PROJECT REVIEW - 1

ARDUINO TIME ATTENDANCE SYSTEM WITH RFID

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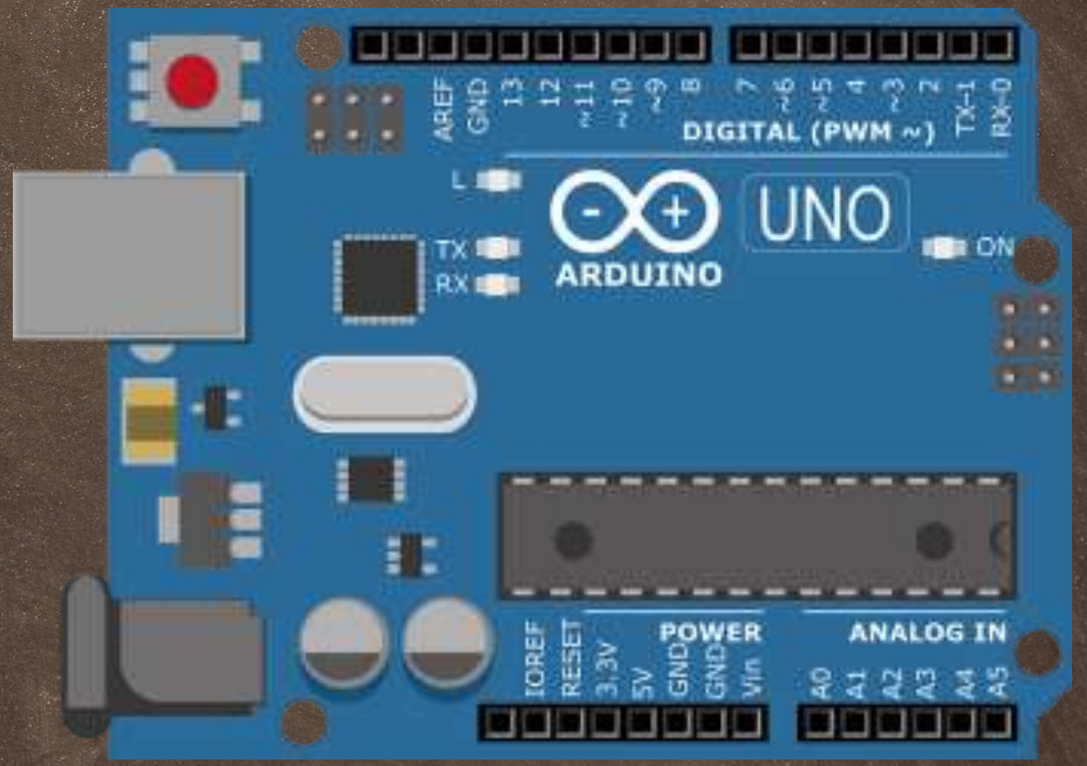
INTRODUCTION

In today's fast-paced world, manual attendance tracking is inefficient and prone to errors. Our project, the Arduino Time Attendance System with RFID, automates attendance marking using RFID technology. This system enhances security, reduces human effort, and ensures accurate record-keeping for institutions and workplaces.



OBJECTIVES

01

Develop an RFID-based attendance system for automated tracking.

02

Enhance security by allowing only authorized users to mark attendance.

03

Store attendance records with timestamps for accuracy and reliability.

04

Eliminate manual errors and reduce time consumption.

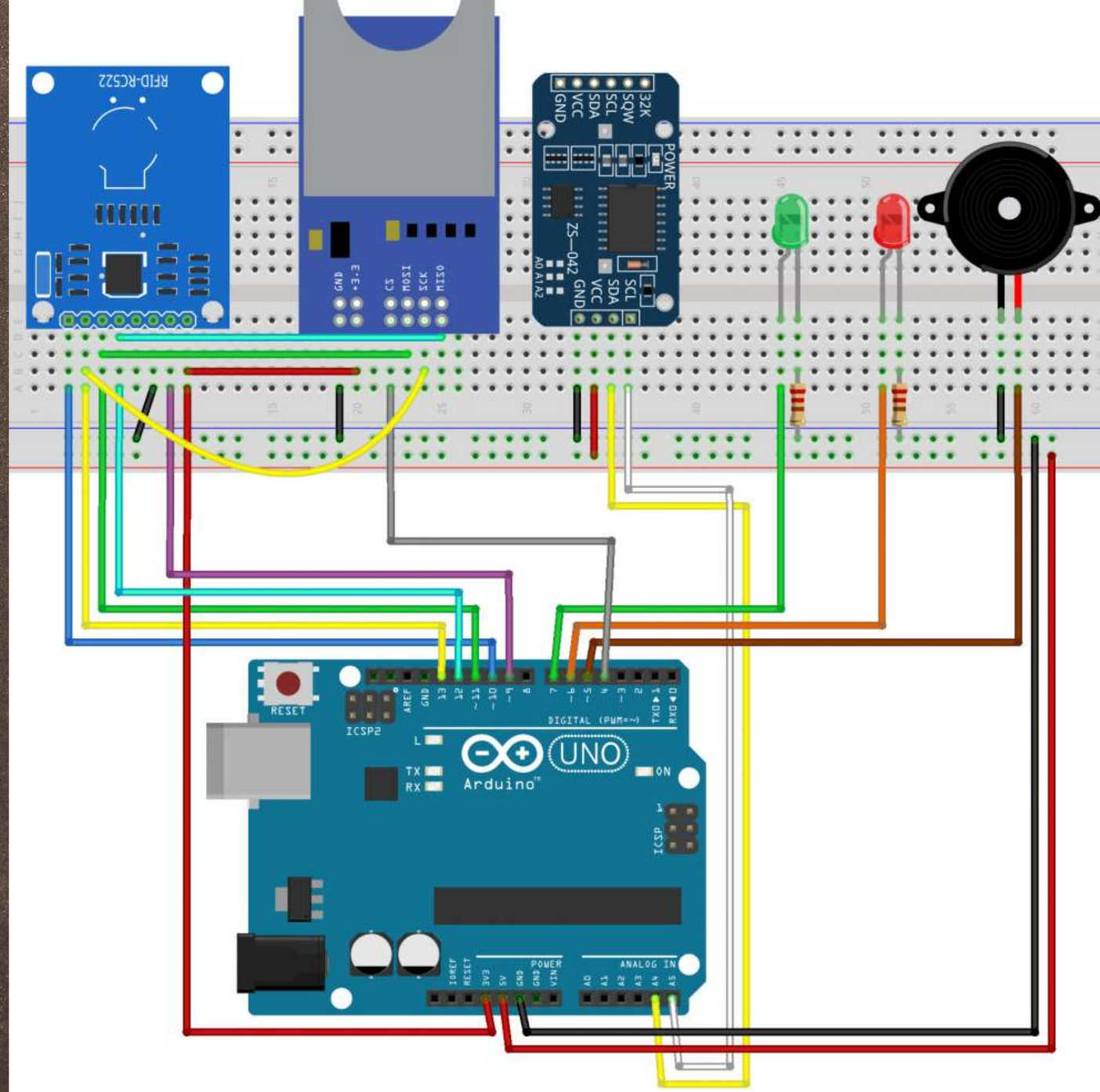
PROBLEM STATEMENT

- Traditional attendance systems (manual registers, biometric) are time-consuming and error-prone.
- Manual methods can lead to inaccurate records and require additional effort.
- Biometric systems have hygiene concerns, especially in shared environments.
- **RFID technology** offers a fast, contactless, and automated alternative for accurate attendance tracking.

WORKING PRINCIPLE

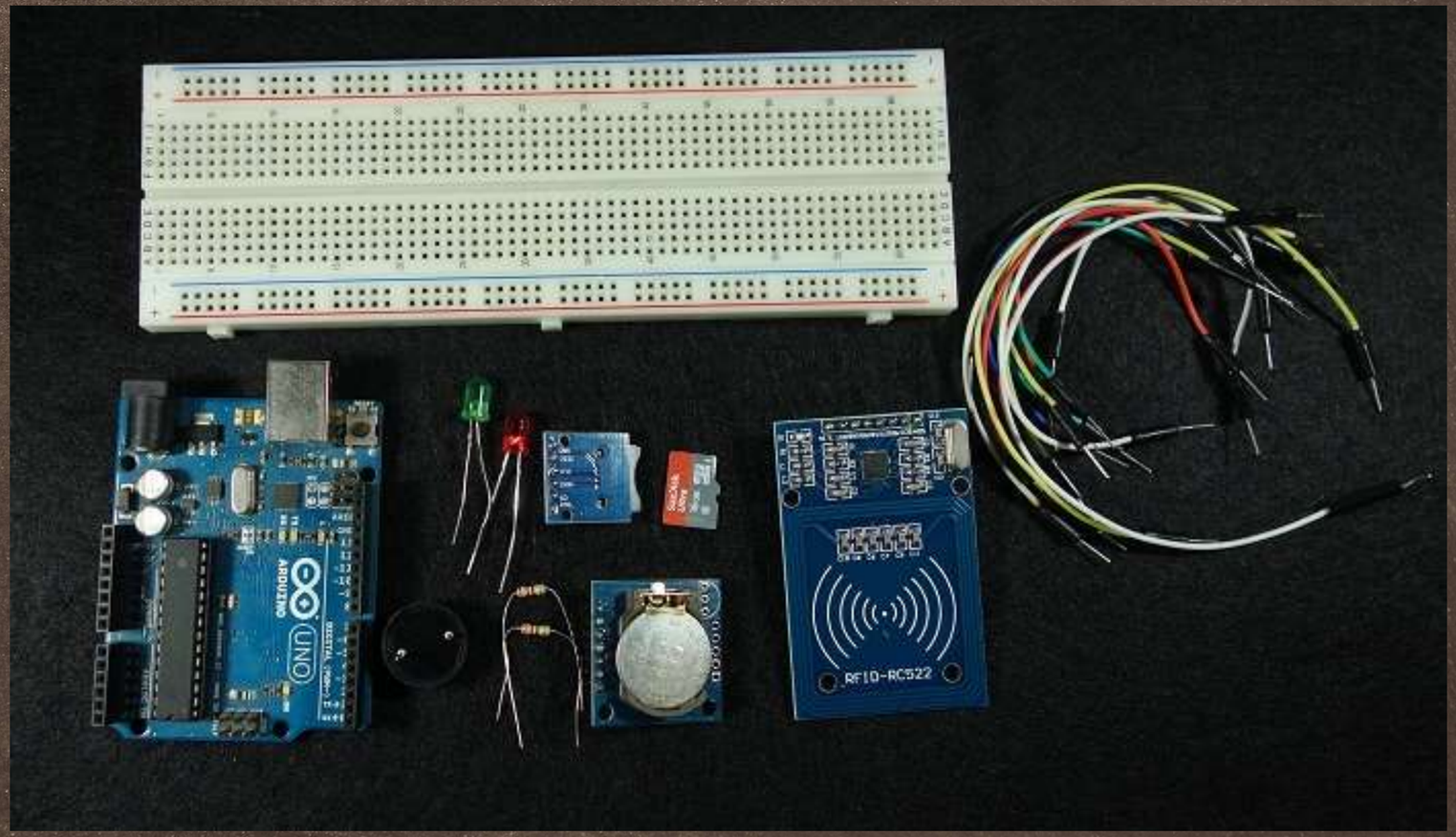
The system uses RFID technology to read unique ID tags assigned to individuals. When an RFID tag is scanned, the RFID module sends data to the Arduino, which verifies the ID against stored records. If the ID is valid, the attendance is recorded in plx daq excel sheet, and feedback is given via buzzer and LED indicators. The attendance data can be stored on an SD card or sent to a database.

BLOCK DIAGRAM



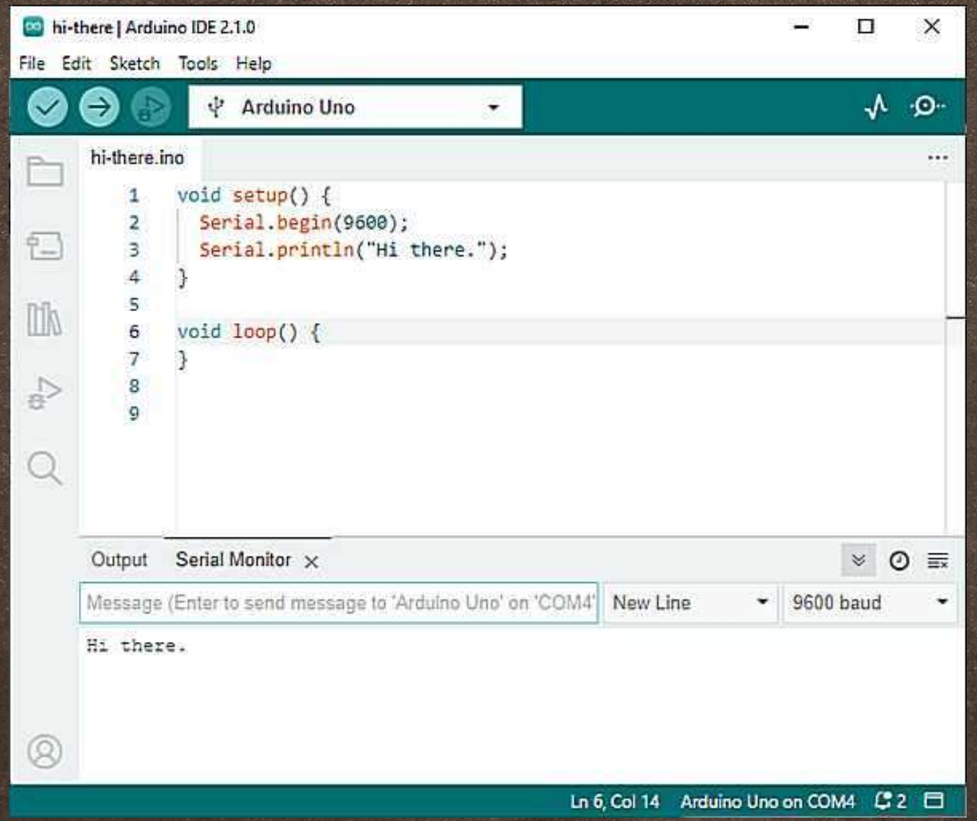
HARDWARE COMPONENTS

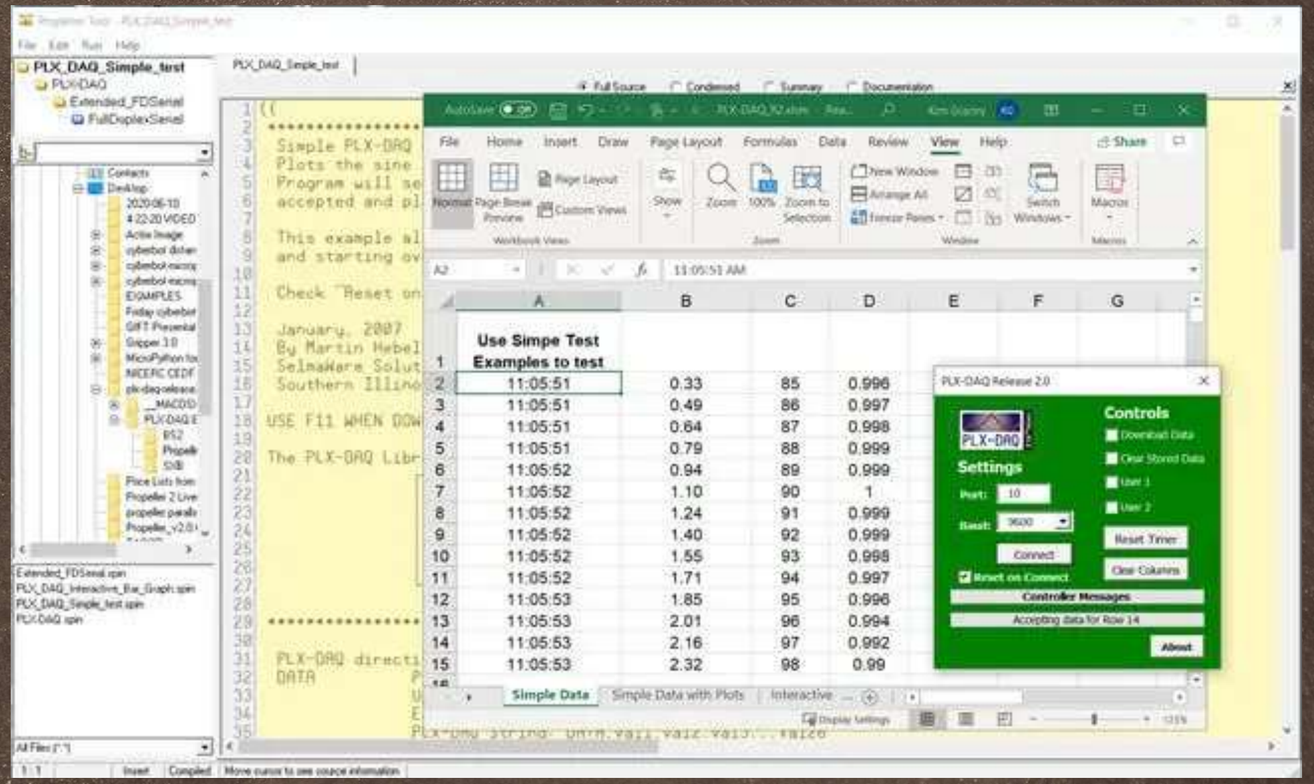
- ARDUINO
- BREADBOARD
- LED AND BUZZER
- RFID MC522
- 2 x RFID TAGS
- JUMPER WIRES



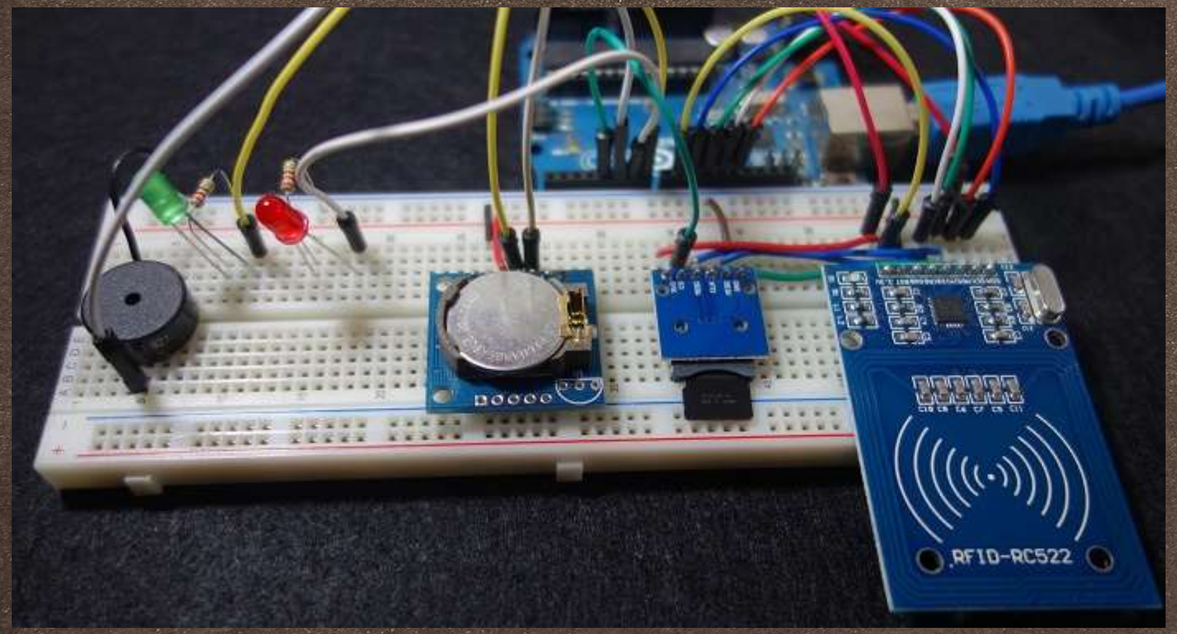
SOFTWARE COMPONENTS

- ARDUINO IDE
- PLX DAQ





CONNECTIONS



RFID RC522 Module:

SDA -> Pin 10
SCK -> Pin 13
MOSI -> Pin 11
MISO -> Pin 12
IRQ -> Not connected
GND -> GND
RST -> Pin 9
3.3V -> 3.3V

LED and Buzzer:

GREEN LED

POSITIVE -> PIN 5
NEGATIVE -> GND

RED LED
POSITIVE -> PIN 6
NEGATIVE -> GND

BUZZER
POSITIVE -> PIN 8
NEGATIVE -> GND

ADVANTAGES

- **Fast & Contactless** – Reduces waiting time and speeds up attendance marking.
- **Accurate & Reliable** – Eliminates manual errors and ensures precise record-keeping.
- **Improved Security** – Only authorized RFID tags can be used, preventing unauthorized access.
- **Data Storage Capability** – Attendance records can be stored and retrieved for future reference.

APPLICATION

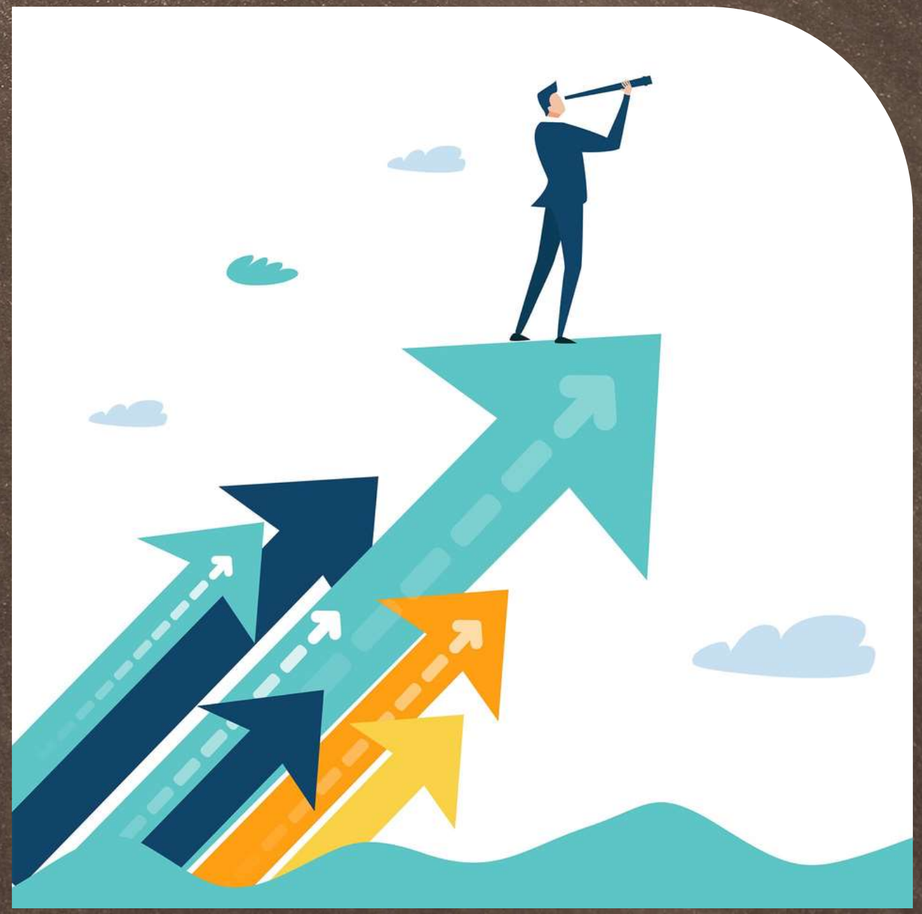
- **Schools & Colleges** – Automates student attendance tracking.
- **Offices & Industries** – Manages employee attendance efficiently.
- **Secure Access Control** – Restricts unauthorized entry to buildings.
- **Libraries & Cafeterias** – Enables automated check-in and check-out systems.

LIMITATIONS

- **Limited Range** – RFID tags have a short scanning distance.
- **No Differentiation** – Cannot distinguish between intentional and accidental scans.
- **Dependence on Hardware** – System relies on proper functioning of RFID reader and microcontroller.
- **Limited Storage** – Data storage may be restricted without external memory or cloud integration.

FUTURE IMPROVEMENTS

- **WiFi/IoT Integration** – Enables real-time, cloud-based attendance tracking.
- **SMS/Email Notifications** – Sends alerts to users or administrators upon attendance marking.
- **Battery Backup** – Ensures uninterrupted operation during power failures.
- **Mobile App Support** – Allows users to check attendance records through a smartphone application.



CONCLUSION

The Arduino Time Attendance System with RFID is an efficient, automated, and reliable solution for attendance tracking. By using RFID technology, the system eliminates manual errors, reduces processing time, and enhances security by ensuring only authorized users can mark attendance. The integration of an RTC module allows for accurate timestamping, making attendance records more precise and verifiable.

This project can be implemented in various sectors, including educational institutions, offices, and restricted areas, providing a scalable and cost-effective solution.

THANK YOU!