

Mess Management System: A Web-Based Solution for Hostel Meal Automation

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Abstract - The Mess Management System is a web-based application designed to automate and streamline hostel mess operations. Traditional mess management systems rely heavily on manual record keeping, which often results in errors in meal attendance, bill calculation, and feedback collection. This system provides a centralized digital platform where students can register, view daily menus, mark meal attendance, and submit feedback online. Administrators can efficiently manage student records, update menus, monitor daily attendance, and generate monthly mess bills automatically. The system is developed using Java for backend processing and PostgreSQL for database management, ensuring accuracy, security, and scalability. By reducing paperwork and minimizing human intervention, the proposed system improves transparency, operational efficiency, and overall student satisfaction in hostel mess management.

Key Words: Mess Management System, Web Application, Meal Attendance, Billing System, Java, PostgreSQL.

1. INTRODUCTION

Hostel mess management plays a crucial role in ensuring proper food distribution and student satisfaction. In many institutions, mess operations are still handled manually using registers and paperwork. This traditional approach often leads to inaccurate attendance records, delayed billing, lack of transparency, and food wastage. As the number of students increases, manual management becomes inefficient and difficult to monitor.

The Mess Management System aims to overcome these challenges by providing a digital solution that automates daily mess activities. Through a web-based platform, students and administrators can interact with the system easily. Students can check menus, mark attendance, and give feedback, while administrators can track attendance, manage menus, and generate bills. The system improves accuracy, saves time, and supports better decision-making for hostel authorities.

2. PROBLEM STATEMENT

Hostel mess management in many educational institutions is still carried out using manual methods such as registers and paperwork. These traditional systems make it difficult to maintain accurate meal attendance records and often result in errors during monthly mess bill calculations. Manual handling of data also leads to delays, lack of transparency, and frequent disputes between students and mess authorities.

Additionally, there is no effective system to monitor food consumption or collect structured feedback from students regarding food quality. Due to the absence of real-time data, mess administrators face challenges in reducing food wastage and planning meals efficiently. As the number of students increases, managing mess operations manually becomes time-consuming, inefficient, and prone to human errors.

Therefore, there is a strong need for a web-based Mess Management System that can automate meal attendance, billing, menu management, and feedback collection. Such a system can improve accuracy, reduce paperwork, enhance transparency, and provide an efficient solution for managing hostel mess operations.

3. RELATED WORK

3.1 Existing Manual Mess System

Traditional hostel mess management systems are mostly manual and paper-based. Attendance is recorded using registers, and monthly bills are calculated manually. This often leads to errors, delays, lack of transparency, and disputes between students and management. There is no proper mechanism to collect student feedback or monitor food wastage efficiently.

3.2 Digital Attendance Management Systems

Many institutions use digital attendance systems for classrooms and offices. These systems improve accuracy and reduce paperwork. However, most of them are not designed specifically for mess management and do not support meal-wise attendance or automatic bill generation.

3.3 Online Billing and Payment Systems

Online billing systems are widely used in utility services and subscriptions. These systems automate calculations and reduce human errors. Similar concepts can be applied to mess billing, where attendance data is used to generate monthly bills automatically.

3.4 Feedback Collection Platforms

Digital feedback systems are commonly used in educational institutions and service industries. They help organizations understand user satisfaction and improve service quality. Integrating feedback into mess management helps improve food quality and student satisfaction.

4. OBJECTIVES

- To maintain accurate daily meal attendance of students
- To automate monthly mess bill calculation

- To reduce food wastage through systematic monitoring
- To provide a digital platform for student feedback
- To minimize manual work and paperwork
- To improve transparency in hostel mess operations

5. FUTURE SCOPE

- Online payment integration (UPI / Debit / Credit cards)
- Mobile application for students and mess staff
- AI-based food demand prediction to reduce food wastage
- Notification system for daily menu and bill alerts
- Integration with hostel management system
- Multi-mess support for large campuses

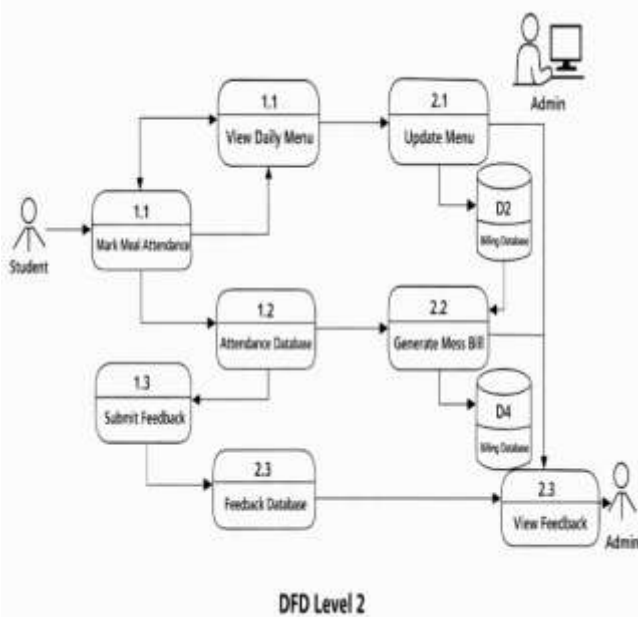
6. KEY FEATURES

- Online student registration and login system
- Daily menu display for students
- Meal attendance marking (Breakfast/Lunch/Dinner)
- Automatic monthly mess bill generation
- Admin panel for menu, attendance, and billing management
- Student feedback system for food quality
- Reduced paperwork and manual errors

7. PROCEDURE

7.1 Methodology

7.1.1 DFD Level 2



A Data Flow Diagram (DFD) Level-2 represents the detailed working of the Mess Management System by clearly showing how data flows between students, administrators, internal processes, and the centralized database. This level explains the internal sub-processes involved in managing daily mess activities in a structured and systematic manner.

The process begins when a student accesses the system through a secure login interface. After successful authentication, the student can view daily menus, mark meal attendance, check monthly mess bills, and submit feedback. All student-related requests such as attendance details, meal selection, and feedback are processed by the system and stored securely in the

Centralized PostgreSQL Database. This ensures accurate record-keeping and real-time availability of data.

On the administrative side, the admin logs into the system using authorized credentials. The admin is responsible for managing student records, updating daily menus, verifying attendance, generating monthly bills, and reviewing feedback submitted by students. Admin actions such as menu updates, attendance approval, and bill generation are processed internally and stored in the database for future reference.

The Centralized Database plays a crucial role in the system as it acts as the single source of truth. It stores student profiles, attendance records, menu details, billing information, and feedback data. Both student and admin modules interact with this database to retrieve or update information, ensuring consistency, transparency, and data integrity.

Overall, the DFD Level-2 demonstrates a clear separation of roles between students and administrators while maintaining smooth data flow through a centralized system. By automating mess operations and minimizing manual work, the Mess Management System improves efficiency, reduces errors, and provides a reliable platform for managing hostel mess activities effectively.

8. CONCLUSION

The Mess Management System successfully automates hostel mess operations by replacing manual processes with a digital solution. The system improves accuracy in attendance tracking, reduces errors in billing, and provides transparency in mess management. By integrating feedback collection and automated reports, the system enhances student satisfaction and helps reduce food wastage. The project demonstrates how web-based technologies can effectively improve institutional services.

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10. REFERENCES

1. A. Silberschatz, H. F. Korth, and S. Sudarshan, *Database System Concepts*, 6th ed., New York: McGraw-Hill, 2011.
2. R. S. Pressman and B. R. Maxim, *Software Engineering: A Practitioner's Approach*, 8th ed., New York: McGraw-Hill, 2015.
3. I. Sommerville, *Software Engineering*, 10th ed., Boston: Pearson Education, 2016.
4. S. Laudon and K. Laudon, *Management Information Systems: Managing the Digital Firm*, 15th ed., Pearson Education, 2018.
5. Oracle Corporation, "Java Platform, Standard Edition Documentation," [Online]. Available: <https://docs.oracle.com/javase/>
6. PostgreSQL Global Development Group, "PostgreSQL Official Documentation," [Online]. Available: <https://www.postgresql.org/docs/>
7. P. Jalote, *An Integrated Approach to Software Engineering*, 3rd ed., Springer, 2010.
8. W3C, "HTML, CSS and JavaScript Specifications," [Online]. Available: <https://www.w3.org/>
9. K. Kendall and J. Kendall, *Systems Analysis and Design*, 9th ed., Pearson Education, 2019.