Software Requirements Specification

for

Employees Attendance Tracker System

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1.Introduction

1.1.Purpose

The purpose of this document is to present a detailed description of the online attendance system . It will describe the purposes and features of the system, its interfaces, what the system will perform, the constraints that must be met for it to function, and how the system will respond to outside stimuli. This document is intended for both the stakeholders and the developers of the system.This document also functions as a blueprint for completing a project with as little cost growth as possible.It is basically to present an organization's written understanding of a customer or potential client's system requirements and dependencies at one specific time (usually before any actual design or development work).

1.2. Product Scope

The purpose of the online attendance system is to ease managing and tracking employee attendance. The system aims to provide an online attendance tracking solution that captures real-time data for accurate employee attendance management. It allows employees to record their attendance by check in and check out through the unique company ID, identity information and appropriate verification method (face print - finger print - voice), which will be accepted only if the employee is in the same company location, the dashboard will depict the employees' attendance including check-in/check-out times, leaves, and absences. In addition, the system includes leave management features that enable the employee to request an emergency leave through the system to the manager, which has the validity to accept or reject the excuse after reviewing. Employees also have the ability to send an excuse for being absent from work that will be reviewed and checked by the manager. Using the employees' attendance data the system has the ability to calculate their overtime. The custom work schedule can be established by the manager that contains a calendar for workdays and holiday days (time and date). So that the system accurately calculates and records work hours on workdays and rest days. New employees of the company can register their data in the system and then have it reviewed and accepted by the manager. Attendance and employee information is securely stored in the cloud.
The online attendance system reduces the cost compared to traditional attendance systems, readily available and quickly accessible information, and document security. Due to the effectiveness and efficiency of implementing this online attendance system, this SRS document is aimed at specifying the requirements of software to be developed and it also to be applied.

1.3. structure

1. Introduction : in this section we will produce the overall description of this Document.

2. System Overview : this section produce General View about our System feature Assumptions and people roles.

3.Functional Requirements :in this part will show the Functional requirements define the specific behaviors and functionalities that our software system should exhibit. These describe the system's capabilities and specify how it should respond to different inputs or stimuli.

4.External Interface Requirements :this section produces different types of interface functions which are user, software, hardware and communication interface.

5.Non-functional Requirements : this part will show A non-functional requirement is a quality attribute of a software system. They represent a set of standards used to judge the specific operation of a system. It is essential to ensure the usability and effectiveness of the entire software system.

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2. System Overview

2.1. Product Perspective

Employees Attendance Tracker System is online attendance system captures real-time data for accurate employee attendance , as anyone use software can easily track their employees by Dashboard that display data for check in and check out , leave and absent .
The HR can Manage leaves (holidays, legal leaves and sick days) By employee re- questing leave through the system. So employees can easily interact with the system by request registration through the company ID and then the HR can accept their request.
For example : the company X has Unique ID x011 (can not be duplicated by other company) so the employee when join to the system the first step must be enter the ID of company " x011 " and then he can easily register by enter personal information and then choose the way that can be attend either by (voice - fingerprint - or face print), and the attendance information will be saved on cloud.

2.2. Product Features

1. Online attendance system
2. Advanced face recognition technology
3. Live location attendance
4. Real-time timesheet updates
5. Detailed attendance and absence analytics
6. Notification reminder“ By phone Number or Email “
7. Calculate overtime “Each additional work time will compute “
8. manage employee leave days “Manager can accept or deny employ leaves ”
9. create a custom work schedule and Set up a holiday calendar to accurately monitor worked hours on work days or rest days.
10. Easily access statistics timesheets as well as check each employee's attendance by dashboard “the statistics will be appear when manager enter the system ”

2.3.User Roles and Characteristic

1-Administrator : This user has the highest privilege and can perform any activities on the system, including accepting and deleting users - and even deleting all the data. Assign this privilege only to highly trusted individuals. This user allows to use "administrator version”.

Also has the ability to receive excuses of absence submitted by employees, as well as accept and reject requests for leaves .

2-Employee : This user can only use the system to create an account and able to perform allowed activity like checkin - checkout and, send excuse and requests for leaves. This user cannot accept /delete an existing account or using the Administrator version.

2.4.Operating Environment

2.4.1.The supported operating systems for client include :

- Windows XP/7/8/10/11
- Mac OS
- Linux Ubuntu/Mint act
- Android/iOS/Windows

2.4.2Web Browser

- Google Chrome
- Mozila FireFox
- Internet Explorer
- Safari

2.5.Assumptions and Dependencies

2.5.1.Assumptions

- The recognition module has to be very accurate in recognizing that is comparing the detected ”face print- voice-fingerprint” with the “faceprin-voice-fingerprint” fetched from the cloud data. So it was assumed that the recognition module will correctly recognize all the faces ,voice and fingerprint from the uploaded data so that a correct attendance is produced.
- We assume that the time employee recorded attendance that will appear on the dashboard the system.

2.5.2.Dependencies

1. Each company has a unique ID for ex.(X011). This ID is essential for the employees to register and access to their company system. The uniqueness of the company ID is a dependency to ensure proper identification and segregation of employee data.

2. System uses cloud storage to securely store and manage attendance information, such as check-ins, check-outs, leave logs and absence.
3. To operate properly, the system requires a stable internet connection so employees can access it and access attendance-related functions.
4. Employee leave requests submitted through the system must be reviewed and approved by manager personnel. Management of leaves and absences depends on the availability and responsiveness of the manager.

2.6.Requirement collection and Gathering

2.6.1.Requirements Engineering

Requirements engineering plays a crucial role in the software development process by ensuring that the software system meets the needs and expectations of its stakeholders. The importance of requirements engineering:

1. Understanding Stakeholder Needs: Requirements engineering helps in eliciting and understanding the
   needs, expectations, and constraints of various stakeholders, including users, customers, and business owners. It facilitates effective communication and collaboration between stakeholders and the development team.
2. Defining System Functionality: By analyzing and documenting requirements, the development team gains a clear understanding of the desired functionality of the software system. This helps in defining what the software should do, how it should behave, and what features it should include.
3. Scope Management: Requirements engineering helps in defining the scope of the software project. It establishes boundaries and identifies the features and functionalities that are within the project's scope.
4. Minimizing Rework and Cost Overruns: Clearly defined and well-understood requirements minimize the chances of misunderstandings and misinterpretations. This reduces the need for rework and costly changes later in the development process. By addressing requirements-related issues early on, requirements engineering helps in controlling costs and avoiding budget overruns.

The purpose of this section is to outline the plan for requirements engineering and provide a comprehensive overview of the methods used for gathering, analyzing, and validating requirements in the software development process. In order to ensure an organized and systematic approach to requirements engineering, this section serves as a guide to the development team and stakeholders involved in the project. By clearly defining the methods for gathering requirements. The document ensures that all relevant stakeholders' perspectives are considered. It also outlines the techniques for analyzing requirements. In order to ensure that the requirements are well understood, feasible, and consistent. Furthermore, the document highlights the methods for validating requirements, to verify that the software system meets the specified requirements.

2.6.2.Requirements Gathering

In requirements gathering process we identifying and defining what a software system needs to do to meet the needs of its users. It involves stakeholder interviews to gain insight and analyzing user needs, and defining clear specifications that developers can use to build the system.

A number of stakeholders are involved in the development of the software system, including:

1. End-Users (Employees): The employees of the company who will be using the attendance tracking system to record their attendance, request leaves, and interact with the system for various purposes.
2. Manager in HR department: The manager is a key stakeholder as he responsible for managing employee
   leaves, reviewing and approving leave requests, and ensuring accurate attendance data.
3. System Administrators: The system administrators are responsible for managing user accounts, system
   configurations, access controls, and system-level settings. They ensure that the system operates smoothly
   and securely.
4. Software Developers: The developers who design, develop, and maintain the attendance tracking system
   are also stakeholders. They are responsible for implementing the required features, ensuring system
   functionality, and addressing any technical issues that may arise.

5. Compliance and Legal Team: The compliance and legal team will be stakeholders if the system needs to
   adhere to any regulatory requirements or data privacy laws. They ensure that the system complies with applicable regulations and protects employees' personal information.

In order to understand what the system should provide and its constraints we develop a set of well-defined and open-ended questions that will guide the interview process and help elicit the necessary information. These questions like:
-Whats the problem the system will solve and whats the challenges currently faced in managing employee attendance and leave management ?
-Who are the users of the system?What are trying to help them achieve?
-Whats methods or technologies are currently in use for attendance tracking?
-What information you need to capture when employee request a leave or send an absent excuse? is there specific field or documentation?
-Do you anticipate any integration needs with other systems or databases?
-Are there any constraints? If yes, what are they?
-Are there any specific security or privacy requirement for attendance tracking system?
-what are the deadlines for the project? What is the process of approval for design and who will be approving them?
After defining the related questions that will help in eliciting requirements, understanding and developing the system, is to reach out the stockholders trough (email or in person) in order to make them participate in the interview. Then we document and review the gathered requirements in structured format.

2.6.3.Analyzing Requirements

Analyzing requirements is a critical phase in the software development life cycle. To ensure that the resulting system meets the requirements of stakeholders effectively, it is necessary to understand, document, and prioritize the stakeholder's needs and expectations. Various methods can be utilized to analyze requirements and gain a comprehensive understanding of what the system should accomplish. In our system we rely on requirement prioritization based on Kano Model.

- Must-Be: Requirements that are expected by users and do not necessarily provide additional satisfaction when met but can cause dissatisfaction if not fulfilled.

-Register a new employee.
-Send an excuse for being absent from work.

• One-Dimensional: Requirements that directly impact customer satisfaction. The more of these requirements are met, the more satisfied the customer becomes.

-Recording the employee's attendance.
-Recording the employee's departure time.
-Monitoring attendance dashboard.

• Attractive: Requirements that go beyond customer expectations and provide delight or surprise when fulfilled.

-Requesting emergency leave from work.

-Calculate overtime.
-Create a custom work schedule.

C- Validating Requirements

To validate requirements, User Acceptance Testing (UAT) is conducted as an essential step in the software development process. In UAT, the specification requirements are validated against the actual needs and expectations of the end users. By involving the end-users in the testing process, UAT provides a practical and hands-on approach.

User Acceptance Testing (UAT) for the Employees Attendance Tracker System:

Objective:

The objective of User Acceptance Testing (UAT) for the Employees Attendance Tracker System is to validate the system's functionality and ensure that it meets the specified requirements. Testing will focus on verifying the key features, such as employee registration, recording attendance and departure times, managing leave requests, sending absence excuses, calculating overtime, monitoring the attendance dashboard, and creating custom work schedules.

Test Scenario 1: Registering a New Employee

Test Case 1.1: New Employee Registration

1. Test Description: Verify that a new employee can successfully register in the system.

2. Test Steps:

a. Access the registration page and enter the unique company ID, "x011."
b. b. Enter the required personal information of the new employee.

c. Submit the registration form.
d. Accept registration from the manager.
3. Expected Result: The system successfully registers the new employee after manager approval with the provided information .

Test Scenario 2: Monitoring Attendance Dashboard and Custom Work Schedules

Test Case 2.1: Monitoring Attendance Dashboard

1. Test Description: Verify that the attendance dashboard accurately displays employee attendance data. 2. Test Steps:
a. Log in to the system using manager credentials.
b. Access the attendance dashboard and review displayed data for check-in, check-out, and leave statuses. 3. Expected Result: The attendance dashboard displays accurate and up-to-date employee attendance
information.

Test Case 2.2: Creating Custom Work Schedules

1. Test Description: Test system ability to make a manager create a custom work schedule that contains
   calendar for workdays and holiday days (time and date).
2. Test Steps:
   a. Log in to the system using manager credentials.
   b. Access the work schedule management feature and enter data for workdays & holiday days (time and date).
   c. Create a custom work schedule for a specific employee or group of employees.
3. Expected Result: The system successfully creates and applies custom work schedules as per manager's specifications.

Test Scenario 3: Requesting emergency leave from work

Test Case 3.1: Requesting emergency leave from work

1. Test Description: Test the system's ability to requesting emergency leave from work.
2. Test Steps:
a. Log in to the system using employee credentials.
b. Access the leave request feature and write the request reason with available documentation .
c. Leave request approve or rejected by manager based on the provided information.
3. Expected Result: The system send employee’s leave request to manager, and accurately updates employee leave statuses as per manager's approval or rejection of the requests.

Test Scenario 4: Recording the employee's attendance Test Case

4.1: Successful attendance recording

1. Test Description: Test the system's ability to record the employee's attendance time when all conditions
   satisfied.
2. Test Steps:
   a. Enter the company ID.
   b. Ensure the employee in the same company location.
   c. Log in using employee credentials and one of the verification methods (face print, voice, or finger print).
   d. send the attendance time for the employee.
3. Expected Result: The system successfully record attendance time for employee.

Test Case 4.2: Mismatch the company location

1. Test Description: Test the system's ability to handle the different location of employee and company.

2. Test Steps:

a. Enter the company ID.

b. Ensure the employee not in the same company location.

c. Log in using employee credentials and one of the verification methods (face print, voice, or finger print).

d. Send the attendance time request for the employee.

3. Expected Result: The system send a request error due to mismatch in location and it doesn't record
attendance time.

Test Case 4.3: Invalid employee identity information

1. Test Description: Test the system's ability to handle incorrect identity information of the employee.

2. Test Steps:

a. Enter the company ID.

b. Ensure the employee in the same company location.

c. Log in using employee credentials and one of the verification methods (face print, voice, or finger print).

d. Verify that employee's data doesn't match.

e. Send the attendance time request for the employee.
3. Expected Result: The system send a request error due to wrong information in employee identity data.

2.6.4.Modeling Requirements

This section provides use case diagrams which is illustrate possible situations where the user interacts with the system.(figure 1)

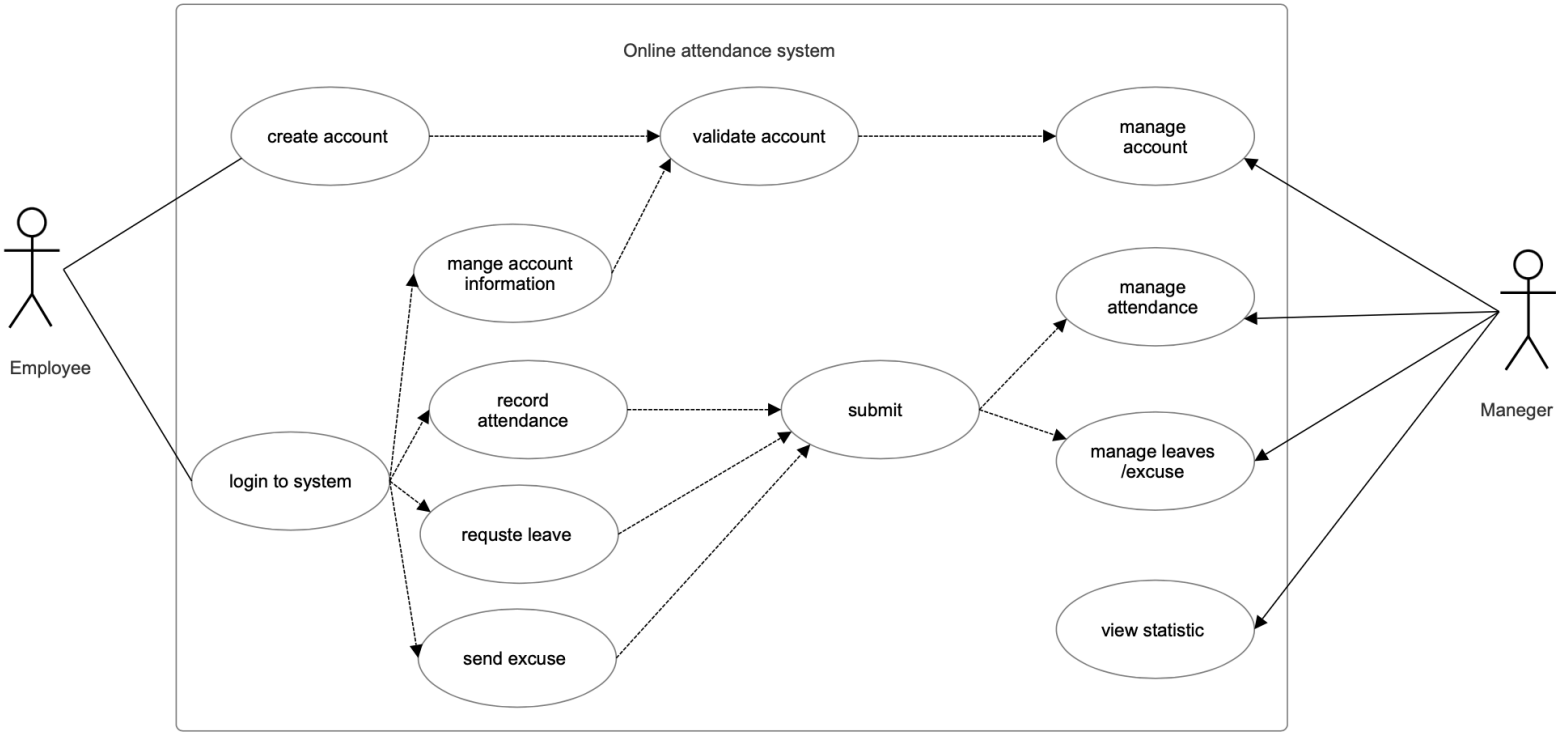

Figure 1

3.Functional Requirements

1-Register a new employee:

Description: Allow creation of new employee registration if its not already on the system using face print, voice, finger print, name, password and national ID. After approval, his information will be stored in the system.

Input: face print, voice, finger print, name, password and national ID.
Output: New recorded employee information on the system.
Action: Check the new employee information if its valid or not. If information not entered correctly and completely send error data. Else the system check weather this information entered before or not. If its not, then the system will save this information for a new employee.
Pre-condition: There is a connection to the cloud, valid and complete information and new registered information.
Post-condition: Employee's registration is approved, indicating that they can now access the system/cloud recorded this information as employee.

2-Recording the employee's attendance:

Description: Recording the employee's attendance time at work electronically if he is at the company location by entering company ID then user name, password and one of the verification methods (face print, voice, or finger print) and linking it with the employee's data in the cloud.
Input: Company ID/one of the verification methods (face print, voice, or finger print) to authenticate their identity, in addition to the user name and password.
Output: Attendance time recorded.
Action: Check the location and the validity of employee identity information. If it is same as company location and employee identify information accepted, then his attendance time will be recorded in cloud. Else send message mismatch if he is not at company location or check identity information .
Pre-condition: Presence of employee data in the cloud/connection to cloud/the employee must be in the same company location/the necessary hardware components, such as camera or sensors or built-in components, for capturing the selected verification method(face print, voice, fingerprint), are available and functional.
Post-condition: Cloud records a new attendance for the employee/the attendance record is associated with the employee's profile.

3-Recording the employee's departure time:

Description: The system should enable employee to electronically record their departure

time when they already have attendance time recorded for the same day and they are leaving the company location, through user name, password and one of the verification methods (face print, voice, or finger print) and linking it with the employee's data in the cloud.
Input: One of the verification methods (face print, voice, or finger print) in addition to the user name and password.
Output: Departure time recorded.
Action: Check if the employee has already recorded attendance time for the same day and check the location and the validity of employee identity information. If it has recorded attendance time and he is at the same company location and employee identify information accepted, then his departure time will be recorded in cloud. Else send message mismatch if he is not at company location or check identity and attendance information .
Pre-condition: Having a recorded attendance time for the employee on the same day in the cloud/presence of employee data in the cloud/connection to cloud/the employee must be in the same company location/the necessary hardware components, such as camera or sensors or built-in components, for capturing the selected verification method(face print, voice, fingerprint), are available and functional.
Post-condition: cloud records a new departure for the employee/the departure record is associated with the employee's profile.

5-Send an excuse for being absent from work:

Description: Allowing the employee to electronically send his excuse report to the manager for being absent from work. And return a verification message to the employee about receiving excuse report.
Input: Necessary details about the excuse, such as reason for absence, date of absence, and supporting documentation .
Output: Message verifying the arrival of the report.
Action: Check the cloud if there is no attendance of employee, then system allows employee to send an excuse. Else this service will not be available to the employee.
Pre-condition: There is no employee attendance recorded/the employee has the necessary information and supporting documents for filling out the excuse report/the employee is registered and has a valid account in the system/the employee has access to internet-connected device to access the system and submit the excuse report.

Post-condition: The employee's excuse report is successfully submitted to the manager/ the manager receives the submitted excuse report for review and approval/recording excused non-attendance in the cloud.

6- Requesting emergency leave from work:

Description: Allow the employee whose attendance has been registered to submit a request for emergency leave from work before the end of the official working time, and registering him as leaving work with or without an excuse after approval .
Input: Necessary details about the emergency leave, such as reason, requested leave duration, and if there is any supporting documentation.
Output: Recording in the data that the employee leaves before the end of time with or without an excuse. Action: Check the cloud if there is attendance of employee at that day, then system allows employee to send a request to the manager for emergency leave. If approval is done from manager, then attendance is recorded for that day. Else recorded as exit with no excuse.
Pre-condition: There is employee attendance recorded at that day/the employee is registered and has a valid account in the system/employee has a legitimate reason for requesting emergency leave/there is connection to the cloud.
Post-condition: The employee's emergency leave request is successfully submitted to the manager/recording in the cloud, exiting with or without an excuse leave for that day.

7-Calculate overtime:

Description: The system should calculate the employee's overtime hours based on the recorded working hours from the cloud.
Input: Employee's working hours data from the cloud, which includes the start and end times of each day.
Output: Calculated overtime hours for the employee.
Action: Check the work hours for the employee that recorded on cloud. If it exceeds the compulsory work hours, then return these additional hours as overtime. Else there is no overtime hours.
Pre-condition: Connection to the cloud/the employee's compulsory hours of work are defined and stored in the cloud.

Post-condition: The system successfully retrieves the employee's working hour records from the cloud/the system calculate the employees's overtime hours based on retrieved working hour records/the system determines wether the employee has exceeded the compulsory hours of work.

8-Monitoring attendance dashboard:

Description: Enables the manager to monitor and display the real-time data related to check in, check out, leave and absent records for employees, in which data are stored in cloud.
Input: Employee check in & check out data/employee leave & absent records from the cloud.

Output: Visually appealing dashboard that presents: check in, check out, leave and absent records
Action: Check the cloud for attendance information. If there are no connection to the cloud or no recorded data, then returns a message about the reason of why there is no information to display. Else retrieve the employee check-in, check-out, leave and absent records data from the cloud, and generate visual representations to display them.
Pre-condition: Connection to the cloud/availability of employee check in, check out, leave and absent data in the cloud/manager has appropriate permissions and authorisation to access attendance data.
Post-condition: The dashboard displays accurate and up-to-date check-in, check-out, leave, and absent data based on the latest information retrieved from the cloud.

9-Create a custom work schedule:

Description: Enable manager to create a custom work schedule that contains calendar for workdays and holiday days (time and date). So that the system accurately calculate and record work hours on workdays and rest days.
Input: Workdays & holiday days (time and date).
Output: Custom work schedule that contains work and holiday days(time & date) that system can rely on to record employees work hours.
Action: Check the information entered by the manager, which are workdays and holiday (time & date). If these information not valid, then send message to inform incorrect entries.

Else record these information in work schedule, so system use these information to calculate employees work hours.
Pre-condition: The manager must have appropriate managerial privileges and be authenticated into the system/the system should provide a user-friendly interface for creating and managing work schedules/the system should have the necessary functionality to store and update custom work schedules/valid and correct workdays and holiday days information.
Post-condition: The recorded work hours are used for various purposes such as attendance tracking and overtime calculations/system allows the option to modify or update the custom work schedule if needed / system accurately calculate and records work hours on work days and rest days based on the custom work schedule .

4. External interface requirements

4.1.User Interfaces :

The Login interface presents a user-friendly web form where employees can enter their company ID. If the employee is accessing the system from the same location as the company, they can proceed to provide their identity verification.
This interface includes input fields for the company ID, username, password, and a "Login" button. It also incorporates options for employees to choose their preferred biometric modality for identity verification, such as a fingerprint scanner, a camera for capturing face images, or a microphone for recording voice samples.
The Emergency Leave Request interface allows employees to submit a request for emergency leave directly to their manager through the system. This user-friendly interface provides an input form where employees can enter details such as the reason for the emergency leave, the desired duration, and any additional comments. The interface includes a "Submit" or "Request Leave" button to finalize the submission. Clear instructions and guidance are provided to ensure employees provide all necessary information. Upon submission, the system generates a notification or confirmation message to inform the employee that their request has been received.
The Absence Excuse Submission interface enables employees to send an excuse to their manager for an absence through the system. This interface includes an input form where employees can enter a description of the reason for their absence, any supporting documentation or evidence, and any other relevant details. The interface may also include

options for attaching files or documents to provide additional evidence or context. Similar to the Emergency Leave Request interface, clear instructions and prompts guide employees through the submission process. After submission, the system generates a notification or confirmation message to acknowledge that the excuse has been sent to the manager.
The Manager Dashboard interface provides a comprehensive overview of employee attendance for managers. It offers a user-friendly web-based dashboard where managers can monitor and analyze employee attendance data. This interface displays attendance summaries, employees information, work schedule, timesheets and overtime. It includes features for reviewing and approving employee requests for emergency leave and managing excuses for absences. The dashboard provides a streamlined interface for managers to efficiently handle attendance-related tasks and access relevant information.

4.2.Hardware interface :

System can rely on the same employee device (Personal Computer - Mobile) in order to receive the employee identity information (username - password - face print - fingerprint - voice) by using built-in hardware components of the device like: camera, microphone and keyboard. Also, the system can work with separated hardware. For that there are number of hardware interfaces (APIs):
1. Face Recognition Device API:
The Face Recognition Device API provides a set of interfaces and methods to communicate with the external face recognition hardware. It enables the integration of the face recognition device with the system. This API includes functions such as:
• Function establishes a connection with the face recognition device.
• Function initiates the capture process to obtain face prints from employees.
• Function terminates the capture process.
• Function retrieves the captured face print data from the device.
• Function closes the connection with the face recognition device.
2. Voice Recognition Device API:
The Voice Recognition Device API facilitates communication with the external voice recognition hardware. It enables capturing and processing voice samples for employee verification. This API may provide methods such as:
• Method establishes a connection with the voice recognition device.
• Method initiates the voice capture process.
• Method terminates the voice capture process.

• Method retrieves the captured voice sample data.
• Method closes the connection with the voice recognition device.
3. Fingerprint Scanner Device API:
The Fingerprint Scanner Device API allows interaction with the external fingerprint scanner hardware. It provides functionality for capturing and processing fingerprint data. This API might include methods like:
• Method establishes a connection with the fingerprint scanner device.
• Method initiates the fingerprint scanning process.
• Method terminates the fingerprint scanning process.
• Method retrieves the captured fingerprint template.
• Method closes the connection with the fingerprint scanner device.

4.3. Software interface

Cloud Storage API:
The Cloud Storage API defines the software interface for interacting with the designated cloud storage service for storing attendance records. It includes methods for securely uploading and retrieving attendance data for the specific company. Common functions might include:
· Function stores the attendance data for the authenticated employee in the cloud storage.
· Function retrieves the attendance records for a specific company within the specified date range.
User Authentication API:
User Authentication API defines the software interface for handling user authentication. It provides methods for validating the entered username and password against the stored credentials of the employee associated with the company ID. This API includes functions such as:
· Function verifies the provided username and password for authentication. · Function retrieves user details such as employee information based on the username.
Biometric Verification API:
Biometric API can be used to record an individual employee's check-in and check-out times. Individual employees' attendance exit/entry will be tracked by the system. For each check-in and check-out, it will automatically update the attendance status on the

web portal. If it is integrated with the attendance management module, the biometrics records will automatically reflect in the attendance management system. It offers methods such as:

Function compares the captured fingerprint template with the registered template to verify the employee's identity.

Function performs face recognition on the captured face image to authenticate the employee.

Function analyzes the captured voice sample to validate the employee's identity.

Company Website Integration API:

The Company Website Integration API outlines the software interface for seamless integration between the system and the company's website. This API enables the website to interact with the system's authentication and attendance functionality.

4.4 Communication interface

Web API used to provide an endpoint, where employees can make requests by providing data like user name, password and face print or voice or finger print. Response indicates the status of the attendance recording process, with a success message if it was successful or an error message if any issues occurred.
HTTP protocol is responsible for requests to the server, which contains POST methods. After processing, the HTTP response will be sent back to the user to indicate success or failure of registration.

5. Non-functional Requirements

5.1 Performance Requirements

Performance requirements are an important set of criteria that specify how quickly and efficiently the system will use its resources.

5.1.1 Response Time :

Description: The system must provide immediate response times for various operations.
Input: Action performed by the user that triggers a response from the system.
Output: The output that the system produces in response to user action is known as the system response. It should be within a few seconds.

Action: The amount of time it takes for the system to understand user activity and provide a response.
Pre-condition: The system is operating at a normal load.
Post-condition: The system maintains its response to interactions and the user receives the required response from the system within an acceptable time frame.

5.2 Safety Requirements

Safety requirements are statements that define the safety functionality that a system or application must have in order to protect its users and other stakeholders from harm

5.2.1 Biometric Data Processing :

Description: protect the collection and storage of biometric data from unauthorized access.
Input: Biometric data (voice sample, fingerprint scan, facial recognition data) provided by the user during the registration or authentication process.
Output: Access Granted or Denied.
Action: The system receives and captures the biometric data provided by the user. It then determines whether the provided biometric data match the reference data within an acceptable threshold of similarity. If the match is successful, the system proceeds with authentication and grants access.
Pre-condition: The user must be registered in the system with his biometric data stored securely.
Post-condition: Access is granted if the biometric data matches the reference data, and if there is no match, access is denied.

5.3 Security Requirements

The techniques and policies a system must employ to guard against unauthorized access, data breaches, and other security threats are outlined in security requirements, which are crucial specifications.

5.3.1 Access Control and Authentication :

Description: Multi-factor authentication must be implemented to ensure that only authorized employees can access the system.
Input: User ID (Company ID), Personal Information and Authentication Credentials.

Output: Granted or Denied access and user permissions (if granted).
Action: The system receives user input, validates it, and checks if the entered User ID is valid and associated with an existing company. Verifies authentication credentials against stored records and determines if the user has the necessary permissions to access the system.
Pre-condition: The user must have the required credentials, which could include a valid company ID and authentication information.
Post-condition: If authentication is successful, the user gains access to the system with specific permissions and If authentication fails, the user is denied access.

5.4.Software Quality Attributes requirement

Software quality attributes define the overall quality characteristics and performance expectations of a system.

5.4.1 Efficiency :

Description: The system must perform operations efficiently without unnecessary delays or resource consumption.
Input: Attendance tracking method.
Output: successfully recorded a time of attendance.
Pre-condition: The employee must be registered with the system.
Post-condition: The attendance entry is recorded in the system for the specified employee.