

Lecture 19 - Web Behavior (JavaScript) Programming Concepts (continued)

November 8, 2016

JavaScript Programming Concepts

Variables, Functions and the DOM

Variables in JavaScript

- A variable is a placeholder for information.
- The variable is stored in the computer's memory (RAM).

- `var userName;`



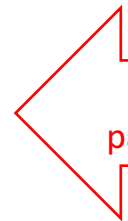
declaration

- `userName = "Karen";`



assignment

- `document.write(userName);`



Call to the write() method,
passing the variable as the argument

Variable Naming Rules

- The name must start with a letter, the underscore, or a dollar sign
- The rest of the name can contain any combination of letters, underscores, and numbers
- No spaces, punctuation or other characters
- Cannot use a reserved JavaScript word
- Names are case-sensitive

Functions in JavaScript

A function is a block of one or more JavaScript statements with a specific purpose, which can be run when needed.

```
function function_name() {  
    ... JavaScript statements ...  
}
```

Using Functions

JavaScript...

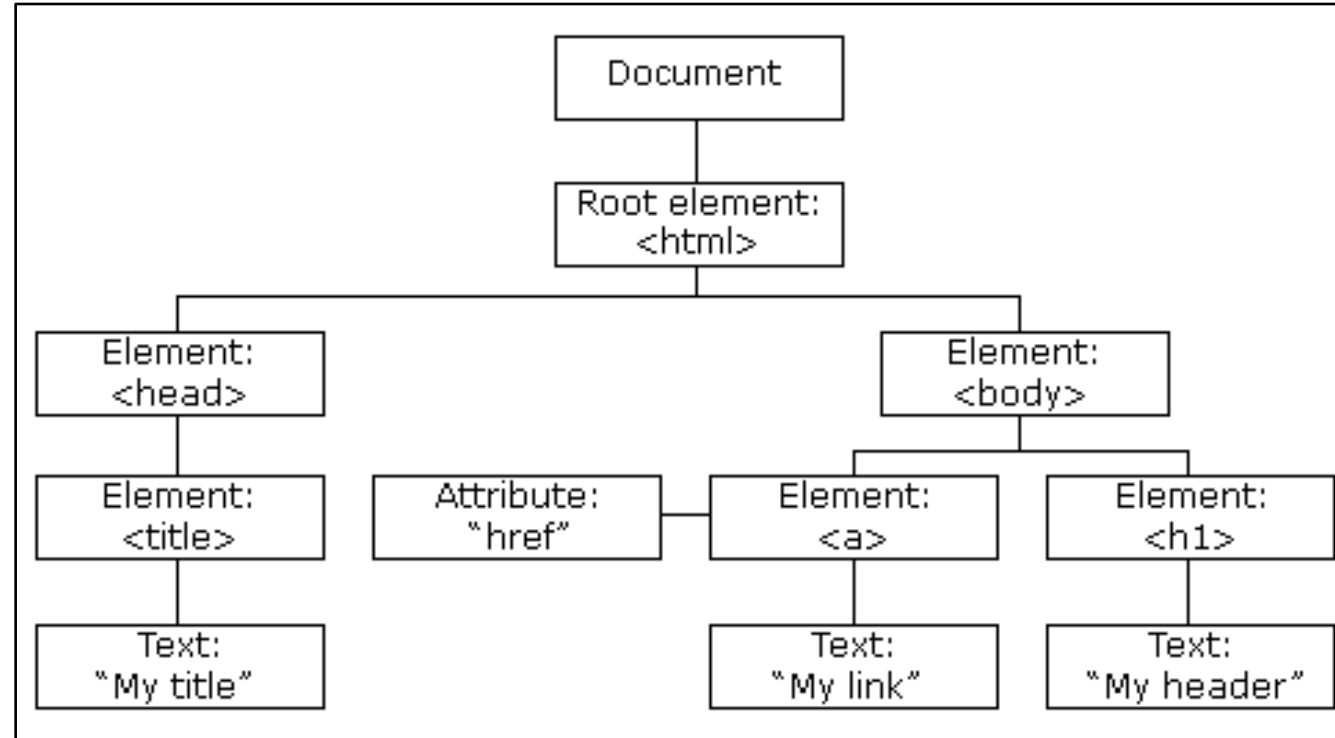
```
function getPrice() {  
    var price;  
    price = prompt("Enter the price");  
    price = parseInt(price);  
    alert("You entered $" + price.toFixed(2) );  
}
```

HTML...

```
<button onclick="getPrice()">Price</button>
```

The Document Object Model (DOM)

- Document - The file and all its content
- Object - All the things in the document and their "handles"
- Model - A way to depict the document and all its objects



Definition

"The W3C Document Object Model (DOM) is a platform and language-neutral interface that allows programs and scripts to dynamically access and update the content, structure, and style of a document."

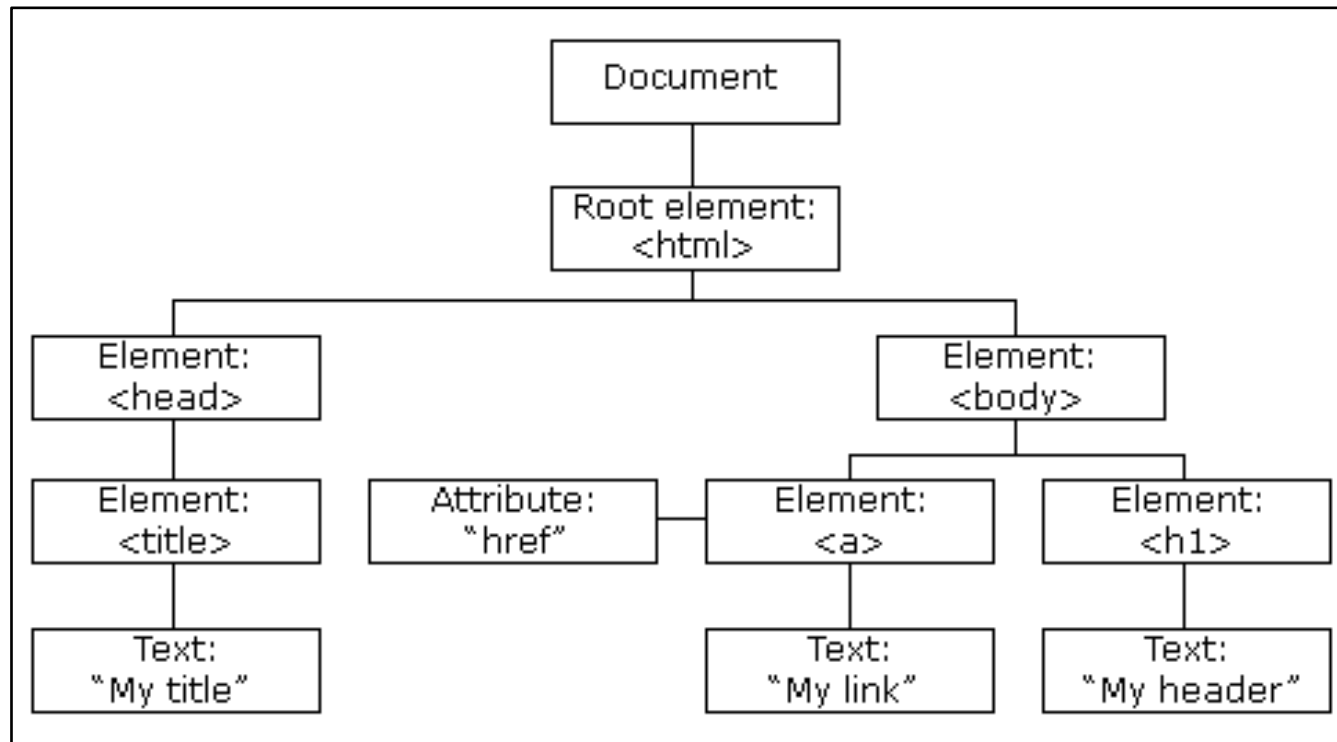
- The Document Object Model is a W3C standard.
- The DOM defines a standard for accessing HTML and XML documents:
- The W3C DOM standard is separated into 3 different parts:
 - Core DOM - standard model for any structured document
 - XML DOM - standard model for XML documents
 - HTML DOM - standard model for HTML documents

DOM Nodes

- According to the W3C HTML DOM standard, everything in an HTML document is a node:
 - The entire document is a document node
 - Every HTML element is an element node
 - The text inside HTML elements are text nodes
 - Every HTML attribute is an attribute node
 - Comments are comment nodes

The HTML DOM Node Tree

The HTML DOM views HTML documents as tree structures. The structure is called a Node Tree:



With the HTML DOM, all nodes in the tree can be accessed by JavaScript. All HTML elements (nodes) can be modified, and nodes can be created or deleted.

Node Parents, Children, and Siblings

- The nodes in the node tree have a hierarchical relationship to each other.
- The terms parent, child, and sibling are used to describe the relationships. Parent nodes have children. Children on the same level are called siblings (brothers or sisters).
- In a node tree, the top node is called the root
- Every node has exactly one parent, except the root (which has no parent)
- A node can have any number of children
- Siblings are nodes with the same parent

JavaScript and the DOM

- The HTML DOM can be accessed with JavaScript (and other programming languages).
- All HTML elements are defined as objects, and the programming interface is the object methods and object properties .
- A method is an action you can do (like add or modify an element).
- A property is a value that you can get or set (like the name or content of a node).

Objects have Properties

- A property is a characteristic or attribute of the object.
- DOT NOTATION: object.property
 - The URL of a web page document
`document.URL`
 - The title of a web page document
`document.title`
 - The date the web page file was last modified
`document.lastModified`
 - The src file of an image object
`image1.src`

Method

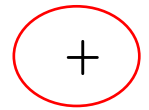
- A method is an action the object can do or respond to:
- Writing text to a web page document:
`document.write()`
- Submitting a form:
`form1.submit()`

Accessing and Displaying document properties

```
<script>
```

```
document.write("This page was last modified: "  
document.lastModified);
```

```
</script>
```



concatenate symbol

```
<script>
```

```
document.write("The title of this page is: ");  
document.write(document.title);
```

```
</script>
```

.getElementById() method

- The `.getElementById()` method returns the element with the specified ID.
- Example:
- ```
var e = document.getElementById("intro");
```

*Note: developers commonly use “e” as a variable name to represent an element.*