

JavaScript

JavaScript is a **programming language** used to create dynamic content for websites. It is a **lightweight, cross-platform, and single-threaded** programming language. JavaScript is an **interpreted** language that executes code line by line providing more flexibility.

- [HTML](#) adds Structure to a web page, [CSS](#) styles it and JavaScript brings it to life by allowing users to interact with elements on the page, such as actions on clicking buttons, filling out forms, and showing animations.
- JavaScript on the client side is directly executed in the user's browser. Almost all browsers have JavaScript Interpreter and do not need to install any software. There is also a browser console where you can test your JavaScript code.
- JavaScript is also used on the Server side (on [Web Servers](#)) to do operations like accessing databases, file handling and security features to send responses, to browsers.

Hello World Program

This JavaScript Compiler is completely free and easy to use. Here, you can practice various JS Exercises

```
console.log("Hello World!");
```

Output:

Hello World!!

Why to learn JavaScript?

1. **Versatility:** JavaScript can be used to develop (using Election JS) websites, games (Using Phaser and Three.js), mobile apps (using React Native), and more.
2. **Client Side:** JavaScript is the main language for client-side logic and is supported by almost all browsers. There is a big list of frameworks and libraries like React JS, Angular JS, and Vue JS.
3. **Server-Side:** With runtime environments like Node.js and Frameworks like Express.js, JavaScript is now widely used for building server-side applications.
4. **Machine Learning:** With Libraries like Tensorflow.JS, JavaScript can be used to develop and train machine learning models. Please refer to ML in JS for details.

Features of JavaScript

There are following features of JavaScript:

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

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.

JavaScript Example

1. `<script>`
2. `document.write("Hello JavaScript by JavaScript");`
3. `</script>`

JavaScript Example

1. [JavaScript Example](#)
2. [Within body tag](#)
3. [Within head tag](#)

Javascript example is easy to code. JavaScript provides 3 places to put the JavaScript code: within body tag, within head tag and external JavaScript file.

1. `<script type="text/javascript">`
2. `document.write("JavaScript is a simple language for javatpoint learners");`
3. `</script>`

The **script** tag specifies that we are using JavaScript.

The **text/javascript** is the content type that provides information to the browser about the data.

The **document.write()** function is used to display dynamic content through JavaScript

3 Places to put JavaScript code

1. Between the body tag of html
2. Between the head tag of html
3. In .js file (external javascript)

1) JavaScript Example : code between the body tag

In the above example, we have displayed the dynamic content using JavaScript. Let's see the simple example of JavaScript that displays alert dialog box.

```
<script type="text/javascript">  
    alert("Hello Javatpoint");  
</script>
```

2) JavaScript Example : code between the head tag

Let's see the same example of displaying alert dialog box of JavaScript that is contained inside the head tag.

In this example, we are creating a function msg(). To create function in JavaScript, you need to write function with function_name as given below.

To call function, you need to work on event. Here we are using onclick event to call msg() function.

```
<html>
```

```
<head>
<script type="text/javascript">
function msg(){
  alert("Hello Javatpoint");
}
</script>
</head>
<body>
<p>Welcome to JavaScript</p>
<form>
<input type="button" value="click" onclick="msg()"/>
</form>
</body>
</html>
```

External JavaScript file

We can create external JavaScript file and embed it in many html page.

It provides **code reusability** because single JavaScript file can be used in several html pages.

An external JavaScript file must be saved by .js extension. It is recommended to embed all JavaScript files into a single file. It increases the speed of the webpage.

Let's create an external [JavaScript](#) file that prints Hello Javatpoint in a alert dialog box.

message.js

```
function msg(){
  alert("Hello Javatpoint");
```

```
}
```

Let's include the JavaScript file into [html](#) page. It calls the [JavaScript function](#) on button click.

index.html

```
<html>
<head>
<script type="text/javascript" src="message.js"></script>
</head>
<body>
<p>Welcome to JavaScript</p>
<form>
<input type="button" value="click" onclick="msg()"/>
</form>
</body>
</html>
```

Advantages of External JavaScript

There will be following benefits if a user creates an external javascript:

1. It helps in the reusability of code in more than one HTML file.
2. It allows easy code readability.
3. It is time-efficient as web browsers cache the external js files, which further reduces the page loading time.
4. It enables both web designers and coders to work with html and js files parallelly and separately, i.e., without facing any code conflictions.
5. The length of the code reduces as only we need to specify the location of the js file.

Disadvantages of External JavaScript

There are the following disadvantages of external files:

1. The stealer may download the coder's code using the url of the js file.
2. If two js files are dependent on one another, then a failure in one file may affect the execution of the other dependent file.
3. The web browser needs to make an additional http request to get the js code.
4. A tiny to a large change in the js code may cause unexpected results in all its dependent files.
5. We need to check each file that depends on the commonly created external javascript file.
6. If it is a few lines of code, then better to implement the internal javascript code.

