INTELLIGENT FARMING ASSISTANT (I-FAS)

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GROUP 5

GROUP MEMBERS :1. AIMAN FARHAN BIN JAMALULLAIL (197208)
2. MUHAMMAD IKMAL BIN MUHAMMAD FADHIL (195824)
3. SHABIL IZDIHAR BIN AHMAD AZMI (197812)
4. HASANAH BINTI RIDZUAN (198463)
5. NUR ALIAH DALILAH BINTI ZULKIFLI (196285)

Problem Statement

Farmers in Malaysia struggle to predict how much water needed for their plants due to the country's unpredictable weather.

Lack of knowledge to handle the plants

Project Description

We offer a low-cost intelligent farming system that offers a reliable intelligent assistant in terms of taking care of the needs of the plant by giving accurate ways and advice on how to execute it through smartphone and the remote monitoring element in one system. These are the novel features offered by our product which are not available in the market yet.

Objective

All objectives are achieved in this project

To design a smart gardening system that can provide monitoring, planting and harvesting and display the output to users that can contribute to a healthier crop.

To improve the quality of the crops by implementing a system that can help farmers in their daily routine.

Project Deliverable

Week 8 - Week 11 (4 weeks):

- Design and develop the system

- Software development: Arduino IDE, Firebase (database), and MIT app Inventor (application)

- Hardware development: integrate all sensors into one system

Week 11 - Week 14 (4 weeks):

- Testing the system

- Producing a demonstration video

- Preparing for final report

NO	ACTIVITY	WEEK													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Breafing on project and client requirement														
2	Discussion on project deliverables with SV														
3	Discussion and researching on product implementation														
4	Task distribution														
5	Researching on target														
6	Finding and approach potential clients														
7	Preparing and finalize interview questions														
8	Meeting with target client														
9	Analyzing feedback and opinions from clients														
10	Preparing Client Validation Report														
11	Preparing Project Proposal														
12	Submission of CVR and														
13	Design and develop system														
14	System testing														
15	Preparing Final Project														
16	Submission of Final Project Report														

Project Scope

01

This project can measure the value of soil PH, moisture, surrounding temperature and humidity.

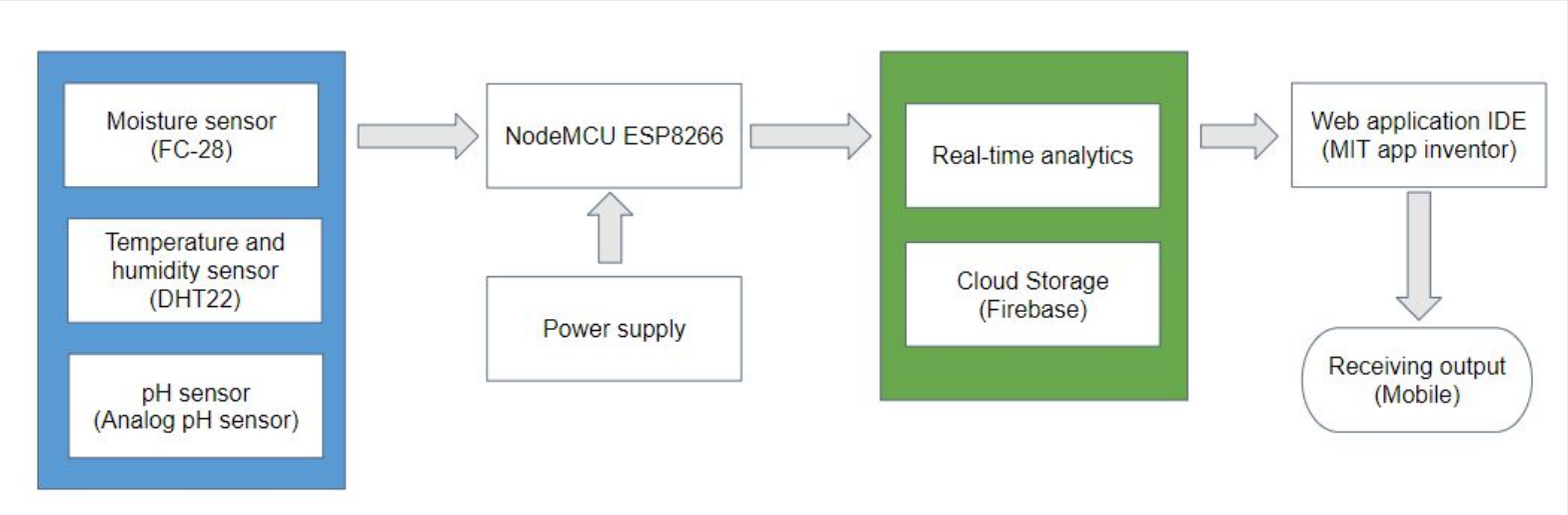
02

All the output will be display in the application for monitoring purpose together with the step to take care of the plant.

03

This project can only be implement on indoor chili plant.

Design Overview



Test Methodology

Planting: Gives guidance and tips to prepare soil for chilli seeds, and transplanting chilli seeds.

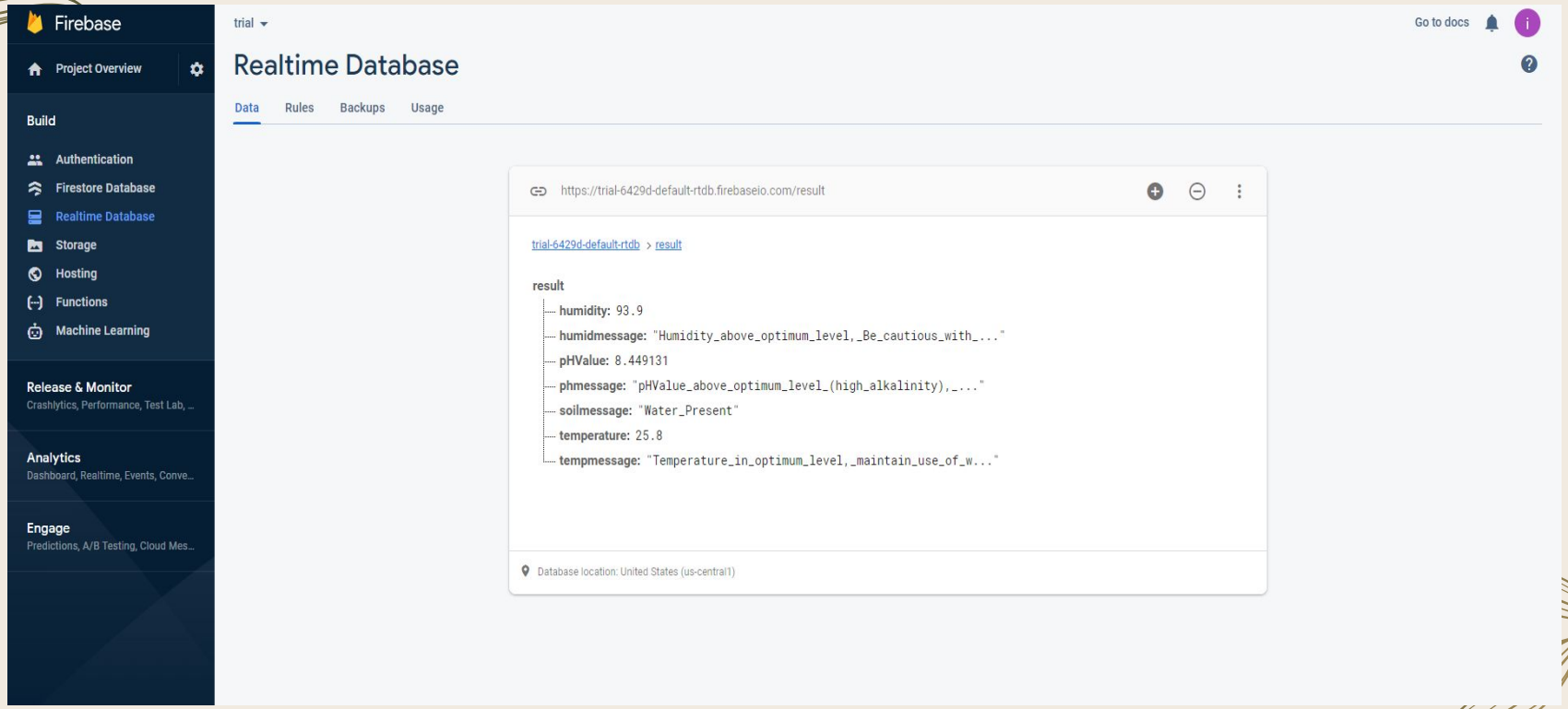
Monitoring: Displays surrounding humidity and temperature, soil pH value and soil moisture to the user via a mobile application and gives tips regarding the input from sensors

Harvesting: Offers tips on how to harvest a chilli plant

Test Methodology

Sensor	Condition	Action/Output
Moisture	1	Displays "*Water is present, use less water to plant*"
	0	Displays "*Water is not present, use more water to plant*"
pH	<5.5	Displays "*pH value is below optimum level, use alkaline-based fertilizer*"
	5.5 – 6.8	Displays "*pH value is at optimum level, no fertilizers needed*"
	>6.8	Displays "*pH value is above optimum level, use acidic-based fertilizer*"
Temperature	<20°	Displays "*temperature is below optimum level, use less water to plant*"
	20° – 30°	Displays "*temperature is at optimum level, maintain use of water*"
	>30°	Displays "*temperature is above optimum level, use water more water to plant*"
Humidity	<60	Displays "*humidity is below optimum level, use more water to plant*"
	60 - 80	Displays "*humidity is at optimum level, maintain use of water*"
	>80	Displays "*humidity is above optimum level, be cautious with fungus and bacteria*"

Test Methodology



Application Interface

Menu

Intelligent Farming Assistant

Planting

Monitoring

Harvesting

MENU

Step1

Chilli Seeds Preparation

Prepare high quality chilli seeds. Large-scale farming can purchase the chilli seeds at the store. For small-scale farming, you can prepare chilli seeds on your own.

Small-Scale Chilli Seeds Preparation

1. Peel the chilies then take the seeds.
2. Dry the seeds in the sun.

Tips: High quality chilli seeds are seeds that are still fresh

next

PLANTING

Screen2

MONITOR YOUR CHILLI

Temperature

25.8

Humidity

93.9

Soil Moisture

Water present

pH

8.45

Temperature in Optimum Level

Maintain use of water

Humidity above optimum level

Maintain use of water

pH value above optimum level (high alkalinity)

Use acidic-based fertilizer

MONITORING

Harvesting

Harvesting Chilli

Harvesting time is usually determined by the fruit colour required by the market.

Harvest the chilli fruits 2 - 2½ months after transplanting during its maturity period and continue for a further 4-6 months.

Chilli fruits can be handpicked or using secateurs.

secateur

HARVESTING

Market Analysis

195

Cost

Total development cost

280

Revenue

Total Revenue per customer for every subscription

47

Profit

20% profit from initial cost per customer

Hardware Costing

	Cost Estimation		
Project Work Element	**Unit**	**Unit Price**	**Price**
NodeMCU	1	20.00	20.00
NodeMCU cable	1	5.00	5.00
Breadboard	1	10.00	10.00
Temperature and Humidity Sensor DHT22	1	22.00	22.00
FC-28 Soil Mositure Sensor	1	3.90	3.90
Industrial pH Electrode	1	75.00	75.00
Jumper Cable (5 Sets)	1	10.00	10.00
Dupont Jumper Wire Male-Male - 30cm	1	4.60	4.60
Dupont Jumper Wire Female-Female - 30cm	1	4.60	4.60
Dupont Jumper Wire Male-Female - 30cm	1	4.60	4.60
Total Direct Cost			160

Market Price and Profit

Total Direct Cost	160
Overhead Cost	35
TOTAL (Overhead + Direct)	195
G&A Overhead Cost (20%)	39
Total Cost	234
Profit (20%)	47
Total Bid	280

Issue and Risk

Real Time Monitoring

latency

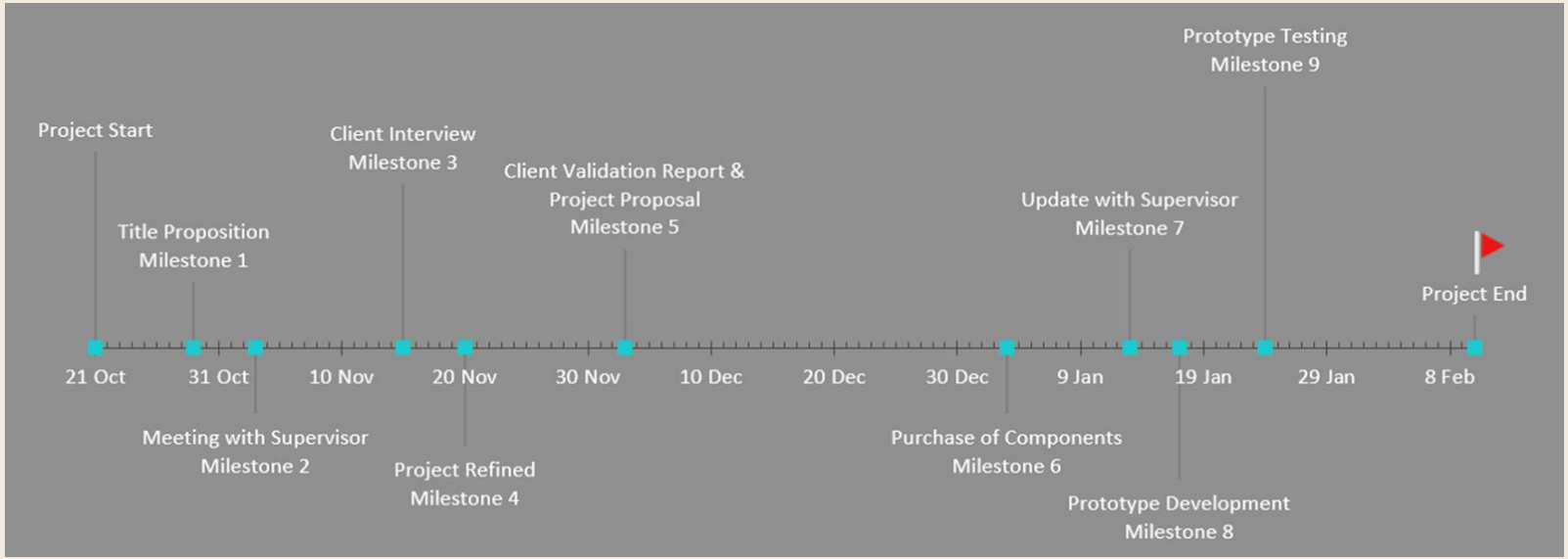
Budget

Expensive component

Lifetime Benefits

New knowledge and evolution

Key Milestones



Product demo

Thank You