

# 6.3D – Custom Program

## Design Overview for Student Attendance System

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## Summary of Program

The "Student Attendance System" is a tool for organizing student data and managing the attendance process. The MySQL database will be used to hold student data such as personal information, class information, and attendance statistics. Users can access administrative functions like saving details and attendance time after logging in to connect to the database. In order to build an interface through which users can alter information by filling out forms and clicking on buttons, window forms are also used

The Student Attendance System project demonstrates the principles of object-oriented programming:

### 1. Encapsulation:

The code uses classes to encapsulate related data and methods. Each form (`LoginForm`, `MainForm`, and `StudentRegistrationForm`) encapsulates the behavior and UI elements related to its specific functionality. The MySqlConnection object (`con`) is kept private within each form, encapsulating the database connection details.

### 2. Inheritance:

The `LoginForm`, `MainForm`, and `StudentRegistrationForm` classes inherit from the `Form` class, which provides common functionality for windows forms in Windows Forms applications. By inheriting from the `Form` class, these classes inherit attributes and methods like `InitializeComponent()` and event handling mechanisms.

### 3. Polymorphism:

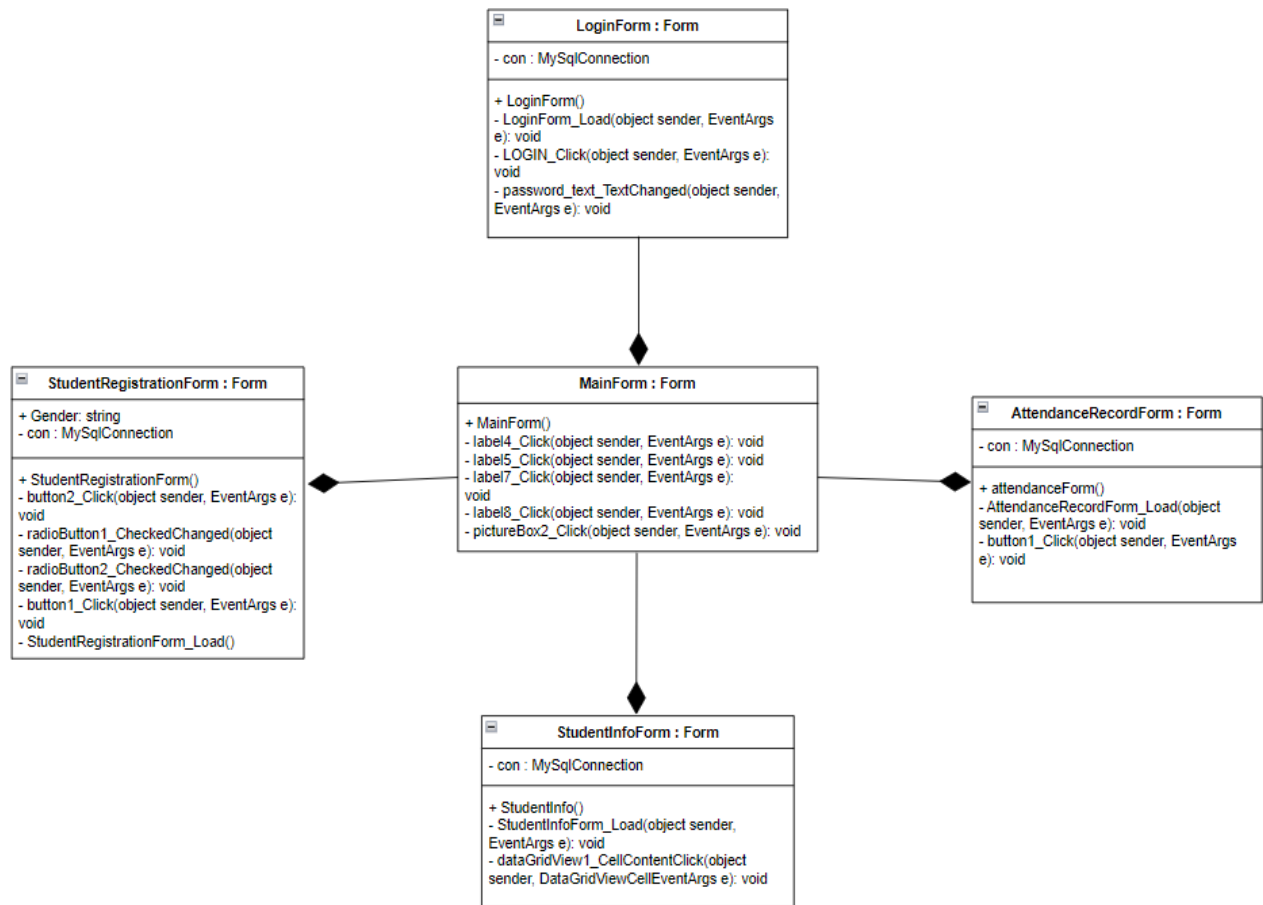
Polymorphism is not explicitly demonstrated in the system.

### 4. Abstraction:

Abstraction is the process of simplifying complex functionality into a more manageable and understandable form. In the code, complex operations like generating QR codes, inserting data into the database, and image handling are abstracted into separate methods (`button2\_Click`, `button1\_Click`). The behavior of these methods is abstracted away from the main logic, allowing for a clearer and more focused understanding of the code.

## Class Structure

Below is the final design for the system:



The classes that were developed within the system are:

### 1. LoginForm class:

- That handles user authentication. It has private fields, UI elements, and event handlers for login functionality
- After the user logs into the account, a connection is also established to the database. The user can only access the MainForm class after successfully connecting to the database.

### 2. MainForm class:

- Represents the main functionality of the application. It contains private fields, UI elements, and event handlers for the main functionality.
- Is responsible for displaying functions of the system including update or display attendance records and students' information.

### 3. AttendanceRecordForm class:

- Displays and prints attendance records. The data will print in PDF format and be accessible across browser tabs.
- The class development process also includes an external file called "DGVPrinter" at the same time. It features exclusive private fields, attributes, and methods designed just for printing DataGridViews.

### 4. StudentRegistrationForm class:

- Some information, including names, addresses, and attending times, will be kept in a database used to track student attendance. Each student will also be given a qr code,

which will vary each time information is submitted to prevent confusion with earlier entries.

#### 5. StudentInfoForm class:

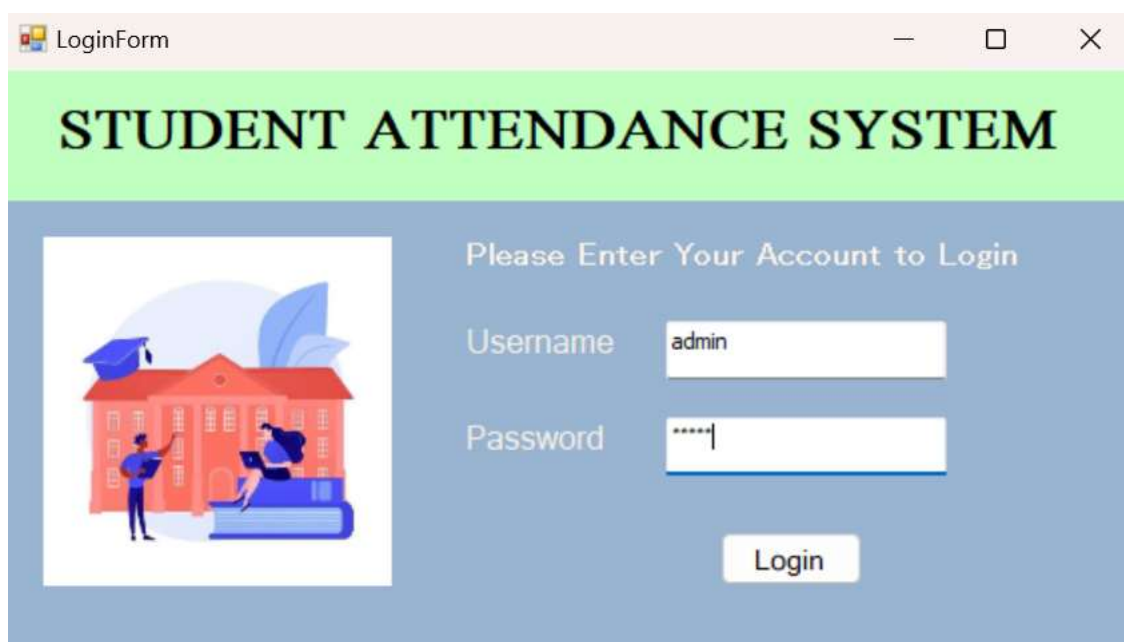
- Responsible for displaying information about students. The Gridfield contains a list of student information, and clicking on a particular student's information will enlarge it on the top half of the screen.

#### 6. Program class:

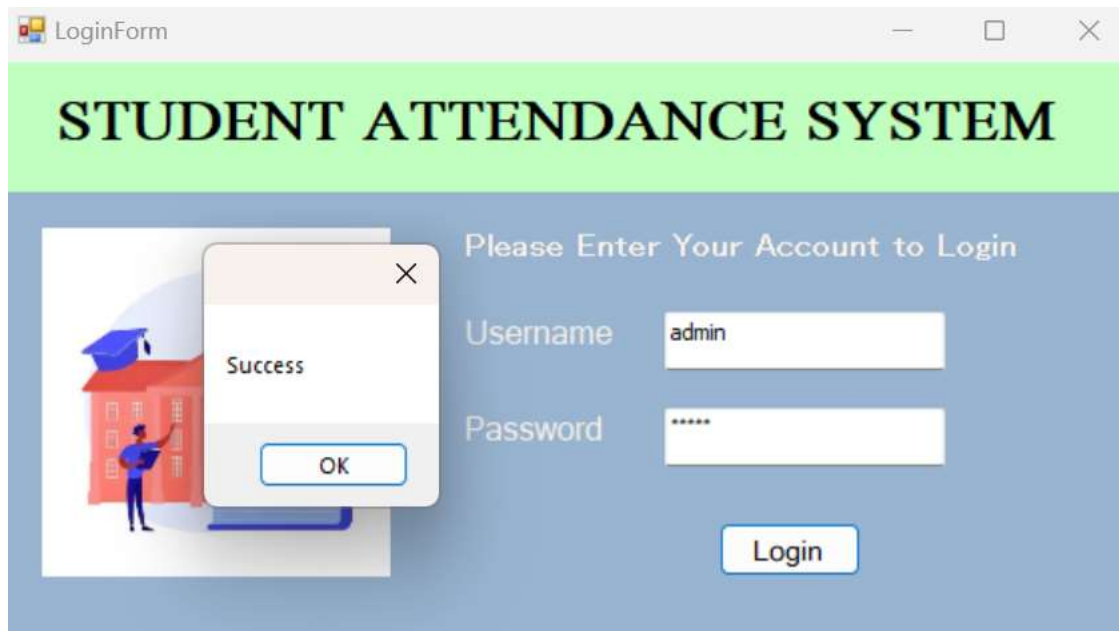
- The main entry point for the application
- Responsible for calling the Login Form.

### Program Execution

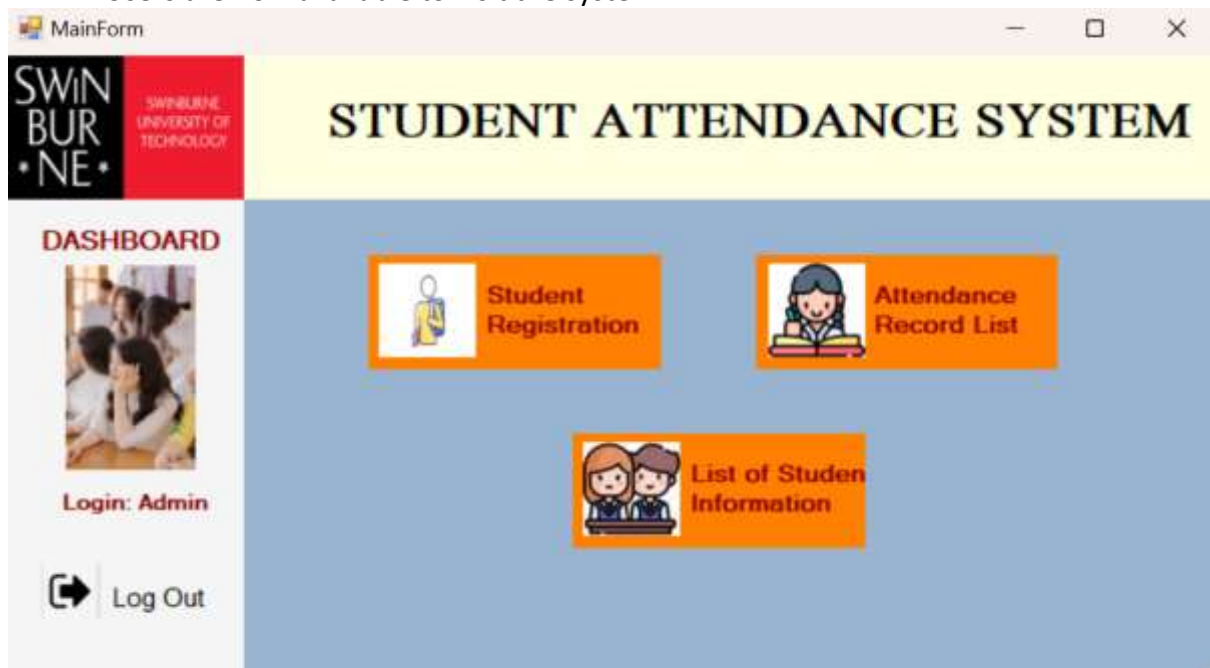
- Upon running the program, the Login Form appears and requires users enter their account.

The image shows a screenshot of a web application window titled "LoginForm". The window has a light green header bar with the text "STUDENT ATTENDANCE SYSTEM" in bold, black, serif font. Below the header, the background is a solid blue color. On the left side, there is a white square containing a colorful illustration of a school building with a red roof, a person in a blue uniform standing in front, and a person sitting on a blue bench. To the right of the illustration, the text "Please Enter Your Account to Login" is displayed in a light blue, sans-serif font. Below this text, there are two input fields: "Username" with the text "admin" entered, and "Password" with masked characters "\*\*\*\*\*" and a cursor. A white "Login" button is positioned below the password field.

- After entering correct account, a message box appear and database is connected successfully



- Users are now available to visit the system



- **MainForm:** will appear immediately and displays system's functions

**STUDENT ATTENDANCE SYSTEM**

**USER PROFILE**

ID: 5

Name: Nam Joon

Last Name: Kim

Email: joonkim@gmail.com

Date of Birth: 16/03/1995

Class: IT

Phone Number: 90876381332

Gender: ☒ Male ☐ Female

Buttons: Save, Update, Delete

QR Code

Dialog: Data Save Successfull! OK

- **Student Registration Form:** collect the student information and attending time then generate a corresponding QR code

**STUDENT ATTENDANCE SYSTEM**

**Information Box**

ID: 5

Name: Nam Joon

Last Name: Kim

Email: joonkim@gmail.com

Date of Birth: 16/03/1995

Class: IT


Phone Number: 90876381332

Gender: Male

ID	Name	LastName	Email	DateOfBirth	Class	PhoneNumber	Gender
2	Jennie	Kim	jennie@gmail.com	16/01/1996	AI	+9679528467	Female
3	Jisoo	Kim	jisoo@email.com	03/01/1995	Computer Science	3408176687	Female
5	Nam Joon	Kim	joonkim@gmail.com	16/03/1995	IT	90876381332	Male

- **List of Student Information Form:** will display a list of student information, the details will present if one of them is selected

AttendanceRecordForm



# STUDENT ATTENDANCE SYSTEM

ID	Name	LastName	Email	DateOfBirth	Class
1	Lalisa	Manobal	lisa@gmail.com	27/03/1997	IT
2	Jisoo	Kim	jisoo@gmail.com	03/01/1995	Computer Science
3	Jennie	Kim	jennie@email.com	16/01/1996	AI
1	Lalisa	Manobal	lalisa@gmail.com	28/02/1997	IT
4	Chaeyoung	Park	chaeyoung@em...	11/02/1997	IT
2	Jennie	Kim	jennie@gmail.com	16/01/1996	AI
3	Jisoo	Kim	jisoo@email.com	03/01/1995	Computer Science
5	Nam Joon	Kim	joonkim@gmail.c...	16/03/1995	IT

**Print Data**

- **Attendance Record List Form:** Displays both student information and attending time

AttendanceRecordForm

Print to PDF Document - Foxit Reader PDF Printer

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Printing

Page 1 of STUDENT ATTENDANCE SYSTEM REPROT FORM

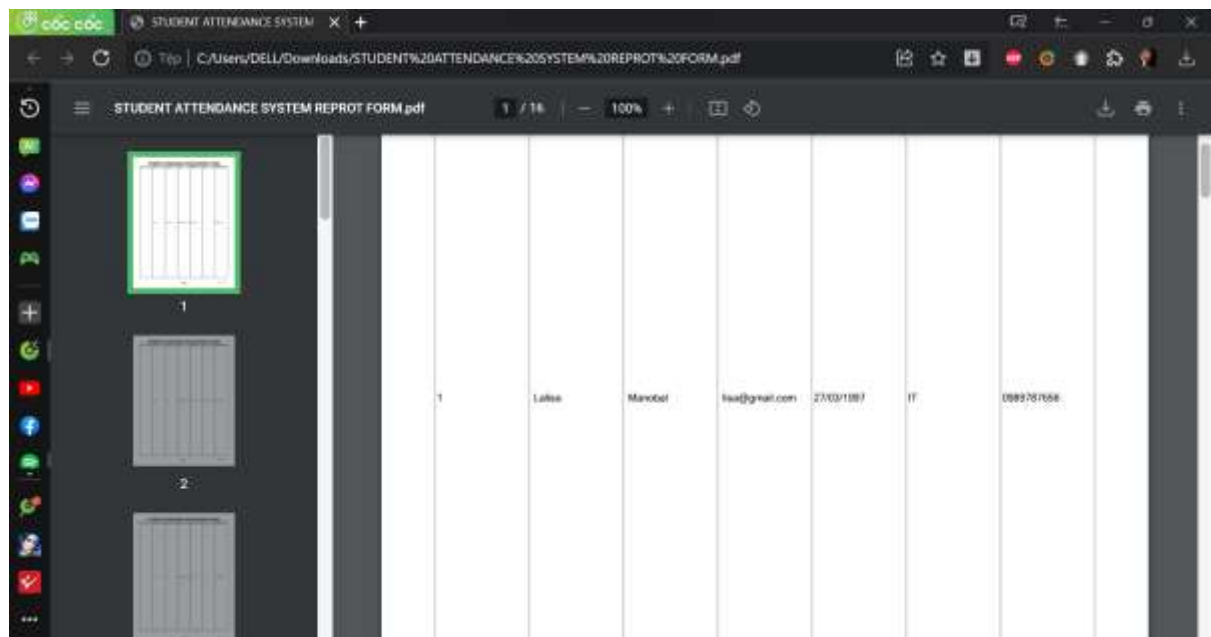
Cancel

Name	Date modified
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STUDENT ATTENDANCE SYSTEM REPROT FORM.pdf	12/07/2023 3:57 CH
Last week (2)	
6.2D - D Level Custom Program Design.pdf	08/07/2023 8:16 CH
Coffee Shop Management System (1)	08/07/2023 8:30 CH
Earlier this month (8)	
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Innovation-Concept-1.pdf	02/07/2023 1:37 SA
07_Chapter 5 Decision Support Systems (1).pdf	02/07/2023 12:51 SA
07_Chapter 5 Decision Support Systems.pdf	02/07/2023 12:43 SA
Innovation-Concept.pdf	01/07/2023 12:55 SA

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Save Cancel



- If **PrintData button** is selected, a file will be exported and available to see