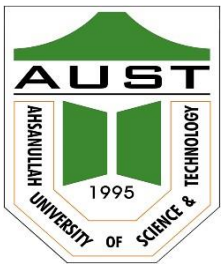

Ahsanullah University of Science and Technology (AUST)

Department of Electrical and Electronic Engineering

Course No.: EEE 1110

Course Title: Programming Language Laboratory

Aust Admission System

ID: **20230205165**

Name: **A.S.M. Rakibul Hasan**

Section: **C2**

For the students of the

Department of Electrical and Electronic Engineering

1st Year, 1st Semester

Overview

The Student Admission System is designed to facilitate the registration and management of student admissions at Ahsanullah University of Science and Technology. This system aims to provide an efficient and user-friendly interface for students and administrators, allowing for seamless management of the admission process and ensuring that qualified candidates are selected for academic programs.

Objective

The primary objective of the system is to streamline the student registration and admission process. This includes verifying student phone number, managing exam schedules, tracking admission status, and providing an easy-to-use platform for students to monitor their progress. Ultimately, the goal is to improve the efficiency of the admission process while ensuring fairness and transparency.

Design and Implementation

Structures and Functions

Student structure

- Holds student-related information.

Attributes:

- phone: Student's phone number.
- Password: Student's password.
- name: Student's name.
- gender: Student's gender.
- sscRoll: SSC roll number.
- sscYear: Year of SSC examination.

- sscGPA: GPA from SSC.
- hscRoll: HSC roll number.
- hscYear: Year of HSC examination.
- hscGPA: GPA from HSC.
- examStatus: Status of the exam (default is "Pending").
- position: Student's position in the exam results (default is 0).
- selectDepartment: Department selected by the student (default is "pending").

Admin structure

Holds admin-related information.

Attributes:

- userName: Admin's username.
- Password: Admin's password.

Validation Functions

- **isValidPhoneNumber**: Checks if the phone number is exactly 11 digits.
- **validateStringInput**: Ensures a string is not empty.
- **isValidGender**: Validates gender input ('M' or 'F').
- **isValidYear**: Validates the year to be between 2020 and 2024.
- **isValidRollNumber**: Checks if a roll number is exactly 6 digits.
- **isValidSSCGPA**: Validates SSC GPA to be exactly 5.0.
- **isValidHSCGPA**: Validates HSC GPA to be between 4.50 and 5.00.

Student Registration

RegisterStudent()

- Prompts for and validates student details.
- Checks for unique phone number and valid inputs.
- Saves valid student data to a file (students.txt).

Student Login

- Authenticates a student based on phone and password.
- Retrieves student data if credentials are valid.

Viewing Information

ViewExamDay()

- Reads and displays the exam date from admin.txt.

ViewExamResult()

- Displays the exam result and status for the logged-in student.

ViewPersonalInfo()

- Displays personal information of the logged-in student.

Student Menu

StudentMenu()

- Provides options for the student to view exam details, results, personal info, or log out.

Admin Functions

DisplayAllStudents()

- Reads and displays all registered students from students.txt.

SetExamSDate()

- Allows the admin to set a new exam date and save it to admin.txt.

AdminUpdate()

- Updates student information including exam status, position, and selected department based on input.

AdminMenu()

- Provides admin options to display all students, set exam dates, and update student information.

Admin Login

Adminlogin()

- Authenticates the admin based on a hardcoded password and grants access to the admin menu.

Main function

main()

- Presents the main menu for user choices: register, student login, admin login, or exit.
- Handles user input and navigates to appropriate functions.

Problems During Implementation

During the development of this system, several challenges were encountered:

Data Validation:

- Implementing strict data validation rules was essential to maintain data integrity. Challenges included ensuring that phone numbers followed a specific format, validating gender entries, and ensuring GPAs fell within a realistic range.

- Providing meaningful error messages to guide users in correcting their input was necessary to improve the user experience.

File Management:

- The system relies on reading from and writing to text files for data storage. Ensuring that data was accurately retrieved and updated without loss during these operations was a significant concern.
- Additionally, managing concurrent access to the data files was critical to prevent data corruption when multiple users attempted to register or log in simultaneously.

User Experience:

- Designing an intuitive user interface that guides users through the registration and login process was essential. Feedback mechanisms, such as progress indicators and confirmation messages, were incorporated to minimize confusion.
- User testing revealed areas for improvement in navigation and accessibility, leading to iterative design changes.

Key Features

Student Registration:

- The registration process collects vital information including phone number, name, gender, SSC and HSC details, GPA, and exam status. Each field has specific validation checks to ensure eligibility.
- Additional features may include email verification and security questions to enhance account security.
- A user-friendly form layout with tooltips and help sections assists students in completing their registration accurately.

Student Login:

- Students can securely log in using their registered phone number and password. Password hashing techniques are implemented to protect user data.
- Upon login, students can access a dashboard displaying their exam results, registration status, and any updates from the administration.
- Future updates may include a password recovery option and multi-factor authentication for enhanced security.

Admin Management:

- Admin users can view, edit, and manage all student applications from a centralized interface. This includes sorting and filtering options to quickly find specific records.
- Admins can set and modify exam dates and details, as well as communicate directly with students through the system.
- Comprehensive reporting tools allow admins to generate statistics on student registrations and admissions for analysis and decision-making.

Exam Scheduling:

- The system allows admins to set exam schedules, including date, time, and location. Automated notifications can be sent to students to remind them of upcoming exams.
- Future plans include implementing an automated selection process for the top 1000 candidates based on their academic performance, ensuring fairness and transparency.
- Additional functionality may allow for rescheduling or cancellation of exams with proper notifications to affected students.

Department Selection:

- Students will be able to select their preferred department from a dynamic list that reflects available programs based on their qualifications and interests.
- Admins can update department availability in real-time, ensuring students have access to the latest options.
- Future enhancements will allow for criteria-based filtering, where students can see recommended departments based on their exam scores and interests.

Future Findings

Top Candidate Selection:

- A planned feature will enable the system to automatically select the top 1000 candidates for exams based on their SSC and HSC GPA scores. This will involve developing algorithms that assess candidates' qualifications against predefined criteria.
- Implementing a ranking system will allow for quick identification of eligible candidates and facilitate a more streamlined exam selection process.

Subject-Specific Evaluation:

- Future updates will incorporate functionality to evaluate HSC marks in Physics, Chemistry, and Mathematics to determine students' eligibility for specific departments.
- A scoring mechanism can be developed to assess students' subject proficiency, aiding in department placement and enhancing the admissions process.

Dynamic Department Choices:

- A feature allowing students to select from a list of available departments based on their academic performance and interests will be implemented.

- This will not only empower students in their decision-making but also enable admins to allocate resources and manage department capacities more effectively.

Admission Status Management:

- A robust system for tracking admission status will be developed, clearly indicating whether students are admitted or not admitted based on their performance and application criteria.
- This feature will include automated notifications to students regarding their admission status, ensuring they are kept informed throughout the process.

Conclusion

The Student Admission System is a robust solution designed to manage student registrations and admissions effectively. It addresses the needs of both students and administrators, focusing on data validation, user experience, and administrative oversight. Planned future enhancements will further streamline the admission process, ensuring that students are evaluated fairly and transparently, while enabling efficient management by administrative staff.