Lecture 21

Introduction to JavaScript BOM and DOM

What are BOM and DOM

Browser Object Model and Document Object Model are object oriented APIs which provides certain functionality.

BOM are the APIs which allow us to interact with the system – opening windows, measuring the dimensions of the screen, redirecting the browser, etc.

DOM are the APIs which gives us access to the HTML document, its element, their events and other.

JavaScript DOM

JavaScript DOM represents the HTML document . It is used to create, access and change the HTML Document and its elements

It is accessible via the window.document (or just document) variable

Basic Methods for manipulating the DOM

- document.write(sth) – writes in the body of the document
- document.writeln(sth) – writes a line in the body of the document.
- Document.getElementById(id) – returns a DOM Element with the specified id.
- Document.getElementById(id).value - returns the value of html input
- Document.getElementById(id).innerHTML = html - replaces the html of an element.

JavaScript BOM

JavaScript BOM includes :

- The Window Object – window in our code
- The Location Object – location in our code
- The Navigator Object – navigator in our code

Window Object Explained

The window object has 2 purposes in JavaScript:

1) as a representation of the browser instance

2) as a JavaScript Global Scope, i.e. all global declared variables are window object members and all the built in functions are methods of the window object:

console.log(window.alert === alert) ---> true

Window Object and frames

The window object holds the reference to the parent window if the current document is opened in frame via the window.parent property.

Same Origin Policy – you can not access document in another domain with JavaScript, neither can other domain document access yours.

Opening windows with the Window object

You can use the Window object to open another windows via the window open method:

window.open(<url>, <name>, <specs>, <replace in history>);

Details - http://www.w3schools.com/jsref/met_win_open.asp

The method window.open returns instance of the opened window.

The window form which is opened the current window is accessible via the window.opener property.

The window position

Determining the Window position on the screen is a little bit tricky because of certain browser incompatibilities.

- The top left position X – window.screenLeft | window.screenX
- The top left position Y – window.screenTop | window.screenY
- Cross browser code:

```
var leftPos = (typeof window.screenLeft == “number”) ?
                window.screenLeft : window.screenX;
var topPos = (typeof window.screenTop == “number”) ?
                window.screenTop : window.screenY;
```

Moving the window

You can move the window with moveTo and moveBy methods of the window object

- window.moveTo(x, y) – moves the top left corner of the window on position (x, y) of the screen
- window.moveBy(x, y) – moves the top left corner with x in left/right and y in top/bottom direction

Resizing the window

You can move the window with resizeTo and resizeBy methods of the window object

- window.resizeTo(x, y) – resizes the window to the pointed dimensions.
- window.resizeBy(x, y) – changes the size of the window with the pointed dimensions.

How big is the window?

You can get the size of the window via the following Window object properties:

- Window.innerHeight – the inner height of the page
- Window.outerHeight – the height of the window
- Window.innerWidth– the inner width of the page
- Window.outerWidth – the width of the window

Intervals And Timeouts

You can delay code execution , or repeat certain code on some time interval via

- setTimeout(function, time) – delays the code
- setInterval(function, time) – repeats the code on interval

  Both of the above functions return indicator for the timeout and the interval needed when you want to stop the repetition or cancel the delayed code execution – clearInterval(intervalIndicator), clearTimeout(timeoutIndicator);

Tasks

1. Create a html form with inputs width and height and button “Open”;
2. When open button is clicked window with specified width and height should be open
3. Add Width and Height text inputs and Resize button
4. When resize button is pressed resize the opened window to the specified size
5. Add X and Y text inputs and Move button, move the opened window when it is pressed
6. Add radio buttons to identify weather you want to use move/resizeBy/To
7. Write in the opened window its size and position
8. Create a digital watch in JavaScript

The Location Object

The location object represents the current URL and its components

- Accessible via window.locaition property
- Location.hash – the anchor of the URL if any
- Location.search – the query string of the request
- You can redirect the browser with window.location = newUrl
- You can reload the location via the window.location.reload() method

The Navigator Object

The navigator 0bject gives us information about the current browser software that runs our JavaScript code.

Used for browser detection

http://www.w3schools.com/jsref/obj_navigator.asp

The Screen Object

We can obtain different information about the screen via the screen object resolution, density etc,

http://www.w3schools.com/jsref/obj_screen.asp

The history object

The history Object gives us abbility to redirect the browser back and forward in his history

http://www.w3schools.com/jsref/obj_history.asp