EduSync

Academic Profile Portal

Under the supervision of:

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Prepared by:

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Click here for Github source code

INTRODUCTION:

This project is a collaborative effort by the members of this project to create a student database management portal, named “EduSync”, incorporating various possible features typically present in such a system, along with addition of a few innovative ones. The code, in its entirety, is based solely on C language and runs on terminal, as per the project requirements.

MOTIVATION AND DEVELOPMENT PROCESS:

In today’s digital age, efficient management systems play a key role in keeping data organised and available to users for various purposes. Developing such a system project gave us the opportunity to contribute to this dynamic sector and gain practical experience.

The idea of creating this project came up when the new ERP portal of our college was initially unable to process student fee payments effectively. With the active efforts by each and every member, this idea came into actual existence. Not only did the individual efforts and code made by each student play a role, but understanding the specifications of each so as to integrate them and run together as a single effective program provided an insight into the various real life programming aspects.

Building a student academic profile portal required us to to be thorough with various technologies such as database management, security protocols, file handling and a peek into encryption and decryption. By working on this project, we also got to know about various pre-defined function of C that make programming better and effective.

Apart from programming related aspects, this project also gave an experience of collaborative environment in which these large scale projects are actually handled. It helped improve teamwork and communication skills.

OVERVIEW:

This project demonstrates the working of a database management system in its core format. Though the coding is simple, attempts were made to make real life applications possible.

On entering the program, user is presented with a welcome screen and a main menu menu is presented with available options for login, view information about the project and exit. User-specific functions can subsequently be accessed according the login type used. Three tiers of login types are available, namely Admin, Faculty and Student, with varying functions available for them to access. This simulates an actual environment where hierarchical level of an organisation work in sync to manage large data and function efficiently.

AVAILABLE FUNCTIONALITIES:

- Login options (Admin, Faculty and Student)
- Addition of new students and faculty
- Editing details
- Viewing sorted list of students (based on marks and CGPA)
- Marks and CGPA Calculation
- Leave application
- Attendance system
- Update Password
- Masking passwords

SALIENT FEATURES:

Along with typical features of a database management system, efforts were made to include some novel features:

1. **Faculty Advisor:** A faculty can be assigned as a faculty advisor for a particular branch. An additional feature of review and approval/rejection of leave is available for the faculty advisor only for the students of that particular branch.

2. **Election:** Election procedure can be initiated by the admin, letting out a list of candidates for the students to choose. Each student is allowed to vote only once and admin has the control of terminating the election and letting out the results.

3. **Register Courses:** A student can register from available courses, registering for a maximum of six courses. A minimum of four registered courses is required for CGPA to be calculated.

4. **Automation:** An attempt was undertaken to introduce some sort of automation for better efficiency and enhanced results. Roll number and default password of a new student is assigned automatically according to his/her branch. Also, leave application appears as a pop-up for the assigned faculty advisor on login.

Some sort of graphics design was also implemented by altering the "printf" statements, using special characters and incorporating time delay for better presentation.

AREAS OF IMPROVEMENT:

Though each member tried their best to make this project comprehensive and wholesome, some improvements which could have been made if we had more time and experience:

- **Graphical User Interface:** A graphical user interface can greatly enhance presentability and user-friendliness of the system. It could help ease the way user interacts with the system and reduces the pre-requirement of knowledge of the code in order to run the program efficiently.

- **Accessibility:** Consideration of users with disability. e.g., incorporating a screen reader.

- **Data Encryption:** Encrypting personal information is a crucial step for confidentiality of user data. While the password was masked during input, it would have been better for the users' data security if their passwords were not visible to the admin.

FUTURE SCOPE :

This project can be a base for a large scale system, that may actually handle organisational level data management systems and streamline their data management tasks efficiently, when modified and expanded to suit the industry requirements. It could grow into a versatile system, managing all aspects of a school/college operations.

CONTRIBUTION :

The project was a joint effort in the true sense, with each member sharing their knowledge and know-how, and contributing roughly equally to it. Framework of the project, creating and retrieving data, attendance system and masking of input was created by Shashank. The login window, all features regarding faculty, registration of courses and password change was done by Arit. Editing student information, option of branch change and functions of navigation were done by Adarsh. The entire election controls and debugging was done by Vineet. Function to calculate overall marks & CGPA, various sorting options and preparation of report was done by Deep.

WHAT WE LEARNT:

- File handling
- Memory Management
- New libraries such as <windows.h> and <unistd.h>
- Creation of user-defined header file
- Use of GitHub for collaborative working

CONCLUSION:

Overall, the project served as a platform to develop and enhance our skills in this ever expanding domain of programming, database management and data structures. It provided an insight into a real world environment of joint development of projects. Not only did it help enhance coding knowledge, but also helped in increasing innovation and tackling errors. This experience will surely help in our future endeavours in the field of programming and data structures.