আন্তর্জাতিক ইসলামী বিশ্ববিদ্যালয় চট্টগ্রাম

الجامعة الإسلامية العالمية شيتاغونغ

International Islamic University Chittagong

Department of

Computer Science and Engineering

DS Final Project

Course Code	:	**CSE - 2322**
Course Title	:	**Data Structure Lab**
Section	:	**3AM**

Team Name	:	**Team Console**
Name of Team Leader	:	**Gazi Shaharabi Anwar Tuhin**
Team Leader ID	:	**C231035**
Name of Team Member 1	:	**SM Muntasir Sarwar**
Team Leader ID	:	**C231037**
Name of Team Member 2	:	**Adnan Mahmud Alvee**
Team Leader ID	:	**C231022**

Date of Submission	:	**25/06/2024**
Submitted To	:	**Mohammed Shamsul Alam**

Remark

Introduction

The Employee Management System (EMS) is a console-based application designed to help users manage employee information efficiently. This system supports functionalities like adding, viewing, updating, deleting, and searching employee records. Additionally, it includes user authentication, allowing multiple users to maintain their own sets of employee data.

Features

1. **User Authentication**:
    - Sign Up: Allows new users to create an account.
    - Log In: Allows existing users to access their accounts.
    - User credentials are stored in a `users.txt` file, and each user has a separate file to store employee data.
2. **Employee Data Management**:
    - Insert Data: Add new employee details.
    - Show Data: Display all employee records.
    - Search Data: Search for an employee by ID.
    - Update Data: Modify existing employee records.
    - Delete Data: Remove specific or all employee records.
3. **File Handling**:
    - Employee data is persisted in text files.
    - Utilizes file streams for reading and writing data.
4. **User Interface**:
    - Console-based interface with clear options.
    - Visual feedback through changing console colors and delay effects.

Implementation

Functions Used - Short Description

1. `insertEmp(const emp& employee)`:
    - Inserts a new employee record into the linked list.
2. `saveEmpDataToFile()`:
    - Saves all employee data from the linked list to the user's file.
3. `loadEmpDataFromFile()`:
    - Loads employee data from the user's file into the linked list.
4. `signUp()`:
    - Registers a new user by saving their credentials and creating a new file for their employee data.
5. `logIn()`:
    - Authenticates an existing user and loads their employee data.
6. `empdata()`:
    - Collects and inserts new employee data from the user.
7. `show()`:
    - Displays all employee records.
8. `Search()`:
    - Searches for an employee by ID and displays their information.

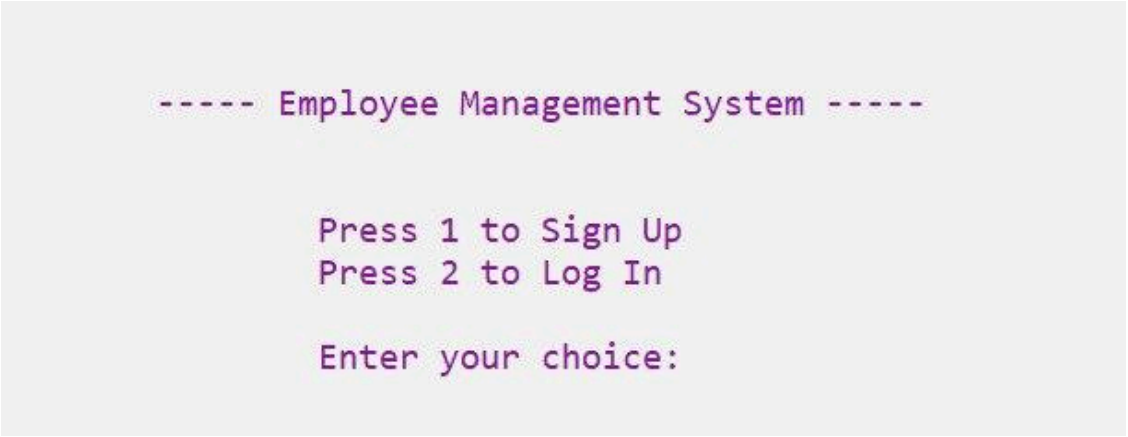
9. `update()`:
    - Updates an existing employee's information based on their ID.
10. `del()`:
    - Deletes specific or all employee records.
11. `feature()`:
    - Displays the list of features with a delay effect.
12. `sleepMilliseconds(int milliseconds)`:
    - Introduces a delay in the program execution.

Future Plan/Possible Extension

1. **Enhanced Error Handling**:
    - Implement comprehensive error handling to cover more edge cases and provide better user feedback.
2. **Input Validation**:
    - Ensure that inputs like employee IDs are unique and follow a specific format.
3. **Graphical User Interface (GUI)**:
    - The transition from a console-based interface to a GUI for a better user experience.
4. **Database Integration**:
    - Integrate with a database system like MySQL or SQLite for more efficient data management and retrieval.
5. **Concurrent Access Handling**:
    - Allow multiple users to access and modify data simultaneously with proper synchronization.
6. **Reporting and Analytics**:
    - Add features to generate reports and perform analytics on employee data.
7. **Data Encryption**:
    - Encrypt user credentials and employee data files to enhance security.

Screen Shorts :

Welcome Page :



Menu Page :

```
Press 1 to enter data
Press 2 to show data
Press 3 to search data
Press 4 to update data
Press 5 to delete data
Press 6 to show feature
Press 7 to logout

Enter your choice:
```

Enter data page :

```
How many employees data do you want to enter??
2
Enter data of employee 1

Enter employee name: Mun
Enter id: 1
Enter address: Muradpur
Enter contact: 01845742105
Enter salary: 14000
Enter data of employee 2

Enter employee name: Tuhin
Enter id: 2
Enter address: Kumira
Enter contact: 01847201596
Enter salary: 15000


Press 1 to enter data
Press 2 to show data
Press 3 to search data
Press 4 to update data
Press 5 to delete data
Press 6 to show feature
Press 7 to logout

Enter your choice: 2
```

Show data page :

```
Data of employee
Name: tuni
ID: 1
Address: df
Contact: 454
Salary: 12213

Data of employee
Name:
ID:
Address:
Contact: 454
Salary: 12213

Data of employee
Name: Mun
ID: 1
Address: Muradpur
Contact: 1845742105
Salary: 14000

Data of employee
Name: Tuhin
ID: 2
Address: Kumira
Contact: 1847201596
Salary: 15000


Press 1 to enter data
Press 2 to show data
Press 3 to search data
Press 4 to update data
Press 5 to delete data
Press 6 to show feature
Press 7 to logout

Enter your choice:
```

Search data page :

```
Enter id of employee which you want to search
1
Data of employee
Name: tuni
ID: 1
Address: df
Contact: 454
Salary: 12213


Press 1 to enter data
Press 2 to show data
Press 3 to search data
Press 4 to update data
Press 5 to delete data
Press 6 to show feature
Press 7 to logout

Enter your choice:
```

Update data page :

```
Enter id of employee which you want to update
1
Old data of employee
Name: tuhin
ID: 1
Address: Kumira
Contact: 1845721036
Salary: 14500

Enter new data
Enter employee name: Alvi
Enter id: 1
Enter address: Rangamati
Enter contact: 01875412369
Enter salary: 14800
```

Delete data page :

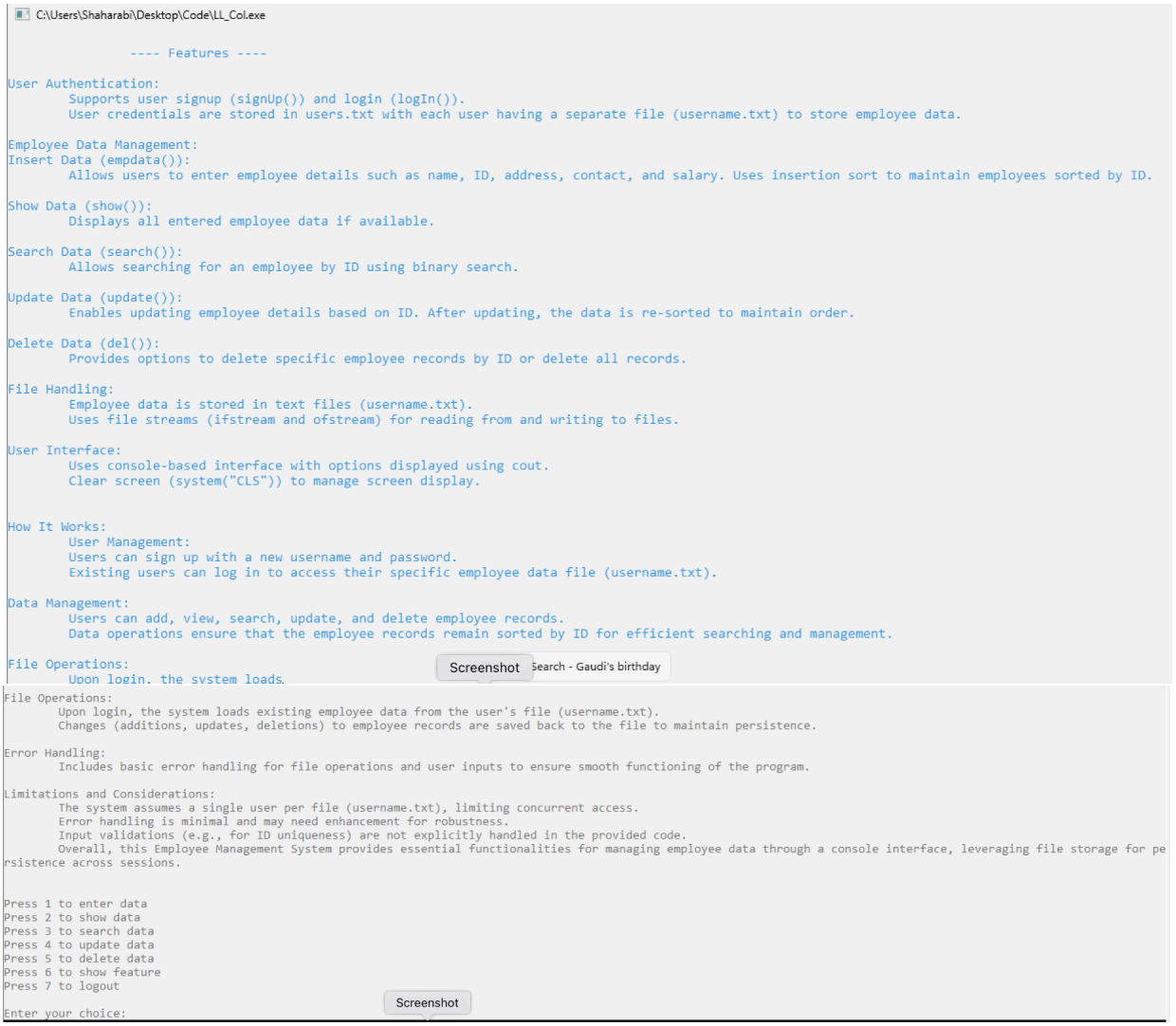
```
Press 1 to delete specific record
Press 2 to delete full record
1
Enter id of employee which you want to delete
1
```

```
Press 1 to delete specific record
Press 2 to delete full record
1
Enter id of employee which you want to delete
1
Your required record is deleted


Press 1 to enter data
Press 2 to show data
Press 3 to search data
Press 4 to update data
Press 5 to delete data
Press 6 to show feature
Press 7 to logout

Enter your choice:
```

Feature page :



Sign-up page :

```
----- Employee Management System -----


        Press 1 to Sign Up
        Press 2 to Log In

        Enter your choice: 1



        ----- Signup -----
        Enter new username: Arafat
        Enter new password: arafat

        Your new id is creating please wait......

        Your id created successfully

        Press 1 to Sign Up
        Press 2 to Log In

        Enter your choice:
```

Login with new data :

```
Press 1 to Sign Up
Press 2 to Log In

Enter your choice: 2



   LOGIN
Enter username: Arafat
Enter password: arafat
```

Log out page :

```
Process returned 0 (0x0)   execution time : 1828.635 s
Press any key to continue.
```

Conclusion :

The Employee Management System provides essential functionalities for managing employee data through a console-based interface. It supports multiple users with individual data management and ensures data persistence through file handling. The future enhancements aim to improve user experience, security, and scalability. The current implementation serves as a robust foundation for further development and expansion.

Final Project Collection: **DS Final Project**