

# Project Vision, Scope & Plan



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The image features two overlapping window frames on a light gray background with a dotted pattern. The foreground window is white with a black border and contains the text. The background window is partially visible behind it. Both windows have a title bar with a minus sign, a square icon, and a close 'X' icon.

# Problem Statement

## Project Background

Our team is looking to achieve attendance and control systems using RFID technology, keeping our motto "Securing Today, Safeguarding Tomorrow" in mind. We hope to create an innovative security system with adaptability for present and future needs.

# Stakeholders

## Team Lead

Responsible for final decisions, ensuring project progression.

## Project Manager

Oversee the execution and success of the project, setting weekly goals for completion.

## Programming Coordinator

Coordinates programming tasks and activities within the team.

## System Programmers

Develop and maintains the software components of the project.

## Hardware Programmers

Designs and assembles the hardware elements of the system.

## Project Consultant

Provides expert advice and guidance to enhance project outcomes.



**Users**

The image features a stylized, hand-drawn illustration of a computer window. The window has a thick black border and a light cream-colored interior. In the top right corner, there are three small icons: a horizontal line, a square, and an 'X', representing standard window controls. The word "Users" is written in a large, bold, black, sans-serif font in the center of the window. The window is slightly offset to the left, revealing a second, identical window behind it. The background is a light beige color with a subtle pattern of small, dark dots in the bottom right corner.

# Low Security

- ❑ Individuals (students, employees, etc.)
- ❑ Utilize the system for access and attendance marking.
- ❑ Generally have low security clearance.

## School Example:

- Students marking attendance and accessing designated areas and rooms
- Employees using the system for routine access

## Workplace Example:

- Employees marking attendance and accessing specific areas



# Mid Security

- ❑ Faculty and managers
- ❑ Similar access to Low Security Users
- ❑ Additional privileges include accessing attendance logs and clearance for higher-risk access points

## School Example:

- Faculty accessing attendance logs
- Managers with clearance for higher-risk access points

## Workplace Example:

- Managers accessing attendance logs
- Supervisors with clearance for higher-risk access points



# High Security

- ❑ System Administrators
- ❑ Possess all functionalities of Low and Mid-Security Users
- ❑ Additional capabilities include creating/removing access points and accessing high-risk areas

## School Example:

- System Administrators managing access points
- Accessing high-risk areas for system maintenance

## Workplace Example:

- IT Administrators managing access points
- Accessing high-risk areas for system maintenance

# Risks

## ❑ **Hardware Malfunction:**

The hardware in use may experience malfunctions, or specific components might break.

## ❑ **Hardware Delay:**

Some tasks may be delayed due to incomplete or unavailable hardware, particularly relying on Arduino software tests.

## ❑ **Missing Team Member:**

Absence or delay of a team member could disrupt workflow, requiring task redistribution.

## ❑ **Hardware Incompatibility:**

There may be insufficient power to support all components, causing potential operational issues.

## ❑ **Engineering Lock Error:**

The lock mechanism could malfunction, either through programming errors or mechanical parts failure.



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# Risks Continued

## ❑ **Programming Incompatibility:**

Certain sections of the program might not seamlessly integrate, necessitating rework for proper functionality.

## ❑ **Database RFID Incompatibility:**

The RFID sequence might encounter difficulties during input due to size-related issues in the system.

# Assumptions

- RFID tokens/cards are compatible with scanner and system.
- The system is connected through a physical medium, i.e., a USB cord.
- The database is running with default configurations.
- RFID tokens/cards available are known and documented for assignment; the current system doesn't scan for assignment.
- The administrator possesses prior knowledge in SQL for efficient database creation; otherwise, manual entry will be done individually.
- RFID cards have unique IDs.
- Higher security levels have access to all clearances of lower security levels.
- Security levels are correctly assigned.



# Vision

Our goal for our project is to create a scalable, robust attendance and access security system using RFID technology. Allowing for quick, automated access to doors, and automated tracking attendance, users will use RFID tokens and cards to access these features. Administrators and faculty will have access to the same facilities plus access to attendance lists.

# Features

## **Administration - User and AP Control:**

- Administrators have full control, creating, removing, and editing users and access points.
- Security levels for users and access points are adjustable.

## **User Access and Attendance:**

- Users scan for attendance or access at designated points.

# Features

## **Administration - Attendance Access:**

- Administrators will be able to access the attendance list.
- Alternatively administrators can also see the attendance denied list

## **Automated Archival:**

- Database lists, including attendance, are automatically archived.

# Desirable Features

## **Wired to Wireless:**

Transition from wired to wireless connections

## **Closed Door Detection:**

Implement a system that detects when the door is closed.

## **Website for Attendance:**

Create an interface where the administrator can access attendance without being connected to the system.

## **Auto-lock Function:**

Integrate an automatic lock function.

## **Additional/Optional Security Measures:**

Add keypads, biometrics, or voice recognition for alternative/ additional ways of entry.

# Features Breakdown

- **Feature 1: Database and Control**

- Part 1: Create a SQL database.
- Part 2: Create a program that can access the database
  - Part 2a: Create Users and access points ability.
  - Part 2b: Edit Users and Access points ability.
  - Part 2c: Search user and access point
- Part 3: Connect Control program with Arduino

- **Feature 2: Door mechanism**

- Part 1: Design Mechanism
  - Part 1a: 3d-model design
  - Part 1b: 3d-print design
- Part 2: Build Lock mechanism
- Part 3: connect lock to arduino.

- **Feature 3: Arduino**

- **Part 1:** Design Arduino build.
- **Part 2:** Build Arduino build
- **Part 3:** Program Arduino
  - **Part 3a:** Read RFID
  - **Part 3b:** Contact Control System
  - **Part 3c:** Send signal to Door Mechanism



# Work Breakdown

- **Feature 1: Data Base and Control**
  - **Designer Lead:** Ryan
  - **Implementation:** The whole team
- **Feature 1b: Control**
  - **Designer Lead:** Alejandro
  - **Implementation:** The whole team
- **Feature 2: Door Mechanism**
  - **Designer Lead:** Manuel
  - **Implementation:** The whole team
- **Feature 3: Arduino :**
  - **Designer Lead:** Jon
  - **Implementation:** The whole team

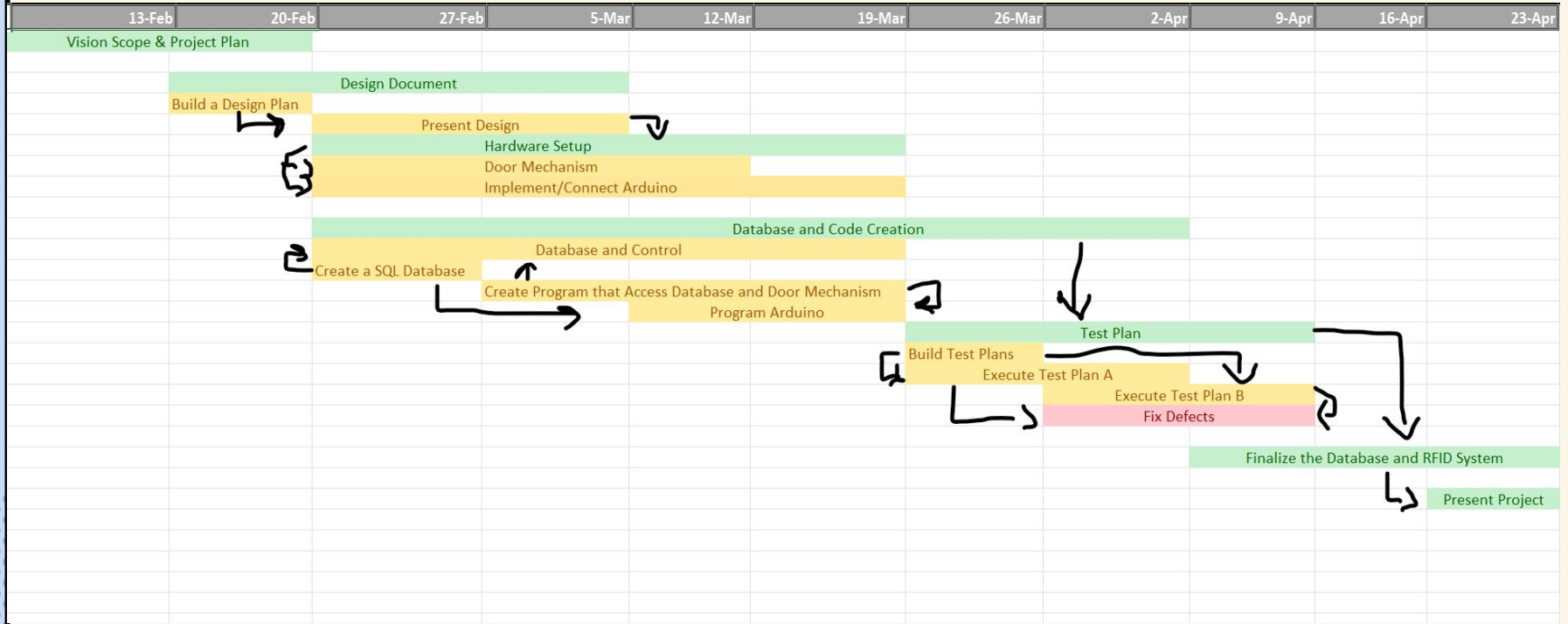


# Hardware and Software Resources

## RFID Scanner: Security Program: Database (server program)

- Arduino
- RFID Scanner
- Wires
- Power Source
- RFID Tokens
- C++
- Python and C++
- Host Computer
- Hosting application
- MYSQL
- PhpMyAdmin
- Apache
- Storage Device

# Project Schedule



# Risk Plan for Project

Risk plan for project RFID Attendance/Entrance Control System					
Assessment team members Alejandro Martinez, Jon Nguyen, Ryan Pierce, Manuel Santos					
Risk	Probability 1-10	Impact 1-5	Priority	Actions	
Hardware delay	4	4	16	Ryan will get an ETA from Professor as to when we can expect the hardware.	
Jon becomes very sick for 2 weeks	5	5	25	Ryan will ask Manuel and Alejandro to pick up the extra slack until Jon returns.	
Programming Incompatibility	3	5	15	Ryan and Jon will move into a different direction in terms of programming.	
Hardware Malfunction	4	5	20	Manuel will ensure we have extra backup to replace unusable hardware.	
Database RFID incompatibility	3	5	15	Alejandro will trouble shoot any and all problems with our database.	