HTML5 and CSS3
Complete

Second Edition

Unit M

Programming Web Pages with JavaScript

Objectives

- Explore the Document Object Model

- Access elements and properties using JavaScript

- Create statements

- Store and access data in variables

Objectives (continued)

- Create a function

- Add an event listener

- Change CSS with JavaScript

- Create an `if` statement

JavaScript

- JavaScript: the most widely used programming language for modern web browsers
  - Is not Java
  - Created in 1995 by Brendan Eich, who worked at Netscape, and now Mozilla
  - Originally name was Mocha, named after Marc Andreesen, founder of Netscape
  - - 1995 (LiveScript)

Explore the Document Object Model

- **Document Object Model (DOM):** standardized way of referring to parts of a web page
  - Creates a hierarchical arrangement known as a DOM tree
  - Each part of HTML document represented by a node
  - W3C standard

Explore the Document Object Model (continued)

Unit M

- A DOM Tree

```
<html>
    <head>
        <title>
            Lakeland Reeds Bed &amp; Breakfast
        </title>
    </head>
    <body>
        <h1>
            <img src="images/logo.gif" alt="Lakeland Reeds Bed
            and Breakfast">
        </h1>
        <footer>
            45 Marsh Grass Ln. &bull; Marble, MN 55764 &bull;
            (218) 555-5253
        </footer>
    </body>
</html>
```
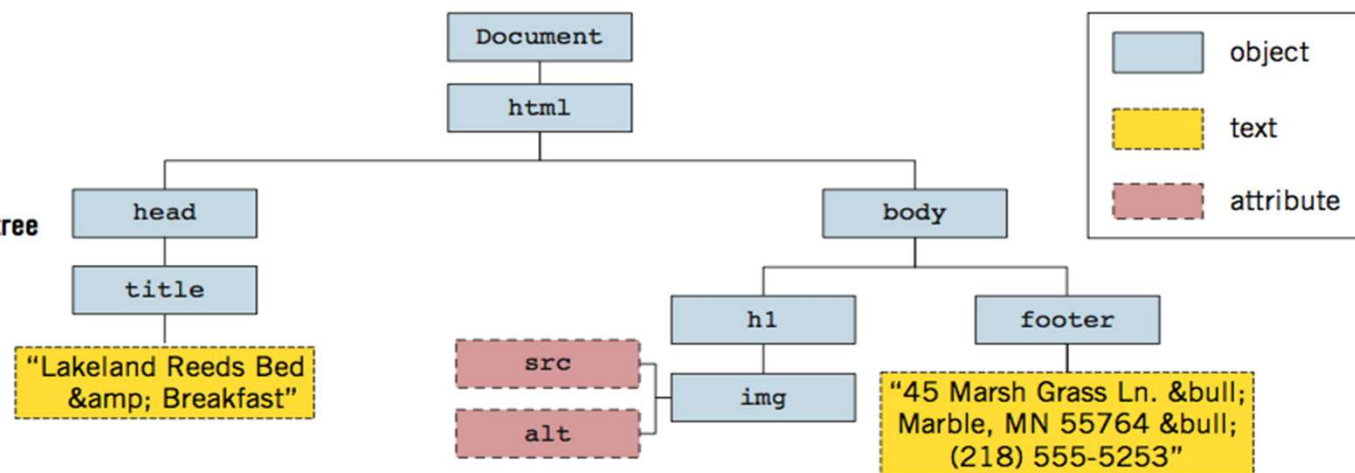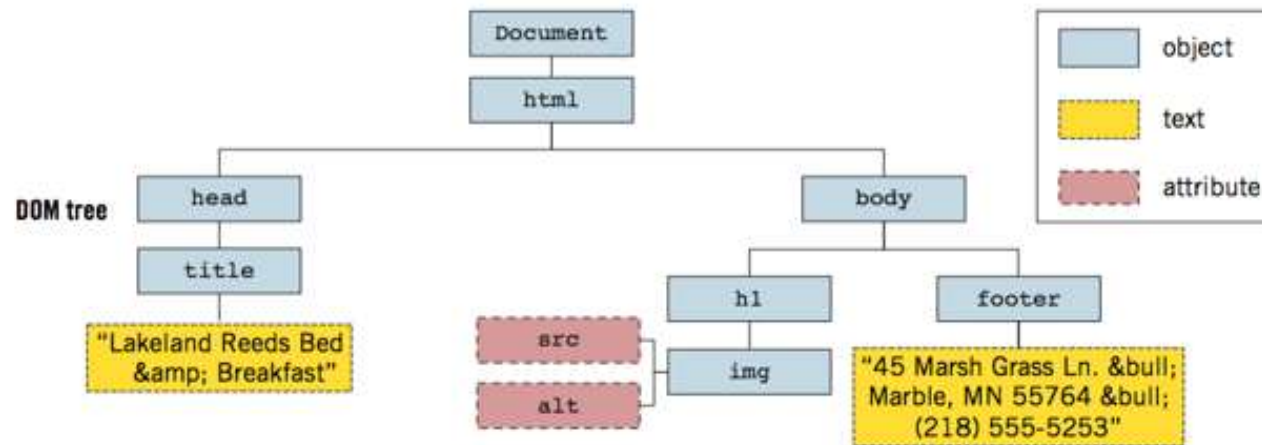
DOM tree

object	
text	
attribute	

Document
html
head — title — "Lakeland Reeds Bed & Breakfast"
body — h1 — img (src, alt)
body — footer — "45 Marsh Grass Ln. • Marble, MN 55764 • (218) 555-5253"

Explore the Document Object Model (continued)

JavaScript can:
1. change all the HTML elements in the page
2. change all the HTML attributes in the page
3. change all the CSS styles in the page
4. can remove existing HTML elements and attributes
5. can add new HTML elements and attributes
6. can react to all existing HTML events in the page
7. can create new HTML events in the page

Explore the Document Object Model (continued)

- <u>Object</u>: HTML element in DOM
  - ➢ Specific object must be identified in order to manipulate it using JavaScript

- <u>Property</u>: piece of a standard set of information associated with DOM node
  - ➢ Attributes are considered their own nodes and are associated with their own properties

Explore the Document Object Model (continued)

- Method: action that can be performed for a node

  - Method names are followed by parentheses between which you specify information specific to the method

  - `querySelector()` method lets you access any HTML element by specifying a CSS selector

    - Example: `querySelector("#nameinput")` selects the element with the `id` value `nameinput`

Access Elements and Properties Using JavaScript

- `querySelector()` method lets you reference objects and properties
  - `querySelector()` is a child of the `Document` object

- To use a method, specify its parent object, a period, and method name: `document.querySelector()`
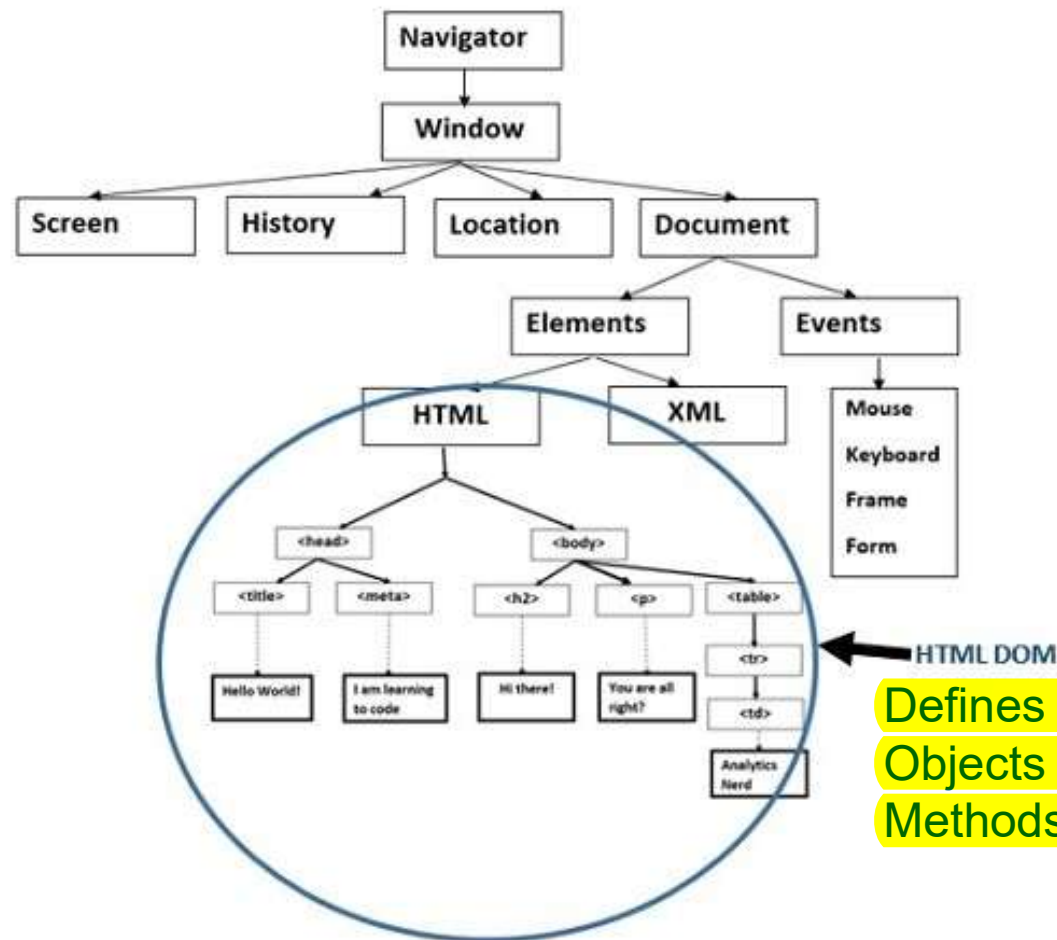
W3C DOM Standard: 3 different parts

1. Core DOM - standard model for all document types
2. XML DOM - standard model for XML documents
3. HTML DOM - standard model for HTML documents

Core / HTML DOM

Define the logical structure of any structure element.

Core DOM

Navigator
Window
Screen | History | Location | Document
Elements | Events
HTML | XML | Mouse Keyboard Frame Form
<head> | <body>
<title> | <meta> | <h2> | <p> | <table>
Hello World! | I am learning to code | Hi there! | You are all right? | <tr>
<td>
Analytics Nerd

← HTML DOM

Defines HTML elements as Objects – properties, Methods, events

Example:
<a id="shark" href=http://www.sharks.com target="_blank", title="attack"
class=" shark rocks"…

Access Elements and Properties Using JavaScript (continued)

- Specify CSS selector within parentheses of method to reference an object
  - To select the `aside` element:
    `document.querySelector("aside")`

- To access a property, add dot and property name after method:
  `document.querySelector("aside").textContent`

Access Elements and Properties Using JavaScript (continued)

- <u>Console</u>: part of developer tools in modern browsers; can be used to enter test code and view error messages related to JavaScript

- The browser console in Chrome: