What is JavaScript?

JavaScript, often abbreviated as JS, is a compact, object-based scripting programming language that is used for developing both client and server web based applications (or simply internet applications).

On the client side, JavaScript can be used to create programs that are executed by a web browser within the reference of a web page.

On the server side, JS is used to create web server programs that process the information submitted by a web browser and then update the browser's web page accordingly.

JavaScript is a very popular, easy to learn web-based programming language, completely different from Java.

JavaScript is one of the backbones of web development, along with HTML semantic markup language and CSS styling.

Therefore, it is also used in conjunction with HTML and CSS to design interactive and responsive web pages and websites. It helps to improve website or webpage functionality.

JavaScript is a lightweight programming language that is interpreted by web browser software when the web page is loaded.

JavaScript is a great programming language to learn because it's still the most popular and commonly used script language around everywhere.

For example, web browsers like Chrome, Firefox, and Internet Explorer all use JavaScript. Nearly every major websites, including Google, Yahoo, Facebook, Twitter, Flickr, and Netflix use JavaScript extensively to create interactive web applications.
Websites like Gmail, Facebook, and Twitter use JavaScript to make it simpler to send emails, post comments, or browse websites. For example, when you read your tweets on Twitter and you see more tweets at the bottom of the page as you scroll down, that is function due to JavaScript.

Due to its wide usage in the world, it has built multiple frameworks. Frameworks make coding easier, improve and enhance the functionality of languages.

Features of JavaScript Language (JS)

1. JavaScript (JS) is a high-level, interpreted, cross-platform, and open-source programming language.

2. JavaScript (js) is a lightweight object-based scripting programming language that is mainly used in web programming.

3. It supports both client-side and server-side scripting.

4. It is responsible for making web pages interactive and responsive. Like HTML defines the content and structure of web page, CSS styles the layout, and JavaScript make that web page interactive.

5. JS is not a compiled language, but it is an interpreted language. The JavaScript interpreter embedded inside the web browser software (such as Microsoft Internet Explorer, Google Chrome, Firefox, Opera, etc) translates the JavaScript code in the order they are written.

6. All popular web browsers such as Chrome, Firefox, Opera, etc. support JavaScript as they provide built-in execution environments.

7. JavaScript follows the syntax and structure of the C programming language. Thus, it is a structured programming language.

8. JavaScript is a weakly typed language, where certain types are implicitly cast (depending on the operation).

9. It is a case-sensitive language.

10. JavaScript is supportable in several operating systems including, Windows, macOS, etc.

11. It provides good control to the users over the web browsers.

12. JavaScript programs do not depend on any specific hardware platform or operating system. It run inside HTML document.

13. Since JS is open-source, therefore, everyone can use JS without purchasing a license.

14. Since JS is a client-side scripting language, JS code can be directly embedded into HTML pages.

History of JavaScript (JS)

JavaScript was first introduced in December 1995. This technology was developed in just ten days by Brendan Eich at Netscape Communication Corporation for both client-side and server-side scripting.

JavaScript was originally called Mocha, but quickly became known as LiveScript and, later, JavaScript.

Before the introduction of JavaScript, Netscape worked into a development alliance with Sun Microsystems but a disagreement arose between Netscape and Microsoft over its licensing.

So, Microsoft created their own version named "JScript" which had extended features and some differences. At that time, there were two different JavaScript versions floating around the world: JavaScript and JScript.

With industry fears rising, it was decided that the language must be standardized. In June 1997, JavaScript 1.1 was submitted to the European Computer Manufacturers Association (ECMA) as "ECMAScript".

It helped to stabilize the core features but the name, sounding like some kind of disease, was not widely used at that time. So, the language was finally renamed to 'JavaScript' in December 1995. From then, JavaScript came into existence.

Versions of ECMAScript (and JavaScript)

Every year a different edition or version of ECMAScript is released. The most recent editions of ECMAScript at the time of this writing JavaScript tutorial is as follows:

1. ECMAScript 6 (ES6, 6th edition):

This edition was released in June 2015. In this edition of ECMAScript, there was added new syntax for complex applications, included iterators and for...of loops, arrow functions, maps, typed-arrays, promises, variable declarations using let and const, and many more.

Morden web browsers supports SVG by using this version of JavaScript and is a major functional release.

2. ECMAScript 7 (ES7, 7th edition):

This edition was released in June 2016. The features like block-scoping of variables, exponentiation operator, and support for asynchronous execution were added in this versions of JavaScript.

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3. **ECMAScript 8 (ES8, 8th edition):**

This version was released in June 2017. This version of JavaScript added support for async/await constructions.

4. **ECMAScript 9 (ES9, 9th edition):**

This version of JavaScript (released in June 2019) added the features like rest/spread operators for variables, asynchronous iteration and additions to regular expressions.

5. **ECMAScript 10 (ES10, 10th edition):**

This version (released in June 2019) introduced features to object prototypes and changes to Array sorting.

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6. **ECMAScript 11 (ES11, 11th edition):**

This version of JavaScript was released in June 2020. In this edition of JavaScript, the features like an optional object chaining operator for array and functions were introduced.

7. **ECMAScript 12 (ES12, 12th edition):**

The 12th edition, ECMAScript 12 was released in June 2021. This edition introduces the features like replaceAll method for strings; Promise.any, AggregateError, WeakRef, and FinalizationRegistry, separators for numeric literals, logical assignment operators, and Array.prototype.sort.

Types of JavaScript

JavaScript is categorized into two types. They are:

- Inline JavaScript
- External JavaScript
Let's understand in short one by one with examples. In further tutorials, we will discuss this in more detail.

Inline JS

Inline JS code is embedded (or put) directly in the HTML document and enclosed in the default syntax of JavaScript. For example:

```javascript
Example 1:
<scirpt>
        document.write("Good morning");
</script>

Example 2:
<script>
        alert("Good evening");
</script>
```

External JS

We need to use the src attribute with <script> tag to call JavaScript code from an external text file. It is useful when we have a lot of codes or we want to run external files from several pages because any number of pages can call the same external javaScript file.

For example, suppose we want to use the below script as an external javaScript file.

```javascript
<html>
<head>
      <title>JavaScript Tutorial</title>
      <script src = "alertscript.js"></script>
</head>
</html>
```

Some Useful Terminology

1. **Website:** A website is a collection of web pages, graphics, and multimedia objects.

2. **Web page:** The page which is created by using web languages such as HTML, CSS, and JavaScript is called webpage.

3. Web server: A computer that stores webpages in form of directories and files and provides these files to be read is called web server. It runs some special software like Apache.

The main function of web server is to accept client requests for information and respond to client requests through web pages with request information.

4. Web client/Web browser: A computer that provides the facility to read information stored in the format of text, graphics, animation from the web pages is called web client.

Web client installs the special application software called web browser that connects to the appropriate server and provides an interface to read information returned by the web server.

5. Client-side scripting language: Scripts that are executed by web browsers with or without connecting web server is called client-side scripting language.

An example of client-side scripting language is JavaScript. It is executed at a client (i.e. user) computer and takes too much less time. Scripting code is visible to the user and not secure.

6. Server-side scripting language: Scripts that are executed and processed by web server is called server-side scripting language.

Examples of server-side scripting languages are PHP, JSP, etc. Script code is run at a server and is more secure. It takes too must time compare to the client-side script because it needed sending requests to the server for execution.

Application of JavaScript

JavaScript is used to design interactive and responsive websites. It is mainly used for:

- Client-side validation
- Creating dynamic drop-down menus.
- Creating cookies.
- Validating input data.
- Displaying date and time
- Displaying pop-up windows and dialog boxes (like an alert dialog box, confirm dialog box, and prompt dialog box),
  Displaying clocks, etc.

Advantage of JavaScript Programming Language

Like all other computer programming languages, JavaScript has also certain advantages that are as follows:

1. Speed: JavaScript is very fast in the client-side area because the function of any code can be executed immediately instead of having to contact the web server and wait for response.

2. Simplicity: JavaScript is relatively easy to learn and implement. For example, we need only a text editor like notepad to write a JavaScript program.

3. Cross-browser compatibility: Currently, JavaScript is only the scripting language supported by the popular web browsers like Netscape Navigator, Microsoft Internet Explorer, Google Chrome, etc.

4. Versatility: JavaScript acts nicely with other computer languages and therefore, can be used in a huge variety of applications. It can be added into any web page regardless of the file extension. JavaScript can also be used inside scripts written in PHP and Perl languages.

5. Server Load: Since JavaScript runs on the client-side, data validation is also possible on the web browser itself rather than sending it off to the web server.

In case of any discrepancy, the whole website does not need to be reloaded. The web browser updates only the elected part of the page.

6. Reduce code length: JavaScript improves the performance of web page and website by reducing the code length.

Disadvantage of JavaScript

There are the following disadvantages of JavaScript that are as follows:

1. Security: Since JavaScript code executes on the computer of user, in some cases, it can be exploited for malicious purposes. Therefore, some people prefer to choose to disable JavaScript.

2. Browser support: JavaScript code is interpreted differently by different browsers. It must be executed on various browsers before publishing because older browser might not support some new functions.

Therefore, the client-side scripts can produce a little unpredictable output. While server-side scripts will always produce the same output.

3. Single inheritance: JS only supports single inheritance, not multiple inheritance.

Frequently Asked Questions in Google Search

Before you go ahead on learning JavaScript, here we have listed some small FAQs from Google related to information that may clear up some misunderstandings and misconceptions about this scripting language. You must read these FAQs.

1. Is JavaScript compatible with all web browsers?

Ans: Yes, most popular browsers such as Google Chrome, Firefox, Opera, Safari, Internet Explorer support JavaScript. However, browsers may behave or perform differently in some codes or cases.

In addition to it, JavaScript also has a server-side scripting version and it provides more power to its client-side scripting.

2. Is JavaScript related to the Java Programming Language?

Ans: JavaScript is not directly correlated to *Java programming language*. Although, the way we code JavaScript resembles Java language.

There are also some familiar terms and keywords that are present in both JavaScript and Java. Nevertheless, both are different from each other.

3. Is JavaScript difficult to learn and understand?

Ans: Not really. JavaScript has no complex syntax and set of rules. If you do not know any programming language, still, you will have no difficulty to learn JavaScript.

Basic knowledge of HTML would be sufficient to learn the JavaScript programming language. The difficulty of learning and understanding JavaScript hugely depends on your goal and purpose.

4. For which purpose you are trying to learn JavaScript?

Ans: If you are reading this tutorial to learn basic knowledge such as how to create web forms and minor scripts, you will not need to read everything.

But if you are trying to learn how to create dynamic web pages, how to develop plugins, etc. then you will need to understand everything in here.

In this situation, you will need more practice in coding. Overall, JavaScript is neither very easy nor very hard to learn and understand. Practice makes perfect.

If you follow all JavaScript tutorials from basic to advanced in order, you will not have problems in learning and understanding JavaScript.