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

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

- 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