DAYCARE BUDDY

Daycare Attendance System with RFID & SMS Technology

Project Vision Document

Version 0.1

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Revision History

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0.1	09/30/2024	Jam Furaque	Kei Ishikawa	Updated stakeholder and descriptions section.
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Document Approval List

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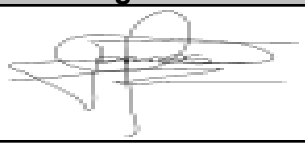
0.1	Jam Furaque		Sep. 30, 2024
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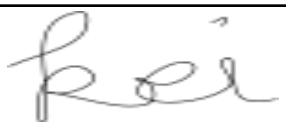
0.1	Kei Ishikawa		Oct. 1, 2024
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Table of Contents

1 Introduction....4
1.1 Purpose....4
1.2 Scope....4
1.2.1 In Scope....4
1.2.2 Out of Scope....4
1.3 Definitions, Acronyms, and Abbreviations....4
1.4 References....5
2 Positioning....6
2.1 Business Opportunity....6
2.2 Problem Statement....6
2.3 Product Position Statement....6
2.4 SWOT Analysis....6
3 Stakeholder and User Descriptions....7
3.1 Stakeholder Summary....7
3.2 User Summary....7
4 Stakeholder Requirements....8
5 System Features....8
6 Assumptions....8
7 Constraints....8

1 Introduction

This document provides a high-level overview of the “Daycare Attendance System with RFID & SMS notification Technology” project, detailing its purpose, scope, stakeholder requirements, and key system features. This document is intended to guide the development and implementation of the RFID-based attendance system, ensuring clear communication among stakeholders and providing a reference for the project team.

1.1 Purpose

The purpose of this Project Vision Document is to define the goals and objectives of the “Daycare Attendance System with RFID & SMS notification Technology.” The project aims to address the issues faced by daycare centers in managing attendance and ensuring security by implementing an automated RFID system with real-time SMS notifications.

1.2 Scope

The project will develop a system that automates attendance tracking for toddlers in daycare centers using RFID technology, integrated with an SMS notification service.

1.2.1 In Scope

- Development of the front-end interface using the MERN stack.
- Integration of RFID technology for attendance tracking.
- SMS notification system to inform parents about their child’s arrival and departure.

1.2.2 Out of Scope

- Procurement and physical setup of RFID hardware.
- Management of SMS subscription service and associated costs.

1.3 Definitions, Acronyms, and Abbreviations

<This subsection provides the definitions of all terms, acronyms, and abbreviations required to properly interpret the Project Vision document. This information may be provided by reference to the project's Glossary>

This section explains all of the terms and abbreviations that are being used in this document, for those who are unfamiliar with them. Not everybody who reads this document will understand all of the terms, so this section is helpful.

Term	Explanation
RFID	Radio-Frequency Identification is a technology that uses radio waves to read information from a tag—like an ID card—without needing direct contact. In our daycare, each child has an RFID card they tap when they enter or leave. This makes tracking attendance quicker and more reliable, and it helps us keep parents updated easily.
MERN	MERN is a set of technologies used to build web applications. It stands for **MongoDB, Express, React, and Node.js**. **MongoDB**: A database where we store data. **Express**: A back-end web framework that helps manage servers and routes. **React**: A front-end library used to build user interfaces, making the app interactive. **Node.js**: A JavaScript runtime that lets us run JavaScript on the server side. Together, these tools help us build full-stack applications where everything is written in JavaScript, making the process smoother and more efficient.
SMS	**SMS** stands for **Short Message Service**—basically, text messaging. We're using SMS to send quick notifications to parents when their child arrives or leaves daycare, so they're always updated.

1.4 References

<This subsection provides a complete list of all documents referenced elsewhere in the Project Vision. Identify each document by title, report number if applicable, date, and publishing organization. Specify the sources from which the references can be obtained. This information may be provided by reference to an appendix or to another document>

Reference File Name	Version	Description
RFID Attendance System Research	1.0	Research paper on implementing RFID for attendance tracking
SMS API Documentation	1.0	Documentation on the SMS service API integration
MERN Stack Tutorial	1.0	MongoDB tutorial on implementing the MERN stack

This section also contains links to all other places that were referred to in this document. These may include:

- *Web sites*
- *URLs or network locations*
- *Research done for similar products*

Name	Link
RFID Research Paper	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3872592/
SMS API Documentation	https://documenter.getpostman.com/view/7705958/Uyr7Hydn https://www.twilio.com/docs
MERN Stack Documentation	https://www.mongodb.com/resources/languages/mern-stack-tutorial

2 Positioning

2.1 Business Opportunity

Daycare centers currently face challenges in managing attendance and ensuring child safety. By developing a reliable and automated attendance system, this project will improve operational efficiency and provide peace of mind to parents, enhancing trust and satisfaction.

2.2 Problem Statement

< Provide a statement summarizing the problem being solved by this project. The following format may be used>

The Problem of	Manual attendance and poor communication at daycare centers
affects	Daycare staff and parents of enrolled children
the impact of which is	Increased administrative workload, potential miscommunication, and security risks for toddlers
a successful solution would be	An automated system that tracks attendance, improves security, and provides real-time notifications to parents

Table 1 Problem Statement

2.3 Product Position Statement

< A product position statement communicates the intent of the application and the importance of the project to all concerned personnel >

For	Daycare centers and parents
Who	Need a secure and efficient way to track attendance
The Daycare Buddies	is a Daycare Attendance System with RFID & SMS notification Technology
That	Automates tracking and communicates directly with parents through SMS
Unlike	Manual logbooks and unreliable tracking methods
Our product	Ensure real-time updates, better security, and reduced administrative burden

Table 2 Product Position Statement

2.4 SWOT Analysis

<Reference: https://www.businessballs.com/strategy-innovation/swot-analysis/)

Strengths	Weaknesses
Automated, accurate attendance tracking	Reliance on SMS service providers
Real-time communication with parents	Cost of RFID hardware setup
Opportunities	**Threats**
Market demand for secure daycare systems	Technical issues with RFID integration
Expanding into other daycare centers	Competitors may offer similar products

3 Stakeholder and User Descriptions

Stakeholder	Role	Responsibility	System Interaction
Daycare Owner	Oversees the entire daycare operation.	Monitor daycare's performance including attendance, staff efficiency and parent satisfaction.	Access to high-level reports and dashboards to track daycare's overall performance.
Daycare's Administrator	Manages day-to-day operations of the daycare, including attendance tracking, managing staff schedules and ensuring that the daycare runs smoothly.	Use the system to register children, staff members and manage attendance records. They can also update student and parent information and oversee the correct usage of RFID cards for attendance.	Full access to the system inducing adding and managing users, viewing attendance logs and generating detailed reports.
IT Admin	Handles technical management of the daycare including permissions and maintenance.	Manage system configurations, maintain the database and provide technical support to daycare staff. They are also the ones who ensure that the system is secure and functional.	Manage system-level settings such as adding new staff users, configuring SMS notifications and managing data backups.
Daycare Staff / Teacher	Responsible for managing children during daycare hours. They interact with the system to track attendance and ensure that children are checked in and out properly.	Monitors every parent/guardian to make sure that children's RFID cards are properly used to mark attendance when children arrive or leave.	Access to view attendance records, manage daily check-ins/outs and assist parents or guardians with using their child's RFID cards.
Parent / Guardian	Main recipients of the attendance notifications provided by the system.	Receive SMS notifications about their child's attendance status when the child arrives at or leaves the daycare.	Do not directly interact with the system's interface, but they receive real-time SMS updates when their child is checked in or out.

Children / Toddlers	Individuals whose attendance is being tracked.	Enter / leave the daycare while their parents or guardians make sure that their RFID is being tapped.	They do not interact directly with the system but instead, tapping their own RFID cards will automatically log their attendance in the system.

3.1 Stakeholder Summary

< There are a number of stakeholders with an interest in the development and not all of them are end users. Describe and list the project stakeholders>

Stakeholder Name	Represents	Role
<Name the stakeholder type >	< Briefly describe what the stakeholder represents with respect to the project >	< Briefly describe the role the stakeholder will play throughout the lifecycle of the project.>
Daycare Owner	Business stakeholders	Oversees overall operations and ensures project alignment with business objectives
Daycare Administrator	System users	Manages day-to-day operations, including attendance tracking and staff schedules
IT Admin	Technical stakeholders	Handles technical management, database configuration, and provides support
Daycare Staff / Teachers	End users	Use the system to track attendance and assist with RFID card use for children
Parents	End users	Receive real-time SMS notifications regarding their child’s attendance

Table 3 Stakeholder Summary

3.2 User Summary

Present a summary list of all identified users of the system

User Name	Description	Responsibilities	Stakeholder
[Name the user]	[Briefly describe what they represent with respect to the system.]	[List the user's key responsibilities with regard to the system being developed; for example: captures details produces reports coordinates work and so on]	[If the user is not directly represented, identify which stakeholder is responsible for representing the user's interest.]
Daycare Owner	Oversees the daycare's overall operations	Monitor performance, review reports, make high-level decisions.	Daycare Owner
Daycare Administrator	Manages the day-to-day system activities	Register children, maintain schedules, manage data, and generate reports	Daycare Owner
IT Admin	Manages the technical side of the system	Configure and maintain the system, handle backups, provide technical support	Daycare Owner
Daycare Staff / Teachers	Use the system during daycare hours	Track attendance, assist with RFID usage, and ensure children's safety	Daycare Administrator
Parent / Guardian	Receives attendance notifications for their child	Monitor child's daycare attendance through SMS notifications	Parents

Table 4 User Summary

4 Stakeholder Requirements

< Categorize and list the requirements from the perspective of the business stakeholder and potential system users >

ID	Requirement	Stakeholder
1 SR001-OWN	Automated attendance tracking using RFID	Daycare Owner
2 SR005-PAR	Real-time SMS notifications for parents	Parents / Guardian
3 SR004-DEV	Secure and reliable database for attendance records and smooth application for less maintenance.	IT Admin
4 SR002-ADMIN SR003-STF	User interface for system access and reporting	Daycare Administrator, Staff,
5 SR001-OWN	Must have access to a summary of attendance data for all students.	Daycare Owner

Table 5 Stakeholder Requirements

5 System Features

< List and briefly describe the system features. Features are the high-level capabilities of the system that are necessary to deliver benefits to the users. Avoid design. Keep feature descriptions at a general level. Focus on capabilities needed and why (not how) they should be implemented >

ID	Feature	Stakeholder Requirement ID
1 SF001	RFID-based attendance tracking	1 SR002-ADMIN SR003-STF SR005-PAR SR001-OWN
2 SF002	SMS notification integration for parents	2 SR002-ADMIN SR003-STF SR005-PAR SR001-OWN
3 SF003	Secure cloud-based database for attendance	3 SR002-ADMIN SR004-DEV SR001-OWN
4 SF004	User-friendly interface for staff and admin access	4 SR002-ADMIN SR003-STF SR001-OWN

Table 6 System Features

6 Assumptions

<List all assumptions made about any of the content provided in this document. Assumptions should be applicable to the scope, desired solution, requirements, business process, and stakeholders >

- *Daycare centers will provide RFID cards for each toddler.*
- *Parents have mobile phones capable of receiving SMS notifications.*
- *The daycare facility will have internet access to enable the system to operate effectively.*

7 Constraints

<List any process constraints, external constraints or other dependencies >

- *Reliance on third-party SMS providers for notifications.*
- *Hardware and testing of RFID systems are managed by the internal team.*
- *Data privacy regulations must be adhered to in managing the database.*