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# **1.JavaScript**

* Our **JavaScript Tutorial** is designed for beginners and professionals both. JavaScript is used to create client-side dynamic pages
* JavaScript is an **object-based scripting language** which is lightweight and cross-platform.
* JavaScript is not a compiled language, but it is a translated language. The JavaScript Translator (embedded in the browser) is responsible for translating the JavaScript code for the web browser.

**1. What is JavaScript**

* JavaScript is a light-weight object-oriented programming language which is used by several websites for scripting the webpages. It is an interpreted, full-fledged programming language that enables dynamic interactivity on websites when applied to an HTML document. It was introduced in the year 1995 for adding programs to the webpages in the Netscape Navigator browser. Since then, it has been adopted by all other graphical web browsers. With JavaScript, users can build modern web applications to interact directly without reloading the page every time. The traditional website uses Javascript to provide several forms of interactivity and simplicity.
* Although, JavaScript has no connectivity with Java programming language. The name was suggested and provided in the times when Java was gaining popularity in the market. In addition to web browsers, databases such as CouchDB and MongoDB uses JavaScript as their scripting and query language.

**2. Features of JavaScript**

There are following features of JavaScript:

* All popular web browsers support JavaScript as they provide built-in execution environments.
* JavaScript follows the syntax and structure of the C programming language. Thus, it is a structured programming language.
* JavaScript is a weakly typed language, where certain types are implicitly cast (depending on the operation).
* JavaScript is an object-oriented programming language that uses prototypes rather than using classes for inheritance.
* It is a light-weighted and interpreted language.
* It is a case-sensitive language.
* JavaScript is supportable in several operating systems including, Windows, macOS, etc.
* It provides good control to the users over the web browsers.

**3. History of JavaScript**

* In 1993, **Mosaic**, the first popular web browser, came into existence. In the **year 1994**, **Netscape** was founded by **Marc Andreessen**. He realized that the web needed to become more dynamic.
* Thus, a 'glue language' was believed to be provided to HTML to make web designing easy for designers and part-time programmers.
* In 1995, the company recruited **Brendan Eich** intending to implement and embed Scheme programming language to the browser. But, before Brendan could start, the company merged with **Sun Microsystems** for adding Java into its Navigator so that it could compete with Microsoft over the web technologies and platforms. Now, two languages were there: Java and the scripting language. Further, Netscape decided to give a similar name to the scripting language as Java's. It led to 'Javascript'.
* In May 1995, Marc Andreessen coined the first code of Javascript named '**Mocha**'. Later, the marketing team replaced the name with '**LiveScript**'. But, due to trademark reasons and certain other reasons, in December 1995, the language was finally renamed to 'JavaScript'. From then, JavaScript came into existence.

**4. Application of JavaScript**

JavaScript is used to create interactive websites. It is mainly used for:

* Client-side validation,
* Dynamic drop-down menus,
* 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.

# **2.Web Browser**

* Web Browser is a common term which is frequently used by people while discussing the Internet. However, the exact definition of a web browser is known by few only.

**1. Web Browser Definition:**

* A software application used to access information on the World Wide Web is called a Web Browser. When a user requests some information, the web browser fetches the data from a web server and then displays the webpage on the user’s screen.

## **2. History of Web Browser**

Today web browsers are easily accessible and can be used on devices like computer, laptops, mobile phones, etc. but this evolution of making browsers available for easy use took many years.

Given below are some salient points which one must know with regard to the history of web browsers:

* **“WorldWideWeb”** was the first web browser created by Tim Berners Lee in 1990. This is completely different from the World Wide Web we use today
* In 1993, the **“Mosaic”** web browser was released. It had the feature of adding images and an innovative graphical interface. It was the “the world’s first popular browser”
* After this, in 1994, Marc Andreessen (leader of Mosaic Team) started working on a new web browser, which was released and was named **“Netscape Navigator”**
* In 1995, **“Internet Explorer”** was launched by Microsoft. It soon overtook as the most popular web browser
* In 2002, **“Mozilla Firefox”** was introduced which was equally as competent as Internet Explorer
* Apple too launched a web browser in the year 2003 and named it **“Safari”**. This browser is commonly used in Apple devices only and not popular with other devices
* Finally, in the year 2008, Google released “Chrome” and within a time span of 3 years it took over all the other existing browsers and is one of the most commonly used web browsers across the world

### **3. Functions of Web Browser**

* The main function is to retrieve information from the World Wide Web and making it available for users
* Visiting any website can be done using a web browser. When a URL is entered in a browser, the web server takes us to that website
* To run Java applets and flash content, plugins are available on the web browser
* It makes Internet surfing easy as once we reach a website, we can easily check the hyperlinks and get more and more useful data online
* Browsers user internal cache which gets stored and the user can open the same webpage time and again without losing extra data
* Multiple webpages can be opened at the same time on a web browser
* Options like back, forward, reload, stop reload, home, etc. are available on these web browsers, which make using them easy and convenient

# **3.Document Object Model**

**1. Definition:**

* The Document Object Model (DOM) is a programming interface for **HTML (Hypertext Markup Language)** and **XML** (Extensible markup language) documents. It defines the **logical structure** of documents and the way a document is accessed and manipulated.
* It is called a Logical structure because DOM doesn’t specify any relationship between objects.

**2. Functions**

* DOM is a way to represent the webpage in a structured hierarchical way so that it will become easier for programmers and users to glide through the document.
* we can easily access and manipulate tags, IDs, classes, Attributes, or Elements of HTML using commands or methods provided by the Document object.
* Using DOM, the JavaScript gets access to HTML as well as CSS of the web page and can also add behaviour to the HTML elements. so basically, **Document Object Model is an API that represents and interacts with HTML or XML documents.**

**3. Why DOM is required?**

* HTML is used to **structure**the web pages and Javascript is used to add **behaviour**to our web pages. When an HTML file is loaded into the browser, the Javascript cannot understand the HTML document directly. So, a corresponding document is created (DOM).
* **DOM is basically the representation of the same HTML document but in a different format with the use of objects**.
* Javascript interprets DOM easily i.e Javascript cannot understand the tags(<h1>H</h1>) in HTML document but can understand object h1 in DOM. Now, Javascript can access each of the objects (h1, p, etc) by using different functions.

### **4. Document**

* We can think of a document as a way to structure information, including articles, books, and scientific papers. For Web Developers, a document is a name for a web page, and they consider the DOM as a model for all the stuff on the web page. The DOM calls this stuff objects.

### **5. Object**

* The "stuff" on web pages are objects and are sometimes called elements or nodes. Here are some objects you may run into on a web page:
* **Content.** The most obvious objects on a web page are the content. These can include words, videos, images, and more.
* **Structural elements.** These include divs, containers, and sections. You may not see these elements, but you see how they affect the visible elements because they organize those elements on the web page.
* **Attributes.** Every element on a web page has attributes. These include classes, styles, and sizes, for example. These are objects in the DOM, but they're not elements like the content and structural elements.

### **6. Model**

* A model is a representation of something, and it helps us understand how something is put together. There are models for many things that need to be universally understood, analysed, and used.
* One example of a model being used is for instructions. Blueprints, floor plans, and IKEA directions are all examples of this kind of model. They show the object being modelled with enough detail that it can be recreated.
* The DOM is a model for web pages. It acts as a set of instructions for web browsers.