Advanced JavaScript
Lab 2

A. JavaScript as Object Oriented Programing

A.1. Using the constructor method for creating Objects, write a script that allows you to create a rectangle object that

- **Should have width and height properties.**
- **Implement a method for calculating its area**
- **Implement a method for calculating its perimeter.**
- **Implement displayInfo() function to display a message declaring the width, height, area, and perimeter of the created object.**

A.2. Create your own object that contains a list of numerical sequence, with the following details

- **Your constructor takes 3 parameters to define start, end of list and step**
- **The list should be private and filled with private method**
- **You can create getter and setter for the list if needed**
- **Allow the user to apply the following functionality to his created sequence**
  - **Append or prepend a new value within the same numerical sequence**
  - **Dequeue or pop a value,**
  - **you have to ensure that you are pushing value within the same sequence otherwise through exception**
  - **you have to ensure that there is no duplicated value otherwise through exception**
- **all of the properties should be defined using accessor and/or data descriptor, prevent them from being deleted, iterated or being modified.**
- **Override .toString() function to display a message with all of the list content.**
- **you can add any property you need.**

A.3. Create your box object that contains books objects, ensure that you can

a. **Create a book object and add it to the box object content property**
b. **Count # of books inside the box**
c. **Delete any of these books in the box according to a book title. Note: You should delete a single copy of the books with the same title.**
d. **Create Class Property that counts numbers of created books objects and Class method to retrieve it.**
e. **Use .toString() to display the box instance's dimensions and how books are stored in it.**
f. **Implement .valueof() so that if there is more than one box object we can get the total number of books in these boxes by adding them**
   i.e. if box1 has 5 books and box2 has 2 books,
   then box1 + box2 should return 7

Note:

- **Use Constructor Pattern for creating the Book Objects**
- **There is no inheritance**
- **Using global variables is not allowed**
- **No Class methods and properties are allowed except for those required in part d.**
- **Box object has the following properties:**
  height, width, length, material, and content.
  - **The content property contains an array of book objects**
- **Book object has the following properties:**
  title, numofChapters, author, numofPages, publisher, numofCopies
- **You should use accessor and/or data descriptor for defining properties, and if needed, prevent them from being deleted, iterated, or being modified.**
- **You can define any function needed for both box and book objects**