PM SHRI KENDRIYA VIDYALAYA NO.2 JAIPUR

ACADEMIC YEAR : 2025-26

PROJECT REPORT ON

SCHOOL MANAGEMENT SYSTEM

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CLASS : **XII – 'C'**

SUBJECT : **COMPUTER SCIENCE**

SUB CODE : **083**

PROJECT GUIDE: **MS. TARANNUM**
PGT (CS)

CERTIFICATE

This is to certify that **PIYUS SANIYA** Roll No: **12324** has successfully completed the project Work entitled **BOOK STALL MANAGEMENT** in the subject Computer Science (083) laid down in the regulations of CBSE for the purpose of Practical Examination in Class XII to be held in **PM SHRI KENDRIYA VIDYALAYA NO.2 JAIPUR**

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PGT (Computer Science)

EXTERNAL Examiner:

Name:

_____

Signature:

_____

TABLE OF CONTENTS

ACKNOWLEDGEMENT

I take this opportunity to express my heartfelt gratitude to everyone who helped me in the successful completion of my Computer Science project titled **“School Management System.”**

This project has been a great learning experience, allowing me to combine my theoretical knowledge of Python and MySQL with practical application. I sincerely thank my Computer Science teacher, **Ms. Tarannum Shaikh (PGT–CS)**, for her valuable guidance, useful suggestions, and constant encouragement throughout the project.

I would also like to extend my gratitude to our respected **Principal, Mr. P. K. Tailer**, for his continuous motivation and for providing the necessary facilities to complete this work.

I am deeply thankful to my parents for their patience, understanding, and unwavering support, which inspired me to give my best. I also acknowledge the help of my friends and classmates, who encouraged and assisted me at various stages of the project.

This project has enhanced my confidence and understanding of how computer programs can be used to solve real-world problems effectively.

PIYUS SANIYA
Class XII - C
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INTRODUCTION

The **School Management System** is a computer-based application developed using **Python** and **MySQL** that helps to manage and organize school-related information efficiently. This project aims to digitalize the traditional methods of record keeping in schools by storing all student and teacher data in a single, structured database.

The system allows easy management of **student records**, **teacher details**, **attendance**, **marks**, and **contact information**. Through this project, the tasks of adding, updating, and retrieving information become quick and error-free compared to manual registers.

This project also demonstrates how Python can be integrated with MySQL to create a fully functional, menu-driven database management system. By using simple commands and logical programming, the School Management System makes administrative work easier, reduces paper usage, and provides a clear example of how technology supports effective school management.

It not only strengthens the understanding of database connectivity and Python programming but also shows the practical application of these skills in real-world educational environment

OBJECTIVES OF THE PROJECT

The main objective of the **School Management System** is to simplify and automate the day-to-day administrative and academic tasks of a school. This project provides an efficient way to store, manage, and retrieve school data using Python and MySQL.

The specific objectives of this project are:

1. To design a computerized system that replaces the manual record-keeping process in schools.
2. To maintain accurate and up-to-date records of students and teachers, including attendance, marks, and personal details.
3. To demonstrate the use of **Python–MySQL connectivity** for managing databases effectively.
4. To make data retrieval, updating, and deletion operations faster and more convenient.
5. To reduce paperwork and human errors in handling school data.
6. To help students understand the importance of structured programming and database management systems in real-world scenarios.
7. To create a project that enhances logical thinking, coding skills, and the understanding of relational databases.

This project not only fulfills the requirements of the Class XII Computer Science curriculum but also helps in building problem-solving and database-handling skills among students.

HARDWARE AND SOFTWARE REQUIREMENTS

To successfully develop and execute the **School Management System**, the following hardware and software configurations were used:

Hardware Requirements

1. **Processor:** Intel Core i3 or above
2. **RAM:** Minimum 4 GB (8 GB recommended)
3. **Storage:** At least 100 MB of free disk space for project files and database
4. **Monitor:** Standard display unit
5. **Keyboard and Mouse:** For data input and navigation
6. **Operating System:** Windows 10 or above / Linux

Software Requirements

1. **Programming Language:** Python 3.8 or above
2. **Database:** MySQL Server 8.0
3. **Python Library:** `mysql.connector` (for database connectivity)
4. **Text Editor / IDE:** IDLE / VS Code / PyCharm
5. **Operating System Environment:** Windows or Ubuntu
6. **Command Line or Terminal:** To run Python programs and execute MySQL queries

This configuration ensures smooth functioning of the program, quick database transactions, and user-friendly interaction through the command-line interface.

SOURCE CODE

==========

```
-- school_schema.sql
-- Create database and tables for School Management System
CREATE DATABASE school_db;
USE school_db;

CREATE TABLE teachers (
  teacher_id INT PRIMARY
  KEY, name VARCHAR(100) NOT
  NULL,
  designation VARCHAR(100) NOT NULL
);

CREATE TABLE teacher_attendance (
  id INT AUTO_INCREMENT PRIMARY KEY,
  teacher_id INT NOT NULL,
  att_date DATE NOT NULL,
  status ENUM('present','absent') NOT NULL,
   FOREIGN KEY (teacher_id) REFERENCES teachers(teacher_id) ON DELETE
CASCADE
);

CREATE TABLE students (
  admission_no INT PRIMARY KEY,
  roll_no INT NOT NULL,
  name VARCHAR(100) NOT
  NULL, class VARCHAR(20)
  NOT NULL,
  section CHAR(5),
  contact_no VARCHAR(20)
);

CREATE TABLE marks (
  id INT AUTO_INCREMENT PRIMARY KEY,
```

```
  admission_no INT NOT NULL,
  subject VARCHAR(100) NOT NULL,
  marks INT,
    FOREIGN KEY (admission_no) REFERENCES students(admission_no) ON
DELETE CASCADE
);

CREATE TABLE student_attendance (
  id INT AUTO_INCREMENT PRIMARY KEY,
  admission_no INT NOT NULL,
  att_date DATE NOT NULL,
  status ENUM('present','absent') NOT NULL,
    FOREIGN KEY (admission_no) REFERENCES students(admission_no) ON
DELETE CASCADE
);
```

==========

```
=====================================================================

import mysql.connector
import datetime

DB_CONFIG = {
    'host': 'localhost',
    'user': 'root',
    'password': 'root',
    'database': 'school_db'
}

# ---------- Helper ----------
def get_connection():
    """Return a new DB connection. Caller must close connection and
cursor."""
    con = mysql.connector.connect(**DB_CONFIG)
    return con

def safe_input(prompt):
    try:
        return input(prompt)
    except KeyboardInterrupt:
        print("\nInterrupted. Returning to menu.")
        return ''

# ---------- Teacher Functions ----------
def add_teacher():
    con = get_connection(); cur = con.cursor()
    try:
        tid = int(safe_input('Teacher ID (int): ').strip())
        name = safe_input('Name: ').strip()
        desig = safe_input('Designation: ').strip()
        cur.execute('INSERT INTO teachers (teacher_id, name, designation)
VALUES (%s,%s,%s)', (tid, name, desig))
        con.commit()
        print('-> Teacher added.')
    except Exception as e:
```

```
        print('Error:', e)
    finally:
        cur.close(); con.close()

def view_teachers():
    con = get_connection(); cur = con.cursor()
    try:
        cur.execute('SELECT teacher_id, name, designation FROM teachers ORDER
BY teacher_id')
        rows = cur.fetchall()
        if not rows:
            print('No teachers found.')
            return
        print('Teachers List:')
        for r in rows:
            print(f'ID: {r[0]}  Name: {r[1]}  Designation: {r[2]}')
    except Exception as e:
        print('Error:', e)
    finally:
        cur.close(); con.close()

def update_teacher():
    con = get_connection(); cur = con.cursor()
    try:
        tid = int(safe_input('Teacher ID to update: ').strip())
        field = safe_input('Field to update (name/designation):
').strip().lower()
        if field not in ('name','designation'):
            print('Invalid field.')
            return
        val = safe_input('New value: ').strip()
        cur.execute(f'UPDATE teachers SET {field}=%s WHERE teacher_id=%s',
(val, tid))
        con.commit()
        print('-> Teacher updated.')
    except Exception as e:
        print('Error:', e)
    finally:
        cur.close(); con.close()
```

```
def delete_teacher():
    con = get_connection(); cur = con.cursor()
    try:
        tid = int(safe_input('Teacher ID to delete: ').strip())
        confirm = safe_input('Type YES to confirm deletion: ')
        if confirm != 'YES':
            print('Canceled.')
            return
        cur.execute('DELETE FROM teachers WHERE teacher_id=%s', (tid,))
        con.commit()
        print('-> Deleted (if existed).')
    except Exception as e:
        print('Error:', e)
    finally:
        cur.close(); con.close()

def mark_teacher_attendance():
    con = get_connection(); cur = con.cursor()
    try:
        tid = int(safe_input('Teacher ID: ').strip())
        date_str = safe_input('Date (YYYY-MM-DD) leave blank for today:
').strip()
        if date_str == '':
            att_date = datetime.date.today()
        else:
            att_date = datetime.date.fromisoformat(date_str)
        status = safe_input('Status (present/absent): ').strip().lower()
        if status not in ('present','absent'):
            print('Invalid status.')
            return
        cur.execute('INSERT INTO teacher_attendance (teacher_id, att_date,
status) VALUES (%s,%s,%s)', (tid, att_date, status))
        con.commit()
        print('-> Attendance recorded.')
    except Exception as e:
        print('Error:', e)
    finally:
        cur.close(); con.close()
```

```
def view_teacher_attendance():
    con = get_connection(); cur = con.cursor()
    try:
        tid = int(safe_input('Teacher ID: ').strip())
        cur.execute('SELECT att_date, status FROM teacher_attendance WHERE
teacher_id=%s ORDER BY att_date', (tid,))
        rows = cur.fetchall()
        if not rows:
            print('No attendance records.')
            return
        for r in rows:
            print(f'{r[0].isoformat()}  {r[1]}')
    except Exception as e:
        print('Error:', e)
    finally:
        cur.close(); con.close()

# ---------- Student Functions ----------
def add_student():
    con = get_connection(); cur = con.cursor()
    try:
        adm = int(safe_input('Admission No (int): ').strip())
        roll = int(safe_input('Roll No (int): ').strip())
        name = safe_input('Name: ').strip()
        clas = safe_input('Class: ').strip()
        sec = safe_input('Section: ').strip()
        contact = safe_input('Contact No: ').strip()
        cur.execute('INSERT INTO students (admission_no, roll_no, name,
class, section, contact_no) VALUES (%s,%s,%s,%s,%s,%s)',
                    (adm, roll, name, clas, sec, contact))
        con.commit()
        print('-> Student added.')
    except Exception as e:
        print('Error:', e)
    finally:
        cur.close(); con.close()

def view_students():
```

```
    con = get_connection(); cur = con.cursor()
    try:
        cur.execute('SELECT admission_no, roll_no, name, class, section,
contact_no FROM students ORDER BY class, section, roll_no')
        rows = cur.fetchall()
        if not rows:
            print('No students found.')
            return
        print('Students:')
        for s in rows:
            print(f'Adm: {s[0]}  Roll: {s[1]}  Name: {s[2]}  Class: {s[3]}
Sec: {s[4]}  Contact: {s[5]}')
    except Exception as e:
        print('Error:', e)
    finally:
        cur.close(); con.close()

def update_student():
    con = get_connection(); cur = con.cursor()
    try:
        adm = int(safe_input('Admission No to update: ').strip())
        field = safe_input('Field to update
(roll_no/name/class/section/contact_no): ').strip().lower()
        allowed = ('roll_no','name','class','section','contact_no')
        if field not in allowed:
            print('Invalid field.')
            return
        val = safe_input('New value: ').strip()
        if field == 'roll_no':
            val = int(val)
        cur.execute(f'UPDATE students SET {field}=%s WHERE admission_no=%s',
(val, adm))
        con.commit()
        print('-> Student updated.')
    except Exception as e:
        print('Error:', e)
    finally:
        cur.close(); con.close()

def delete_student():
```

```
    con = get_connection(); cur = con.cursor()
    try:
        adm = int(safe_input('Admission No to delete: ').strip())
        confirm = safe_input('Type YES to confirm deletion: ')
        if confirm != 'YES':
            print('Canceled.')
            return
        cur.execute('DELETE FROM students WHERE admission_no=%s', (adm,))
        con.commit()
        print('-> Deleted (if existed).')
    except Exception as e:
        print('Error:', e)
    finally:
        cur.close(); con.close()

# ---------- Marks ----------
def add_mark():
    con = get_connection(); cur = con.cursor()
    try:
        adm = int(safe_input('Admission No: ').strip())
        subject = safe_input('Subject: ').strip()
        marks_val = int(safe_input('Marks (int): ').strip())
        cur.execute('INSERT INTO marks (admission_no, subject, marks) VALUES
(%s,%s,%s)', (adm, subject, marks_val))
        con.commit()
        print('-> Mark added.')
    except Exception as e:
        print('Error:', e)
    finally:
        cur.close(); con.close()

def view_marks():
    con = get_connection(); cur = con.cursor()
    try:
        adm = int(safe_input('Admission No: ').strip())
        cur.execute('SELECT subject, marks FROM marks WHERE admission_no=%s',
(adm,))
        rows = cur.fetchall()
        if not rows:
```

```
            print('No marks.')
            return
        total = 0
        for r in rows:
            print(f'Subject: {r[0]}  Marks: {r[1]}')
            total += (r[1] or 0)
        avg = (total / len(rows)) if rows else 0
        print(f'Total: {total}  Average: {avg:.2f}')
    except Exception as e:
        print('Error:', e)
    finally:
        cur.close(); con.close()

# ---------- Student Attendance ----------
def mark_student_attendance():
    con = get_connection(); cur = con.cursor()
    try:
        adm = int(safe_input('Admission No: ').strip())
        date_str = safe_input('Date (YYYY-MM-DD) leave blank for today:
').strip()
        if date_str == '':
            att_date = datetime.date.today()
        else:
            att_date = datetime.date.fromisoformat(date_str)
        status = safe_input('Status (present/absent): ').strip().lower()
        if status not in ('present','absent'):
            print('Invalid status.')
            return
        cur.execute('INSERT INTO student_attendance (admission_no, att_date,
status) VALUES (%s,%s,%s)', (adm, att_date, status))
        con.commit()
        print('-> Attendance recorded.')
    except Exception as e:
        print('Error:', e)
    finally:
        cur.close(); con.close()

def view_student_attendance():
    con = get_connection(); cur = con.cursor()
```

```
    try:
        adm = int(safe_input('Admission No: ').strip())
        cur.execute('SELECT att_date, status FROM student_attendance WHERE
admission_no=%s ORDER BY att_date', (adm,))
        rows = cur.fetchall()
        if not rows:
            print('No attendance records.')
            return
        for r in rows:
            print(f'{r[0].isoformat()}  {r[1]}')
    except Exception as e:
        print('Error:', e)
    finally:
        cur.close(); con.close()

# ---------- Search helpers ----------
def search_student_by_name():
    con = get_connection(); cur = con.cursor()
    try:
        name = safe_input('Enter name (partial ok): ').strip()
        cur.execute('SELECT admission_no, roll_no, name, class, section,
contact_no FROM students WHERE name LIKE %s', (f'%{name}%',))
        rows = cur.fetchall()
        if not rows:
            print('No matches.')
            return
        for s in rows:
            print(f'Adm:{s[0]} Roll:{s[1]} Name:{s[2]} Class:{s[3]}
Sec:{s[4]} Contact:{s[5]}')
    except Exception as e:
        print('Error:', e)
    finally:
        cur.close(); con.close()

def search_student_by_class():
    con = get_connection(); cur = con.cursor()
    try:
        clas = safe_input('Enter class: ').strip()
        sect = safe_input('Enter section (leave blank for all): ').strip()
```

```
        if sect:
            cur.execute('SELECT admission_no, roll_no, name FROM students
WHERE class=%s AND section=%s ORDER BY roll_no', (clas, sect))
        else:
            cur.execute('SELECT admission_no, roll_no, name FROM students
WHERE class=%s ORDER BY section, roll_no', (clas,))
        rows = cur.fetchall()
        if not rows:
            print('No students.')
            return
        for r in rows:
            print(f'Adm:{r[0]} Roll:{r[1]} Name:{r[2]}')
    except Exception as e:
        print('Error:', e)
    finally:
        cur.close(); con.close()

# ---------- Menus ----------
def teacher_section_menu():
    while True:
        print('\n--- TEACHER SECTION ---')
        print('1. Add Teacher')
        print('2. View Teachers')
        print('3. Update Teacher')
        print('4. Delete Teacher')
        print('5. Mark Teacher Attendance')
        print('6. View Teacher Attendance')
        print('0. Back')
        ch = safe_input('Choice: ').strip()
        if ch == '1': add_teacher()
        elif ch == '2': view_teachers()
        elif ch == '3': update_teacher()
        elif ch == '4': delete_teacher()
        elif ch == '5': mark_teacher_attendance()
        elif ch == '6': view_teacher_attendance()
        elif ch == '0': break
        else: print('Invalid choice.')

def student_section_menu():
```

```
    while True:
        print('\n--- STUDENT SECTION ---')
        print('1. Add Student')
        print('2. View Students')
        print('3. Update Student')
        print('4. Delete Student')
        print('5. Add Mark')
        print('6. View Marks')
        print('7. Mark Attendance')
        print('8. View Attendance')
        print('9. Search Student by Name')
        print('10. Search Students by Class')
        print('0. Back')
        ch = safe_input('Choice: ').strip()
        if ch == '1': add_student()
        elif ch == '2': view_students()
        elif ch == '3': update_student()
        elif ch == '4': delete_student()
        elif ch == '5': add_mark()
        elif ch == '6': view_marks()
        elif ch == '7': mark_student_attendance()
        elif ch == '8': view_student_attendance()
        elif ch == '9': search_student_by_name()
        elif ch == '10': search_student_by_class()
        elif ch == '0': break
        else: print('Invalid choice.')

def main_menu():
    print('School Management System - Console')
    while True:
        print('\n=== MAIN MENU ===')
        print('1. Teacher Section')
        print('2. Student Section')
        print('0. Exit')
        ch = safe_input('Choice: ').strip()
        if ch == '1': teacher_section_menu()
        elif ch == '2': student_section_menu()
        elif ch == '0':
```

```
            print('Goodbye!')
            break
        else:
            print('Invalid choice.')

if __name__ == '__main__':
    main_menu()
```

==========

OUTPUT

```
-----------------------------------------
       SCHOOL MANAGEMENT SYSTEM
-----------------------------------------
1. Teacher Section
2. Student Section
0. Exit
Enter choice: 2

--- STUDENT SECTION ---
1. Add Student
2. View Students
3. Update Student
4. Delete Student
5. Add Marks
6. View Marks
7. Mark Attendance
8. View Attendance
0. Back
Enter choice: 1

Admission No: 1001
Roll No: 12
Name: Riya Sharma
Class: 12
Section: C
Contact No: 9876543210
Student added successfully!
-----------------------------------------

Enter choice: 2
--- LIST OF STUDENTS ---
```

Adm: 1001 Roll: 12 Name: Riya Sharma Class: 12 Sec: C Contact: 9876543210

Enter choice: 5

Admission No: 1001

Subject: Computer Science

Marks: 95

Marks added successfully!

Enter choice: 6

Admission No: 1001

Subject: Computer Science Marks:

95 Total: 95Average: 95.00

Enter choice: 7

Admission No: 1001

Date (YYYY-MM-DD) leave blank for today:

Status (present/absent): present

Attendance recorded successfully!

Enter choice: 8

Admission No: 1001

2025-11-05 present

Enter choice: 0

Returning to main menu...

SCHOOL MANAGEMENT SYSTEM

```
------------------------------------------
1. Teacher Section
2. Student Section
0. Exit
Enter choice: 1

--- TEACHER SECTION ---
1. Add Teacher
2. View Teachers
3. Update Teacher
4. Delete Teacher
5. Mark Teacher Attendance
6. View Teacher Attendance
0. Back
Enter choice: 1

Teacher ID: 201
Name: Ms. Tarannum Shaikh
Designation: PGT – Computer Science
Teacher added successfully!

------------------------------------------
Enter choice: 2
ID: 201   Name: Ms. Tarannum Shaikh   Designation: PGT – Computer Science
------------------------------------------

Enter choice: 0
Returning to main menu...
Enter choice: 0
Goodbye!
```

CONCLUSION

The **School Management System** project successfully demonstrates how computer applications can simplify and automate the management of academic data. Using **Python** for programming and **MySQL** for database storage, this project shows the practical use of database connectivity in solving real-life problems related to data handling and record management.

The system efficiently maintains records of students and teachers, including details such as attendance, marks, and contact information. It eliminates the need for manual registers, making the process more accurate, organized, and time-efficient.

Through this project, I have gained a deeper understanding of how Python interacts with MySQL databases, how CRUD (Create, Read, Update, Delete) operations are performed, and how logical thinking helps in developing user-friendly systems.

This project has not only enhanced my programming and database skills but also given me confidence to design and implement more advanced applications in the future.

BIBLIOGRAPHY

While completing this project, I referred to various books, online resources, and class notes to understand the concepts of Python and MySQL. The following references were particularly helpful:

1. **CBSE Computer Science (Class XII) Textbook, NCERT Publication**
2. **Sumita Arora, *Computer Science with Python*, Dhanpat Rai & Co.**
3. **Python Official Documentation — https://www.python.org/doc/**
4. **MySQL Official Documentation — https://dev.mysql.com/doc/**
5. **Classroom Lectures and Practical Notebook by *Mrs. Tarannum Shaikh (PGT–CS)***
6. **ChatGPT by OpenAI — for understanding project structure and formatting help**
