

HTML, DOM & Events

Lesson Objectives

- Read and write simple HTML5 document.
- Learn to validate HTML document
- Basics of DOM and event handling

Hypertext Markup Language (HTML)

- It's a markup language (not really a programming language) used to demarcate sections of a web page.
 - Nearer to word processing application (e.g. MS Word) than the programming language.
- HTML5 is the latest version of the language

Structure of an HTML5 page

- The **header** describes the page and the **body** contains the page's contents
 - An HTML page is saved into a file ending with extension **.html**
- **DOCTYPE** tag tells browser to interpret our page's code as HTML5.
- HTML is case insensitive, but we follow conventions.

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="utf-8" />
    <title></title>
  </head>
  <body>
    page contents
  </body>
</html>
```

HTML Elements

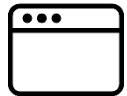
- HTML element is composed of opening tag, optional text, and closing tag.
 - Syntax: `<element>content </element>`
 - Example: `<p>This is a paragraph</p>`
- Most whitespaces are insignificant in HTML (ignored or collapsed to a single space)

Headings: `<h1>`, `<h2>`, . . . , `<h6>`

Headings to separate major areas of the page (block)



```
<h1>Maharishi University</h1>  
<h2>Department of Computer Science</h2>  
<h3>CS301</h3>
```



Maharishi University
Department of Computer Science
CS301

[More headings examples](#)

Paragraph: <p>

Paragraphs of text (block)



```
<p>Lorem ipsum dolor sit amet, consectetur  
adipiscing elit. Nam enim nisl, adipiscing quis  
ultrices a, egestas quis lorem. Pellentesque  
ultrices nunc id mauris posuere pulvinar.</p>
```

- Placed within the body of the page

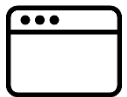
[More paragraph examples](#)

Links: <a>

- Links, or "anchors", to other pages (inline)
- **href** can be absolute or relative
- Anchors are inline elements; must be placed in a block element such as **p** or **h1**



```
<p> Search
    <a href="http://www.google.com/">Google</a> or our
    <a href="aboutme.html">About Me</a>.
</p>
```



Search [Google](http://www.google.com/) or our [About Me](aboutme.html).

Exercise

- Write a HTML page with your full name inside `<h1>` tag followed by a short paragraph about yourself.
- Add a link to the IMDB page for one of your favorite movie.

Form input elements

Tag	Purpose
<code><input type="text"></code>	Make a text field (single row)
<code><input type="button" value="Click Me"></code>	Makes a button that user can click with label "Click Me"
<code><button>Click Me</button></code>	Makes a button that user can click with label "Click Me"
<code><textarea></textarea></code>	Makes text area (multiple row)

Exercise

- Quickly add a textbox, a textarea and a button to your html page.

Block vs Inline elements

- A block-level element always starts on a new line and takes up the full width available (stretches out to the left and right as far as it can). e.g. `<p>`, `<h1>`
- An inline element does not start on a new line and only takes up as much width as necessary. e.g. `<input>`, `<textarea>`
 - Need to use line break `
` to move to the new line.

Exercise

- User `
` tag to fix spacing between the elements.

Comments: `<!-- -->`

- Comments to document your HTML file or "comment out" text
- Many web pages are not thoroughly commented (or at all)
- Useful at the top of page and for disabling code



```
<!-- My web page, by Suzy Student CSE 190 D, Spring 2048 -->  
<p>CSE courses are <!-- NOT --> a lot of fun!</p>
```

W3C HTML Validator

- Checks your HTML code to make sure it follows the official HTML syntax
- Pickier than the browser



```
<p>  
    <a href="https://validator.w3.org/check/referer">Validate</a>  
</p>
```

Main points

- HTML is a very simple language, once you know the content and organization of your document, you simply use the right set of tags to demarcate content you want to display in browsers. *Science of Consciousness, Transcendental Meditation is a very simple meditation technique, you simply take the correct angle and let go.*
- It's important to make sure html documents are well formed. *Science of Consciousness, Checking the syntactic structure of a document catches unintended errors. Regular TM checking gives the experience of effortless thought and prevents unintended effort during TM.*

JavaScript in browser

- JavaScript was originally developed to work with HTML pages in a browser application.

<script> element

- The <script> element is used to embed JavaScript codes.
- It can go anywhere in the HTML page, but by convention it is placed in the head section.

window

- When JavaScript runs on a browser, it runs inside the global environment called window (object).
 - `alert()` and `prompt()` are methods (functions) of window object for alerting output and displaying prompt for user input.

Running a JavaScript program

- The computer (browser) runs or executes JavaScript code when certain events happen.
 - When HTML document is loaded in a browser.
 - When user clicks a button
 - When user types in a textbox
 - and more...

HTML Event Attributes

```
<button onclick = "doSomething()">Do it</button>
```

```
<script>  
    function doSomething(){  
        // code to do something.  
    }  
</script>
```

Example 1

- [Example](#), hello world on button click.
 - Note: `alert()` is being used for output instead of `console.log()`

Example 2

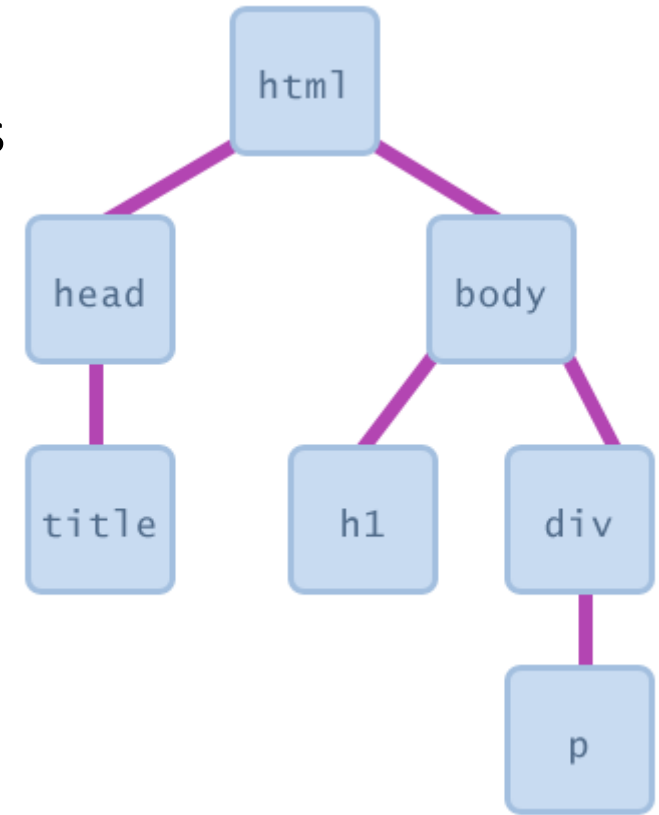
- [Program](#) to ask for name using prompt and display greeting using alert.
 - Note: we don't require Node module anymore, we are now running JavaScript inside browser's environment.

HTML element's id attribute

- The id attribute specifies a unique identifier for a HTML element (the value must be unique within the HTML document)
- The id attribute is used to target elements in JavaScript (via. the HTML DOM)

Document Object Model (DOM)

- All HTML elements are represented in browsers as objects
- All objects are nested together in one tree (DOM tree)
- Elements can have parents, siblings and children
- Most JS code manipulates elements (objects) on the DOM
 - it can examine elements' state (see whether a box is checked)
 - it can change state (insert some new text into a span)
 - it can change styles (make a paragraph red)



Getting a DOM element using its id

- `document.getElementById("id")`
 - Get the element with the specified id.
- [Example](#), Program to get first name and last name from the input fields and display full name inside span element on button click.

Main point

- JavaScript programs runs on events, that makes JavaScript an event driven programming language. We also perform our actions based on events that is either external or internal. *When we establish our self at the field of pure consciousness, we perform conscious actions rather than the compulsive ones.*

Assignments

- Reading Chapters 3 & 4
- Assignments from chapter 3 and 4