**Data Structures and Algorithms**

**Mini Project: 01**



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The main purpose of this project was to create a database management software for undergraduate students which holds the information of each student enrolled in the department of electrical and computer engineering. The requirement for creation of this software was to implement it through a data structure technique called Linked List. As there were no restrictions on what type of linked list should be used, therefore, this project is implemented through Singly Linked List (SSL) as it only uses one pointer variable link so the node of SSL occupied less memory space than nodes of other linked lists.

The database holds student’s first name, surname, intake year, session, program, and roll number. Each node is consider as an item which consists of two parts: data and a pointer. The data part holds the information (six fields) for each student and the pointer part holds the address of the next item (node). This database software is created which does the following operations.

* Adds an item to the list.
* Removes an item from the list.
* Searches a certain field of an item.
* Edits an item.
* Load the list from the disk
* Save file to the list.

In “main.c” switch case with some if/else statements have been used to present a menu to the user to perform operations in the database.

In “Functions.c”, functions are written and pointers were used almost in every function which are called in the main function.

In “DBMS.h”, structures have been defined.

In “Functions.h”, prototypes of functions are written.

There are some limitations in the code for example when a user searches for the data in a certain field of an item, and if the result is found, then it outputs the index number at which that data in that certain field searched by the user is located, however, it doesn’t check the entire database and the remaining items might have the same data for that certain field which the user searches for (e.g: intake year: 2018).

Other than that, most of the tasks were performed in labs which helped a lot in completing the project and this project helped in better understanding of the linked list in data structures.