

Day 1 Lab Assignments

1. Try arrow function:
 - a. With `Array.filter()` function, to return the odd numbers from an array.
 - b. With `array.foreach()` to print the even values.
 - c. With `array.map()` to print the square of each element.
 - d. “An arrow function does not create its own this context, unlike the normal literal function.” – Explain with demo.
2. Try `for...in`, `for...of` and `.foreach()` with an array.
 - a. What’re the differences between `for...in`, `for...of` and `.foreach()`.
3. Try spread operator with any array of your implementation.
4. Create Person class (Using ES6 syntax), that has name and age properties and show function that prints the name and age.
 - a) Create static method `whoAmI()` that prints: “I am a person”
5. Create a Student class inherits from Person and contains: University, faculty, and final grade, and use print his data in the console using template literals in this format:

`{Std_name}` is a student in faculty of `{fac_name}` in university `{Uni_name}`
And his final grad is `{grad}`.

 - a) Create static method `whoAmI()` that prints: “I am a student”
6. Create a mixin that has 2 functions: `printName()`, `printAge()`.
 - a) Use `object.Assign()` to add the previous mixin to the Student class.
7. Make a set that holds student names.
 - a. Try to add repeated names, will the set accept it?
 - b. Print the set values using spread operator and using `for...of`.
8. Make a page that displays a tip for user every 3 seconds, as the following:
 - a. Create a generator that has an array of 10 tips, and loops on the array and each time returns the next tip.
 - b. Make a button that loop on the generator and display all tips [Using `for...of`]
 - c. Make another button that uses `setInterval` (with arrow function) to display a tip every 3 seconds from the generator.[use `next()`].
9. Make a Map that contains the student name as a key, and object that contains an array of his studied courses and his grade in each course. (The object structure as following: `{Grades:[`
`{CourseName:"JavaScript", Grade:"Excellent"}},`
`{CourseName:"Jquery", Grade:"Good"}},`
`{CourseName:"CSS", Grade:"V.Good"}]}`

- a. Loop in the Map and display each student along with his grades in all courses.
 - b. Make a dropdownlist and fill it with the student names (from the Map), and when the user selects specific student display his grades in all courses.
10. Search for at least 3 new features in ES.next (not explained in the lecture) and explain them using a demo

Bonus:

1. Make a Map and use the key as the day name (Saturday, Sunday,.....), and the values is a Tip of each day, and on page load make a function that loops on gets the day name of the current day, and use the map to get the tip of the current day (for example: on Saturday displays the Saturday's tip, and so on), and alert it.
2. Search for other new ES6, 7, 8 features that weren't explained in the lecture. (Useful resources: <https://www.cronj.com/blog/javascript-es7-es8-new-features>)
3. Create new custom object Queue, its constructor takes maxSize, and has InQueue, DeQueue.
 - a) You'll need to define local variable toq (private) to define the last place used in the queue, and another local variable as array that will hold the elements.
 - b) Create privileged method (getCurrentSize) that returns the current size of the queue.
 - c) Create internal function "getQueueElements" that prints queue elements, and returns the size of queue, and create public function "viewQueue" to call it.
 - d) Create new public method "returnQueue" that returns "getQueueElements" inner function as function expression (literal). The inner function should return an array of elements.
 - e) Create an object from queue, and use inQueue and dequeuer functions to add some elements
 - f) Then use returnQueue() function that will return a reference to function, and put it in a variable. Then call that variable (which refers to function), and call it, to return the array of elements.

(1) Can the inner literal function access the array local variable of the outer function? Why?

- (2) What's closure?
- g) Use prototype to add new function to queue "isEmpty()" that return Boolean.
4. Implement linked list using ES6 [create class node, and Class linkedList, to simulate linked list].

<Script>document.write("Thank YOU") </Script>
