Exercise06: Javascript

Objectives:

To learn to use JQuery, JSON, and Object-oriented Javascript.

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

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EXAMPLES

00: show the order in which js is loaded and executed and ready and onload events are fired.

01: shows self-invocation of functions. Also, shows use of call, apply, and bind.

02: shows JSON stringify and parse methods.

03: Shows adding action with Jquery to DOM

03-2: Shows adding action with Jquery to DOM via id attribute, tag and class

03-3: create table with Jquery (i.e. use jquery to create DOM elements)

04: two ways to create objects

05: factory pattern of creating objects and why it does not work.

06: shows constructor pattern for creating js objects and the problem with that.

07: shows the prototype pattern for creating js objects and the problem with that.

08: shows the constructor+prototype approach of creating js objects.

1   Warm Up: Try Some Examples

1. First, open blackboard, go to Course Contents, and then download exercise06.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.

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.

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

3. ADDITIONAL RESOURCES

Please read the concepts in below link. And also try examples provided for best practices.

https://developer.mozilla.org/en-US/docs/Web/JavaScript/Introduction_to_Object-Oriented_JavaScript#Object-oriented_programming

JQuery Documentation and Examples. https://learn.jquery.com/using-jquery-core/
https://learn.jquery.com/about-jquery/,   also w3schools.com

2   JQuery

This is a really simple exercise to have you practice jquery. Create an HTML page (that's empty for now) that you'll create/manipulate as you explore. Add code to load the jQuery library and a code.js JavaScript file that you'll also create.

```
<script src="http://ajax.googleapis.com/ajax/libs/jquery/1.9.1/jquery.min.js"></script>
<script src="code.js"></script>
<script>
 // page-specific code goes here
</script>
```

Add code to the code.js file that demonstrates jQuery features. Create a small demo of each of following jQuery features. Obviously, you will have to create and add HTML content so you can see your demos working.

- ☐ Write simple comment for each effect, like this
  <!-- Html Element: button id:..effect:…-->
- ☐ Manipulate the CSS (i.e. style) of an element with jQuery. Show FIVE different style elements being changed.
- ☐ Use an effect on an element. Show FIVE different effects.
  http://learn.jquery.com/effects/.
- ☐ Use jQuery events. Show FIVE different events. http://learn.jquery.com/events/

You will need to submit your code.html and code.js files. Attach every required file and remove unrelated files from your submission.
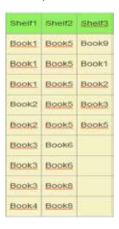
3   Library

The goal of this exercise is to design and implement a books library using object-oriented Javascript. Use a constructor+prototype pattern to develop your objects (look at examples). At a minimum, your design should have the three classes Library, Shelf, and Book. Write all the code for these objects in booksLibrary.js file.

Assume there are a fixed (reasonable for testing purposes) number of books present in the Library. No need to add or remove books from the library. Books will either be with a borrower (i.e. checked out) or with the library.

The Library object should perform following operations (from a student's viewpoint)

- Show whether a book is available. If available, return the shelf. (A book is available if there is at least one copy of the book in the library).
- Get list of all shelves.
- Show library with current shelves and books (HTML table is generated on the fly where each column is a shelf. Each cell is a book – clicking on the cell gives the details)

  Example :

Shelf1	Shelf2	Shelf3
Book1	Book5	Book9
Book1	Book5	Book1
Book1	Book5	Book2
Book2	Book5	Book3
Book2	Book5	Book5
Book3	Book6	
Book3	Book6	
Book3	Book8	
Book4	Book8	

MAKE SURE TO:

☐ Write a README.txt file – to describe what you did. Will help in grading.

☐ Use Constructor+Prototype pattern to create objects.

☐ It should contain minimum three classes Library, Shelf, Book.

☐ Don't use any global variables or global functions.

☐ You should decide the members and operations of each class.

☐ Make sure to have the Library object perform the required operations.

☐ Write a Client HTML code that includes the booksLibrary.js file and uses it (i.e. create library objects and populate them and display them etc).

☐ **You will need to submit your booksLibrary.js and booksLibrary.html files.**