DATA STRUCTURES & ALGORITHMS LAB

DATA STRUCTURE PORTION

Task: Add the following methods to the LinkedList that we started in class.

- `shift()`: Remove the first item from the list.
- `removeAll(item)`: Removes all occurrences of the item from the list.
- `removeAt(index)`: Removes an item at a specified index. Returns false if the index is out of range.
- `insertAt(index, item)`: Inserts a new object at a specified index. Returns false if the index is out of range.

Bonus: Turn it into a doubly-linked list and add a `printReverse()` method. `printReverse` prints the elements of the list in reverse order.

ALGORITHM PORTION

Task: Design an algorithm that counts the occurrences of numbers in an array. Implement it in JavaScript.

For example: If an array has the following content: `[2,8,5,8,3,5,2,0,8]`, the program would print the following to the console. (Note that it prints nothing for numbers that are not in the array.)

```
[0]: 1
[2]: 2
[3]: 1
[5]: 2
[8]: 3
```

Build Specifications

Write the the code twice. Submit both versions.

- A function `countWithArray(array)` using an Array to find the frequency.
- A function `countWithMap(array)` using a Map to find the frequency.