Exercise03: 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.

1. Warm Up: Try Some Examples

1. First, open blackboard, go to Course Contents, and then download exercise03.zip file into your workspace (U:\workspace or something like that!). Then, unzip.

   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. Please do the TODO segments for each example.

   NOTE01: 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 html or javascript on the views, and you can immediately see the results.

   NOTE02: 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.

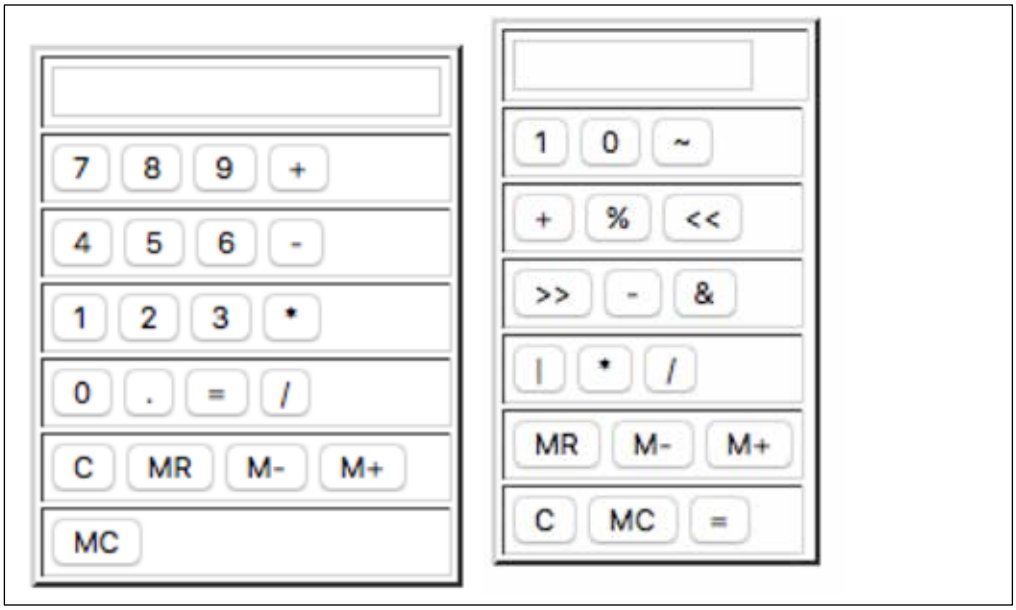
   LIST OF EXAMPLES: THEY HAVE TODO SEGMENTS. PLEASE TRY!

   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.

2. Simple Calculator

A complete example of another program (Matching game) is provided in 04_SampleProgram. A starting template is provided in 03_ExerciseHelp. Your assignment is to use this template to create two simple calculator programs (one decimal and other binary) using **Objects, functions, and closures**. These calculators should look ***approximately*** like the below pictures.



CHECKLIST

[ ] Your javascript code should be files named “calculator.js" and "calculatorbinary.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!

Submission

Make sure your solutions work on Chrome (which is what TAs will use to grade the assignment). Zip your html, js files, and participation file (a simple txt file, which clarifies the specific participation of group members). Then, submit this zip file on blackboard. Remember there is only one submission per group. Make sure to include all the files that are needed in order to run your program.