CS608 Programming Assignment 4

Recursion and Quicksort

This assignment has two parts: Part 4A and Part 4B. 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 4A: Quicksort

Write a Java program to read a file, **inputData4A.txt** and create an array with these elements. Sort the elements using quicksort, discussed this week. I will provide **inputData4A.txt** when I run your program. I will keep it the same directory as the Java program. You can assume that the data file will contain 100 integers.

Output to contain:

(1) After you sort the array, print A[10], A[25], A[50], A[70], and A[90].
and
(2) The number of times partition method was called.

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 4B: Recursion - the blob problem

A is a two-dimensional array of characters of size 25x25. Each element of the array is either a **B** or a **W**.

A blob is a connected group of one or more Bs. The connection can be horizontal, vertical or any diagonal.

Data is given to you in a text file, **blob.txt**, which contains 25 rows and 25 columns of text with characters. Each character is either a B or a W. Write a program to read **blob.txt**,

into a two-dimensional array, and prints: (1) how many blobs are in the array and (2) how many Bs are there in total.
I will provide **blob.txt** when I run your program. I will keep it in the same directory as the Java program. You can assume that the data file will contain 25x25 characters; each character is a **B** or a **W**.
Note: For more details, see my notes.

General instructions:

- If your program has several classes, include all of them in the same file and name your Java file CS6084Axxxxx.java (Assignment 4A) and CS6084Bxxxxx.java (assignment 4B), where xxxxx is your last name. **Example**: If your name is John Smith, name the file CS6084Asmith.java and CS6084Bsmith.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).

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