BIT10703

DATA STRUCTURE AND ALGORITHM

Project On Final Year Thesis Record for FSKTM Students

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Introduction:

The "Final Year Thesis Record for FSKTM Students" project serves as a comprehensive student management system tailored specifically for the Faculty of Computer Science and Information Technology (FSKTM) students. The primary objective of this system is to streamline the processes involved in recording, updating, and retrieving information pertaining to the final year thesis projects of FSKTM students.

In academic institutions, particularly during the final year of undergraduate studies, managing and tracking the progress of students' thesis projects is a complex task. This project addresses these challenges by offering an efficient and organized solution.

Key features and components of the project include:

Student Information Management: The system allows for the systematic recording of crucial student information such as names, student IDs, contact details, program details, and other relevant data.

Thesis Record Management: It facilitates the creation and management of thesis records, including unique identifiers (Thesis_IDs), supervisor names, project statuses, submission dates, and detailed information about the research work undertaken by students.

Linked List Data Structure: The use of a linked list data structure enhances the efficiency of the system. Linked lists are dynamic data structures that enable the seamless addition and removal of student records while optimizing memory usage.

User-Friendly Interface: The system incorporates a user-friendly interface, making it accessible and navigable for users with varying levels of technical expertise. This ensures that administrators, faculty members, and other stakeholders can interact with the system easily.

Data Validation and User Guidance: The project implements input validation mechanisms to ensure the correctness of data entered into the system. Additionally, it provides specific error messages to guide users in case of input errors, enhancing the overall user experience.

Record Sorting and Display: The system includes functionality for sorting student records, such as alphabetical sorting by student name. This feature aids in the efficient retrieval and display of information.

Thesis ID Generation: To ensure uniqueness, the system automatically generates Thesis_IDs for each student record. This not only serves as a unique identifier but also simplifies the retrieval process.

In summary, the "Final Year Thesis Record for FSKTM Students" project is a sophisticated yet user-friendly solution designed to meet the specific needs of managing final year thesis records for FSKTM students. The incorporation of a linked list data structure and thoughtful features enhances the efficiency and effectiveness of the system, ultimately contributing to a smoother and more organized management of student information and thesis records.

Objectives:

The primary objectives of this project are as follows:

Record Management:

Develop a system to record essential information about FSKTM students, including their names, IDs, programs, supervisors, thesis status, submission dates, and contact information.

Efficient Update and Deletion:

Provide functionalities to update and delete existing student records, allowing for the maintenance of accurate and up-to-date information.

User-Friendly Interface:

Design a user-friendly interface that allows users to interact with the system easily, ensuring smooth navigation and efficient data entry.

Problem Backgrounds:

Without the development of this system, FSKTM faces several challenges in managing and maintaining records of final year thesis students:

Manual Record Keeping:

The absence of an automated system leads to manual record-keeping, making it prone to errors, data inconsistencies, and inefficiencies in managing a large number of student records.

Time-Consuming Updates:

Without a centralized system, updating or deleting student records is time-consuming and can lead to delays in reflecting accurate information.

Data Integrity: The lack of a structured system may result in compromised data integrity, affecting the overall reliability of the information maintained.

Justification Methods Used

The system utilizes a linked list data structure, combining the efficiency of record storage with the flexibility of dynamic memory allocation. The Thesis_Record structure contains a StudentRecord structure along with a pointer to the next record in the list.

The key data elements employed include

Thesis_ID Generation: Unique Thesis_IDs are automatically generated using a counter, ensuring each record has a distinct identifier.

Input Validation:

The system incorporates input validation to ensure accurate and valid data entry, preventing duplicate Student IDs and ensuring correct status inputs.

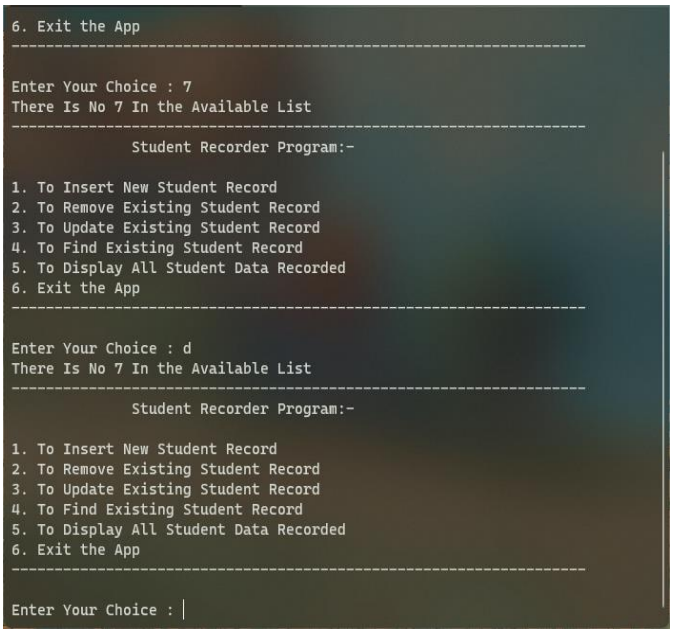
User-Friendly Interface:

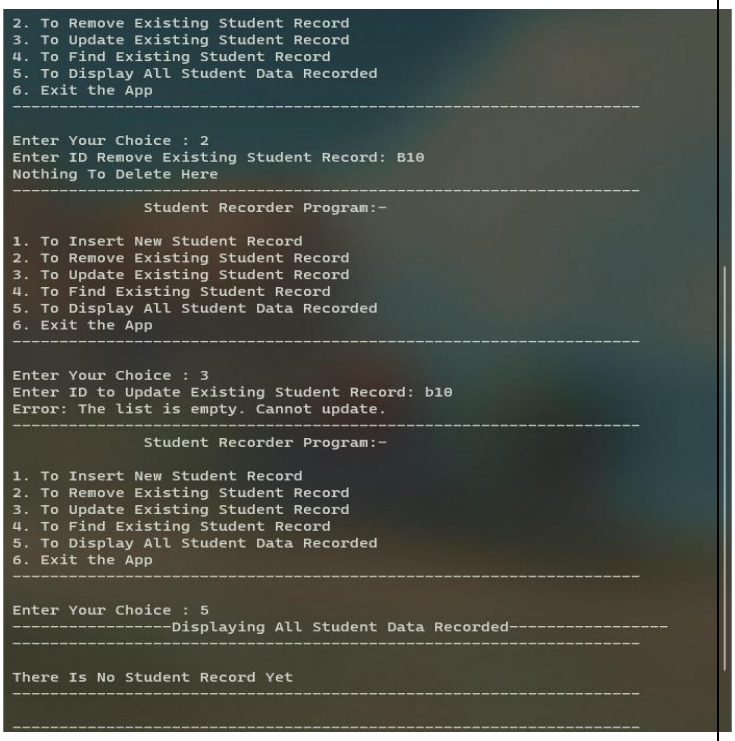
The user interface is designed to be intuitive, guiding users through the data entry process and providing feedback for incorrect inputs.

Results

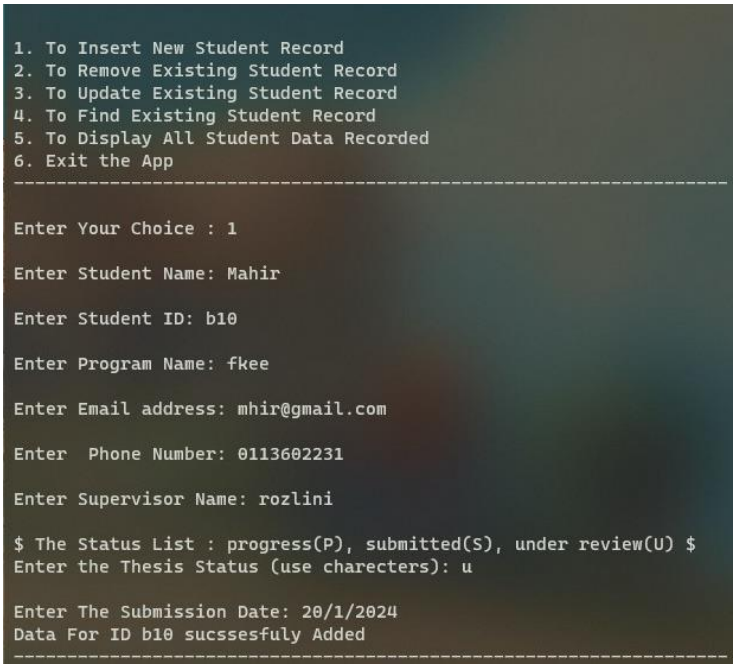
Below are three sample screenshots of the program output, demonstrating the functionalities of the system:

Some input validation:

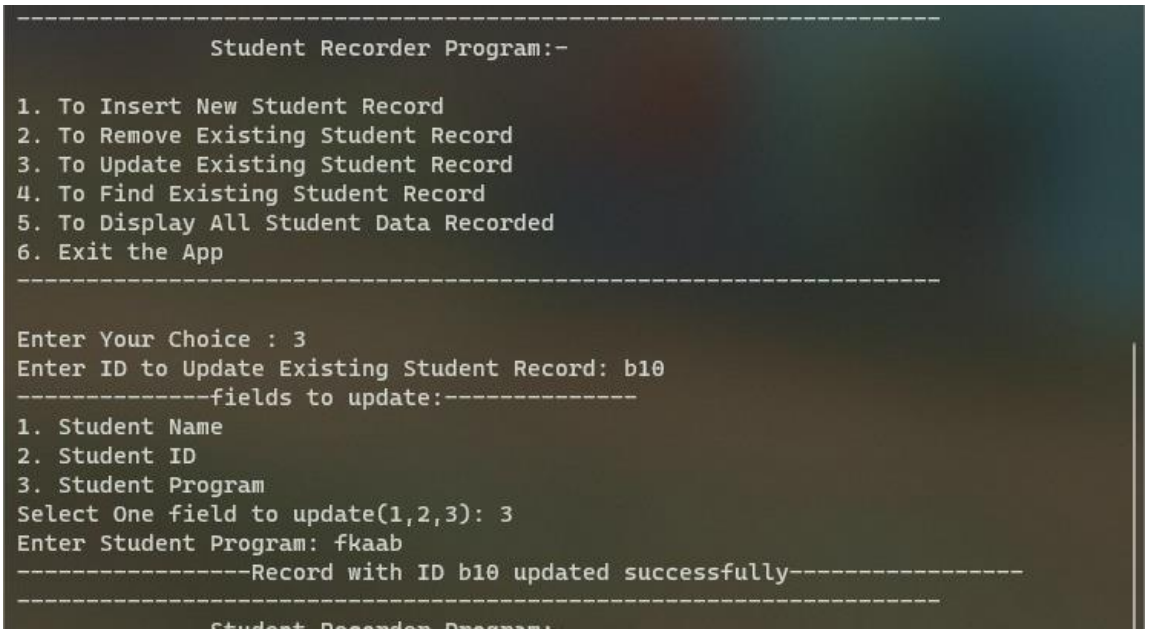




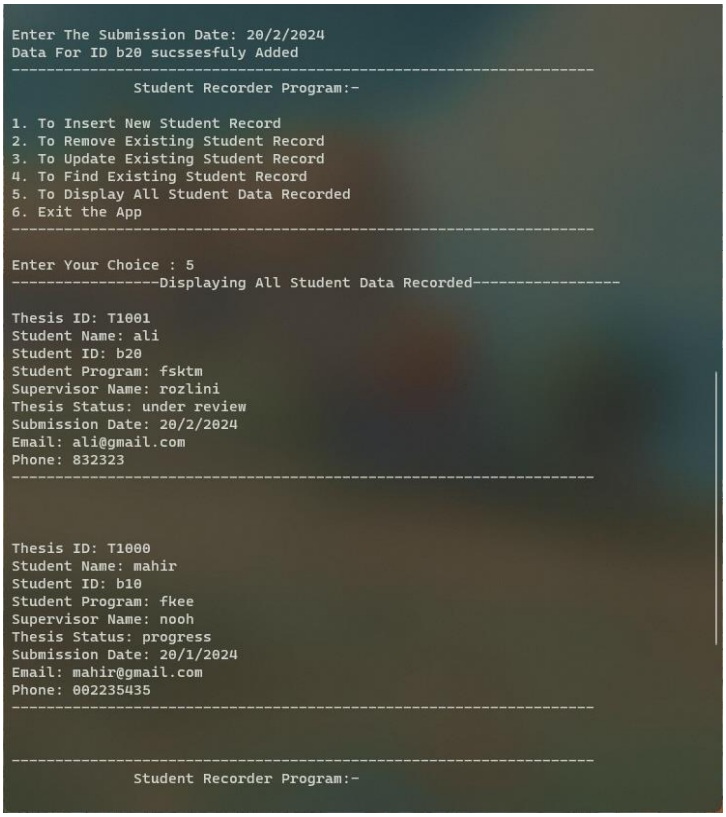
Inserting a New Student Record:



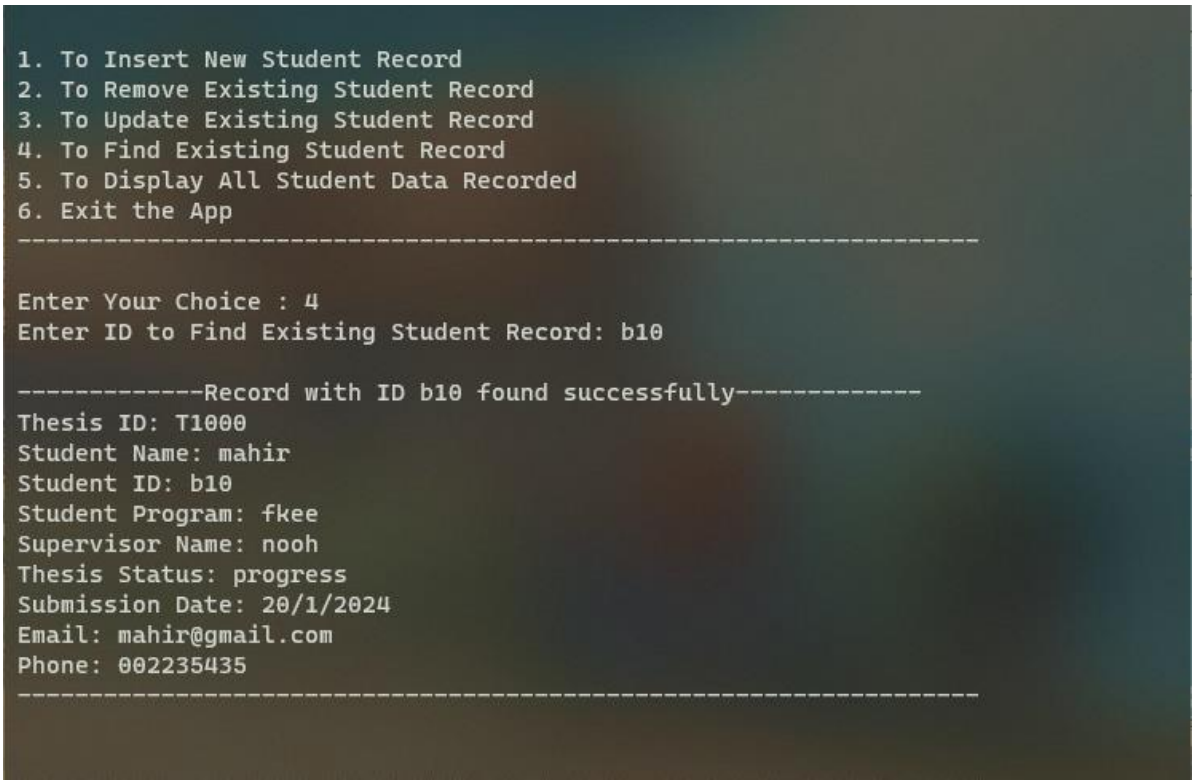
Deleting an Existing Student Record:



Displaying All Student Data Recorded while Sorting student Names by alphabetic Order:



Finding existing student information:



Conclusion:

In conclusion, the "Final Year Thesis Record for FSKTM Students" project successfully addresses the challenges faced by FSKTM in managing student records. The implementation of a linked list data structure, along with efficient input validation and user-friendly interfaces, ensures accurate and streamlined record management. Through this project, I have gained valuable experience in data structure implementation, input validation, and user interface design. The system provides an effective solution for managing final year thesis records, contributing to improved efficiency and data integrity within FSKTM.