ALGORITHMS THEORY QN

1. Suppose that you are tasked to build a school's student database. Describe the effective ways you would utilise the binary and linear search algorithms to locate student information. Give examples of situations in which each method might work better in a school context.

2. Explain the various ways that sorting algorithms, including bubble sort and insertion sort, might be used to arrange test results for students at a school. Describe how sorting efficiency affects things like class ranks and finding high-achieving students.

3. Describe the role that optimisation approaches play in enhancing the efficiency of search and sort algorithms in educational administration. Give instances of optimisation methods that may be used with algorithms such as binary search or merge sort and talk about how they improve performance for things like retrieving student records or computing grades.

ALGORITHMS PRACTICAL QUESTION

Tom lives near a bookshop which its owner is not very tech-savvy. The shop owner only uses one text file 'book_inventory.txt' to store all the books available and not available. Tom kindly requested the shop owner for the text file so that he knows what books are available and which are not.

TASK 1.1   Write a program code for the function book_finder(...) to return the availability of the books Tom want to buy.

Out of curiosity, Tom asked the shop owner for the prices of the books he found that were available. The shop owner begrudgingly sent him a csv file 'book_prices.csv' with all the prices listed down, but not the availability of the books.

TASK 1.2   Write another program code for the function price(...) to return the books Tom wants to buy.

Tom, as a kind and thoughtful person wanted to help the shop owner to organize his book

TASK 1.3   Write the availability of the books into the csv file.