Q1 [20 marks, Stage 1]

Final Examination  
BME 121, Fall 2018

Wednesday, December 12

# Question

Construct your solution in the provided file q1.cs. Do not modify the provided file DataStructures-LinkedList.cs.

This program uses a linked list similar to Weekly Assignment 8 but without the ICollection interface. It uses a generic type TData to represent the type of data held by each node. Beyond the constructor and a Count property, it only provides AddLast and ToArray methods. These are used in the Main method to add items to a list and to display the list. The Main method also calls a TryFindKth method which currently does not exist (resulting in an error message if you try to run the provided code).

Add the missing TryFindKth method to the LinkedList< TData > class. The goal of this method is to find and return the k-th element in the linked list, counting from the 0-th element being the one at the head. If ‘k’ is negative, we count backwards from the null at the end of the list so the (-1)-th element would be the one at the tail. Note this means there are two ways to refer to each element, one using a positive ‘k’ and one using a negative ‘k’.

The method is passed the value of ‘k’ and returns a Boolean value indicating whether the k-th element exists. It uses an ‘out’ parameter variable to return the TData value of the k-th element. If there is no k-th element for the given ‘k’, the out parameter is set to the default value for the TData type.

This is a collaborative question so you should consult with peers in the room to try to understand the given code and the structure of the method to be written. Don’t forget to leave enough time to write and debug your solution.

# Submission

Submit q1.cs at the following url.

<https://fileupload.ca>