

# Exercise05: Javascript

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## **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.**

**Credits (for edits): Naresh Somisetty, Isaac Martin, Zahra Hosseini.**

# 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 <http://codepen.io/pen/>. 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 js 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 js 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.

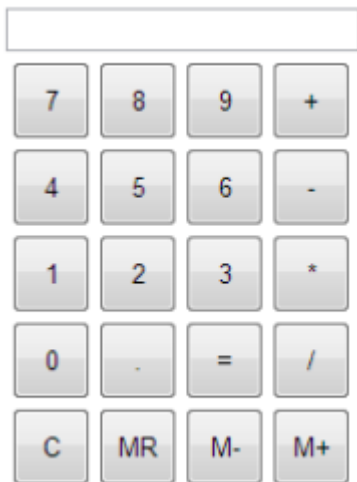
IT IS REQUIRED THAT YOU TRY EACH EXAMPLE AND DO THE "TODO" SECTIONS.

### 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!