Day 15: Linked List ★

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30 Days of Code

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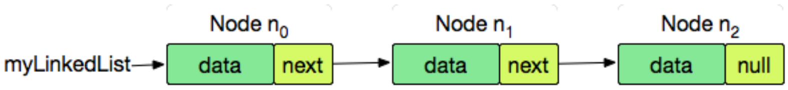
Day 15 of Code: Linked Lists - Code them from Scratch! (+ Trains)

Terms you'll find helpful in completing today's challenge are outlined below, along with sample Java code (where appropriate).

Linked List

A singly linked list is a data structure having a list of elements where each element has a reference pointing to the next element in the list. Its elements are generally referred to as nodes; each node has a data field containing a data value and a next field pointing to the next element in the list (or `null` if it is the last element in the list). The diagram below depicts a linked list of length :



The sample code below demonstrates how to create a LinkedList of Strings, and some of the operations that can be performed on it.

```
LinkedList<String> myLinkedList = new LinkedList<String>();

// Add a node with data="First" to back of the (empty) list
myLinkedList.add("First");

// Add a node with data="Second" to the back of the list
myLinkedList.add("Second");

// Insert a node with data="Third" at front of the list
myLinkedList.addFirst("Third");

// Insert a node with data="Fourth" at back of the list
myLinkedList.addLast("Fourth");

// Insert a node with data="Fifth" at index 2
myLinkedList.add(2, "Fifth");

// Print the list: [Third, First, Fifth, Second, Fourth]
System.out.println(myLinkedList);
```

```
    // Print the value at list index 2:
    System.out.println(myLinkedList.get(2));

    // Empty the list
    myLinkedList.clear();

    // Print the newly emptied list: []
    System.out.println(myLinkedList);

    // Adds a node with data="Sixth" to back of the (empty) list
    myLinkedList.add("Sixth");
    System.out.println(myLinkedList);  // print the list: [Sixth]
```

The above code produces the following output:

```
[Third, First, Fifth, Second, Fourth]
Fifth
[]
[Sixth]
```

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