

Object-based programming Notes

Tutorial 9, 92 pp684-696 (Carey 6e)

You may want to read about objects first in the book

1. **More JavaScript and objects** - JavaScript is an object-based language. The table below shows some examples of JavaScript objects (By the way, the ECC courses CS121 and CS132, Computer Science I and II are taught with C++, an object-oriented language.)

A clue that the code you see involves objects is the dot notation. To the *left* of the dot is an object or an instance of an object. To the *right* of the dot is either a method or property of the object. A method is similar to a function. (Tip – Think of a method as a *verb* and a property as a *noun*.)

JavaScript has 4 object types: built-in, browser, document, and customized. The first few examples below include the Math, Array¹, and Date object, (built-in objects), and the document object. myArray is a variable name -- an instance -- of the Array object. Observe this syntax below:

Example	Object	method or property	
Math.round(x) Math.pow(x, y)	Math	round(x) pow(x, y)	method method
myBirth.getFullYear()	myBirth (variable name for a particular date, an instance of the Date object)	getFullYear()	method
document.write()	document	write("text")	method
document.getElementById("daysLeft").innerHTML	element in the webpage i.e. Document	innerHTML	property
num.toFixed(n)	num (a variable name for a particular number)	toFixed(n)	method
myArray.length	myArray (a variable name for an instance of an array)	length	property

examples:

- in Math.round(x) – the number x rounded to a whole number is returned
- in myBirth.getFullYear() – the full year of the date myBirth is returned with 4 digits (ex 1990 is returned from "December 3, 1990 14:35:05")
- in document.write("text") – text (or html) is written to the document (web page)

¹ The everyday definition of "array" -- a list or grid -- of items. In JavaScript it is the structure to hold the list or array of items and associates all the items with one variable name, Ex: myArray could be 2, 3, 6, 9, and "looks like" this in memory, see below. The four numbers are stored in separate physical memory locations but one variable name will access all of them. I will not cover arrays but will include a handout on it in Brightspace before we part for the semester.

2
3
6
9

- in `document.getElementById("daysLeft").innerHTML` – the contents that is nested within the element's tags is returned. (In JavaScript, the document is an object as is all its elements.) Suppose that the element returned by the `getElementById` method is `<div id="daysLeft">stuff</div>`. Then `innerHTML` would be `stuff`.
 - in `num.toFixed(n)` – a decimal number `num` is rounded to `n` places and returned.
 - in `myArray.length` – a property, `length`, of the array is returned.
2. [Optional] For more background on objects read in ***Weaving a Website* book excerpt**, pp179-182. Find the excerpt in the same folder as this document. (You were referred to these pages previously in the handout, **JavaScript Notes**.)