CSE 3302: Programming Languages Lab

Functional Programming using JavaScript

INSTRUCTIONS

1. **Do NOT plagiarize.**
2. **No group work. All work should be your own.**
3. **Do not discuss your work with other students in the class.**
4. **You CANNOT borrow code from online sources.**
5. **Your program should not ask for any user input.**
6. **Display your results for each question in a new line.**
7. **DO NOT submit an HTML file**
8. **Turn in your program using Canvas. Do not email your program to the TA or the instructor.**
9. **Name your document as lab02-<netid>.js where <netid> is your UTA netid. If you do not know your netid, check what it is using NetID Self Service. Your 1000 number is NOT your netid.**
10. **All code should be your own. You may not copy code from the slides, book, others, or the internet unless specified. You are encouraged to use map() / filter() / reduce() which are available in the JavaScript 'array' datatype.**
11. **Write an explanation of your code for each line using comments. If the explanation is not clear, you will NOT receive full credit.**
12. **The code should have your name, 1000 number, and the date it is due as the first 3 lines in order.**
13. **Use the Developer mode of your browser to access the JavaScript command line. You can edit your code in a separate file and then just paste it into the command line to run it. You will be submitting the file with JavaScript.**
14. **Link used in class is below. This is the link to the first part. There are 6 parts and you can get to other parts from this link: - https://medium.com/@cscalfani/so-you-want-to-be-a-functional-programmer-part-1-1f15e387e536**

--- LAB 01 ---

1. (5 points) Start with an array called **inputtable**. The array should have numbers between 1 and 10.

NOTE: Do NOT use a form of a 'for' loop anywhere, including iterators. This is meant to be a functional exercise, so your code is expected to not have side effects.

2. (30 points) Use **inputtable** from step 1 to create the following: -
   - **a.** Set of multiples of 5 between 1 and 51. Name it **fiveTable**
   - **b.** Set of multiples of 13 between 1 and 131. Name it **thirteenTable**
   - **c.** Set of squares of the numbers in **inputtable**. Name it **squaresTable**

3. (10 points) Get the odd multiples of 5 between 1 and 100. 5, 15, …
4. (20 points) Get the sum of even multiples of 7 between 1 and 100.
    a. Example, find the multiples and then sum them: 14 + 28+…
5. (15 points) Use currying to rewrite the function below: -

```
function cylinder_volume(r, h){
        var volume = 0.0;
        volume = 3.14 * r * r * h;
        return volume;
}
```

    a. Use r = 5 and h = 10 to call your curried function.
    b. Reuse the function from part 'a' but use h = 17
    c. Reuse the function from part 'a' but use h = 11
6. (15 points) Use the following code to take advantage of closures to wrap content with HTML tags, specifically show an HTML table consisting of a table row that has at least one table cell/element. You can use the console to output your results.

```
makeTag = function(beginTag, endTag){
        return function(textcontent){
                return beginTag +textcontent +endTag;
        }

}
```

Example output for #6. Note that the <th> tag is optional. Please do not use this data, but substitute your own values for the contents of the cells.

```
<table>
 <tr>
  <th>Firstname</th>
  <th>Lastname</th>
  <th>Age</th>
 </tr>
 <tr>
  <td>Jill</td>
  <td>Smith</td>
  <td>50</td>
 </tr>
 <tr>
  <td>Eve</td>
  <td>Jackson</td>
  <td>94</td>
 </tr>
</table>
```

7. (5 points) Following instructions
8. (Extra credit: 10 points) Do the ‘generic’ version of questions 3 and 4, meaning the target multiple must not be hard coded; hint: we studied closures and currying. This means you should be able to use the same code to handle multiple scenarios, for example: first odd multiples of 11 and then even multiples of 3 (still in the range 1 to 100). Your code should allow the grader to combine a chosen multiple along with the choice of odd / even without writing any code.