University Centre at
Blackburn
College

Name of School	School of Health, Science & Technology
Course Title	FDSc Computing
Module No & Title	ST10170-Program design and Development
Tutor	Stuart Gregory
Assignment Number	ST10170-1
Assignment Title	Sorts and searches
Weighting	30%
Due Dates	30th April 2019
Word Count or Equivalent	Working Program

Learning Outcomes assessed in this assignment

- Apply appropriate processes (design documentation and testing) and articulate the rationale for design decisions throughout the process of developing a program.
- ~~Communicate own algorithmic solutions for complex programming problems using appropriate notation.~~
- Select and implement appropriate structures for file handling and error catching within a program.
- Select and implement appropriate structures for data manipulation within a program.
- ~~Demonstrate knowledge of subject terminology and concepts, giving appropriate comparative examples in specific contexts.~~

Task(s)

Your task is to design an experiment that will test the effectiveness (timeliness) of different sorting algorithms (see provided pseudo code) with different datasets. The sorting methods you should use are **Insertion**, **Selection** and **Bubble sort**.

Stage 1

Write a program that reads a list of comma-separated numbers from a file into an array. This program should then use a series of Methods, one for each type of sort method, to sort this array into ascending order. The program should calculate the length of time to sort the array using each algorithm and output the results to a file. Keep a separate copy of this code before extending in stage 2.

Stage 2

Extend the program so that it enables the user to input different data sets (via file). The program should keep running until the user terminates it and all tests run by the user should output to a single file in such a way that the user can compare different data sets and different sorting algorithms.

Submission Requirements

Submit a zipped copy of your program to Moodle and a word processed copy of your experiment results to TurnItIn by the due dates. Your work should be word-processed and adhere to academic standards and include a biography of all the sources consulted during the research. All references should be formatted using the Harvard style of referencing.

You must keep a copy of your work in case of loss or damage to the original. Work submitted late will only be accepted if your programme leader has granted permission in advance, and an extension form has been completed.

Your work should be submitted on Moodle during the first 15 minutes of your class time on the given date:

Tuesday 30th April for 17:00

It is your responsibility to ensure that Moodle and the module tutor have received your submission. You are advised to keep copies of email receipts received and make no edits to your documents until you have confirmation your submission is successful. If any doubt as to your work being submitted, you should present your work to the module tutor by 9am on the next working day. **DO NOT** email your work to your tutor unless specifically asked to.

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Marking Criteria

Criteria	Assessed Element	Weighting
1.	Insertion sort	10
1.	Bubble sort	10
1.	Selection sort	10
3	Main program	40
4	Report	30
TOTAL		**100**

Assessment Criteria

A+/A/A-

1. All of the sorting algorithms have been correctly implemented and function as expected.
2. The data is effectively drawn from the generated files and stored appropriately in the program.
3. The core program has been extended successful to enable user interaction and is only terminated by the user.
4. The report presents the results of an effective set of experiments that test a range of different data sets with all three sorting algorithms.
5. An appropriate and well-formed conclusion has been presented that is supported by the results.

B+/B/B-

1. All of the sorting algorithms have been correctly implemented and function as expected.
2. The data is drawn from the generated files and stored appropriately in the program, which is mostly effective.
3. The core program has been extended to enable user interaction and is only terminated by the user, however some aspects are not handled effectively.
4. The report presents the results of a set of experiments that test at least three different data sets with all three sorting algorithms.
5. A conclusion has been presented that is supported by the results to some degree.

C+/C/C-

1. At least two of the sorting algorithms have been correctly implemented and function as expected.
2. The data is drawn from the generated files and stored appropriately in the program, which is somewhat effective.

3. The core program has been extended to enable user interaction and is only terminated by the user, however a number of aspects are not handled effectively.
4. The report presents the results of a set of experiments that test at least two different data sets with all algorithms implemented.
5. A conclusion has been presented that is supported by the results to some degree.

D+/D/D-

1. At least one of the sorting algorithms has been correctly implemented and functions as expected.
2. The data is drawn from the generated files and stored in the program, which is implemented in a less than effective way.
3. The core program has been extended to enable user interaction in a minimal way and the user is unable to terminate the program.
4. The report presents the results of an experiment that tests at least one data set with all algorithms implemented.
5. A conclusion has been presented that is barely supported by the results.

F1-F4

1. None of the sorting algorithms have been correctly implemented or function as expected.
2. The data is not drawn from generated files or stored in the program.
3. The core program has not been extended to enable user interaction and the user is unable to terminate the program.
4. The report presents minimal to no results.
5. The conclusion is minimal to none existent.

Late Submissions

Submission of work by the late 1st submission date will be subject to a drop in grade as per the table below.

These dates do not affect you if you have made extension arrangements with your module tutor or if you are given a repair opportunity after you have made a submission.

Late Submissions table

Quality of Work	Grade Awarded	Quality of Work	Grade Awarded
A+	B+	D+	
A	B	D	F1
A-	B-	D-	
B+	C+	F1	F2
B	C	F2	F3
B-	C-	F3	F4
C+	D+	F4	
C	D		
C-	D-		