Web designing

(advanced)

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Lesson 5

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JS boolean

- Boolean()
- Everything without a value considered as false
  - zero
  - Empty string
  - Undefined null
    - var x; Boolean(x);
  - Null
  - False
  - NaN

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"this" keyword

- Refer an element within the same element
- E.g
  - `<input type="text" onchange="console.log(this.value)">`

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Lesson 6

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Comparison

- If
- If else
- Nested if else
- Switch case

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Lesson 7 & 8

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JS loops

- While
- do---while
- for
- for...in
- for....of

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Lesson 9
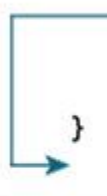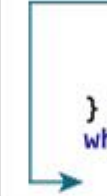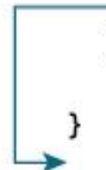
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Loop control: break

```
while (testExpression) {
    // codes
    if (condition to break) {
        break;
    }
    // codes
}
```

```
do {
    // codes
    if (condition to break) {
        break;
    }
    // codes
} while (testExpression);
```

```
for (init; testExpression; update) {
    // codes
    if (condition to break) {
        break;
    }
    // codes
}
```

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Loop control: continue

```
→ while (testExpression) {
      // codes
      if (testExpression) {
        — continue;
      }
      // codes
   }
```

```
   do {
      // codes
      if (testExpression) {
        continue;
      }
      // codes
   }
 → while (testExpression);
```

```
 → for (init; testExpression; update) {
      // codes
      if (testExpression) {
           continue;
      }
      // codes
   }
```

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Lesson 10 & 11

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JS object

- Creation
- getting object properties
    - Attributes
    - methods
- setting object properties
- Looping through obj
    - for..in
    - for..of
- **delete** keyword
- JS objects are mutable
    - Reference to an obj & how its different from primitive data types

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Lesson 14

JS arrays

- Creation
- Accessing elements
- Adding new elements in array
  - push
  - Unshift
- Removing element from an array
  - pop
- Add or remove at a particular index
  - splice

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JS data types

- Boolean
- Number
- String
- object
- undefined
- Determining type using:
  - "typeof"

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JS type conversion

- "4" - 2
- "4" + 2
- 3 + "2"
- "3" * "2"
- 1 + true
- 1 + false
- 1 + undefined
- 3 + null)
- "3" + null
- true + null
- true + undefined)

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JS type conversion

- "4" - 2   2
- "4" + 2   "42"
- 3 + "2"   5
- "3" * "2"   6
- 1 + true   2
- 1 + false   1
- 1 + undefined   NaN
- 3 + null   3
- "3" + null   "3null"
- true + null   1
- true + undefined   NaN

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Conversion to Number

- Number()
- NaN
- What happens if you try converting these in numbers
  - Number("100.5")
  - Number(true)
  - Number(false)
  - Number(null)
  - Number(" 1234 ")
  - Number(" ")
  - Number("")
  - Number("123e-1")
  - Number("0xFF")
  - Number("undefined")
  - Number("null")
  - Number("Hello World!")

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Conversion to Number

- Number()
- NaN
- What happens if you try converting these in numbers
  - Number("100.5") // returns 100.5
  - Number(true) // returns 1
  - Number(false) // returns 0
  - Number(null) // returns 0
  - Number(" 1234 ") // returns 1234
  - Number(" ") // returns 0
  - Number("") // returns 0
  - Number("123e-1") // returns 12.3
  - Number("0xFF") // returns 255 (hexadecimal representation)
  - Number("undefined") // returns NaN
  - Number("null") // returns NaN
  - Number("Hello World!") // returns NaN

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Conversion to String

- String()
- toString()
- What happens when you do the following?
  - String(100.5)
  - String(1234)
  - String(100 + 23)
  - String(true)
  - String(false)
  - String(123e-1)
  - String(0xFF)
  - String(undefined)
  - String(null)

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Conversion to String

- String()
- toString()
- What happens when you do the following?
  - String(100.5) // returns "100.5"
  - String(1234) // returns "1234"
  - String(100 + 23) // returns "123"
  - String(true) // returns "true"
  - String(false) // returns "false"
  - String(123e-1) // returns "12.3"
  - String(0xFF) // returns "255"
  - String(undefined) // returns "undefined"
  - String(null) // returns "null"

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Conversion to boolean

- Boolean()
- What'd be the output of following expressions?
  - Boolean("Hello World!")
  - Boolean(0)
  - Boolean(null)
  - Boolean(false)
  - Boolean(undefined)
  - Boolean(NaN)
  - Boolean("")
  - Boolean("0")
  - Boolean(1)
  - Boolean(true)
  - Boolean("false")
  - Boolean(" ")

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Conversion to boolean

- Boolean()
- What'd be the output of following expressions?
  - Boolean("Hello World!") // returns true
  - Boolean(0) // returns false
  - Boolean(null) // returns false
  - Boolean(false) // returns false
  - Boolean(undefined) // returns false
  - Boolean(NaN) // returns false
  - Boolean("") // returns false
  - Boolean("0") // returns true
  - Boolean(1) // returns true
  - Boolean(true) // returns true
  - Boolean("false") // returns true
  - Boolean(" ") // returns true

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Object to primitive conversion

- **toString()**
  - ~~to override default definition use: **obj.prototype.toString**~~
- **valueOf()**
  - ~~to override default definition use: **obj.prototype.valueOf**~~

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Type conversion using operators

- ```
  var x = "10";
  var y = +x;
  alert(typeof(y));
  ```

- ```
  var x = 10;
  var y = x + "";
  alert(typeof(y));
  ```

- ```
  var x = "15";
  var y = x - 0;
  alert(typeof(y));
  ```

- ```
  var x = "123";
  alert(typeof(!!x));
  ```

- ```
  var x = "Hello World!";
  var y = +x;
  alert(typeof(y));
  ```

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Type conversion using operators

- var x = "10"; // x is a string
  var y = +x;
  alert(typeof(y)); // Outputs: number

- var x = 10; // x is a number
  var y = x + "";
  alert(typeof(y)); // Outputs: string

- var x = "15"; // x is a string
  var y = x - 0;
  alert(typeof(y)); // Outputs: number

- var x = "123";
  alert(typeof(!!x)); // Outputs: boolean

- var x = "Hello World!";
  var y = +x;
  alert(typeof(y));// Outputs: number

Storing data in client machine

- Cookies
- Web Storage object
  - localStorage
  - sessionStorage

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Cookies

- Creation:
  - document.cookie = "firstName=Christopher; secure";
- Older way to store data in client size designed for server side scripting languages
- Smaller maximum size limit(about 4 KB) than that of storage objects
- Difficult to handle
  - Url encoding & decoding needed just to create, read or update
  - Complicated string processing required for reading them
  - No proper method for deletion (need to set max-age:0)
- Security issue & overhead:
  - data is sent to server side for each request

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Web Storage objects

- setItem(key, value) – store key/value pair.
- getItem(key) – get the value by key.
- removeItem(key) – remove the key with its value.
- clear() – delete everything.
- key(index) – get the key on a given position.
- length – the number of stored items.

JS events

- Event handlers
  - Syntax: handler="js statement"
- Event listeners
  - Syntax:
    - target.addEventListener(event, function, useCapture);
    - target.removeEventListener(event, function, useCapture);

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Mouse Events

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onclick

<button type="button" onclick="alert('You have clicked a button!');">Click Me</button>

Click Me

oncontextmenu

<button type="button" oncontextmenu="alert('You have right-clicked a button!');">Right Click on Me</button>

Right Click on Me

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onmouseover

<button type="button" onmouseover="alert('You have placed mouse pointer over a button!');">Place Mouse Over Me</button>

Place Mouse Over Me

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onmouseout

<button type="button" onmouseout="alert('You have moved out of the button!');">Place Mouse Inside Me and Move Out</button>

Place Mouse Inside Me and Move Out

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Keyboard Events

onkeydown

```
<input type="text" onkeydown="alert('You have pressed a key inside text input!')">
```

```
<textarea onkeydown="alert('You have pressed a key inside textarea!')"></textarea>
```

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onkeyup

<input type="text" onkeyup="alert('You have released a key inside text input!')">

<textarea onkeyup="alert('You have released a key inside textarea!')"></textarea>

onkeypress

<input type="text" onkeypress="alert('You have pressed a key inside text input!')">

<textarea onkeypress="alert('You have pressed a key inside textarea!')"></textarea>

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Form Events

onfocus

<input type="text" onfocus="this.style.background = "yellow">

<button type="button">Button</button>

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onblur

- when the user takes the focus away from a form element or a window.

<input type="text" onblur="alert('Text input loses focus!')">

<button type="button">Submit</button>

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onchange

```
<select onchange="alert('You have changed the selection!');">
    <option>Select</option>
    <option>Male</option>
    <option>Female</option>
</select>
```

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onsubmit

```
<form action="action.php" method="post" onsubmit="alert('Form data will be submitted to the server!');">

    <label>First Name:</label>

    <input type="text" name="first-name" required>

    <input type="submit" value="Submit">

</form>
```

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Document/Window Events

onload

```
<body onload="window.alert('Page is loaded successfully!');">
    <h1>This is a heading</h1>
    <p>This is paragraph of text.</p>
</body>
```

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onunload

```
<body onunload="alert('Are you sure you want to leave this page?');">
    <h1>This is a heading</h1>
    <p>This is paragraph of text.</p>
</body>
```

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onresize

```
<p id="result"></p>
<script>
    function displayWindowSize() {
        var w = window.outerWidth;
        var h = window.outerHeight;
        var txt = "Window size: width=" + w + ", height=" + h;
        document.getElementById("result").innerHTML = txt;
    }
    window.onresize = displayWindowSize;
</script>
```

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JS event propagation

Bubbling & capturing

Bubbling

Capturing

```
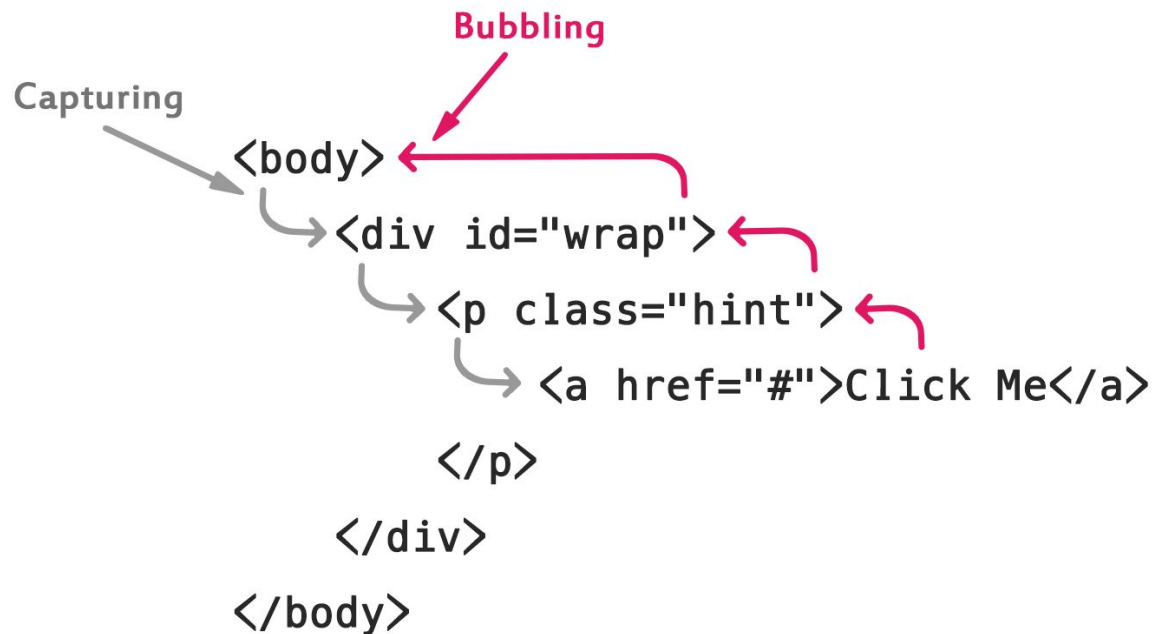<body>
    <div id="wrap">
        <p class="hint">
            <a href="#">Click Me</a>
        </p>
    </div>
</body>
```

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JS & DOM

DOM nodes

```
<!DOCTYPE html>
<html>
<head>
   <title>My Page</title>
</head>
<body>
   <h1>Mobile OS</h1>
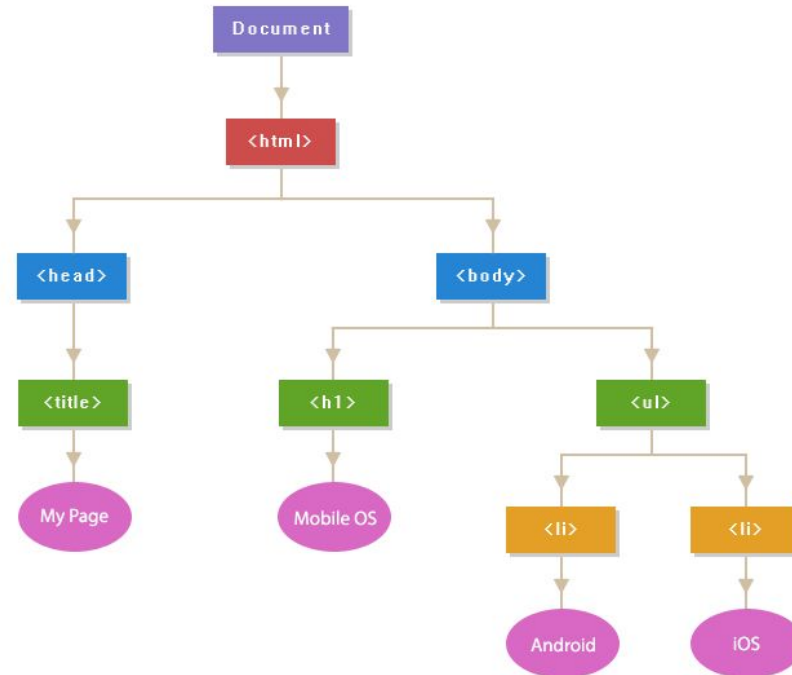   <ul>
      <li>Android</li>
      <li>iOS</li>
   </ul>
</body>
</html>
```

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DOM tree

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