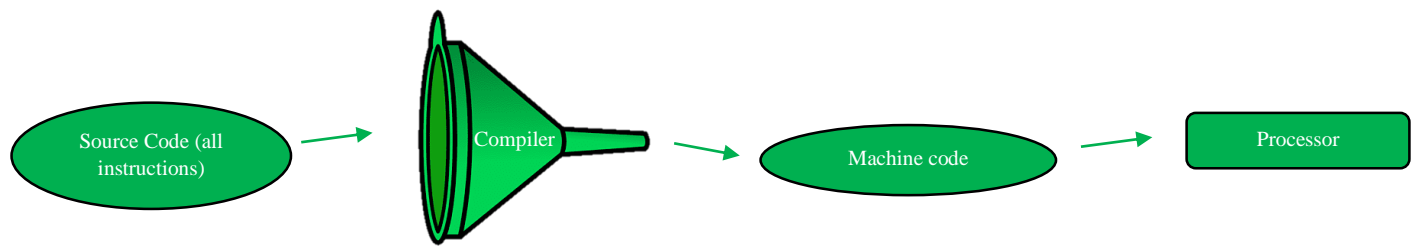
Now back to JavaScript, we already know that JavaScript is a programming language and is therefore used to send instructions to the processor. However, what makes JavaScript the most widely used programming language today? (11 Most In-Demand Programming Languages in 2022).

JavaScript properties

Multiparadigm: this implies that the JavaScript code can be written through different programming logics (for more information see https://en.wikipedia.org/wiki/Programming_paradigm).

Cross-platform: JavaScript code can be executed from any device.

Object Oriented: this means that the data we use in the code made with JavaScript can be stored in structures known as objects (this is a more advanced topic, if you are interested in reviewing it, I recommend you to check the documentation: https://developer.mozilla.org/en-US/docs/Learn/JavaScript/Objects/Object-oriented_programming).

Interpreted: JavaScript is characterized for being an interpreted language, what is the difference between a compiled language and an interpreted one? Well, let's go back to the example of Joe and Charles. Using a compiled language, Charles would first listen to all the instructions we have for Joe, and then tell Joe what to do. So, this means that using a compiled language, we would first write all the instructions, then compile all the instructions, and then pass all the instructions in machine code to the processor. With an interpreted language, things are a little different, since an interpreted language, instead of using a compiler, uses an interpreter. To explain how the interpreter works, let's simply imagine that Charles, instead of waiting for us to finish telling him everything we want Joe to do for us and then translating it, Charles listens to what we tell him, translates it mentally and tells Joe while we continue talking to him. This means that a programming language interpreter translates the source code instruction by instruction into binary code and passes it to the processor, all at the same time instruction by instruction until it reads all the instructions in the program.
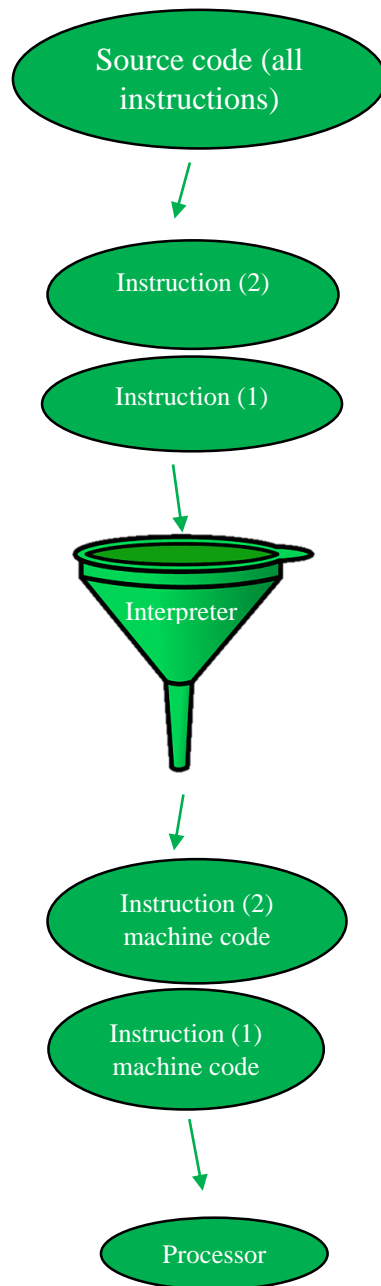
In the case of JavaScript, its interpreter is the web browser. Now you may be wondering how is it that a web browser like Firefox or Chrome are able to interpret JS code, and the answer is that browsers exist thanks to JavaScript. While it is true that today JavaScript can be used for creating games, creating desktop applications, etc ... Since its inception it was designed specifically for use in web development, and to understand the influence of JavaScript in web development we have to know the existence of HTML and CSS. If you are studying JavaScript is probably because you are interested in the world of web development, and you probably know that a web page is basically made up of three different technologies, these are JavaScript, HTML and CSS. A web page is something like a power point presentation, it is a schematic and ordered structuring of a certain amount of data. Well, web pages are created

using HTML, CSS and JavaScript code, and all this code is interpreted by the web browser we are using. As this is not a document about HTML or CSS, I recommend you to investigate on your own what each technology is responsible for in a web page, for this I recommend you always see the documentations (https://developer.mozilla.org/en-US/docs/Web/HTML) (https://developer.mozilla.org/en-US/docs/Web/CSS). In summary, HTML is in charge of creating the page elements, CSS is in charge of styling those elements, and JavaScript is in charge of adding dynamism through computational logic to the HTML elements. Let's look at it through Joe and Charles' example.

Remember that Joe is able to do whatever we ask him to do, and that Charles in this case is able to speak 3 different languages. So we need Joe to create a billboard for us and we want this billboard to be made up of pieces of paper to which we write the information we want and color it in the colors we need, in addition to this we need the pieces of paper to move if you pull a thread. So what we will do, supposing that Charles is the web browser and that Joe is the processor. In this case, we'll tell him how many pieces of paper he's going to stick on the billboard through HTML, we'll tell him what color the pieces of paper will be through CSS and we'll specify how he'll create the thread system through JavaScript.

At the end of the day all that is happening is that we are telling the browser how we want it to render elements on the screen through HTML and CSS, on the other hand, we tell it how these elements are going to behave, through JavaScript.

Well this is the most basic thing you should know about web development, thank you very much for your attention.