Daycare HQ: A Daycare Management System.

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***Abstract*— The Day Care Management System Project is an essential software designed to streamline the operations of day care centers by storing data such as child and caregiver personal information and scheduling data. The system helps center directors or administrators to have a better understanding of the day care center's activities and helps them to plan and manage staff schedules to optimize the utilization of resources and improve the quality of service provided. The project provides a centralized system that makes it easy to manage day-to-day activities such as scheduling, attendance tracking, billing and payments, and communication with parents. With this system, parents can easily access information about their child's activities, attendance, and progress, making it easier for them to stay connected with the day care center.**

The Day Care Management System Project gives appropriate directions and supervision for caregivers and ensures that they provide the best care for children under their supervision. It also secures and manages information that is important to parents, including their children's personal and medical information. Overall, the Day Care Management System Project serves as a valuable resource for day care centers, providing them with the necessary infrastructure to manage their operations efficiently and effectively. It improves the quality of service provided and ensures that children under their care receive the best possible care.

***Keywords*—** Day care management system, scheduling, attendance tracking, billing and payments, communication, child information, caregiver information, staff scheduling, resource optimization, quality of service, parental engagement, supervision, information management, centralized system.

I. Problem Description

Day care centers face numerous challenges in managing the care and education of children. Without a streamlined system for managing day-to-day operations, such as attendance tracking, meal plan management, and activity scheduling, staff can become overwhelmed, leading to reduced quality of care and education.

Additionally, communication between staff and parents can be difficult, leading to frustration and confusion on both sides.

II. Analysis (Related Work)

The day care industry has seen tremendous growth in recent years, with an increasing number of parents opting to enroll their children in day care centers [1]. However, managing a day care center's operations can be challenging, especially when relying on manual processes and procedures. This has led to the development of software solutions that automate day care operations, making it easier for center directors or administrators to manage their facilities' activities.

Previous works have focused on developing software solutions that address various aspects of day care operations such as attendance tracking, scheduling, and communication with parents [2][3]. However, these solutions have been limited in their scalability and usability, with some requiring significant technical expertise to operate effectively.

One of the shortcomings of existing solutions is the lack of user-friendly interfaces, which can make it difficult for caregivers and parents to access and use the system effectively [4]. This has led to a need for more user-friendly solutions that provide easy access to critical information and functionality.

Recent studies have shown that incorporating object-oriented programming concepts such as class definition, inheritance and polymorphism, and interfaces can enhance the scalability and maintainability of software solutions [4]. Furthermore, the use of data structures such as stacks, queues, sets, and lists, as well as the collections framework, can provide a scalable and efficient system that can manage vast amounts of data effectively [2].

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III. System Design

The Daycare Management System is designed using the Model-View-Controller (MVC) architectural pattern. The MVC pattern seperates the application into three main components - Model, View, and Controller.

The Model component represents the data and business logic of the system. It contains classes such as AlertsModel, AttendanceModel, ChildModel, FeeModel, and HolidayModel. These classes represent the data entities of the system, such as alerts, attendance, children, fees, and holidays. The Model component also handles the interaction with the data files using the FileIO class.

The View component represents the user interface of the system. It contains the FXML files, such as AdminDashboard.fxml, Login.fxml, NewAlerts.fxml, NewChild.fxml, Alerts.fxml, Announcements.fxml, UserDashboard.fxml, Attendance.fxml, Children.fxml, Departments.fxml, Home.fxml. These FXML files are responsible for displaying the data to the user and receiving user input.

The Controller component acts as the mediator between the Model and View components. It contains classes such as Controller, AlertsController, LoginController, NewAlertsController, NewChildController, AttendanceController, ChildController, DepartmentsController, FeeController, and UserDashboard. These classes handle the user input and update the Model and View accordingly.

Figure 1. Application Flow Diagram

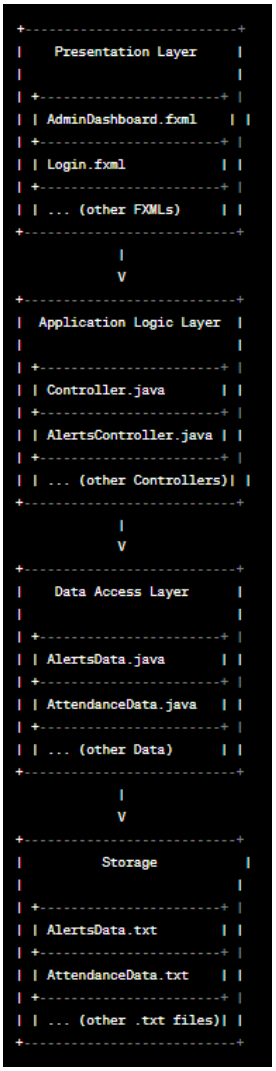

Figure 2. System Architecture Diagram

IV. Implementation

The Daycare Management System is designed using JavaFX, which allows for the creation of rich and interactive user interfaces. The implementation can be divided into two parts: Frontend and Backend.

Frontend:

The frontend of the Daycare Management System consists of the presentation layer, which includes FXML files for creating the user interface. JavaFX's Scene Builder tool can be used to design the layout of these FXML files, which define the structure and appearance of the application's windows, dialogs, and controls (e.g., buttons, text fields, tables, etc.).

The frontend has the following primary components:

Login Screen: Allows parents and admins to log in to the system.

Admin Dashboard: Presents an overview of the daycare, including child records, announcements, attendance, activities, and fee revenue.

Parent Dashboard: Allows parents to view their child's profile, mark attendance, and view announcements and activities scheduled by the daycare.

Each FXML file is associated with a controller class that handles user interactions, such as button clicks or data entry.

Backend:

The backend of the Daycare Management System consists of the application logic and data access layers, implemented using Java classes.

Application Logic Layer (Controller): The controller classes handle the business logic of the application. They process user inputs, interact with the data access layer to read and write data, and communicate with the frontend to display results. These classes include Controller.java, AlertsController.java, LoginController.java, NewAlertsController.java, NewChildController.java, AttendanceController.java, ChildController.java, DepartmentsController.java, FeeController.java, and UserDashboard.java.

Data Access Layer (Model and Data): This layer includes model classes that represent the data objects in the application and data classes responsible for reading and writing data to text files. The data package contains classes like AlertsData.java, AttendanceData.java, FeeData.java, and ChildData.java, while the model package includes classes like

AlertsModel.java, AttendanceModel.java, ChildModel.java, FeeModel.java, and HolidayModel.java.

The backend uses FileIO to read and write data from text files (AlertsData.txt, AttendanceData.txt, ChildData.txt, FeeData.txt), which serve as the storage medium for the application data.

The frontend and backend are connected through the controller classes, which act as a bridge between the user interface and the application's data and logic.

V. Evaluation

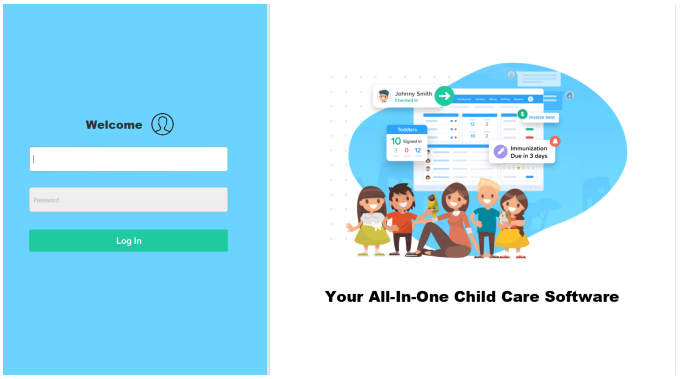

Figure 3. Login Screen

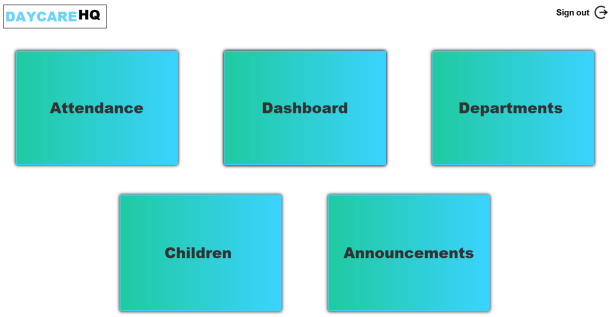

Figure 4. Admin Portal: Homepage of the admin portal from where admin can manage different operations

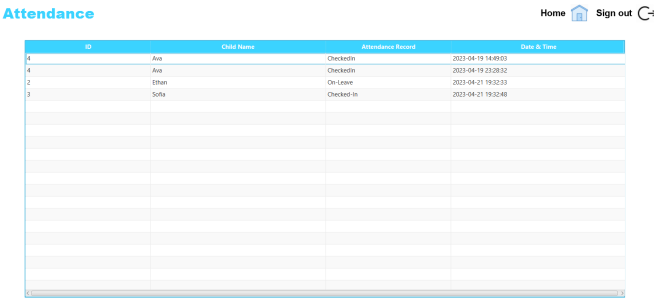

Figure 5. Attendance Screen: Admin can keep track of checked-In children and also the children who are on leave

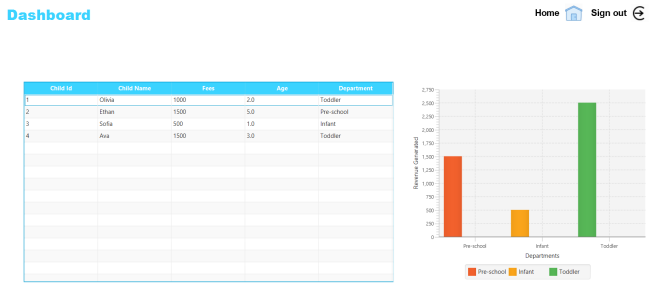

Figure 6. Admin Dashboard: To view the children record based on different departments and a bar graph to represent the fee revenue generated by each department

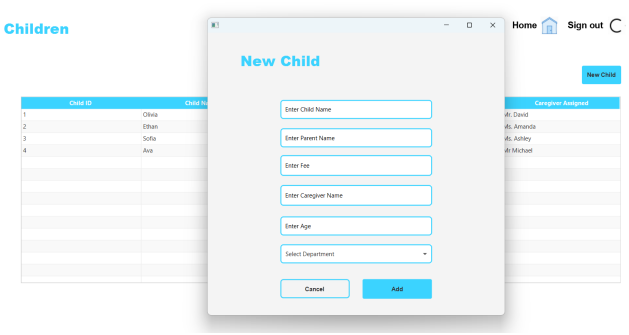

Figure 7. Add New Child: Form to add a new child

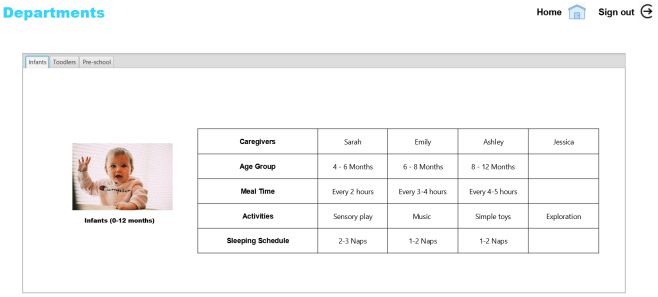

Figure 7. Departments portal: All the relevant information related to each department is present in this section

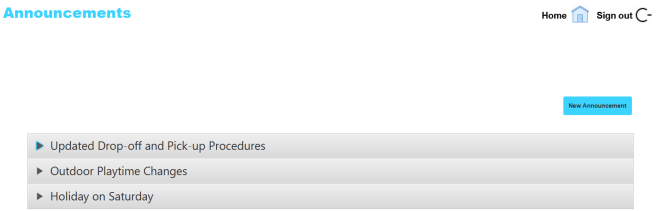

Figure 8. Announcements: Admin can manage daycare announcements in this section

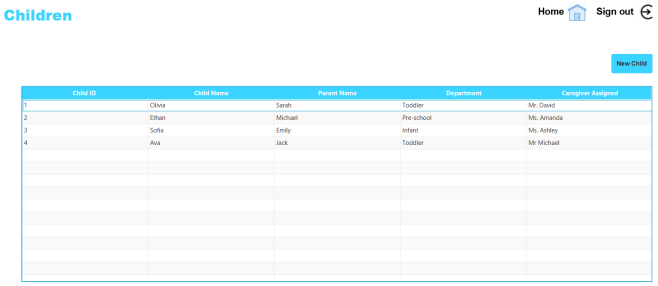

Figure 6. Manage Children: Admin can manage children in this section

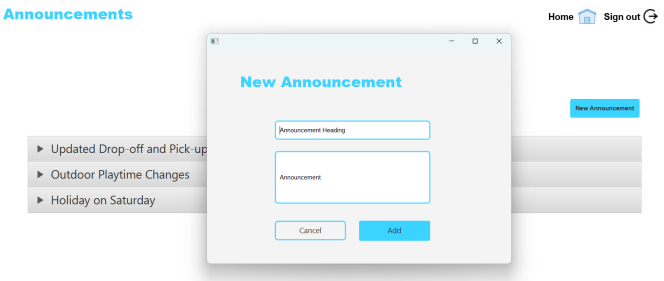

Figure 9. Add New Announcement Form

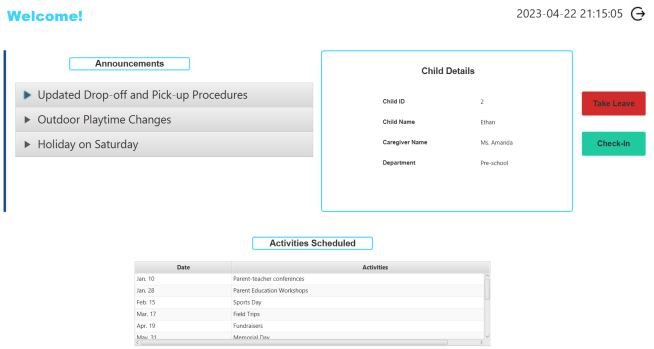

Figure 10. Parent Portal: A separate portal for parents to keep track of day to day activities and announcements published by the daycare.

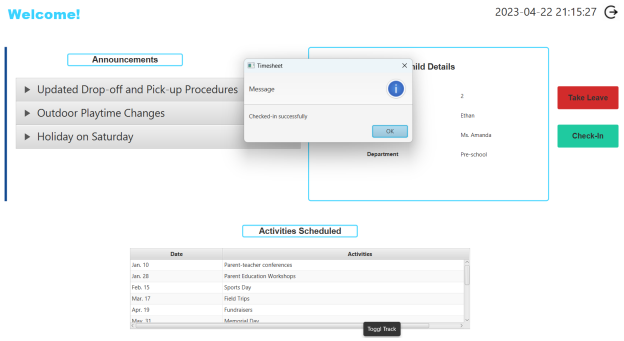

Figure 11. Child Check-in: Parent can also mark their child as checked-in or on-leave

VII. Discussion (Reflection)

The implementation of the Daycare Management System will yield positive results and benefits for both daycare staff and parents. The system will provide an efficient way to manage attendance records, schedules, and announcements, as well as track revenue generated by different departments.

One of the primary benefits of the system is its ability to provide real-time updates and notifications to parents regarding their child's attendance and schedule. This will help parents to stay informed and plan their daily schedules accordingly. Additionally, the ability to mark attendance through the Parent Portal will streamline the process for both parents and daycare staff, saving time and reducing the chances of errors.

The Revenue Dashboard will provide daycare administrators with insights into the performance of different departments and help them identify areas for improvement. This will result in more efficient management of resources and better planning for future growth.

Another notable benefit of the system is its ability to provide a secure login for daycare staff and a separate portal for parents. This will help maintain confidentiality and security of sensitive information, ensuring that only authorized personnel have access to it.

Overall, the Daycare Management System will be a valuable tool for managing daycare operations, improving communication between daycare staff and parents, and providing insights into the performance of different departments. The system will streamline processes, save time, and increase efficiency, ultimately resulting in improved outcomes for both daycare staff and parents.

VIII. Conclusions and Future Work

the implementation of the Daycare Management System will bring several benefits for both daycare staff and parents. The system will streamline processes, save time, and increase efficiency, resulting in improved outcomes. Some of the main advantages of the system include real-time updates and notifications for parents, streamlined attendance tracking, a revenue dashboard for administrators, and improved security of sensitive information.

While the project has identified several problems and challenges in the current daycare management systems, there may be additional problems that were not explored due to time constraints. However, the implementation of the proposed solution will address the identified problems and improve the overall management of daycare operations.

Given more time, there are several improvements that could be made to the Daycare Management System. For instance, the system could be integrated with other tools, such as billing and payment processing systems. Additionally, the system's UI design could be further refined to provide an even more intuitive and user-friendly experience for both daycare staff and parents. Finally, the system's analytics and reporting capabilities could be enhanced to provide even more detailed insights into daycare operations and performance.

IX. Job Assignment

Rohit Nawani - Backend implementation of Admin Dashboard and Announcements, Children Management, Front-end design and implementation of the announcement feature, Backend logic for managing parent accounts, Requirement gathering and testing, PowerPoint presentation and report (editing and review)

Utsav Chadha - UI design using Scene Builder (login screen, children management screen, etc.), Front-end design and implementation of the admin dashboard, Backend logic for attendance management, Backend logic for managing departments, Backend logic for managing children's data and Parent Portal, Requirement gathering and testing, PowerPoint presentation and report (editing and review)

Sanjit Ramesh Kavitha- UI design using Scene Builder (dashboard screen, parent portal), Front-end design and

implementation of the attendance management feature, Front end design and implementation of the parent portal, Backend logic for sending and receiving announcements, Documentation, Requirement gathering and testing, PowerPoint presentation and report (editing and review)… …

References

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