Green University of Bangladesh

Department of Computer Science and Engineering (CSE)

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Lab Project Status

Marks: …… **Signature: .....**

Comments: ..... **Date: .....**

Table of Contents

Chapter 1

Introduction

1.1 Introduction

A library management system is a software application or web-based tool that helps libraries manage and organize their collections, track memberships, and circulation of books and other materials. It can also help librarians keep track of and analyze data on their patrons and the library's resources. Library management systems typically include a catalog of the library's holdings, a system for checking out and returning materials, and a database of member information. Some systems may also offer additional features such as the ability to place holds on materials, pay fines, or access digital resources such as e-books or online databases. Overall, a library management system helps to streamline and simplify the operations of a library, making it easier for librarians to manage their collections and serve their patrons.

1.2 Design Goals/Objective

There are several goals and objectives that a library management system might aim to achieve:

1. To provide a comprehensive and up-to-date catalog of the library's holdings, including books, periodicals, and other materials.
2. To allow patrons to search for and locate specific items within the library's collection.
3. To enable patrons to borrow materials from the library and keep track of their loans.
4. To automate and streamline the process of checking in and checking out materials.
5. To manage and track the library's holdings, including tracking where items are located, when they were borrowed, and when they are due to be returned.
6. To generate reports and statistics on the library's holdings and usage patterns.

Chapter 2

Design/Development/Implementation of the Project

2.1 Design

Here is the pseudocodes of library management system in java:

```
// Define a class to represent a book
class Book {
    // Fields to store the title, author, and number of copies of the book
    private String title;
    private String author;
    private int numCopies;

    // Constructor to initialize the fields
    public Book(String title, String author, int numCopies) {
        this.title = title;
        this.author = author;
        this.numCopies = numCopies;
    }

    // Method to check out a copy of the book
    public void checkOut() {
        if (numCopies > 0) {
            numCopies--;
            System.out.println("Book checked out successfully");
        } else {
            System.out.println("Sorry, no copies of this book are available");
        }
    }

    // Method to return a copy of the book
    public void returnBook() {
        numCopies++;
        System.out.println("Book returned successfully");
    }

    // Method to get the availability of the book
```

```
    public boolean isAvailable() {
        return numCopies > 0;
    }

    // Method to get the title of the book
    public String getTitle() {
        return title;
    }

    // Method to get the author of the book
    public String getAuthor() {
        return author;
    }
}

// Define a class to represent a library
class Library {
    // Field to store a list of books
    private List<Book> books;

    // Constructor to initialize the list of books
    public Library(List<Book> books) {
        this.books = books;
    }

    // Method to search for a book by title
    public Book searchByTitle(String title) {
        for (Book book : books) {
            if (book.getTitle().equals(title)) {
                return book;
            }
        }
        return null;
    }

    // Method to search for a book by author
    public List<Book> searchByAuthor(String author) {
        List<Book> result = new ArrayList<>();
        for (Book book : books) {
            if (book.getAuthor().equals(author)) {
                result.add(book);
            }
```

```
        }
        return result;
    }

    // Method to add a book to the library
    public void addBook(Book book) {
        books.add(book);
    }

    // Method to remove a book from the library
    public void removeBook(Book book) {
        books.remove(book);
    }
}
```

Chapter 3

Performance evaluation

3.1 Results and Discussions

3.1.1 Results

To start my library management system, first, he will have to login into the admin section. When this page comes, he has to give the password and then he will be able to enter the home page.

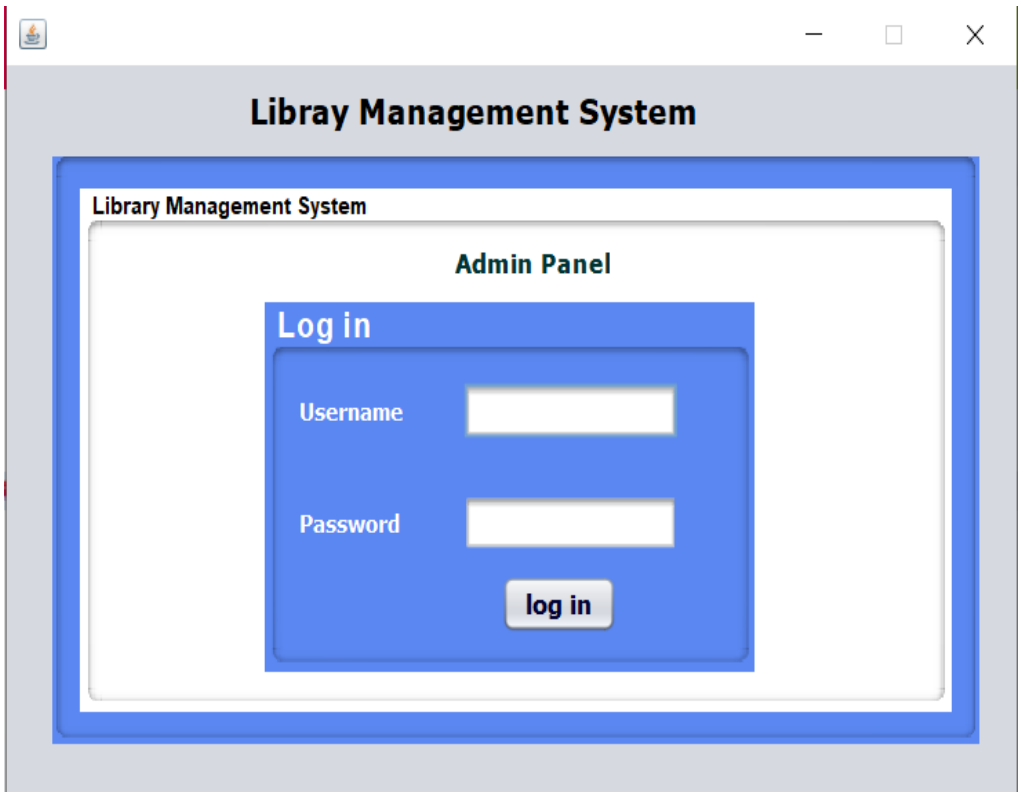

Figure 1: Admin Section

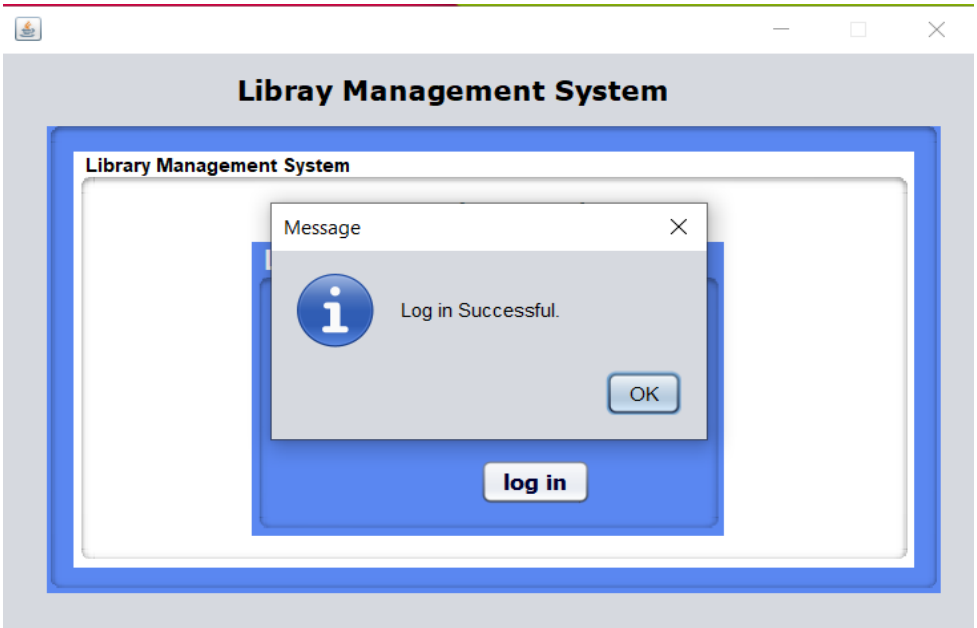

Figure 2: logged in

- On the home page, he will get three buttons: the book button, the student button, and finally, he will get the employee button. All three of these buttons will take them to separate pages, and he will enter all the information that will be asked.

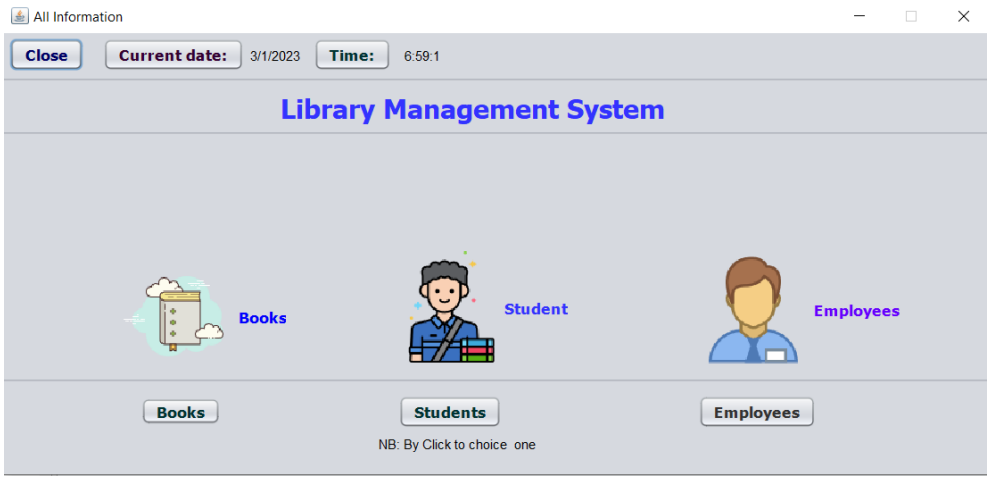

Figure 4: Home section

- When the admin enters into the book section, he then can easily update any new books, or he can also easily update new information on the old books, and he can also search the information. It will also store in the database as a backend so that the information is always saved.

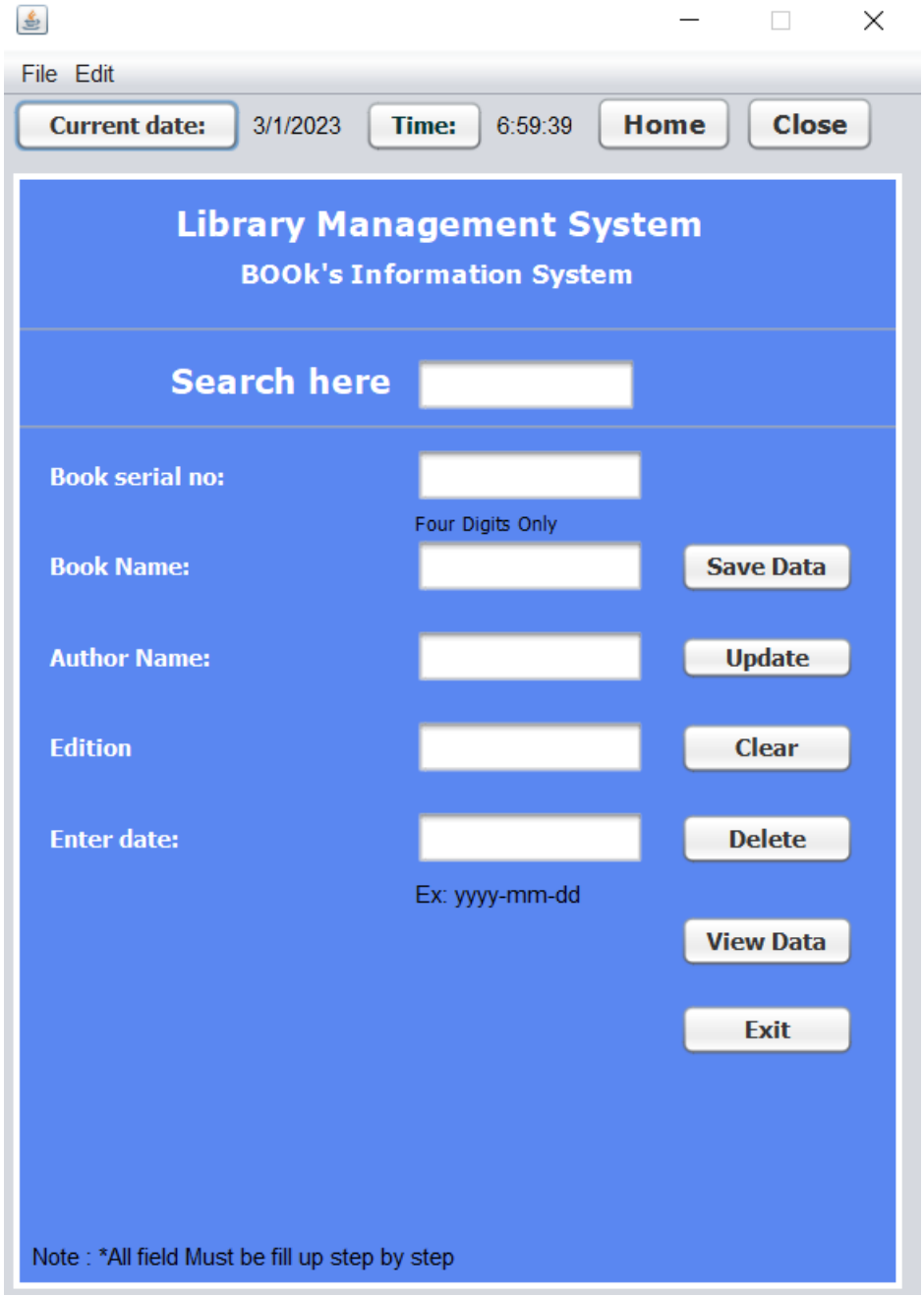

Figure 5: Book section

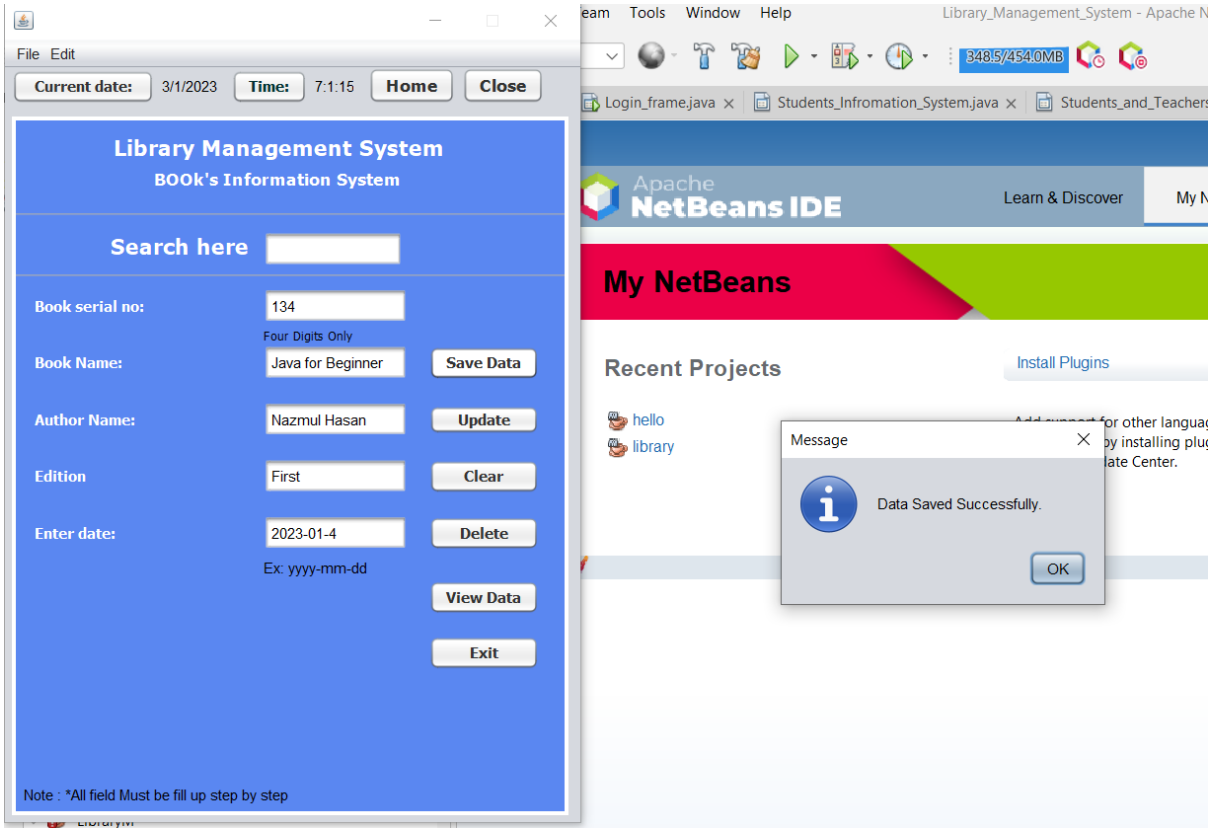

Figure 6: Book information data save

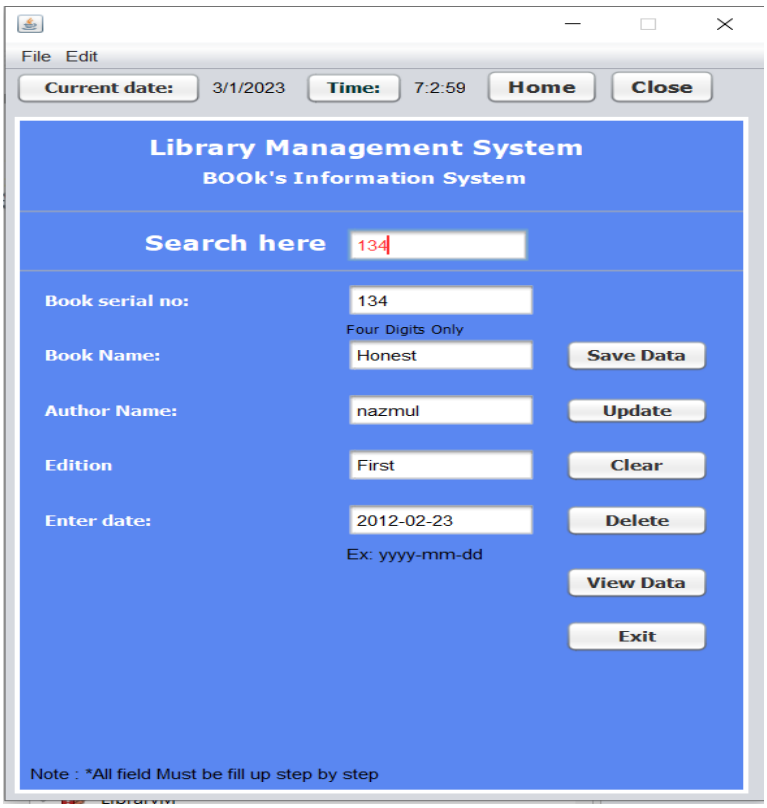

Figure 7: Search Book information

- When the admin enters the Student section, he can enter all the students' entities and how many a student took.

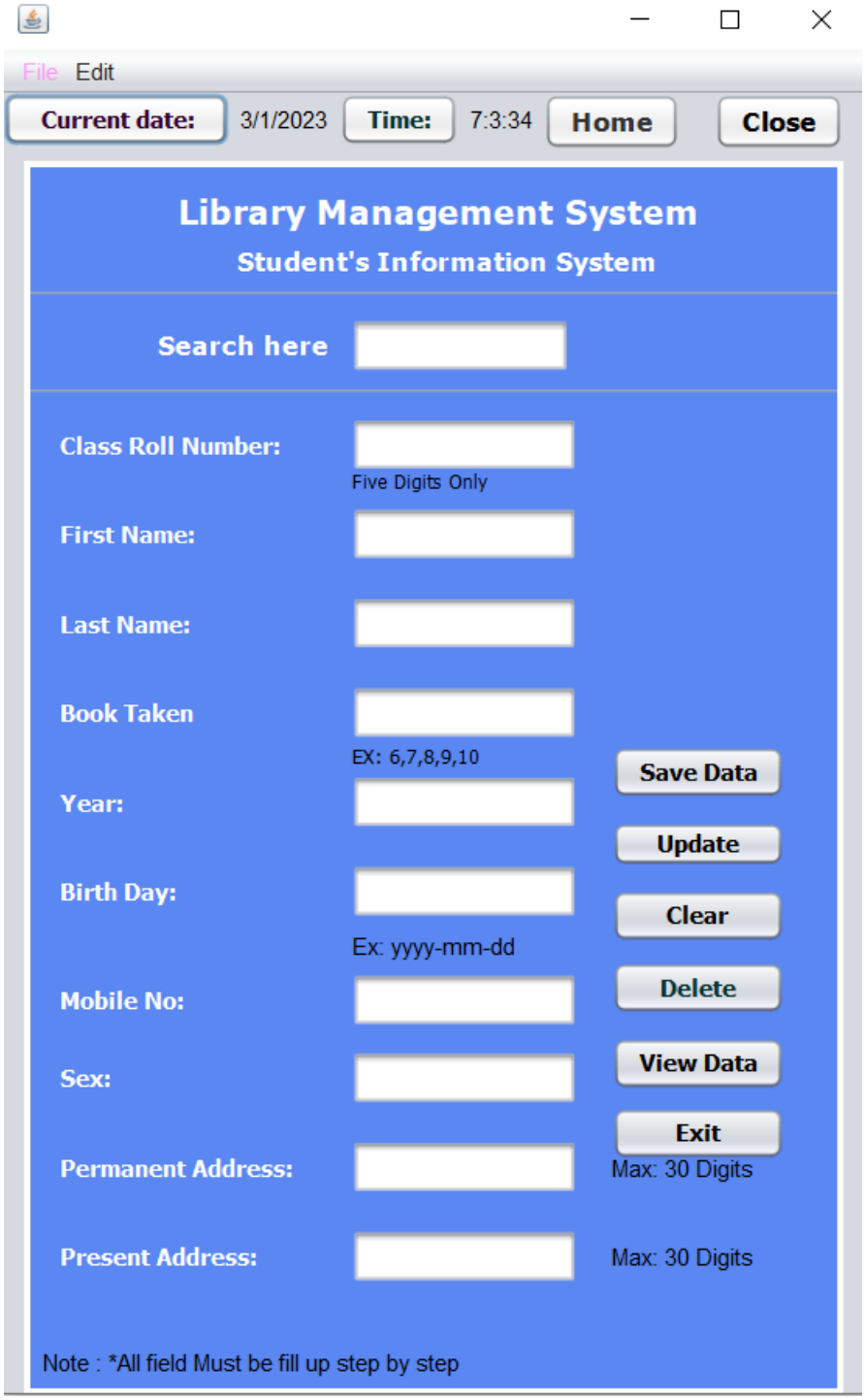

Figure 8: Student information

- When the admin enters the employee section, he then can easily add all the entities of the employee work in the library. Here he can update, search, and also can save all the data.

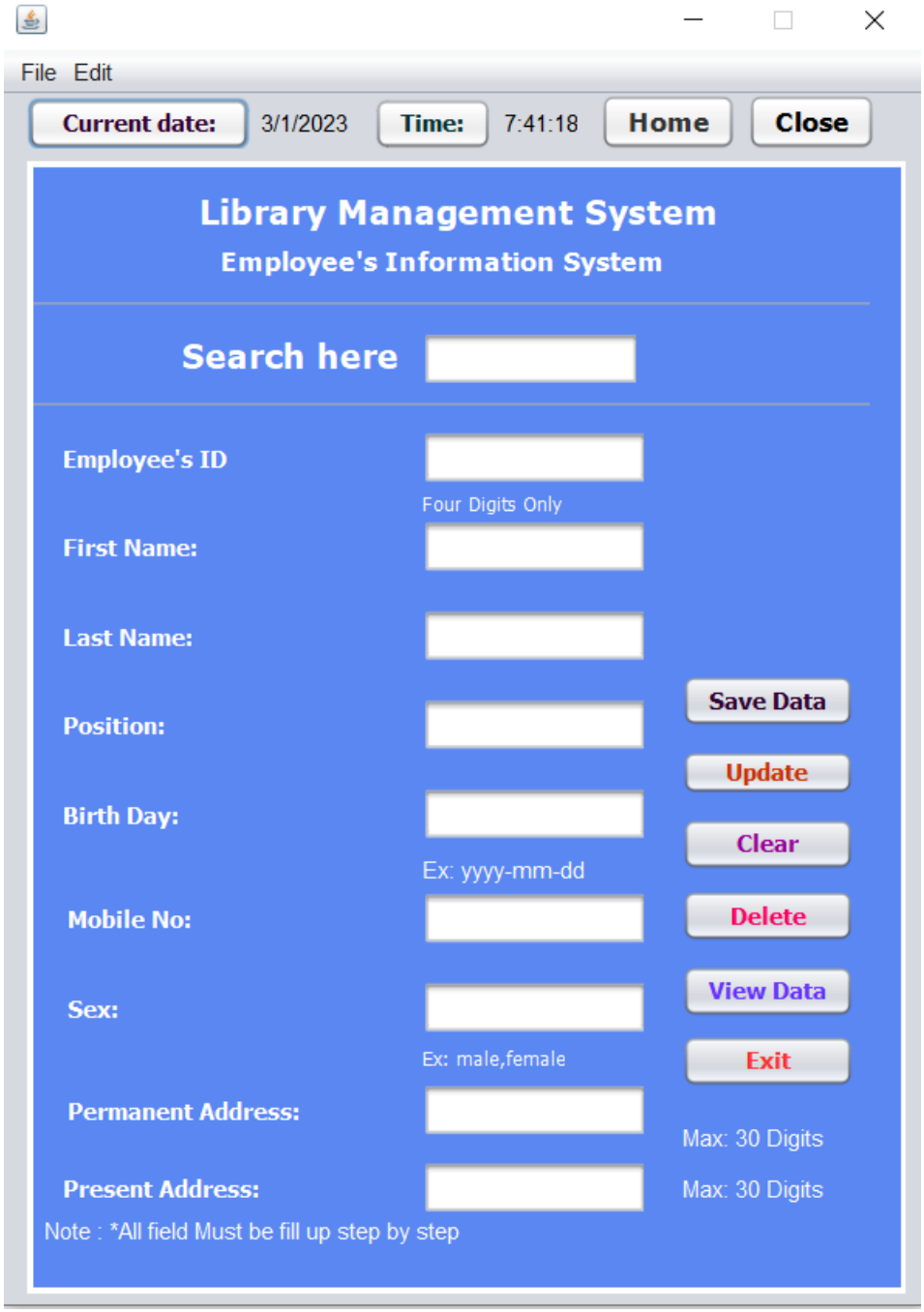

Figure 9: Employee information section.

Chapter 4

Conclusion evaluation

4.1 Introduction

In conclusion, a library management system is a vital tool for any modern library. It enables the library to efficiently catalog, manage, and track its holdings, and to provide patrons with easy access to its resources. By automating many of the tasks involved in managing a library, a library management system can help library staff to save time and effort, and to provide better service to patrons. In addition, a library management system can generate valuable data and insights into the usage patterns and needs of a library's patrons, which can help the library to better understand and meet the needs of its community.

4.1 Practical Implications

There are several steps involved in implementing a library management system in a practical setting:

1. Identify the needs and goals of the library. This will help to determine the specific features and functions that the library management system should include.

2. Research and evaluate different library management systems. This may involve reviewing product demonstrations, reading reviews and case studies, and speaking with other libraries that have implemented similar systems.

3. Choose a library management system that meets the needs and goals of the library, and that is within budget.

4. Install and set up the library management system. This may involve configuring the system to work with the library's existing hardware and software, and importing data from the library's current catalog.

5. Train library staff on how to use the library management system. This may involve providing hands-on training sessions or creating

instructional materials for staff to reference.

6. Roll out the library management system to patrons. This may involve introducing new self-service kiosks or updating the library's website to allow patrons to search for and request materials online.

7. Monitor and maintain the library management system. This may involve regularly backing up data, applying updates and patches, and troubleshooting any issues that may arise.

4.2 Scope of Future Work

There are several areas where future work could be focused in a library management system project:

1. Integration with other systems: A library management system could be integrated with other systems, such as a student information system or a financial management system, to allow for a more seamless and efficient workflow
2. Mobile access: Developing a mobile app or improving mobile access to the library management system could make it easier for patrons to access and use the system from their phones or other mobile devices.
3. Enhanced search and discovery: Adding features such as faceted search or natural language processing could help patrons to more easily find the materials they are looking for within the library's collection.
4. Personalization and recommendation: Implementing personalized recommendations or custom reading lists based on a patron's interests and past borrowing history could help to improve the user experience and encourage repeat use of the library.
5. Data analytics: Leveraging data from the library management system

to gain insights into usage patterns and trends could help the library to make informed decisions about its collection and services.

References

- Tutorials List - Javapoint
- Online Tutorials Library (tutorialspoint.com)