# Student Management System (Python + SQLite)

## Project Report

### 1. Introduction

This project is a console-based Student Management System built using Python and SQLite.

It demonstrates CRUD operations such as Add, List, Search, Update, and Delete.

### 2. Technologies Used

- Python 3

- SQLite (using sqlite3 module)

- SQL Queries

- Command-line Interface (CLI)

### 3. Features Implemented

- Add new student information

- List all student records

- Search for a student by ID

- Update existing student details

- Delete student records

- Year validation (1–5)

- UNIQUE constraint for email field

- Exception handling for duplicate email entries

### 4. Database Schema

Table: students

Columns:

- id (INTEGER, Primary Key, Auto Increment)

- name (TEXT, Not Null)

- email (TEXT, Unique, Not Null)

- course (TEXT, Not Null)

- year (INTEGER, Not Null)

### 5. Code Structure

The project contains a menu-driven structure with functions for each CRUD operation.

The program ensures data accuracy through validations and parameterized queries.

### 6. Learning Outcomes

- Understanding of Python–SQL integration

- Experience with database schema design

- Practical knowledge of CRUD operations

- Handling runtime errors and validations

- Building real-world command-line applications

### 7. Conclusion

This project is suitable for beginner-level developers and is ideal for fresher resumes.

It demonstrates essential programming concepts and database handling skills.