School Attendance / LMS Project
Registration Number: 254,226,228

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Abstract

This project focuses on designing an ICT-based School Attendance system using Google Sheets, DBMS concepts, and Time-series simulation. The aim is to automate attendance tracking, visualize trends, and analyze student engagement over time.

1 Introduction

The manual attendance system in schools and universities is time-consuming and prone to errors. This project introduces an automated Learning Management System (LMS) that logs student attendance, generates time-series trends, and provides insights for teachers. The dataset consists of 20 student attendance records, and analysis is performed to study trends over a 20-day period.

2 Problem Statement

Manual attendance tracking consumes class time and often leads to inaccuracies. The project aims to implement a digital system that captures attendance, stores it in a database, and analyzes trends efficiently.

3 Objectives

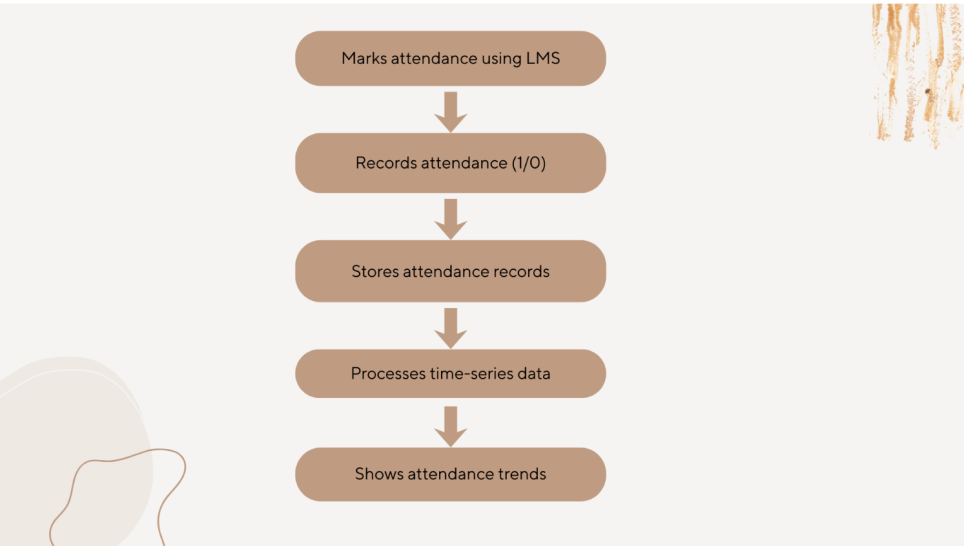
- Design an ICT-based LMS for attendance management.
- Create a dataset of 20 student records.
- Perform time-series analysis of attendance trends.
- Implement database schema and SQL queries.
- Present system architecture diagram and generate reports.

4 Literature Review

Digital attendance systems and LMS platforms are widely adopted in educational institutions to track student participation and engagement. Studies indicate that automating attendance improves accuracy and reduces administrative workload [**?**, **?**].

5 System Architecture

The system architecture illustrates the flow of data from students logging in to generating reports for teachers.



Explanation: Students log in to the LMS interface, which records attendance. The data is stored in the attendance database. Analytics module generates time-series reports for teachers and administrators.

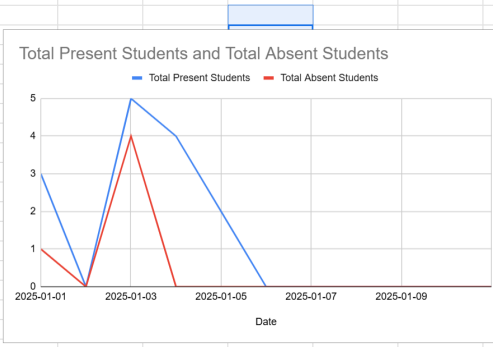
6 Dataset and Analysis

The dataset consists of 20 attendance records. Attendance is coded as 1 for Present and 0 for Absent. Login and Logout times are included to calculate duration in minutes.

1	Student ID	Student Name	Date	Attendance
2	MCT-201	Ahmad	2025-01-01	1
3	MCT-202	Sara	2025-01-01	1
4	MCT-203	Ali	2025-01-01	0
5	MCT-204	Fatima	2025-01-01	1
6	MCT-205	Usman	2025-01-03	0
7	MCT-206	Shabbir	2025-01-03	0
8	MCT-207	Asad	2025-01-03	0
9	MCT-208	Rehan	2025-01-03	0
10	MCT-209	Moiz	2025-01-03	1
11	MCT-210	Zara	2025-01-03	1
12	MCT-211	Shahid	2025-01-03	1
13	MCT-212	Zainab	2025-01-03	1
14	MCT-213	Asghar	2025-01-03	1
15	MCT-214	Moeed	2025-01-04	1
16	MCT-215	Sami	2025-01-04	1
17	MCT-216	Yousaf	2025-01-04	1
18	MCT-217	Yasir	2025-01-04	1
19	MCT-218	Haider	2025-01-05	1
20	MCT-219	Akbar	2025-01-05	1

Time-Series Simulation:

Date	Total Present Students	Total Absent Students
2025-01-01	3	1
2025-01-02	0	0
2025-01-03	5	4
2025-01-04	4	0
2025-01-05	2	0
2025-01-06	0	0
2025-01-07	0	0
2025-01-08	0	0
2025-01-09	0	0
2025-01-10	0	0
2025-01-11	0	0
2025-01-12	0	0
2025-01-13	0	0
2025-01-14	0	0
2025-01-15	0	0
2025-01-16	0	0
2025-01-17	0	0
2025-01-18	0	0



Analysis: The line chart shows daily attendance trends over 20 days, highlighting peak and low participation periods.

7 Database Design

The database consists of two main tables:

Students Table: Stores StudentID and StudentName.

Attendance Table: Stores AttendanceID, StudentID, Date, AttendanceStatus, LoginTime, LogoutTime, DurationMin.

Sample SQL queries:

```
-- Count total present students
SELECT SUM(AttendanceStatus) AS PresentCount
FROM Attendance
WHERE Date = '2025-01-01';

-- Attendance per student
SELECT StudentID, SUM(AttendanceStatus)
FROM Attendance
GROUP BY StudentID;
```

8 Results and Discussion

The time-series analysis indicates trends in student attendance. Certain days show lower participation, possibly due to weekends or holidays. This data can help teachers plan reminders or interventions.

9 Conclusion

The project successfully implements an ICT-based LMS for attendance management. The system captures attendance data, analyzes trends using time-series charts, and provides a foundation for further automation and reporting.

10 References

References

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