Java Script (Methods).

JavaScript popup box are extremely useful when you start coding in JavaScript. They enable you to write basic programs based on the Input/Process/Output very easily.

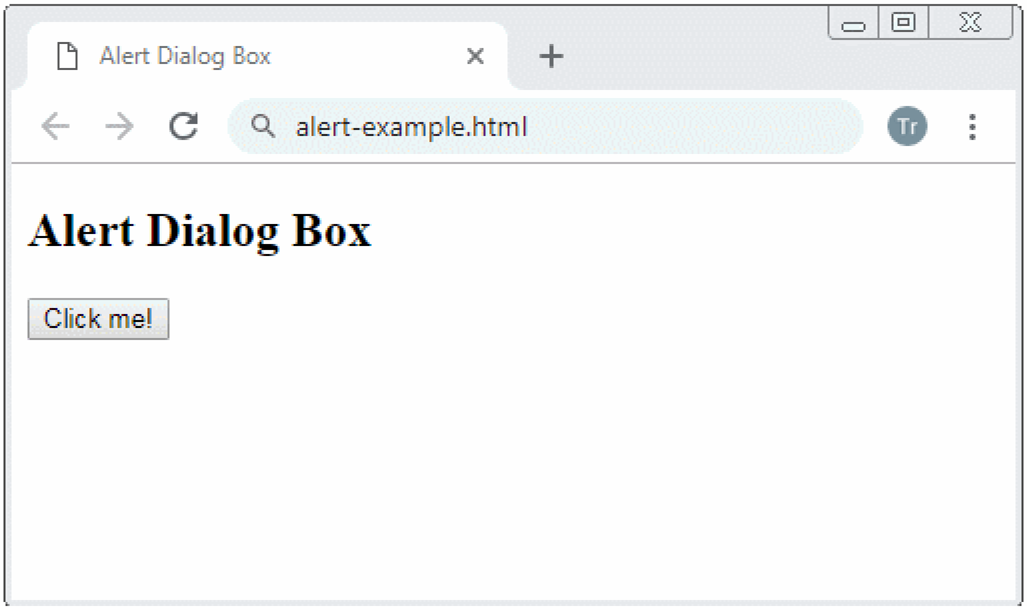
JavaScript Dialog Box

JavaScript provides three important Dialog Boxes, which include Alert Dialog Box for users, Confirmation Dialog Box, and Prompt Dialog Box.

Java Script (Functions).

1- Alert Dialog Box

Alert Dialog Box is mainly used to display a notice, warning, or error to users. Basically, you cannot customize dialog box icon or title, ... you can only provide the message that the dialog box will display. In addition, Alert Dialog Box has only one OK button to close a dialog box.



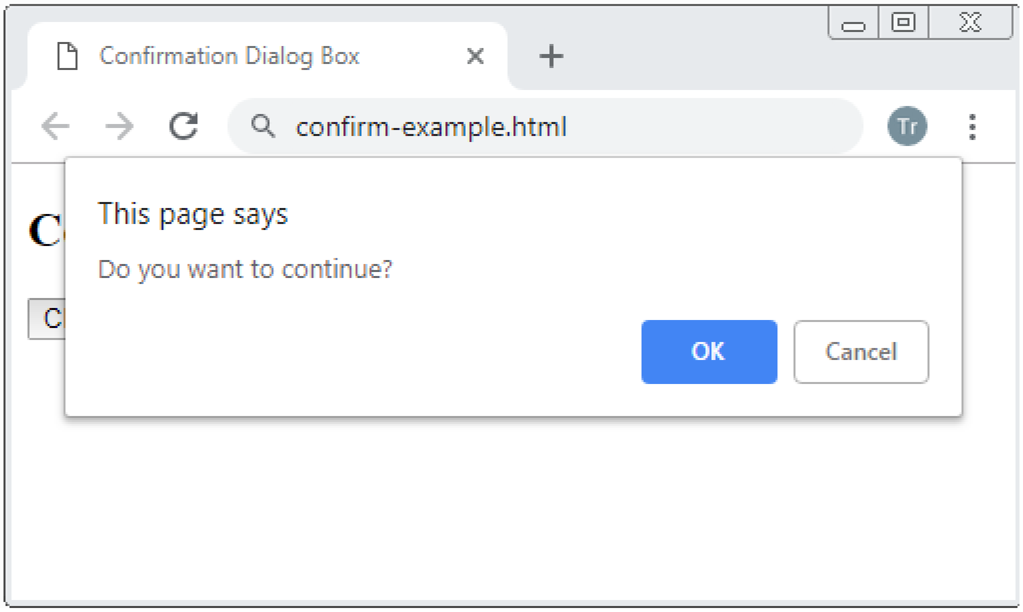
To display a Alert Dialog Box, you call the alert(message) function, in which the message is the content that the dialog box will display.

alert-example.js

```
<!DOCTYPE html>
<html>
  <head>
    <title>Alert Dialog Box</title>

    <script type="text/javascript">

      function testAlertDialog()  {
          alert("Something Error!");
      }

    </script>

  </head>
  <body>
    <h2>Alert Dialog Box</h2>


    <button onclick="testAlertDialog()">Click me!</button>

  </body>
</html>
```

2- Confirmation Dialog Box

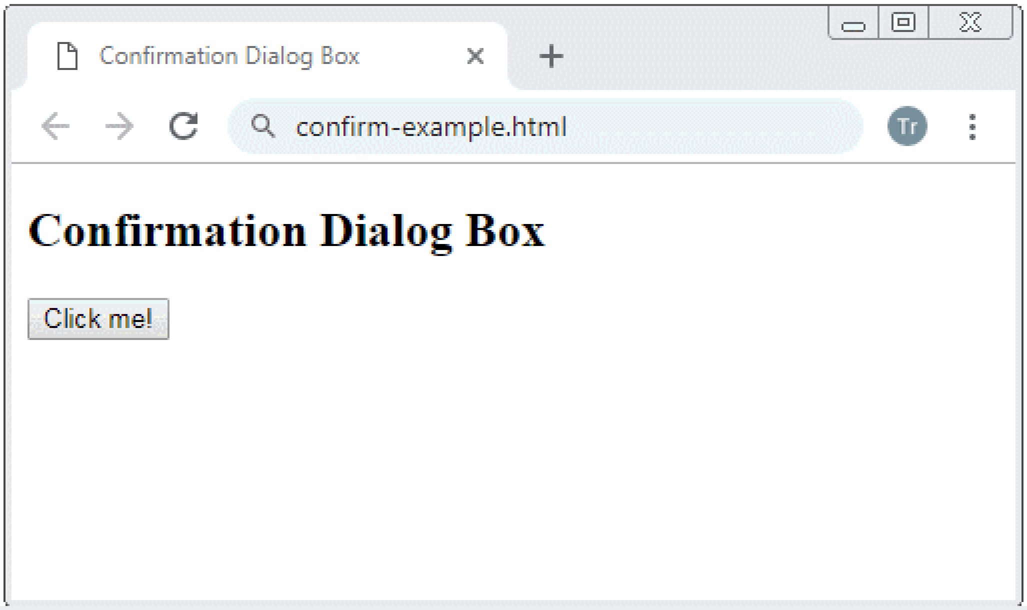
Confirmation Dialog Box is used to ask the user to confirm something. This dialog is very simple, you cannot customize the icon or the title of the dialog box, you can only provide a message asking the user to confirm. This dialog box has 2 OK and Cancel buttons.



This page says

Do you want to continue?

To display a Confirmation Dialog Box you call the confirm(message) function, in which the message is one requesting an user to confirm. If the user clicks the OK button, this function returns true, otherwise if the user clicks the No button, this function returns false.



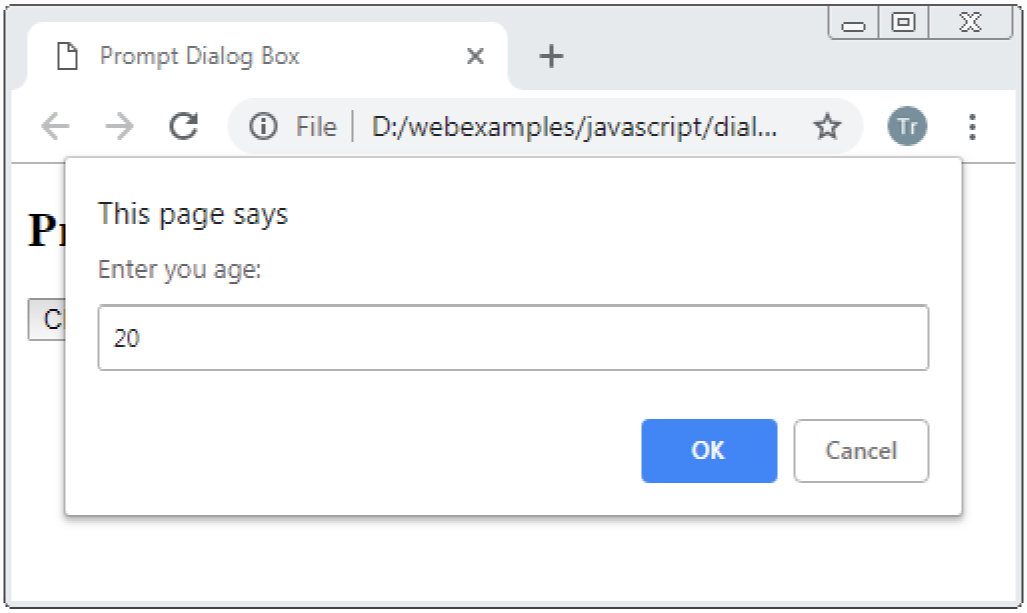
Confirmation Dialog Box

confirm-example.js

```
<!DOCTYPE html>
<html>
  <head>
    <title>Confirmation Dialog Box</title>

    <script type="text/javascript">

      function testConfirmDialog()  {

           var result = confirm("Do you want to continue?");

           if(result)  {
               alert("OK Next lesson!");
           } else {
               alert("Bye!");
           }
      }

    </script>

  </head>
  <body>
    <h2>Confirmation Dialog Box</h2>


    <button onclick="testConfirmDialog()">Click me!</button>

  </body>
</html>
```

3- Prompt Dialog Box

Prompt Dialog Box is used for users to enter an information. This dialog box is very simple. It includes a Text Field for users to enter information. The dialog box has 2 OK and Cancel buttons.



This page says

Enter you age:

20

To display a Prompt Dialog Box you call the prompt(message, defaultValue) function in which the message is one for user. defaultValue is default value prefilled in the Text Field.
If an user clicks OK, the function returns contents on Text Field, otherwise, if the user clicks Cancel, the function returns null.

prompt-example.js

```
<!DOCTYPE html>
<html>
  <head>
    <title>Prompt Dialog Box</title>

    <script type="text/javascript">

      function testPromptDialog()  {

          var result = prompt("Enter you age:", "20");

          if(result != null)  {
             alert("Your age is " + result);
          }
      }

    </script>

  </head>
  <body>
    <h2>Prompt Dialog Box</h2>
    <button onclick="testPromptDialog()">Click me!</button>

  </body>
</html>
```

Comparing Alert, Confirm and Prompt popup boxes

Go through these details to understand when to use Alert, Confirm and Prompt boxes and the differences between them.

Alert popup Box

- **Description**: Used to show a message or warning .
- **Input Field**: None
- **Buttons**: Only a single "OK" button is provided.
- **When to use?**: When we need to print a warning/message for the user to alert him about his/her action.
- **Example**: An alert box displayed when you are being redirected to another page

Confirm popup Box

- **Description**: Used to take confirmation to proceed with an event.
- **Input Field**: None
- **Buttons**: Two botton are provided "OK" and "Cancel".
- **When to use?**: When we need to take a confirmation from the user to proceed with an event like redirecting to another page etc.
- **Example**: A confirm box displayed by a website to show you notifications with an "OK" and "Cancel" button.

Prompt popup Box

- **Description** :Used to take a single input from the user and proceed with event depending upon the input.
- **Input Field** :Single input field(the input in treated as string or null if user does not enter anything).
- **Buttons** :Two buttons are provided "OK" and "Cancel".
- **When to use?** :When we need to take a confirmation from the user to proceed with an event like redirecting to another page etc.
- **Example** :A prompt box displayed by a website to get your name or age.

JavaScript Functions

JavaScript functions are used to perform operations. We can call JavaScript function many times to reuse the code.

Advantage of JavaScript function

There are mainly two advantages of JavaScript functions.

1. **Code reusability**: We can call a function several times so it save coding.
2. **Less coding**: It makes our program compact. We don't need to write many lines of code each time to perform a common task.

JavaScript Function Syntax

The syntax of declaring function is given below.

```
function functionName([arg1, arg2, ...argN]){
 //code to be executed
}
```

JavaScript Functions can have 0 or more arguments.

JavaScript Function Example

Example of function in JavaScript that does not has arguments.

```
<!DOCTYPE html>
<html>
<head>
<title> ONE </title>
<script>
function msg()
{
alert("hello! this is message");
}
</script>
```

```
</head>
<body>
<input type="button" onclick="msg()" value="call function"/>
</body>
</html>
```

JavaScript Function Arguments

We can call function by passing arguments. Let’s see the example of function that has one argument.

```
<!DOCTYPE html>
<html>
<head>
<title> ONE </title>
<script>
function getcube(number)
{
alert(number*number*number);
}
</script>
</head>
<body>
<form>
<input type="button" value="click" onclick="getcube(4)"/>
</form>
</body>
</html>
```

Function with Return Value

We can call function that returns a value and use it in our program. Let’s see the example of function that returns value.

```
<!DOCTYPE html>
<html>
<head>
```

```
<title> ONE </title>
<script>
function getInfo(){
return "Are you a student at Zetech University?";
}
document.write(getInfo());
</script>
</head>
<body>
</body>
</html>
```

JavaScript Math

The **JavaScript math** object provides several constants and methods to perform mathematical operation. Unlike date object, it doesn't have constructors.

JavaScript Math Methods

Let's see the list of JavaScript Math methods with description.

Methods	Description
abs()	It returns the absolute value of the given number.
acos()	It returns the arccosine of the given number in radians.
asin()	It returns the arcsine of the given number in radians.
atan()	It returns the arc-tangent of the given number in radians.
cbrt()	It returns the cube root of the given number.
ceil()	It returns a smallest integer value, greater than or equal to the given number.
cos()	It returns the cosine of the given number.
cosh()	It returns the hyperbolic cosine of the given number.
exp()	It returns the exponential form of the given number.

floor()	It returns largest integer value, lower than or equal to the given number.
hypot()	It returns square root of sum of the squares of given numbers.
log()	It returns natural logarithm of a number.
max()	It returns maximum value of the given numbers.
min()	It returns minimum value of the given numbers.
pow()	It returns value of base to the power of exponent.
random()	It returns random number between 0 (inclusive) and 1 (exclusive).
round()	It returns closest integer value of the given number.
sign()	It returns the sign of the given number
sin()	It returns the sine of the given number.
sinh()	It returns the hyperbolic sine of the given number.
sqrt()	It returns the square root of the given number
tan()	It returns the tangent of the given number.
tanh()	It returns the hyperbolic tangent of the given number.
trunc()	It returns an integer part of the given number.

Example: A program to Calculate 3 to power 4:

```
<!DOCTYPE html>
<html>
<head>
<title> ONE </title>
<script>
document.write("Power=",Math.pow(3,4))
</script>
</head>
<body>
</body>
</html>
```

JavaScript Events

The change in the state of an object is known as an **Event**. In html, there are various events which represents that some activity is performed by the user or by the browser. When javascript code is included in HTML, js react over these events and allow the execution. This process of reacting over the events is called **Event Handling**. Thus, js handles the HTML events via **Event Handlers**.

For example, when a user clicks over the browser, add js code, which will execute the task to be performed on the event.

Some of the HTML events and their event handlers are:

Mouse events:

Event Performed	Event Handler	Description
click	onclick	When mouse click on an element
mouseover	onmouseover	When the cursor of the mouse comes over the element
mouseout	onmouseout	When the cursor of the mouse leaves an element
mousedown	onmousedown	When the mouse button is pressed over the element
mouseup	onmouseup	When the mouse button is released over the element
mousemove	onmousemove	When the mouse movement takes place.

Keyboard events:

Event Performed	Event Handler	Description
Keydown & Keyup	onkeydown & onkeyup	When the user press and then release the key

Form events:

Event Performed	Event Handler	Description
focus	onfocus	When the user focuses on an element
submit	onsubmit	When the user submits the form
blur	onblur	When the focus is away from a form element

change	onchange	When the user modifies or changes the value of a form element

Window/Document events

Event Performed	Event Handler	Description
load	onload	When the browser finishes the loading of the page
unload	onunload	When the visitor leaves the current webpage, the browser unloads it
resize	onresize	When the visitor resizes the window of the browser

Click Event Example:

```
<html>
<head>
<script language="Javascript" type="text/Javascript">
  function clickevent()
  {
    document.write("ZETECH UNIVERSITY");
  }
</script>
</head>
<body>
<form>
<input type="button" onclick="clickevent()" value="Where do yu study?"/>
</form>
</body>
</html>
```

Mouse Over Event Example:

```
<html>
<head>
</head>
<script language="Javascript" type="text/Javascript">
   function mouseoverevent()
   {
      alert("I am a student at Zetech University");
   }
</script>
<body>
<h1> Javascript Events </h1>
<p onmouseover="mouseoverevent()"> Keep cursor over me</p>
</body>
</html>
```

Focus Event Example

```
<html>
<head></head>
<script>
   function focusevent()
   {
      document.getElementById("input1").style.background=" aqua";
   }
</script>
<body>
<h2> Enter something here</h2>
<input type="text" id="input1" onfocus="focusevent()"/>
</body>
</html>
```

Key Down Event Example

```
<html>
<head></head>
<script>
  function keydownevent()
  {
    document.getElementById("input1");
    alert("Pressed a key");
  }
</script>
<body>
<h2> Enter something here</h2>
<input type="text" id="input1" onkeydown="keydownevent()"/>
</body>
</html>
```

Load Event Example

```
<html>
<head></head>
<script>
<!--
document.write("The page is loaded successfully");
//-->
</script>
</br>
<body onload="window.alert('Page successfully loaded');">
</body>
</html>
```