CS608 Programming Assignment 3

Sorting – Straight insertion sort, Binary insertion sort and Shell sort

---

This assignment has two parts: Part 3A and Part 3B. If you successfully complete both, you will receive 15 points. If you successfully complete only one (either one), you will receive 10 points.

Programming Assignment 3A: Sorting

Write a Java program to read a file, **inputData3A.txt** and create an array with these elements. Sort the elements using any one of the three methods discussed this week: Straight insertion sort, Binary insertion sort, or Shell sort. The **inputData3A.txt** contains 100 integers.

Output to contain:

After you sort the array, print A[10], A[25], A[50], A[70], and A[90].

Note: Java provides a built-in method **sort**(). Us this method to sort the given array and verify you have done sorting correctly by looking at the values of A[10], A[25], A[50], A[70], and A[90].

Programming Assignment 3B: Sorting – Shell sorting

Write a Java program to read a file, **inputData3B.txt** into an integer array. The inputData3B.txt file contains 1000 integers. The assignment is to sort the array using Shell sort algorithm, using three different diminishing sequences. Make copies of the array for the three methods.

Use these diminishing sequences: (1) relatively prime numbers. First one being a prime close to 500. (2) Hibbard's sequence and (3) powers of 2: start with a power of 2 close to 500.

For each method, compute time taken by the algorithm to sort.

Output to contain:
After you sort the array, print A[100], A[125], A[250], A[700], and A[900].
For each method, time taken by the algorithm to sort

Note: Java provides a built-in method sort(). Us this method to sort the given array and verify you have done sorting correctly by looking at the values of A[100], A[125], A[250], A[700], and A[900].

General instructions:

- If your program has several classes, include all of them in the same file and name your Java file CS6083Axxxxx.java (Assignment 3A) and CS6083Bxxxxx.java (assignment 3B), where xxxxx is your last name. **Example**: If your name is John Smith, name the file CS6083Asmith.java and CS6083Bsmith.java. **DO NOT SEND ZIP files.**

- Output must include: **Your name, course number and date (use Date class).** If any of the above items are missing, you will not receive full credit.

- Send your Java file as email attachment to CS608Assignment@gmail.com. Include your name and assignment number in the email subject.

Note: I will run your programs and grade them. If your programs do not compile (that is, show syntax errors, you will receive 0 for the programming assignment).