

# **Student Management System**

by

**FIDA TALBIA (190216)**

**AZMAIN INQUAID HAQUE (230218)**

**MD. SABBIR KHAN (230204)**



# Java Swing and AWT

## Swing

Swing is a powerful Java GUI toolkit that provides a wide range of customizable components for building desktop applications.

## AWT

AWT (Abstract Window Toolkit) is an earlier Java GUI toolkit that provides basic components for creating windows and UI elements.

## Advantages

Both Swing and AWT offer flexibility, platform independence, and extensive libraries for developing sophisticated student management systems.

# Swing Components

## JFrame

The JFrame is the main window component in Swing, providing the foundation for building desktop applications with a GUI.

## JButton

JButton is a versatile Swing component used for creating clickable buttons that trigger actions in the application.

## JTextField

JTextField allows users to input and edit text, making it essential for collecting user input in Swing applications.

## JLabel

JLabel displays static text or images, providing informative labels and captions throughout the user interface.

# Swing Components

## JComboBox

A dropdown list that allows users to select an option from a predefined set of choices.

## JScrollPane

A container that provides scrolling functionality, enabling users to view content that exceeds the visible area.

## JTable

A component that displays data in a tabular format, allowing for sorting, filtering, and interactive manipulation.

## JTree

A hierarchical data structure that represents information in a tree-like format, making it ideal for displaying nested data.

Student\_Management\_System

## Student Management System

Name: AZMAIN INQUAID HAQUE  
Id: 230218  
Address: SATKHIRA, KHULNA, BANGLADESH

<< < 1/3 > >>

Add  
Update  
Delete  
Default ▾  
Reset  
Exit

| Name                 | Id     | Address                |
|----------------------|--------|------------------------|
| AZMAIN INQUAID HAQUE | 230218 | SATKHIRA, KHULNA, B... |
| MD. SABBIR KHAN      | 230204 | NARAYANGANJ, BANG...   |
| FIDA TALBIA          | 190216 | CHITTAGONG, BANGL...   |

Project 1: using java swing and SQL

File Edit

### Data Manipulation Form

Name: Azmain Inquaid Haque  
ID: 230218  
Address: Satkhira, Khulna, Bangladesh  
CGPA: 3.8

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Add Update Delete Sort

Project 2: using java swing and serializer / deserializer

# CRUDS Operations

1

## Create

Allows users to add new student records to the system.

2

## Read

Enables users to view and retrieve existing student data.

3

## Update

Gives users the ability to edit and modify student information.

4

## Delete

Allows authorized users to remove student records from the system.

5

## Sort

Allows user to sort the records as per demand

# Data Retention

## File Serialization

Student data is stored in .ser files, ensuring reliable and persistent data storage.

## Secure Storage

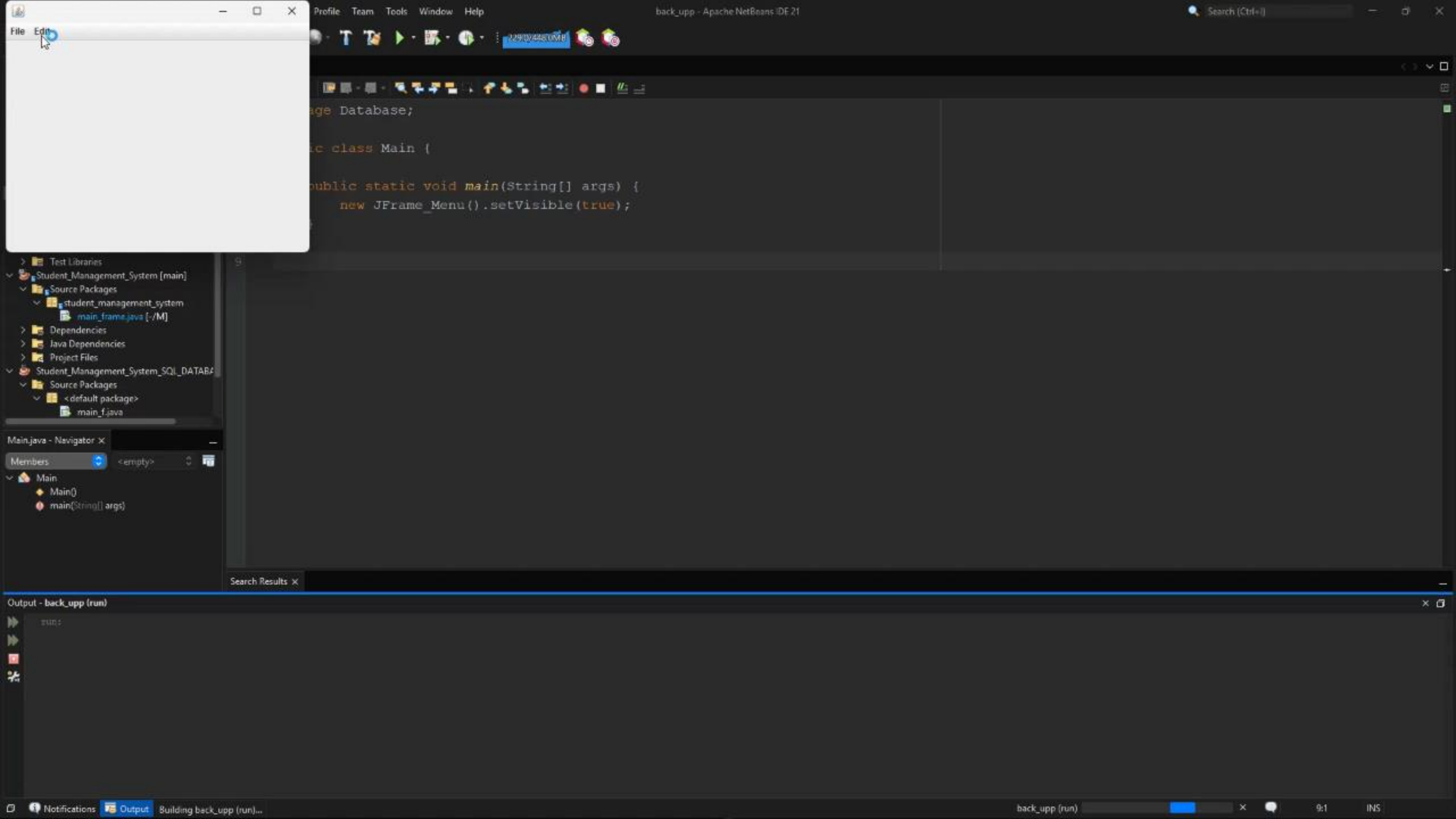
The .ser files are protected and accessible only to authorized personnel, maintaining the integrity of student records.

## MySQL

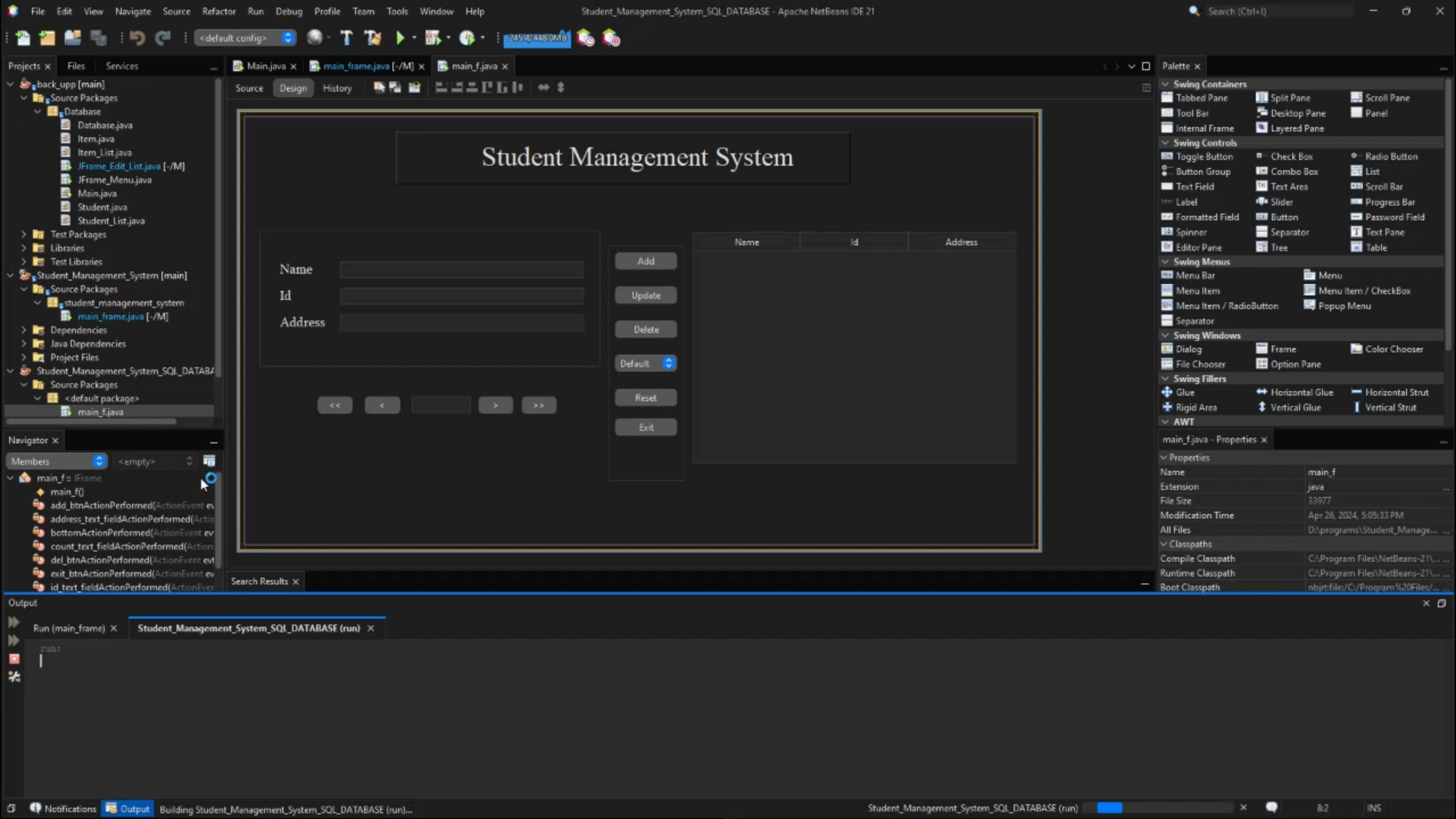
Student data is stored on a local server using MySQL, ensuring connectivity, speed, and security, making it highly suited for accessing internet databases.

## Scalability

The file-based data storage can accommodate growing student populations and expand as the institution's needs evolve.







# Conclusion



## Comprehensive

The student management system offers a complete set of features to effectively manage student records and data.



## Reliable

Robust data storage solutions, including file serialization and MySQL database, ensure the integrity and security of student information.



## Resilient

Backup and recovery capabilities protect against data loss and enable seamless restoration in the event of system disruptions.



## Efficient

The user-friendly interface and intuitive CRUD operations streamline the management of student records.

# The Road Ahead

## Future Enhancements

Planned improvements include integrating advanced analytics, reporting, and user-friendly dashboards to further enhance the system's capabilities.

## Continuous Improvement

The student management system will undergo regular updates and upgrades to ensure it remains aligned with evolving educational needs and industry best practices.

1

2

3

## Expanding Functionality

Additional features such as student attendance tracking, grade management, and automated notifications will be implemented to provide a more comprehensive solution.



