



MINI INDOOR GREENHOUSE

GROUP 17



Meet Our Team



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Problem Statement

01. Restrictions & needed conditions when cultivating a certain plant



02. Limited Time and Busy Schedules



03. Lack of knowledge of optimum conditions for each plant





Our Solution

A Mini Indoor Greenhouse

Consists of options to monitor the plant's status and adjust
the conditions accordingly



Features

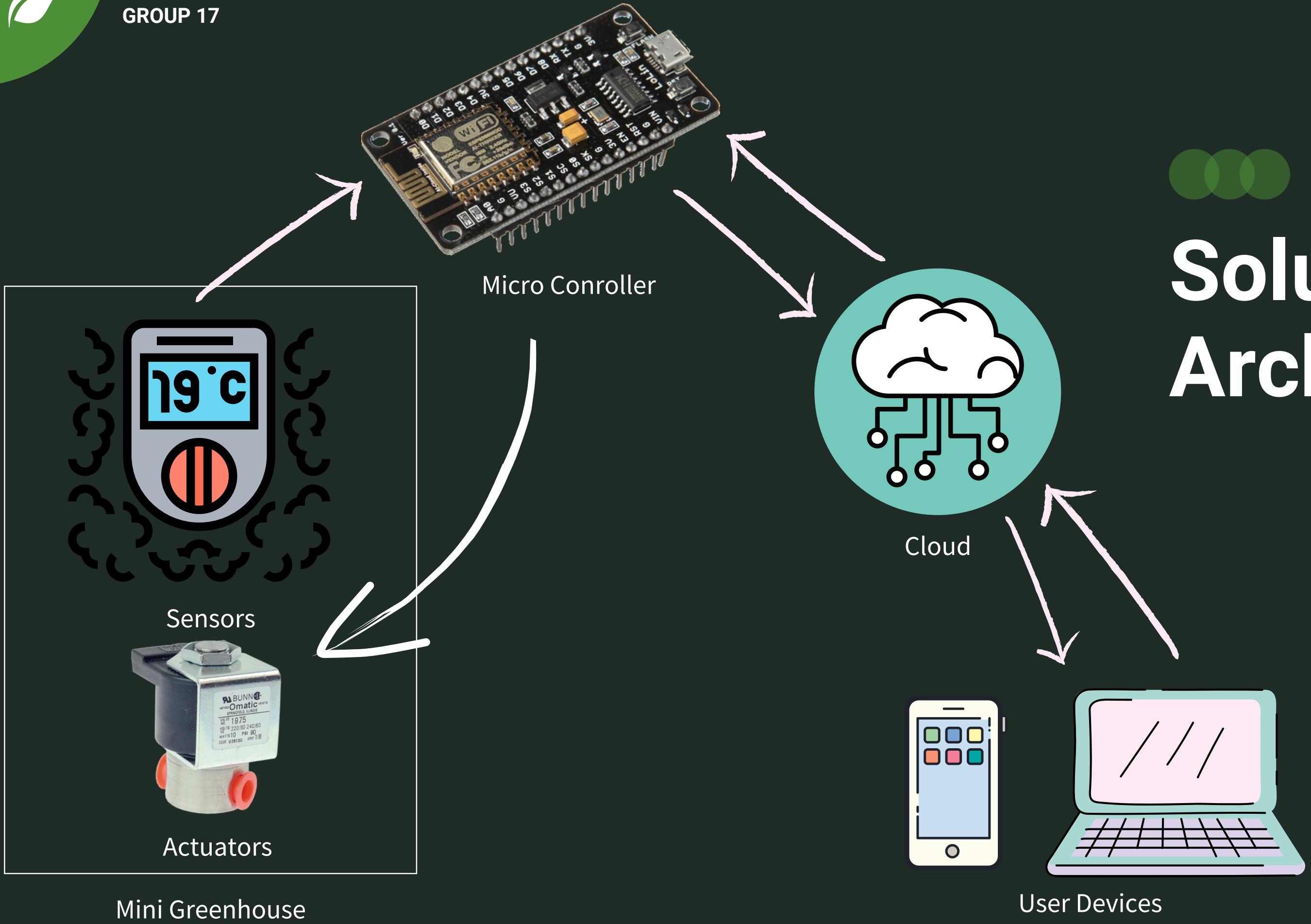
- 01. Monitor the plant's status**
- 02. Control the Conditions**
- 03. Adjust to Optimum Conditions**
- 04. Cultivate Different Plants**

82%

A green circular progress bar with a white outline and a white inner circle. The text "82%" is displayed in the center of the bar.



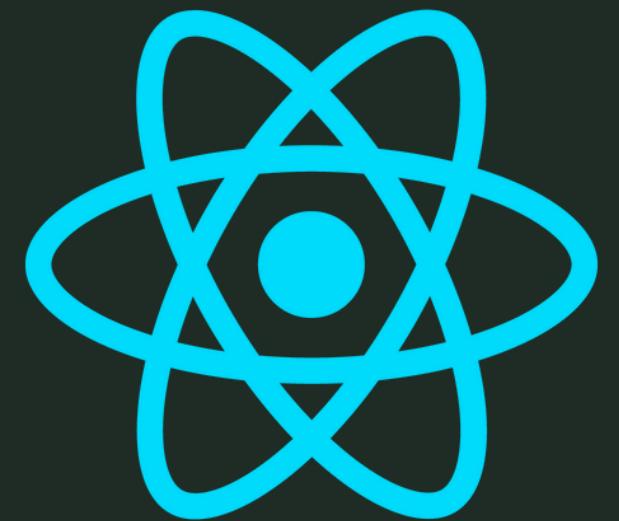
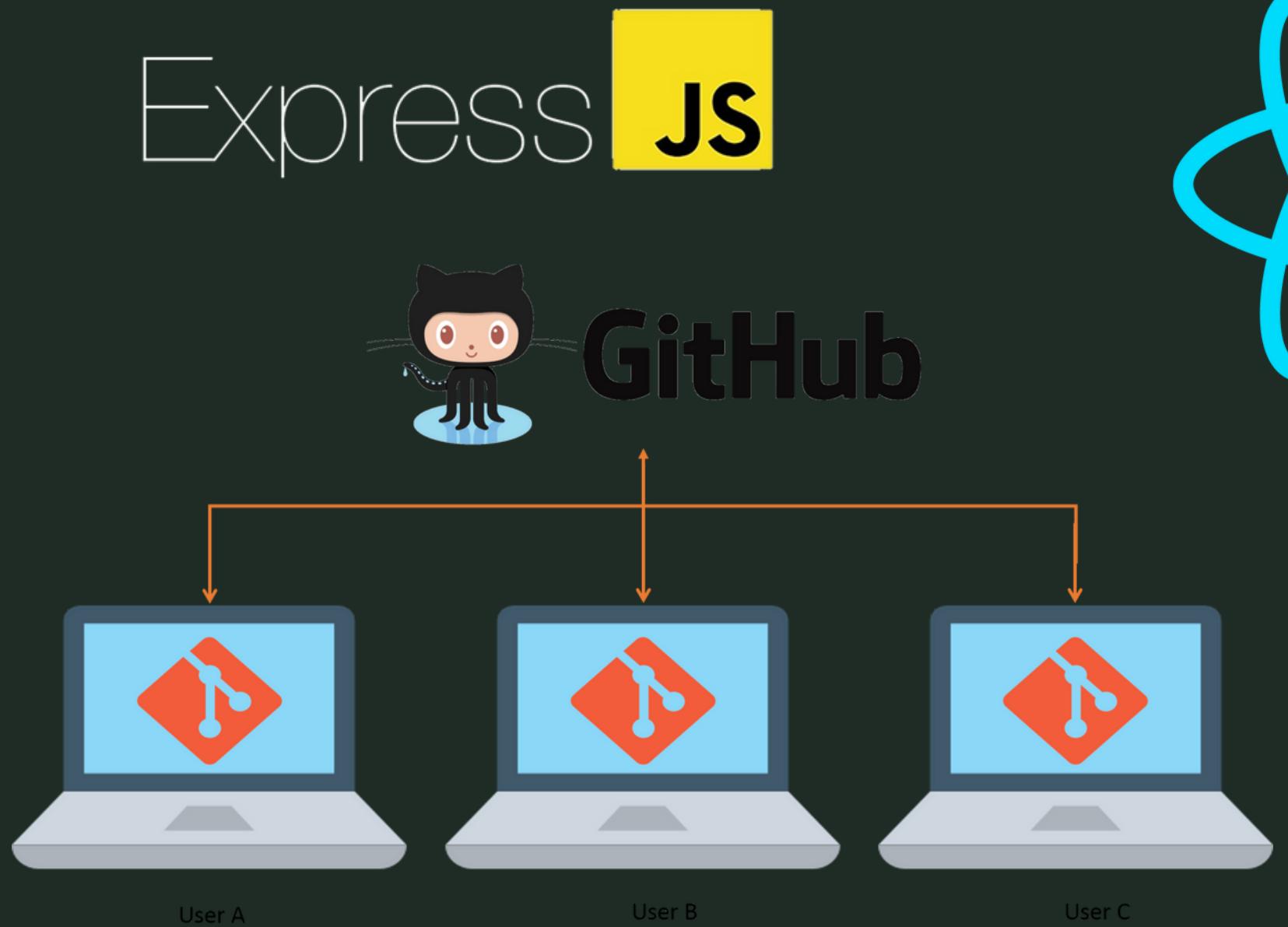
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Solutions Architecture



Technology Stack





Demonstration Plan

- **User Registration via App**

Creating a new user and Sign-up for an existing user through the Mobile/Web App

- **Automate the Control of Conditions**

Automate the actuators to provide the plant with the optimum conditions they need

- **Demonstrate the product by making a mini greenhouse.**

To demonstrate and to test the physical model of the product we are making a 60cm x 60cm x 100cm mini green house .

- **Displaying Sensor Readings in Mobile App/Web App**

Displaying readings took by sensors along with the time

- **Displaying the optimum conditions**

Displaying the Growth rate of plants regarding to various control conditions provided and Selecting the optimum condition



Security Aspects

- **Password Protected User Accounts**

Each user is provided with a password protected user account which can be accessed by Mobile/Web devices

- **Authentication and Authorisation**

When correct password is provided, the user will be directed to his/her account and Access will be granted according to the Least Access principle

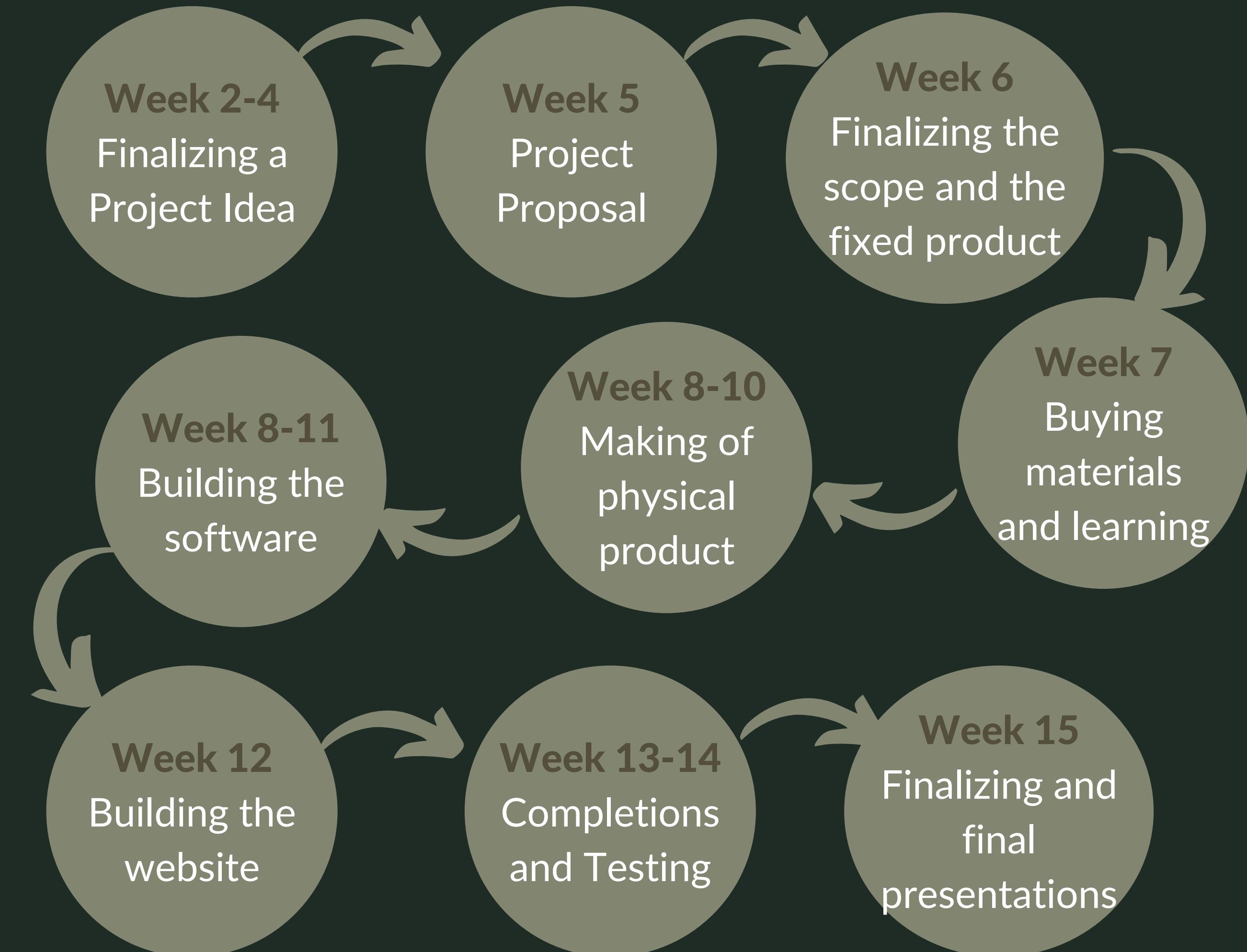
- **Data Integrity**

Secure transmission of data between Nodes and the Backend

- **Isolation**

Isolating each user so that if the security is compromised in an account , the attacker wont be able to steal information from other accounts

Project Timeline





Bill of Materials

| Element | Unit Price | Amount | Price |
|-------------------------------------|------------|--------|-------|
| Relay model | 1000 | 1 | 1000 |
| Sr04 Ultrasonic sensor | 450 | 1 | 450 |
| Soil moisture sensor | 1000 | 1 | 1000 |
| Ntc water proof temperature sensor | 400 | 1 | 400 |
| Grow light chip 5w | 2350 | 1 | 2350 |
| DHT22 Temperature & Humidity Sensor | 1700 | 1 | 1700 |
| Tec1 cooler | 1700 | 1 | 1700 |
| Ptc heating element | 1700 | 1 | 1700 |
| Dc fans | 600 | 3 | 1800 |
| Misting nozzle | 345 | 1 | 345 |
| 12v water solenoid valve | 1500 | 2 | 3000 |
| NodeMCU ESP8266 IoT Dev Board | 3000 | 1 | 3000 |
| Other | 5000 | - | 5000 |
| Total | | | 23445 |



Github Repository & Project Website

- **Github Repository**

https://github.com/HarithaGunarathna/e18_3yp_Automated-Mini-Greenhouse_Monitoring_And_Control_System

- **Project Website**

<https://cepdnaclk.github.io/e18-3yp-Automated-Mini-Greenhouse-Monitoring-And-Control-System/>





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THANK YOU