**ASSIGNMENT SUBMISSION COVER SHEET**

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**Programme of Study**: **Computer Systems Engineering**

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☐ Agree



Calvin.A 23/05/2022

**Signature**……………………………………. **Date**………………………………………….

***Introduction to the assignment***:

In this assignment I had been tasked with creating a java program that would showcase the implementation of searching and sorting algorithms within java structures. This required me to apply the object oriented principles of java as a programming language to execute different segments of the program which then work in unison as the complete program.

***Identification of achievements and failures***:

During the development of the program I had come across different obstacles, some of which I was able to fulfill whilst some I could not, in this segment I will give records of some of these goals starting with those which I was able to achieve:

1. I was able to start my program off with a class that would be able to read a text file compute and display the total number of words within the file and even calculate the amount of time taken to do so.
2. From there on I was in a position to create a method to add a random 20 words from the text file into an array which I did to help me better manipulate the data in ways such as sorting, writing, and even searching.
3. I then carried out the implementation of several methods such as one that was used save the sorted array of words to a file, use a bubble sort on an array and even giving a user the ability to search for a word within the sorted words array.

While I fulfilled most of the tasks I did encounter my fair share of challenges which hindered most of my progress, some of which included:

1. I was not able to figure out how to call and use the array of 20 random words that I had created when I had to use the sorting method even though I did come close at one point when I tried to use the org.apache.commons.lang3.ArrayUtils object but unfortunately I could not import the object because it is not a java object yet it would’ve done what the task required. The only way to use the fore mentioned object was to add it with a dependency manager like Maven or Gradle which I was advised to do whilst doing research but I did not have enough time to carry this out.
2. Because I was not able to use the array which contained the random20words I was forced to hard code arrays to perform tasks which included the implementation of the bubble sort method and also the search method, which was frustrating because I was able to verify that these methods worked correctly but they still did not quite follow the instructions that were given.
3. Due to lack of time I was also not able to create a working GUI because after spending a very long time trying to create a functionable one to no avail, I had to focus on working on the rest of the project, specifically the questions that carried more marks.

***Improvements that could be done on the code***:

1. Better use of object oriented programming principles such as abstraction, inheritance, polymorphism and encapsulation because I had used these sparingly to avoid causing errors that would take me a long time to fix .
2. Completion of the given tasks is an improvement that could be done with the code because if all the tasks were properly done with no alternate techniques it would be more understandable.
3. If I had avoided using hard code it would have greatly improved the usability of my program because the arrays that I manipulated will remain the same unless the source code is altered because they were hard coded and that is a bad practice.
4. The use of more comments would have helped me keep track of what my intentions were with pieces of my code, because at times I was confused with my own code as a result of not really knowing what the end goal with certain objects was.
5. Another improvement that could be done on the code is organizing the schedule and making sure every task is allocated enough time to be completed as best as possible.