Homework 4

Due February 25, 9:30am

50 points

CS 2235

Data Structures and Algorithms

Dr. Leslie Kerby

1. Scale up the river of bears and fish to 5 000, 10 000, 20 000, 40 000, 80 000, 160 000, 320 000 "animals" in the river.

   Note The print statements take time to print to the screen and are not reflective of computation time. However, as the river gets larger this becomes a smaller and smaller effect. Still, oftentimes when experimentally timing algorithms, print statements are removed to more purely time the algorithm computation time. You may leave them in or remove them.

   a. Find the computation time for your array implementation (from HW 2) for each of the 7 river sizes.
   b. Find the computation time required for the DoublyLinkedList implementation (from HW 3) for each of the 7 river sizes.

2. Graph river size vs computation time for both the array and doubly linked list implementations, on the same plot (using Excel or other method etc).

3. Look at your code analytically and try to predict the Big-Oh [O(etc)] order of each of your two simulations. Explain your reasoning.

Demonstrate that your program works. Submit your source code and output screenshots.