# Exercise05: Javascript

### **Objectives:**

To learn to use Javascript objects, functions, and closures – and put them to use!

Work with your group (or by yourself). Each group is to upload only one submission.

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Satish and Simanta 2015/09/27 Page 1 of 3 pages

#### 1. Warm Up: Try Some Examples

- 1. First, open blackboard, go to Course Contents, and then download exercise05.zip file into your workspace (U:\workspace or something like that!). Then, unzip.
- 2. Play with each of the given examples (in examples directory). Open them using a text editor of your choice and modify parts of the html or js files to learn how the different instructions work.

One suggestion is to use online Javascript code tool like <a href="http://codepen.io/pen/">http://codepen.io/pen/</a>. It is very useful for trying javascript examples as you can change the javascript on the left side view, you can immediately see the results in the right side view.

Please do the TODO segments for each example.

You will need to also learn how to use the available tools for JS debugging. Safari has Develop menu with "show error console" etc, Firefox has tools->WebDeveloper->Debugger, Chrome has Tools->Developer Tools.

#### LIST OF EXAMPLES: THEY HAVE TODO SEGMENTS. PLEASE TRY!

01: shows is is loosely typed

02: shows use of === and also how conditions are always evaluated to true or false.

03: shows the two ways of declaring functions. Shows how variables store pointer to functions. Start using the browser developer tools to figure out why the FOURTH print is missing.

04: shows function declaration hoisting. Also, shows correct and incorrect uses of function expressions.

05: shows named function expressions.

06: shows local and global variables in is and also order of execution of javascript

07: shows functions are first class objects in javascript

08: shows closures

09: shows an example of use of closure to create hidden variables

10: shows an example on what to watch out for in using closures

11: shows example of code reuse using functions as first class objects

12: shows how to create an object. Also, shows the use of the THIS object in javascript!

13: shows object attributes can be accessed like arrays.

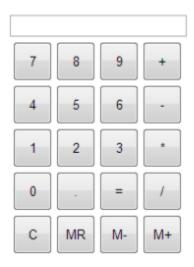
IT IS REQUIRED THAT YOU TRY EACH EXAMPLE AND DO THE "TODO" SECTIONS.

## 3. Simple Calculator

A complete example of another program is provided in 04\_SampleProgram. A starting template is provided in 03\_ExerciseHelp. Your assignment is to use this template and to create a simple calculator program using **Objects**, **functions**, **and closures**.

You will need to add to code in calculator.js in that folder.

The calculator should look approximately like the following:



- [] Your javascript code should be a file named "calculator.js".
- [] Name your Objects based on their purpose. Do the same with your JavaScript functions.
- [] MR (shows memory value on screen)
- [] MC (clears memory value)
- [] C (clears screen value)
- [] = (shows results of an operation, repeatedly pressing it repeats the last operation)
- [] M+ (Whatever is on screen gets added to memory
- [] M- (Whatever is on screen gets subtracted from memory

Make sure that your variables are not global (so that if someone includes some other js files with same names for variables, then your code still works ok). You do this by using closures.

After a few days, if you are unable to make progress - please contact us!