



Competency 150 – JavaScript Algorithms

Module Plan

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Date: 2019/02

Overview & Purpose

Exercises to apply logic to solve more complex problems:

- Linked Lists
- Queue - FIFO
- Queue - LIFO

For all of these exercises do not use the built-in functions.

Prerequisite

- JavaScript Objects - State

References

- <https://medium.com/@codingfreak/top-algorithms-data-structures-concepts-every-computer-science-student-should-know-e0549c67b4ac>

Exercise - Linked List

Linked Lists are not arrays so do not use arrays to solve this interesting problem. A classic solution that you are to use would use two classes:

1. Node - which would hold the data and a pointer to the next node
2. LinkedList - which would be the controller class

Use the standard approach to develop the module

- use TDD to develop this
- create your JavaScripts in evolveu/objects/src/components
- write your tests, and PBC in the correct order

Some requirements:

- the Node class will have three attributes at least: forwardNode, subject, amount
- the Node class will have a show method that will show the subject and amount
- one of the states that must be maintained will be the position we are in the linked list.

To that end implement the following functions:

- first ⇒ position to the first node
- last ⇒ position to the last node
- next ⇒ move to the next node
- previous ⇒ backup one node (? hmm... how are we going to do this?)
- insert ⇒ inserts a new node after the current node
- delete ⇒ delete the current node
- We need to have a total function that will show the total of all the amounts of all the Nodes
- work in groups but code individually
- use TDD (I know this sounds like a stuck recording) and develop and POJOs first
- create wireframes to create the user experience. Sell the wireframes to your group. If you can't, do them again
- implement them in the app with its own icon
- show Larry; if you can't find him send him an email

This is big, real big. You are well on your way to becoming a Full Stack Developer (FSD). You can, with confidence, call yourself a Front End Developer (FED). Soon we will start working on becoming a Back End Developer (BED) and yes a FED + BED = FSD.

If you are well ahead of the group try doing this:

- Allow the user to sort by subject
- Allow the user to sort by amount

Exercise - Queue FIFO / LIFO

Using all the resources available implement a FIFO and a LIFO. Be creative, work in groups and when complete show Larry. Implement it using only the Array functions. Create a working example in the ReactApp.

