Where's My Student? An RFID Tracking System

Tracking student location accurately is critical. Our RFID system offers a tech-savvy solution to prevent skipping.

The Problem: extensive breaks

High Absence Rates

Student on average should take 5-10 minutes on breaks

Impact on Success

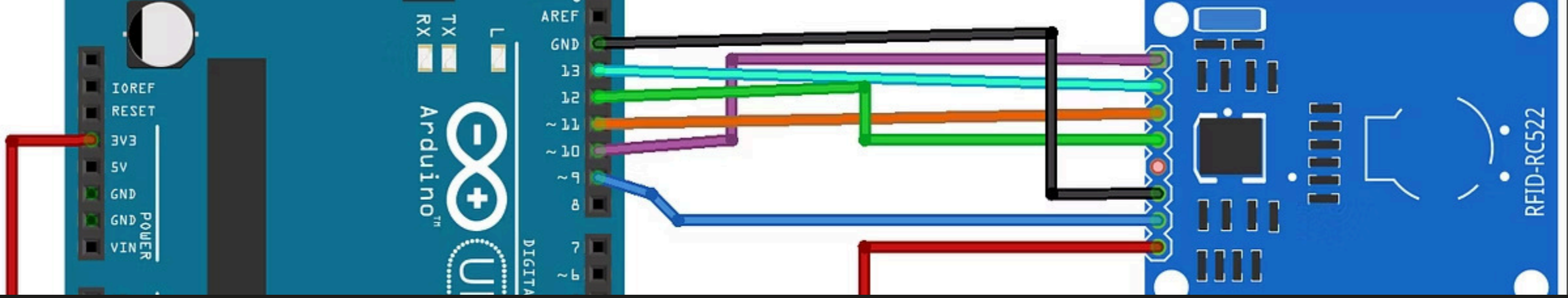
Chronic absenteeism lowers graduation rates significantly.

Manual Tracking Issues

Traditional 'catching' is slow and inefficient.

Resource Misallocation

Unexplained temporary absences affect performance.



Proposed Solution: RFID-Based Tracking

Node-Based Monitoring

Track student location instantly via RFID tags.

Automated skipping prevention

Generate timestamped attendance records automatically.

System Integration

Connects seamlessly with existing student information systems.

Secure Data

Ensures privacy with encrypted, secure identification.

System Components

	Single Product Purchase	Bulk Purchase
Arduino RFID Reader/Writer(x2)	$1 per unit	44¢ (for 500 or more)
Passive RFID Tags (Student ID cards)	35¢ per unit	20¢ per unit (25 or more)
Central Processor (Arduino Uno R4×2)	$28	$6 (500 or more)
Data Transmitter(NRF24L01×2)	$1	50¢ (100 or more)
Breadboards(x2)	$1	15¢ (200 or more)
Total Cost per Student	Less than $60	Less than $7,000

Week 1-2: System Design & Component Sourcing

Architecture Planning

Define system structure and data flow clearly.

Component Procurement

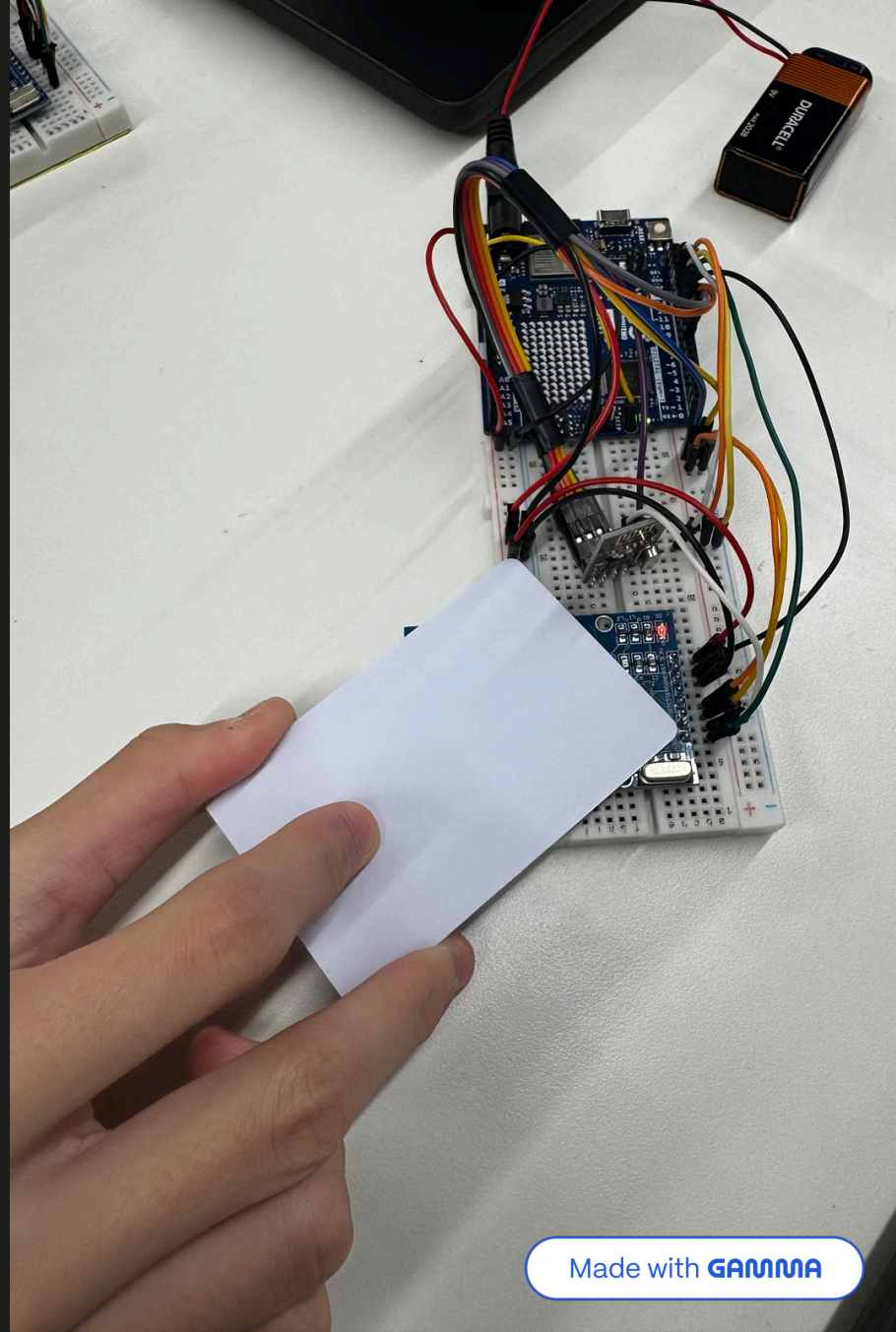
Select Arduino boards, RFID readers, and tags.

Development Setup

Install Arduino IDE.

Database Design

Create scheme for detailed attendance records.



Week 3-4: Hardware Setup & Integration

Configure Hardware

Set up Arduino and RFID readers for data capture.

Establish Communication

Connect RFID devices to central processing unit.

Test Tag Functionality

Ensure reliable reading and writing of RFID tags.

Week 5-6: Software Development & Database Integration

Software Development

Build software to process RFID scans accurately.

Incorporate transmission

Combine the two systems (recieving and sending)

Apply Wireless FUnctinality

Make one of the boxes independent of the computer function on a 9V battery

Week 7: Testing & Feedback

1 **Finalize**

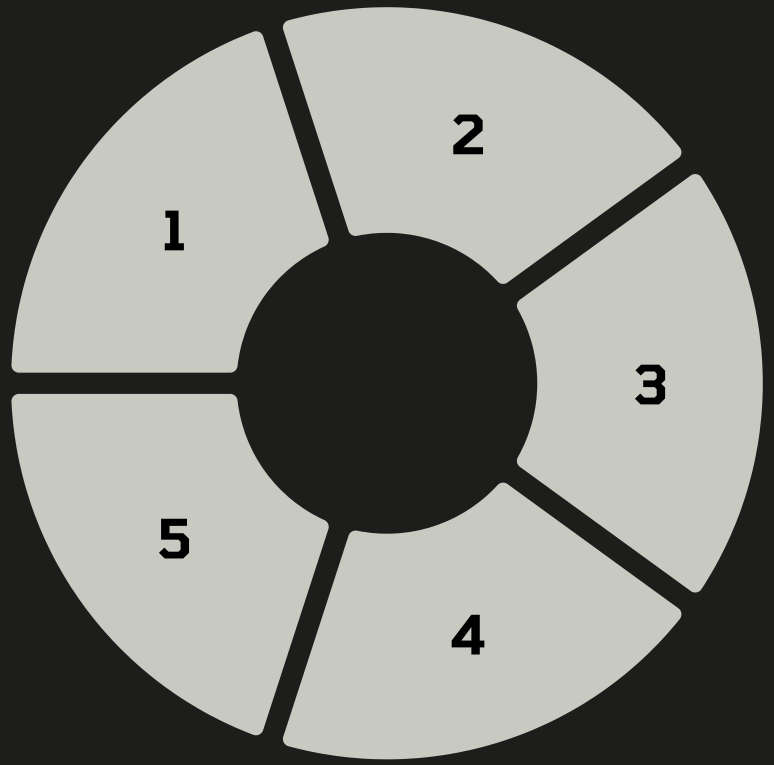
Made the final Prototype

2 **Collect Feedback**

Gather insights from fellow students.

Benefits of RFID Skipping-Prevention System

1. High Tracking Accuracy
2. Semi-Real-time Data
3. Reduced Teacher Distress
4. Enhanced Student Safety
5. Increased Parent Engagement



Conclusion: Investing in Student Success

Our RFID system curbs skipping and boosts attendance. It's a smart investment for education and safety. This scalable solution can expand to other school systems ensuring improved outcomes for students.