Lab Report – Week 7 – *Final Project Program*

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Assignment Analysis and Design

For the final project, the assignment was to compare all the sorting methods we have learnt, with regards to their processing speed. These sorting methods were the Bubble sort, Selection sort, Insertion sort, Quick sort and Merge sort. For the final project we had to create a program that will run all five of these methods. To meet the requirements of the testing procedure, we must give the user the ability to choose which sort method they want to conduct, the size of the data set, and number of times the user will want to conduct this test.

The main method handles the menu option and provides a do loop in case of an error or if the user wants to conduct another test. Each menu option calls the specific sort method. In the method, the user must insert the data set size and the number of tests to be run. Then an array is created with the user size option filled with randomly created 6-digit integers. The method then runs the test in a for loop for the amount of times the user chooses. In the loop, the unsorted array is sorted by the chosen method and the processing time is calculated. This value is then outputted to the console and exported to a CSV file. The CSV file exported is named after the sort method chosen and the data set size (Ex: MergeSort 1000).

Assignment Code

The assignment code was submitted as a zip file.

Assignment Testing

First, each method was tested to see if the sort method worked. This was done with a small data set to save time and manually checked. Then I tested the user interface to see if the menu options and user input for test parameters worked accordingly. This was done by using test stubs instead of the sorting method and just gave the user input as the output. Finally, the whole program was tested comprehensively to see if it all worked together and created the right CSV file for the research test.

Assignment Evaluation

This programming assignment was easy since we have tried each sorting method out in previous assignments. Knowing the logic and code behind the sorting methods made the process simple. Creating the user interface for input and output, as well as including the test parameters has become second nature now. The challenging part of this program was to make sure all the different methods and user interaction worked together and did not produce any error. The complexity lies in the fact that there were a lot of methods, inputs and outputs to consider.

For the future, it would be interesting to create a GUI for this test program. It would be easier to input parameters, and maybe give the user the choice to name the export file and location. Another improvement would be to automatically cancel the sort method if it took longer than 5 minutes. For this project I had to manually time the large data sets to see if it took too long. Otherwise I was satisfied with this test program.