



## CSC231 Project Milestone (1): Project Proposal of OOP1 Application

**Section Number:** ☒ Group(1) ☐ Group(2) ☐ Group(3) ☐ Group(4)  
☐ Group(5) ☐ Group(6) ☐ Group(7) ☐ Group(8)



**Project Title is:**

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### Description:

This project aims to develop an electronic system for tracking employee attendance using Java. The system enables organizations to automate the process of recording employee check-ins and check-outs, enhancing time management and work efficiency. Managers can monitor employee attendance, generate monthly reports, and calculate working hours and productivity. The system will include features for adding and managing employee records, generating reports, and sending notifications in case of delays or absences. The project will be developed entirely in Java, utilizing a simple command-line interface for user interaction.

### Logical analysis & Business:

Logical and Business Analysis of the Employee Attendance Tracking System

#### 1. Logical Analysis:

##### A. Core Components:

- Attendance Recording:
  - Enables employees to log their attendance easily, ensuring data accuracy.
- Employee Record Management:
  - Provides an interface for managers to manage employee data, facilitating performance tracking.
- Report Generation:
  - Allows for periodic reports, supporting data-driven decision-making.



- Alerts and Notifications:
- Notifies employees of delays or absences, promoting accountability.

#### B. Processes:

- Utilizes data structures (e.g., ArrayList, HashMap) for efficient data storage.
- Implements a database (MySQL or SQLite) for data integrity and accessibility.
- Features a user-friendly interface to encourage employee adoption.

#### C. Security and Privacy:

- Ensures sensitive data protection through access controls and security practices.

### 2. Business Analysis:

#### A. Business Benefits:

- Increased Efficiency:
  - Reduces time spent on manual attendance management, allowing focus on core tasks.
- Improved Data Accuracy:
  - Minimizes human error in attendance logging, providing reliable information for management.
- Cost Savings:
  - Decreases reliance on paper processes and reduces HR-related expenses.

#### B. Return on Investment (ROI):

- Enhanced efficiency and reduced errors can lead to high ROI in a short timeframe.

#### C. Future Trends:



- Potential to expand features, such as facial recognition or biometric systems, increasing accuracy.

#### D. Potential Uses:

- Applicable across various sectors, including education, manufacturing, and services, broadening customer reach.

#### Conclusion:

The Employee Attendance Tracking System is a strategic tool that enhances efficiency and supports data-driven decisions, maximizing benefits for organizations.

#### **Systems Users (Actors):**

An employee attendance tracking system is designed to monitor and manage employee attendance, working hours, and related data. Here's an overview of its key components and functionalities:

#### Key Components

##### 1. User Roles:

- Admin: Manages the system, oversees user accounts, and generates reports.
- Manager: Approves leave requests, views attendance records of team members, and can generate reports.
- Employee : Clock in/out, request leave, view personal attendance records.

##### 2. User Authentication:

- Secure login for different user roles to access the system.

##### 3. Attendance Logging:

- Methods for employees to clock in and out (e.g., biometric scanners, mobile apps, web portals).

##### 4. Leave Management:



- Features for employees to request time off and for managers to approve or deny requests.

#### 5. Reporting:

- Generate reports on attendance trends, absenteeism, and overall employee attendance.

#### 6. Notifications:

- Alerts for upcoming leave, reminders for clocking in/out, and notifications of approval/denial of leave requests.

#### 7. Integration:

- Ability to integrate with payroll systems for automated calculations of pay based on attendance.

#### Functionalities

- Time Tracking: Record hours worked, breaks taken, and overtime.
- Attendance Patterns: Analyze attendance patterns to identify issues or trends.
- Customization: Ability to set different attendance policies (e.g., flexible hours, remote work).
- Mobile Access: Allow employees to track attendance and manage requests via mobile devices.

#### Benefits

- Accuracy: Reduces errors associated with manual attendance tracking.
- Efficiency: Streamlines the process of managing attendance and leave requests.
- Accountability: Enhances accountability among employees.
- Data-Driven Decisions: Provides insights that can help in workforce planning and management.

An effective employee attendance tracking system can significantly improve organizational efficiency and employee satisfaction.



	<b>User Role</b> (at least two user roles)	<b>Privileges</b> (User Roles should vary in their privileges Privileges)
1	Admin	- Manages the system, oversees user accounts, and generates reports.
2	Manager	- Approves leave requests, views attendance records of team members, and can generate reports. - Clock in/out, request leave, view personal attendance records.
3	Employee	- Clock in/out, request leave, view personal attendance records

#### **System Constraints:**

##### 1. Hardware:

The system should run on standard servers with enough processing power and storage to handle employee data. It also needs to be accessible from typical devices like desktops or mobile phones.

##### 2. Software:

The system must work across multiple operating systems (e.g., Windows, Linux). If web-based, it should support common browsers like Chrome and Firefox. It also relies on a specific database, such as MySQL.

##### 3. Performance:

Actions like clocking in and generating reports should happen within a few seconds. The system needs to scale to handle a growing number of employees without slowing down.

##### 4. Security:

It should use secure login and protect employee data with encryption, complying with relevant data protection laws.



#### 5. Maintenance:

The system must be easy to update with minimal downtime, allowing for future upgrades and fixes.



### Matching System Functions to the Application Goals:

Function / Application Aspect	UML Diagrams	Classes Management	Inheritance & Polymorphism	Array of Objects	Program Structure	Error Handling	Analysis
Attendance & Leave Management	State diagrams for check-in/out flow	Employee & attendance classes	Employee types (Regular, Manager)	Store attendance records	Record/update attendance data	Handle duplicate entries, missing check-outs	Analyze tracking accuracy and system load handling
Employee Records Management	Class diagrams for employee-attendance relationships	Manage employee records	-	Store employee data	Interface for managing employee data	Handle incorrect data entry	Analyze ease of managing, updating, and retrieving employee data
Report Generation	Activity diagrams for generating reports	Report generation class	-	Store and retrieve attendance data	Generate reports	Handle insufficient data for reports	Analyze report accuracy and clarity of data presentation
Alerts and Notifications	-	-	-	-	Send notifications for tardiness or absence	Handle notification delivery errors	Analyze reliability and timing of notifications

\* YOU NEED TO ENSURE THAT YOU'VE SATISFIED WHOLE CRITERIA OF APPLICATION REQUIREMENTS AT LEAST ONCE



**Instructor(s) Approval:**

☐ Approved

☐ Not Approved (*needs to be changed*)

**Feedback Comments:**