Homework 5

Due March 10, 9:30am

50 points

CS 2235

Data Structures and Algorithms

Dr. Leslie Kerby

1. Experimentally find the computation times for an ArrayDeque<Integer>, ArrayList<Integer>, and LinkedList<Integer> (all from the Java Collections Framework) for the following operations. Create a table and plot of computation times for each.
    a. Adding an integer to the front of the sequence, repeated n=[100 000, 200 000, 400 000, 800 000]
    b. Adding an integer to the back of the sequence, repeated n=[1 000 000, 2 000 000, 4 000 000, 8 000 000]
    c. Adding an integer to the middle of the sequence, repeated n=[25 000, 50 000, 100 000, 200 000] (do not test the ArrayDeque as there is no method to add in the middle)
2. Analyze your findings. Which data structure performed best for each case? Which data structure performed worst? When should you use an ArrayDeque? An ArrayList? A LinkedList?

Demonstrate that your program works. Submit your source code and output screenshots (and tables/plots).