

# Recap JavaScript

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- What is JavaScript?
  - It is designed to add interactivity to HTML pages
  - It is a scripting language (a lightweight programming language)
  - It is an interpreted language (it executes without preliminary compilation)
  - Usually embedded directly into HTML pages
  - And, Java and JavaScript are different

# What can a JavaScript Do?

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- JavaScript gives HTML designers a programming tool:
  - simple syntax
- JavaScript can put dynamic text into an HTML page
- JavaScript can react to events
- JavaScript can read and write HTML elements
- JavaScript can be used to validate data
- JavaScript can be used to detect the visitor's browser
- JavaScript can be used to create cookies
  - Store and retrieve information on the visitor's computer

# JavaScript How To

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- The HTML `<script>` tag is used to insert a JavaScript into an HTML page

```
<script type="text/javascript">
document.write("Hello World!")
</script>
```
- Ending statements with a semicolon?
  - Optional; required when you want to put multiple statements on a single line
- JavaScript can be inserted within the head, the body, or use external JavaScript file
- How to handle older browsers?

```
<script type="text/javascript">
<!--
document.write("Hello World!")
// -->
</script>
```

# JavaScript Where To

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- You can include JavaScripts in head, body, or simply use external JavaScript file (.js)
- JavaScripts in the body section will be executed while the page loads
- JavaScripts in the head section will be executed when called
- Examples:
  - [http://www.w3schools.com/js/js\\_where\\_to.asp](http://www.w3schools.com/js/js_where_to.asp)

# JavaScript Basics

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- Variables
- If ... Else
- Switch
- Operators
- Popup Boxes
- Functions
- Loops (for, while)
- Events
- Try ... Catch
- Throw
- onerror
- Special Text
- Guidelines

# JavaScript Objects

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- String
- Date
- Array
- Boolean
- Math
- RegExp
- HTML DOM

# RegExp: Regular Expression

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- Two ways to define regular expression:
  - `new RegExp("[xyz]")`
  - or, `/[xyz]/`
- String object methods that supports regular expressions:
  - `search`: search a string for a specified value. Returns the position of the value
  - `match`: search a string for a specified value. Returns an array of the found value(s)
  - `replace`: replace characters with other characters
  - `split`: split a string into an array of strings

# RegExp Examples

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- Example 1:
  - `var string1="Peter has 8 dollars and Jane has 15"`
  - `parsestring1=string1.match(/\d+/g)`
  - returns the array `[8,15]`
- Example 2:
  - `var string2="(304)434-5454"`
  - `parsestring2=string2.replace(/[\\(\)-]/g, "")`
  - Returns `"3044345454"` (removes "(", ")", and "-")
- Example 3:
  - `var string3="1,2, 3, 4, 5"`
  - `parsestring3=string3.split(/\s*,\s*/)`
  - Returns the array `["1","2","3","4","5"]`



# JavaScript Regular Expression Examples

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- Check input for 5 digit number
  - <http://www.javascriptkit.com/javatutors/re.shtml>
- Different categories of pattern matching:
  - <http://www.javascriptkit.com/javatutors/re2.shtml>

# More RegExp Examples

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- Valid number: contains only an optional minus sign, followed by digits, followed by an optional dot (.) to signal decimals
- Valid date format
  - 2-digit month, date separator, 2-digit day, date separator, and a 4-digit year
  - e.g., 02/02/2000, 02-02-2000, 02.02.2000
- <http://www.javascriptkit.com/javatutors/re4.shtml>

# HTML DOM

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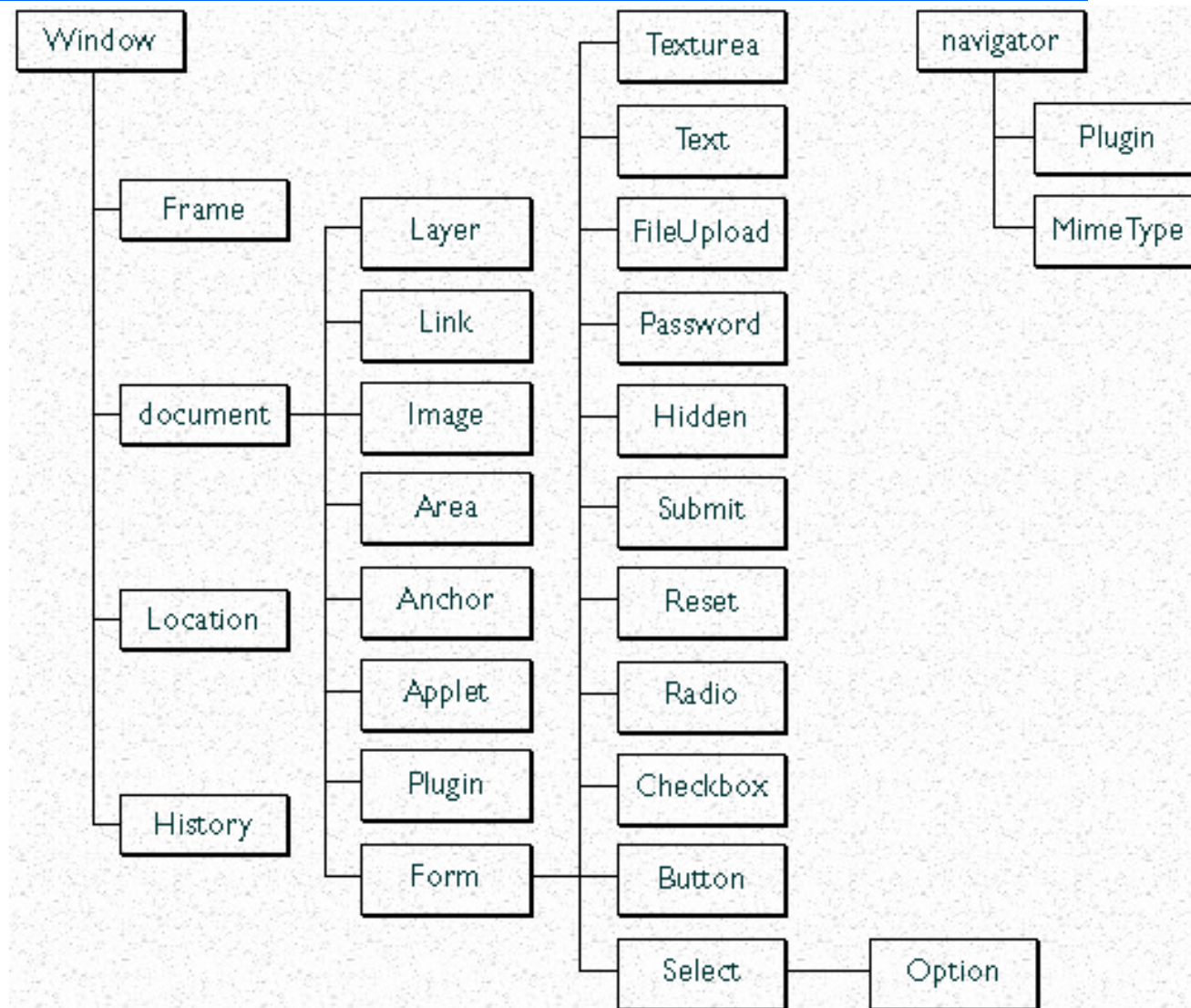
- What is the DOM?
  - It stands for **D**ocument **O**bject **M**odel
  - With JavaScript, we can restructure an entire HTML document by adding, removing, changing, or reordering items on a page
  - JavaScript gains access to all HTML elements through the DOM

# Using JavaScript Objects

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- When you load a document in your web browser, it creates a number of JavaScript objects
- These objects exist in a hierarchy that reflects the structure of the HTML page

# HTML DOM Structure



# JavaScript Advanced

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- Browser
- Cookies
- Validation
- Animation
- Timing
- Create your own object