Arrays

* array is a collection of values of the same data type. It is a user-defined type.
* An array can also be created using the Array object. The Array constructor can be passed as −
  * A numeric value that represents the size of the array or.
  * A list of comma separated values.

*Array Methods

- *pop() Removes the last element from an array and returns that element.
- *push() Adds one or more elements to the end of an array and returns the new length of the array.
- *shift() Removes the first element from an array and returns that element slice.
- *unshift() Adds one or more elements to the front of an array and returns the new length of the array.

*Array Methods

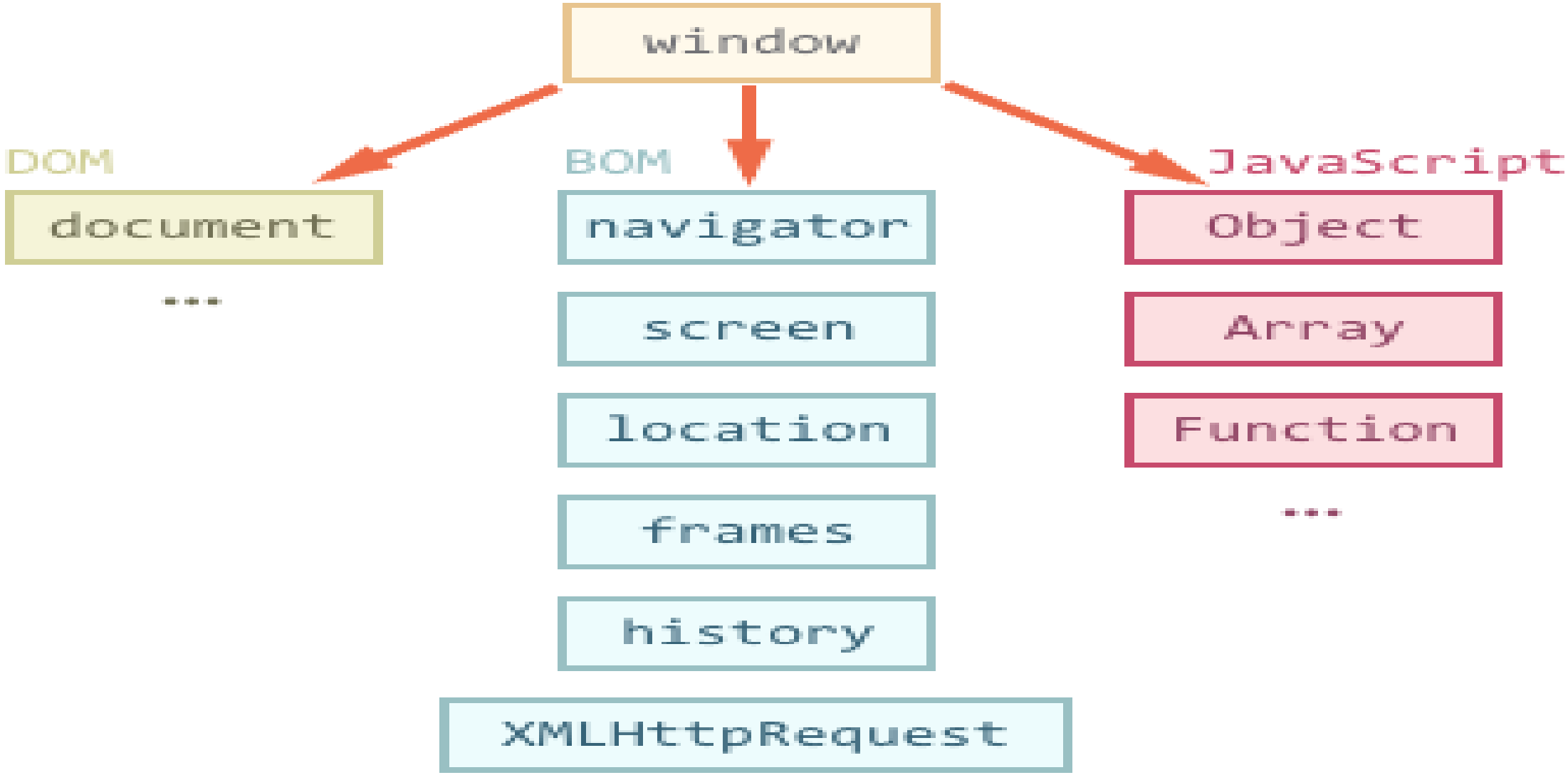
- *slice(start_index, upto_index) extracts a section of an array and returns a new
- *splice(index, count_to_remove, addElement1, addElement2, ...) removes elements from an array and (optionally) replaces them. It returns the items which were removed from the array.
- *sort() sorts the elements of an array in place, and returns a reference to the array.
- *indexOf(searchElement[, fromIndex]) searches the array for searchElement and returns the index of the first match.
- *lastIndexOf(searchElement[, fromIndex]) works like indexOf, but starts at the end and searches backwards.

Array Methods

- concat() Returns a new array comprised of this array joined with other array(s) and/or value(s)
- filter() Creates a new array with all of the elements of this array for which the provided filtering function returns true.
- forEach() Calls a function for each element in the array.
- reverse() Reverses the order of the elements of an array -- the first becomes the last, and the last becomes the first.

* The debugger statement invokes any available debugging functionality, such as setting a breakpoint. If no debugging functionality is available, this statement has no effect.

*debugger


window
DOM
document
...
BOM
navigator
screen
location
frames
history
XMLHttpRequest
JavaScript
Object
Array
Function
...

Browser Object Model (BOM)

- The window object is supported by all browsers. It represents the browser's window.
- All global JavaScript objects, functions, and variables automatically become members of the window object.
- Global variables are properties of the window object.
- Global functions are methods of the window object.

*window.innerHeight - the inner height of the browser window (in pixels)

*window.innerWidth - the inner width of the browser window (in pixels)

*window.open() - open a new window

*window.close() - close the current window

*Window

*Window Screen

* object contains information about the user's screen.
* screen.width property returns the width of the visitor's screen in pixels.
* screen.height property returns the height of the visitor's screen in pixels.
* screen.availWidth property returns the width of the visitor's screen, in pixels, minus interface features like the Windows Taskbar.
* screen.availHeight property returns the height of the visitor's screen, in pixels, minus interface features like the Windows Taskbar.

*Window Location

*window.location.href returns the href (URL) of the current page

*window.location.hostname returns the domain name of the web host

*window.location.pathname returns the path and filename of the current page

*window.location.protocol returns the web protocol used (http: or https:)

*window.location.assign() loads a new document

*Window History

*history.back() - same as clicking back in the browser

*history.forward() - same as clicking forward in the browser

HTML DOM

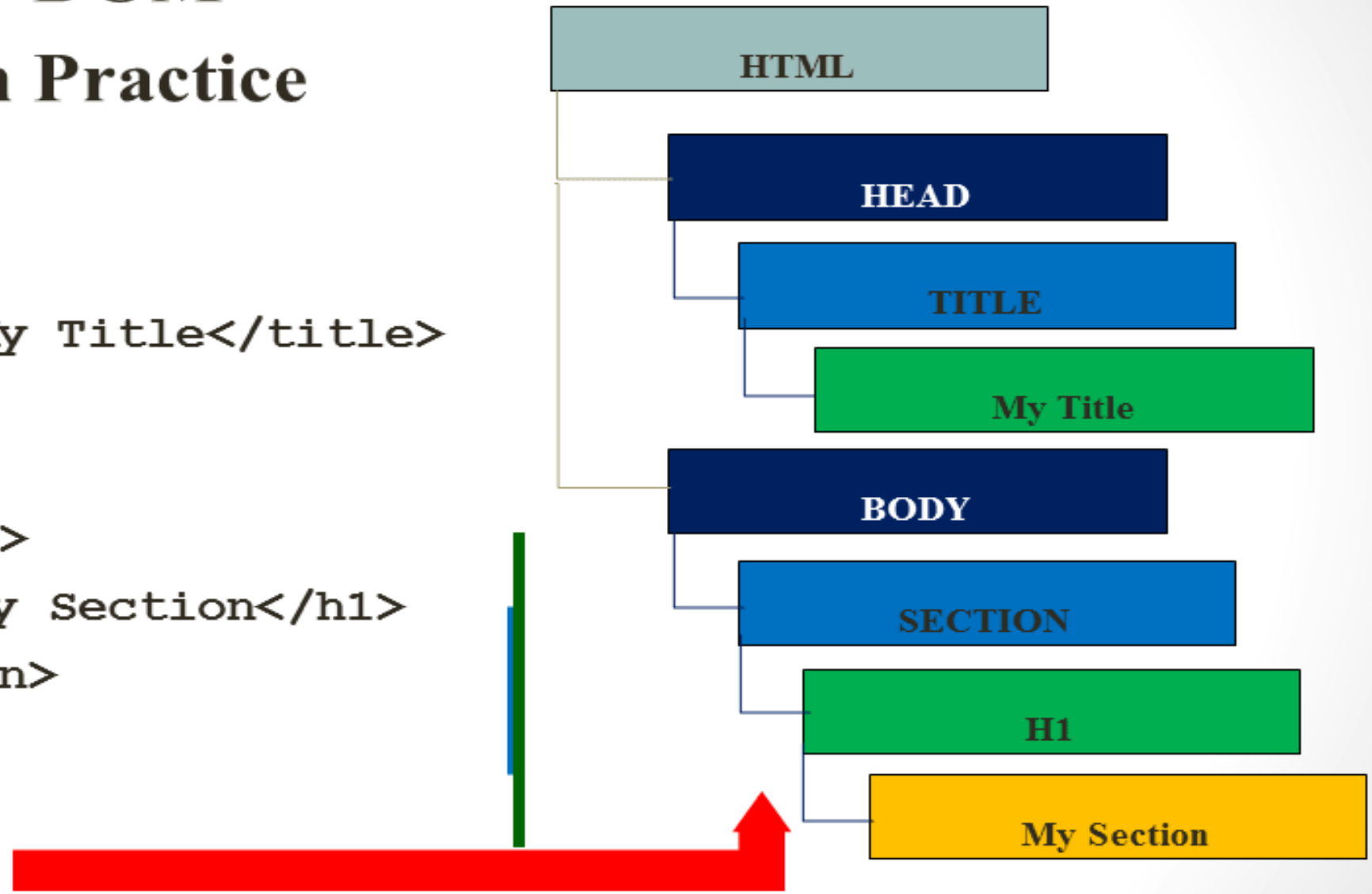
* Every web page resides inside a browser window, which can be considered as an object.
* The way a document content is accessed and modified is called the **Document Object Model**, or **DOM**. The objects are organized in a hierarchy. This hierarchical structure applies to the organization of objects in a web document.

* JavaScript can change all the HTML elements in the page
* JavaScript can change all the HTML attributes in the page
* JavaScript can change all the CSS styles in the page
* JavaScript can remove existing HTML elements and attributes
* JavaScript can add new HTML elements and attributes
* JavaScript can react to all existing HTML events in the page
* JavaScript can create new HTML events in the page

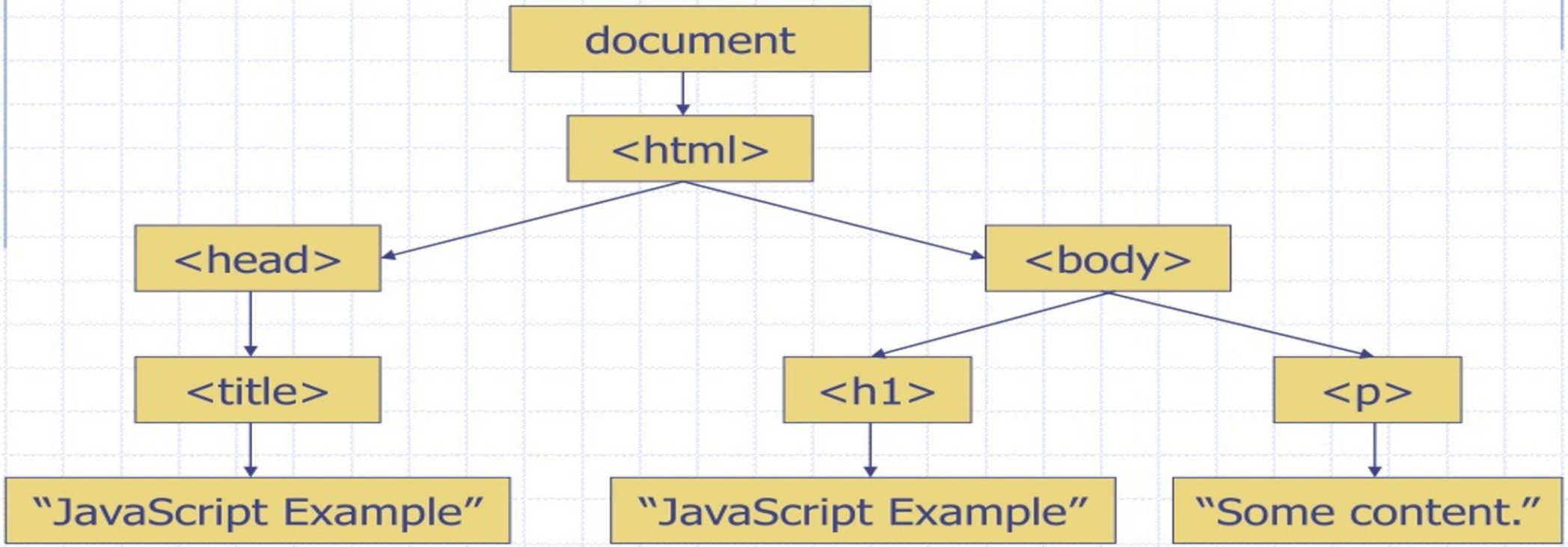
* DOM

DOM
in Practice

```
<html>
  <head>
    <title>My Title</title>
  <head>
  <body>
    <section>
      <h1>My Section</h1>
    </section>
  </body>
<html>
```



DOM Representation



*Document Properties in DOM

* forms[ ] An array of form objects, one for each HTML form that appears in the document.
  * Example : document.forms[0], document.forms[1] and so on
* images[ ] An array of form objects, one for each HTML form that appears in the document with the HTML <img> tag.
  * Example : document.forms[0], document.forms[1] and so on
* Referrer A read-only string that contains the URL of the document, if any, from which the current document was linked.
  * Example : document.referrer
* Title The text contents of the <title> tag.
  * Example : document.title
* URL A read-only string that specifies the URL of the document.
  * Example : document.URL

*Finding HTML Elements

* document.getElementById(id) Find an element by element id
* document.getElementsByTagName(name) Find elements by tag name
* document.getElementsByClassName(name) Find elements by class name
* document.querySelector(id or class or type) Find element by name or id or class or type

*Changing HTML Elements

*element.innerHTML = new html content Change the inner HTML of an element

*element.attribute = new value Change the attribute value of an HTML element

*element.setAttribute(attribute, value) Change the attribute value of an HTML element

*element.style.property = new style Change the style of an HTML element

* document.createElement(element) Create an HTML element
* document.removeChild(element) Remove an HTML element
* document.appendChild(element) Add an HTML element
* document.replaceChild(element) Replace an HTML element
* document.write(text) Write into the HTML output stream

* Adding and Deleting Elements

Events

* An event is an action or occurrence recognized by the software. It can be triggered by a user or the system. Some common examples of events include a user clicking on a button, loading the web page, clicking on a hyperlink and so on.

*Common HTML Events

Event	Description
onchange	An HTML element has been changed
onclick	The user clicks an HTML element
onmouseover	The user moves the mouse over an HTML element
onmouseout	The user moves the mouse away from an HTML element
onkeydown	The user pushes a keyboard key
onload	The browser has finished loading the page

*Validations

* JavaScript provides a way to validate the form's data on the client's computer before sending it to the web server. Form validation generally performs two functions.
  * **Basic Validation** – First of all, the form must be checked to make sure all the mandatory fields are filled in. It would require just a loop through each field in the form and check for data.
  * **Data Format Validation** – Secondly, the data that is entered must be checked for correct form and value. Your code must include appropriate logic to test the correctness of data.

DOM EventListener

- The addEventListener() method attaches an event handler to an element without overwriting existing event handlers.
- can add many event handlers of the same type to one element, i.e two "click" events.