

# JavaScript & DOM

COMP620

## What is JavaScript?

- JavaScript was designed to add interactivity to HTML pages
- JavaScript is a scripting language
  - Interpreted instead of compiled
  - Error prone
- The language was invented by Brendan Eich at Netscape and has appeared in many browsers since 1996

## Adding to the Web Page

- If you write HTML or text to the document, it will appear in the web page

```
document.write("<h1>This is a heading</h1>");  
document.write("<p>This is text.</p>");
```

- Changes made to the web page or DOM take effect immediately

## JavaScript Variables

- You do not have to declare variables
- The first use of a variable declares it
- Variables are typeless and take the type of the data assigned to them
  
- This is **NOT** a good feature

## alert Method

- The alert("message") method displays a pop up box with the message
- You can also create confirm and prompt
- The goal of several of our XSS attacks will be to display an alert message

## functions

- Functions are declared with the function keyword in the body or head of the document
- Functions can be called by the program or through events

## Events

- When something happens a JavaScript function can be called
- Events can be created by the user or system

## Events

- onLoad and onUnload
  - Triggered when a page is called or left
  - May be used to manipulate cookies
- onFocus, onBlur and onChange
  - Triggered when a user moves to a field, away from the field or changes a field
- onSubmit
  - Used to check data before submitting it to a server

## Mouse Events



- **onmousedown** - A mouse button is pressed
- **onmouseup** - A mouse button is released
- **onmousemove** - The mouse is moved
- **onmouseout** - The mouse is moved off an element
- **onmouseover** - The mouse is moved over an element

## Cookies



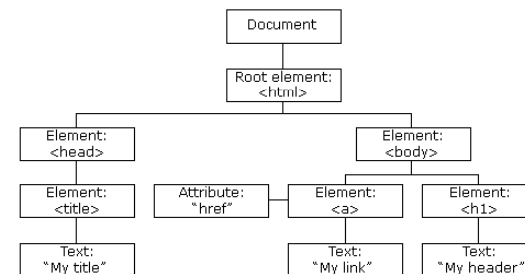
- A cookie is a variable that is stored on the user's computer
- There are many uses for cookies
  - User identification
  - Passwords
  - Shopping cart
- Remember that data stored on the client can be modified outside of the system

## document.cookie

- The document.cookie node is a string containing all of the information about the cookies
- Setting document.cookie to a value stores a cookie

## HTML Domain Object Model

- DOM is a standard that defines the objects and properties of HTML elements and the methods to access them
- DOM is OO with hierarchical nodes for all elements and data in a web page



## HTML DOM Properties

Some of the properties of a node are

- `x.innerHTML` - the text value of `x`
- `x.nodeName` - the name of `x`
- `x.nodeValue` - the value of `x`
- `x.parentNode` - the parent node of `x`
- `x.childNodes` - the child nodes of `x`
- `x.attributes` - the attributes nodes of `x`

## Finding a Node

- Following the child or parent heirarchy
- `getElementById()` method finds a node with a given name
- `getElementsByTagName()` method finds all nodes of a given tag. The result may be an array
- `document.documentElement` - returns the root node of the document
- `document.body` - returns the `<body>` tag

## Accessing Element Properties

- There is a long list of DOM objects
- Each object has several properties and methods
- You can use or set most of the fields of a HTML node