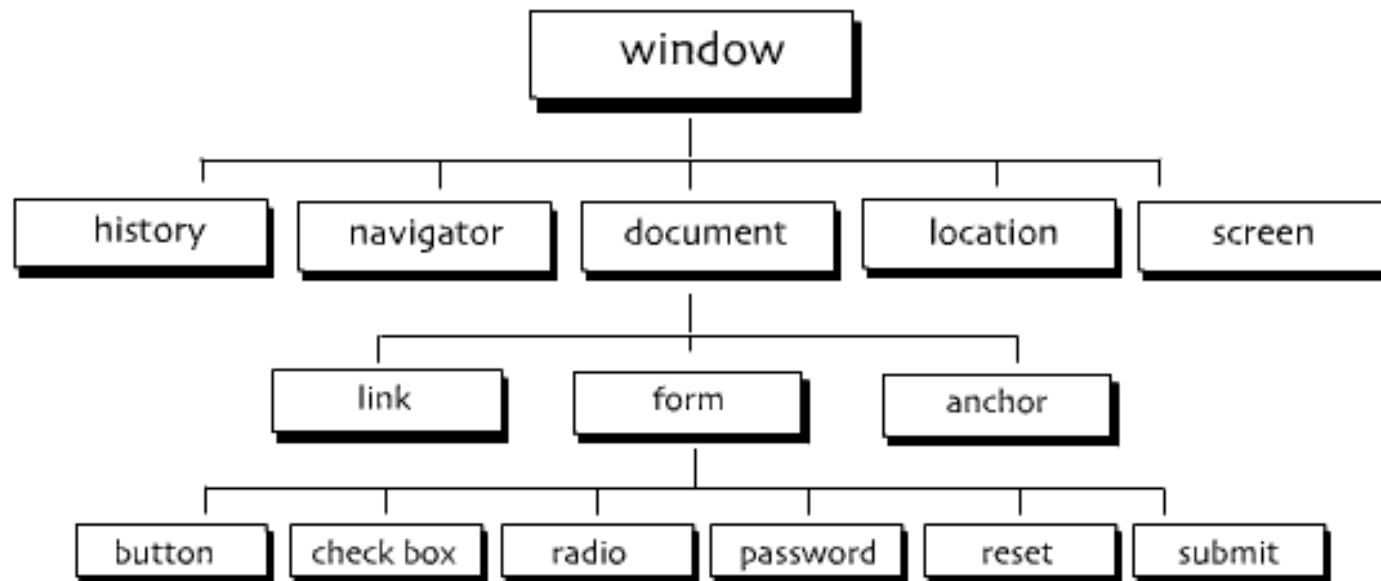# Dynamic HTML using JavaScript

Objectives

- Understand HTML DOM

- Understand how to handle user events in Java script

- Understand how to build dynamic HTML contents using Java script

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DOM [**Document Object Model**]

- When a web page is loaded, the browser creates a **D**ocument **O**bject **M**odel of the page

Tree Structure of the DOM

window

history | navigator | document | location | screen

link | form | anchor

button | check box | radio | password | reset | submit

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JavaScript and DOM

- With the object model, JavaScript gets all the power it needs to create dynamic HTML:

  - JavaScript can change all the HTML elements in the page

  - JavaScript can change all the HTML attributes in the page

  - JavaScript can change all the CSS styles in the page

  - JavaScript can remove existing HTML elements and attributes

  - JavaScript can add new HTML elements and attributes

  - JavaScript can react to all existing HTML events in the page

  - JavaScript can create new HTML events in the page

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DOM Programming interface

- **Objects**: In the DOM, all HTML elements are defined as **objects**.

  - Examples of browser objects

    - Window

    - Navigator

    - Location

- **Property: property** is a value that you can get or set (like changing the content of an HTML element).

  - Examples of window object properties

    - status : Sets or returns the text in the status bar of a window

- **Method**: A **method** is an action you can do (like add or deleting an HTML element).

  - Example of methods of window object

    - alert( ) : Displays an alert box with a message and an OK button

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Example using DOM interface

- **The getElementById Method:** The most common way to access an HTML element is to use the id of the element.

- **The innerHTML Property:** To get the content of an element

```html
<div id="txtDiv">JavaScript is fun!!!</div>
<script type="text/javascript">
    var txt = document.getElementById("txtDiv").innerHTML;
    window.alert(txt);
</script>
```

- To change the content of an HTML element, use this syntax:

  - document.getElementById(*id*).innerHTML= *new HTML*

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JavaScript events

Event attribute	Description	Applies to
onSubmit	User Submits a form	Submit button
onClick	User clicks a form element	Buttons, Links, Submit button, radio and checkboxes
onChange	User changes value of element	select, text, text area
onLoad	User loads the page in browser	Document body
onFocus	User gives input focus to window or form element	Windows and all form elements.
onBlur	User removes input focus from window or form element	Windows and all form elements.
onUnload	User exists the page	Document body

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JavaScript events

- Example of using onclick event and accessing data using "id" attribute.

```html
<title>JavaScript examples</title>
    <script type="text/javascript">
        function addNumbers() {
            var x = document.getElementById("t1").value;
            var y = document.getElementById("t2").value;
            var sum = parseInt(x) + parseInt(y);
            document.getElementById("resultSpan").innerHTML = sum;
        }
    </script>
</head>
<body>
    <form>
        Value 1: <input type="text" name="v1" id="t1" /> <br />
        Value 2: <input type="text" name="v2" id="t2" /> <br />
        Result: <span id="resultSpan"></span> <br />
        <input type="button" value="Add numbers" onclick="addNumbers()" />
    </form>
</body>
```

Value 1: 44
Value 2: 6
Result: 50
[Add numbers]

The name attribute uniquely identifies a field within a form

The id attribute uniquely identifies element in a page

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JavaScript events

- Example of using onclick event and accessing data using "name" attribute.

```html
<script type="text/javascript">
    function addNumbers() {
        var x = document.forms[0].v1.value;
        var y = document.forms[0].v2.value;
        var sum = parseInt(x) + parseInt(y);
        document.getElementById("resultSpan").innerHTML = sum;
    }
</script>
</head>
<body>
    <form>
        Value 1: <input type="text" name="v1" id="t1" /> <br />
        Value 2: <input type="text" name="v2" id="t2" /> <br />
        Result: <span id="resultSpan"></span> <br />
        <input type="button" value="Add numbers" onclick="addNumbers()" />
    </form>
</body>
```
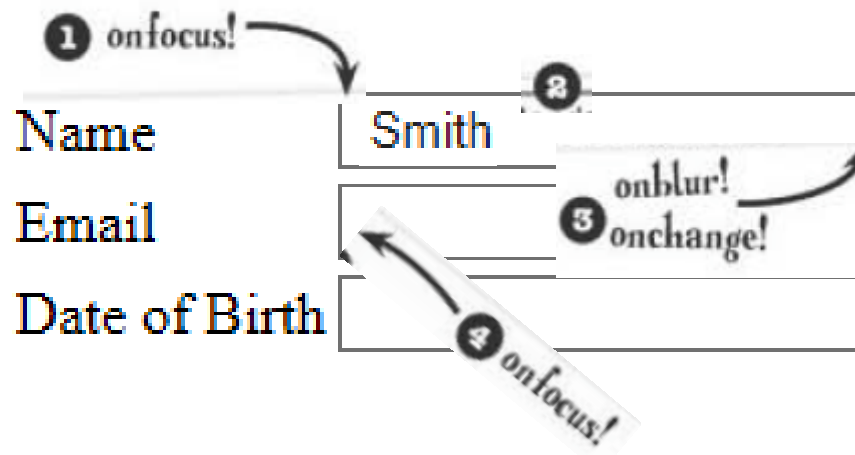
The name attribute uniquely identifies a field within a form

The id attribute uniquely identifies element in a page

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JavaScript events

- Form filed contains a chain of events

    1. Select the input field (onfocus)

    2. Enter data into the field

    3. Leave the input field to move to next one (onblur/onchange)

    4. Select the next input field (onfocus)

JavaScript events

onchange event example: When a user selects a dropdown value

```html
<script type="text/javascript">
    function preferedBrowser() {
        var prefered = document.forms[0].browsers.value;
        alert("You prefer browsing internet with " + prefered);
    }
</script>

<form>
    Choose which browser you prefer: <select id="browsers"
        onchange="preferedBrowser()">
        <option value="Chrome">Chrome</option>
        <option value="Internet Explorer">Internet Explorer</option>
        <option value="Firefox">Firefox</option>
    </select>
</form>
```

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JavaScript events: form validation

```
<div id="errDiv"> </div>
<form method="POST" action="Register"
        onsubmit="return validate(this);">
        First Name<input type="text" name="firstName" />
        <input type="submit" value="Register" />
</form>
```

1. Pass the form as argument on submit to function validate

```
function validate(frm) {
        var msg = "";
        var valid = true;
        var firstName = frm.firstName.value;
        if( firstName == "") {
                msg += "<br /> First Name is required";
                valid = false;
        }
        if( !valid ) {
                document.getElementById("errDiv").innerHTML = msg;
        }
        return valid;
}
```

2. Read the value of firstName form field

3. If firstName is not entered place error message within tag with id "errDiv".

4. If value true is returned the form is submitted else form is not submitted.

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References

- JavaScript Basics

  - https://konnect.mindtree.com/documentrepository/documentDetail.aspx?docID=1261

  - http://www.quackit.com/scripting/

  - http://www.w3schools.com/js/default.asp

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Thank You

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