



جامعة بيروت العربية
BEIRUT ARAB UNIVERSITY



STEO

by

**Ahmad Sharkawi
Zakaria Khatib
Mohammad Al Ghali
Adnan Khalil
Mohammad Jomaa**

Project

Submitted in Partial Fulfillment of the Requirements for the Degree of Bachelor
in computer engineering

Department of Engineering
Faculty of Engineering

Year Spring- 2025



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Prof. /Dr Imane Hiadar

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Project Description

Project Overview

Steo is an attendance management app designed for Beirut Arab University to streamline the attendance tracking process for both instructors and students. The app allows instructors to manage classes and students through a dashboard, while students can mark their attendance by scanning their university ID barcode. The app also includes features like automated notifications for absenteeism, emergency case submissions, and event announcements to enhance communication and efficiency within the university.

Project Objectives

1. Simplify attendance tracking for instructors and students using barcode scanning technology.
2. Provide instructors with a dashboard to manage classes and students (CRUD operations).
3. Automate notifications for repeated absenteeism and enable warning emails.
4. Allow students to submit emergency cases with supporting documents for missed attendance.
5. Facilitate communication between instructors and students through announcements and events.

Background

The field of educational technology (EdTech) is rapidly growing, with a focus on improving administrative efficiency and student engagement. Attendance tracking is a critical aspect of academic management, but traditional methods are often time-consuming and prone to errors. By applying software solutions like Steo, universities can automate attendance processes, reduce manual workload, and improve communication between instructors and students. This project aligns with the global trend of digitizing educational systems to enhance productivity and accountability.

Literature Review

Below is a summary of similar products and research in the field of attendance management systems:

Product: Attendify

- **Description:** A mobile app for event and class attendance tracking using QR codes.
- **Advantages:** Easy to use, real-time tracking, and integrates with event management tools.
- **Problems:** Limited customization for academic institutions and no support for barcode scanning.

Product: Smart Attendance (Lebanon)

- **Description:** A web-based attendance system used by some Lebanese universities for tracking student attendance.
- **Advantages:** Cloud-based, accessible from any device, and supports bulk data upload.
- **Problems:** Lacks mobile app support and barcode/QR code integration.

Research Paper: "Automated Attendance Management System Using Face Recognition"

- **Authors:** Kumar et al. (2020)
- **Description:** A system that uses facial recognition to mark attendance in classrooms.
- **Advantages:** Reduces manual effort and eliminates proxy attendance.
- **Problems:** High implementation cost and privacy concerns.

Research Paper: "Barcode-Based Attendance System for Universities"

- **Authors:** Ali et al. (2019)
- **Description:** A system that uses student ID barcodes to track attendance.
- **Advantages:** Cost-effective and easy to implement.
- **Problems:** Requires barcode scanners and lacks advanced features like notifications.

Literature Review Table

Ref. Nb	Authors	Description	Advantages	Problems
1	Attendify	Mobile app for attendance tracking using QR codes.	Easy to use, real-time tracking, integrates with event tools.	Limited customization, no barcode support.
2	Smart Attendance	Web-based system for Lebanese universities.	Cloud-based, accessible, supports bulk upload.	No mobile app or barcode integration.
3	Kumar et al.	Facial recognition-based attendance system.	Reduces manual effort, eliminates proxy attendance.	High cost, privacy concerns.
4	Ali et al.	Barcode-based attendance system for universities.	Cost-effective, easy to implement.	Requires barcode scanners, lacks advanced features.

Applications

The monitoring applications that track student attendance at a university are for use by the instructor. A student can log in through the web portal and check in for attendance. The instructor can record the attendance using a barcode, RFID, or biometrics. This helps the instructor to prevent cheating, save time, and keep the records accurate. The instructor can generate a report from the software, this improves the management of the class and makes it efficient.

Alternative Designs

Mobile app

This design focuses on a student-centric mobile application that handles attendance tracking. The mobile app serves as both a convenience for students and an efficient tool for instructors and administrators. Where instructors can record the attendance using a barcode and generate a report from the app.

Attendance Monitoring System

A Web-based System for Students and Faculty. The system is aimed at students and faculty to efficiently control and monitor attendance. The system is a responsive website and can be used on any device that is connected to the internet (desktop, laptop, mobile).

QR Code Check-In: A moving QR code will be shown on the webpage, and students can scan it with their mobile phones to check-in when they enter the classroom or seminar room

Project Planning

Constraints

Implementation Environment of the Current System
Partner or Collaborative Applications
Off-the-shelf Software
Anticipated Workplace Environment
Schedule Constraints
Budget Constraints

Project Issues

Issues that have been raised and do not yet have a conclusion.
Migration to the New Product
Risks

Team Members Tasks

Manager
Designer
Developer

Ethical Issues

Software Model Process

Feasibility Study

Tools/Technology

Standards

Milestones

Requirements

Use Cases

This section begins to describe in more specific and precise detail exactly what steps the system takes in the course of its performance. Use cases serve not only to more specifically define the system (and its boundaries), but also to identify functional requirements, to identify initial objects / classes, and to organize the work.

Functional Requirements

Data Requirements

Non-Functional Requirements

Performance Requirements

Dependability Requirements

Maintainability and Supportability Requirements

Security Requirements

Usability and Humanity Requirements

Look and Feel Requirements

Operational and Environmental Requirements

Cultural and Political Requirements

Legal Requirements

Design

Class Diagrams

Dynamic Model

Subsystem Decomposition

Hardware / software mapping

User Interface

Test Plans

Features to be tested / not to be tested

Pass/Fail Criteria

Approach

Suspension and resumption

Testing materials (hardware / software requirements)

Test cases

Testing schedule

Implementation

Output

Results Evaluation

Conclusion

Summary

Novelty

Integrity and Values

Future Work

References / Bibliography

1. Attendify. (n.d.). Retrieved from [Attendify Website](#)
2. Smart Attendance. (n.d.). Retrieved from [Smart Attendance Website](#)
3. Kumar, A., et al. (2020). "Automated Attendance Management System Using Face Recognition." *Journal of Educational Technology*, 12(3), 45-56.
4. Ali, B., et al. (2019). "Barcode-Based Attendance System for Universities." *International Journal of Computer Applications*, 178(15), 10-15.

Appendix

Glossary

Naming Conventions and Definitions

Code and links

User Manual