CSC435: Web Programming Lecture 8: JavaScript Start

Bei Xiao

American University

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Overview

- What is JavaScript

- Importing JavaScript

- Writing simple scripts

- Variables and Operators

- Different Types of Data

What is JavaScript

- Client side scripting language that can be executed by the

- Can manipulate elements in the DOM

- Event-driven language that responds to activity on webpage to interact with user

- In the end, add an interactive element to the page without having to load new pages

More

- JavaScript and Java are very different. Java has a static typing while JavaScript has a dynamic typing (means a variable can hold an object of any type and can't be restricted.
- JavaScript is object oriented
- Prototypes for inheritance
- Interpreted language
- Maybe different for different browsers.
- Maybe different for different versions of browsers

Importing JavaScript <script>

- Two places to import your JavaScript
    - <head> element
    - End of <body> element

    <head>
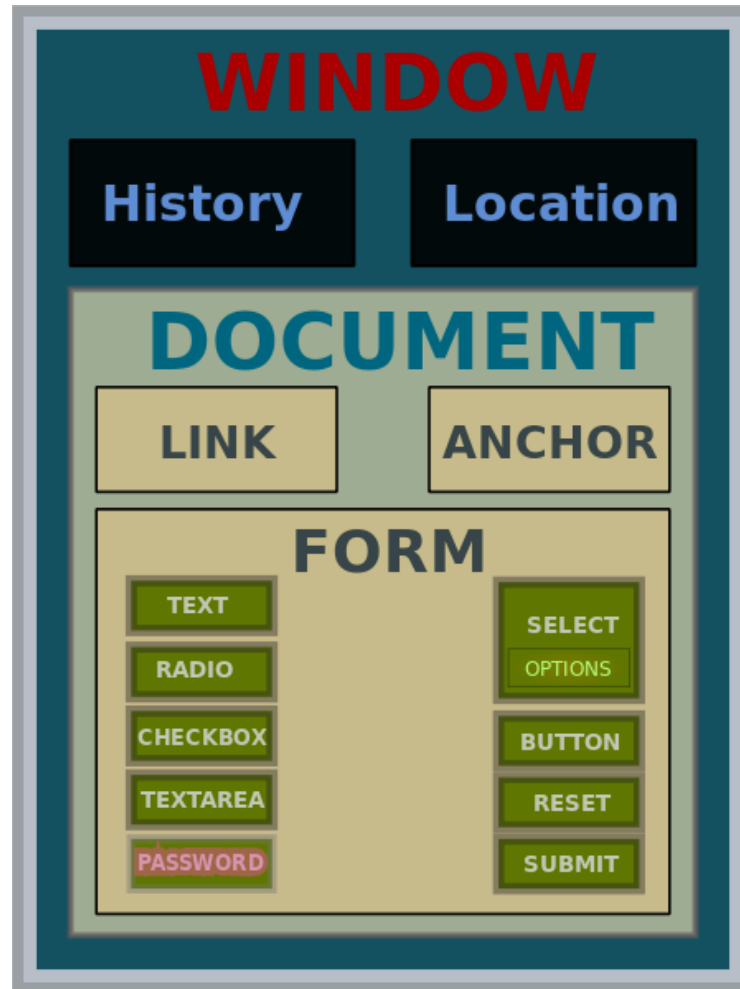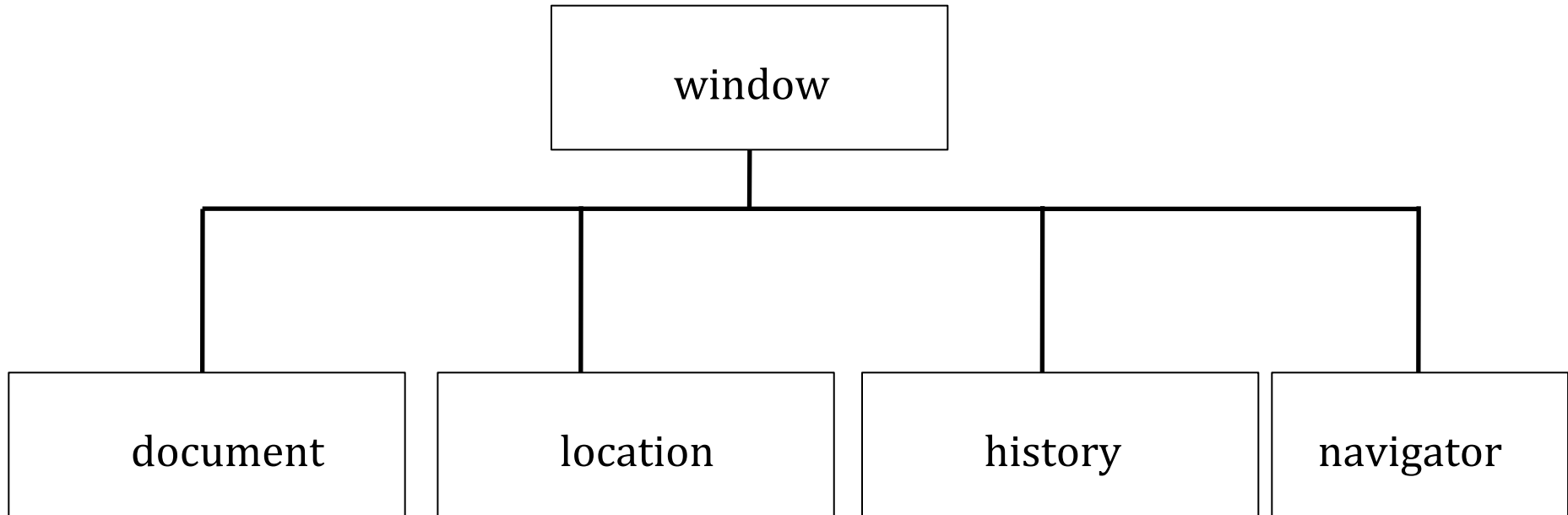   <script type="text/javascript" src="http://location.com/file.js/">
    </head>
    Or
    <body>
        <script type="text/javascript" src="http://location.com/file.js/">
    </body>

Document Object Model

Document Object Model

```
                    ┌─────────────┐
                    │   window    │
                    └─────────────┘
        ┌───────────────┼───────────────┬───────────────┐
┌──────────────┐ ┌──────────────┐ ┌──────────────┐ ┌──────────────┐
│   document    │ │   location   │ │   history    │ │  navigator   │
└──────────────┘ └──────────────┘ └──────────────┘ └──────────────┘
```

Object notation

- Window object, document object
- Object notation: parent. child
- Examples: window. document,
- window. document. body

Example: Window.alert

window.alert(”You got mail!");

Example: document.write

Document . write("Here is another message");

Example: hello.world

Quiz

The top level of the DOM hierarchy is occupied by

a. The document property

b. The window object

c. The document object

d. The document method

Exercise 1: Simple output

Write a .html and write out the title of your HTML file (e.g."My first JavaScript") into the browser using <Script>.

Hint: use document.write()

The object notation for title is document.title

Variables

- Only one prefix to remember, use var with all your variables to declare them.

  var x = 3.1415;

  var y = "hello world";

  var firsname="David";

  var lastname = "White";

  var s = true;

Different types of variables

- Numbers
- Booleans
- String
- Null – for explicitly saying non-assigned value
- Undefined- for never having assigned anything.

Variable: Numbers

- Integers: var = 33;
- Floating-point numbers
   var=0.0001; var =2.5e12;
- Not a Number (NaN): isNan("horse");
- Using parseFloat() and parseInt()
   parseFloat("21.4") //returns 21.4

   parseFloat("10 inches")// returns 10

      Infinity
      isFinite(21);//true
      isFinite(Math.sqrt(-1));//false

Quiz

Is the following true or false:

1. isFinite(-1)

2. isNan(3.1415)

3. var a = parseInt("Hello")
   isNan(a)

4. Var a = parseFloat("25 miles");
   isNan(a)

Operators

- All the common mathematical operators
- +, -,*,/,% (mod)
- Unary operators, x++, ++x
- Compound assignment: x *=3; x = x*3;
- Overloaded operator for string
  "string1" + "string2" ;//return"string1string2"
  "3" + 8   //return "38"
- Math operators in Math module
  Math.pow; Math.sqrt

Demo: converting inches to cm

Quiz: compute area of an triangle from 3 sides

A triangle has 5, 6, 7 inches for its three size, what is its area in CM?

Output your results using either "alert" or document.write

Variable: Strings

- String is an array of characters
  - var myString= "hello world";
  - Var myString= " ";
- Come with a variety of built-in methods

```
var  s= "hello world";
s[1];                         //returns 'e'
s.indexOf('\');               //return the index of 5;
s.substr(8) ;                 //returns 'rle';
```

Strings: Escape sequence

- Demo

  \n new line

  \\ backslash itself.

Strings: Methods

- Concat: joins strings and returns a copy of the joined string

- indexOf: returns the position of the first occurrence of a specified value in a string.

- lastIndexOf: returns the position of the last occurrence of a specific value in a string

- replace: searches for a match between a substring and a string and replaces the substring with the new string

Strings: Methods

- Split: used to split a string into an array of substrings and returns the new array
  - var string1 = "The quick brown fox";
  - var newArray =string1.split(" ");
- Substr(): extracts the characters from a string, beginning at the starting index.
  - Var string1 = "The quick brown fox:"
  - Var sub1 = string1.substr(4,11);// extracts "quick brown"
- toLowerCase()

Quiz

What will be the returned value of the following statements?

Var string= "My Monday is Blue";

string.indexof("Monday");

string.lastIndexof("M");

string.substr(3,8);

Variable: Arrays

- Type of object used to storing multiple values in a single variable. Each value has a numeric index that contain data of any data type such as numbers, strings, booleans, functions, objects, or other arrays.

  Var myArray = new Array;

  Var myArray = [ ];

  Var myArray = ["Monday", "Tuesday", "Friday"];

  Var myArray= ["string", 345, obj1];

Exercise 3: replacing words

var myWeek = ['Monday', 'Tuesday', 'Wednesday', 'Thursday'];

myWeek.splice(2,1,"holiday");

array. splice (index, howmany, [new elements]);

Exercise 3: replacing words

Var inputString = "I prefer ice-cream for dessert";

Change it into " I prefer coffee for drinking" using array.splice

And output the result to your browser

Homework & Readings

Sams teach you JavaSript in 24 hours, Hours 1-2,5.

Code Academy, JavaScript (track 1-2)

http://www.codecademy.com/tracks/ javascript