



Parshvanath Charitable Trust's
A. P. SHAH INSTITUTE OF TECHNOLOGY
(Approved by AICTE New Delhi & Govt. of Maharashtra, Affiliated to University of Mumbai)
(Religious Jain Minority)

BloomBuddy : Plant Care Automation

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UNDER THE GUIDANCE OF
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INTRODUCTION

PLANT CARE AUTOMATION SYSTEM

Harnessing IoT, this system automates plant watering based on real-time data, with a user-friendly interface for monitoring and management of plant care routines.

PROBLEM STATEMENT

THE INEFFICIENCY AND INACCURACY OF MANUAL PLANT CARE, CAN LEAD TO SUBOPTIMAL HEALTH FOR PLANTS. THE CHALLENGE IS TO AUTOMATE THIS PROCESS USING REAL-TIME SOIL DATA, WHILE PROVIDING A USER-FRIENDLY INTERFACE FOR DATA MANAGEMENT AND DISPLAY SO OUR PLANTS THRIVE WITHOUT HUMAN INTERVENTION.

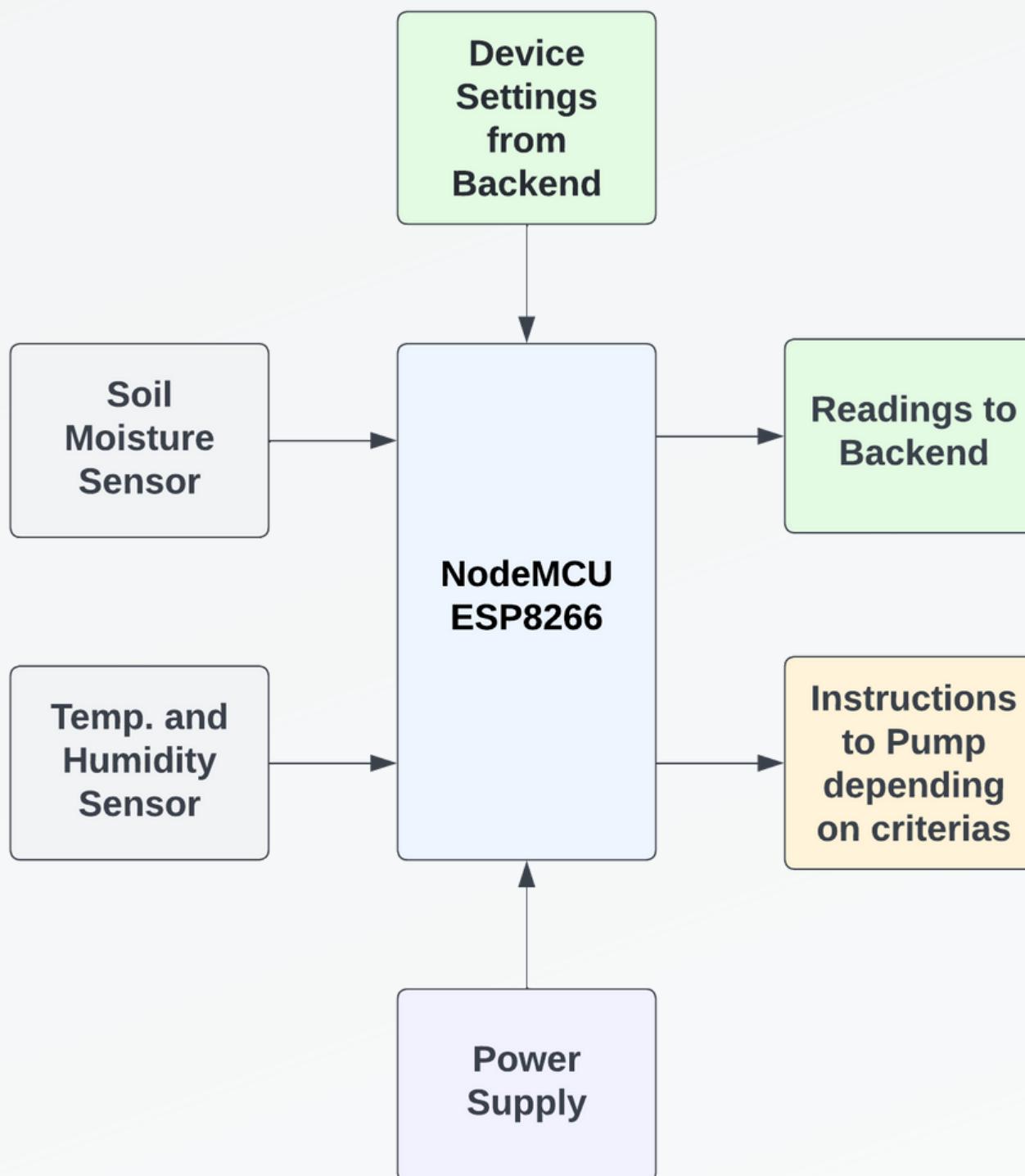
OBJECTIVES

- 1. DATA PRECISION:** ENSURE RELIABLE SENSOR INTEGRATION FOR PRECISE SOIL MOISTURE AND TEMPERATURE READINGS, MINIMIZING DATA COLLECTION ERRORS.
- 2. WATERING EFFICIENCY:** DEVELOP AN EMBEDDED INTELLIGENCE FOR OPTIMAL WATERING THUS REDUCING WATER WASTAGE AND PROMOTING SUSTAINABLE PLANT CARE.
- 3. USER-FRIENDLY INTERFACE:** DESIGN AN INTUITIVE WEB INTERFACE FOR EASY PLANT CONDITION MONITORING, AND ENHANCED USER EXPERIENCE.
- 4. REMOTE MONITORING CAPABILITY:** ENABLE REMOTE SYSTEM CONTROL THROUGH THE WEB INTERFACE, CUSTOMIZED WATERING SCHEDULES, OFFERING FLEXIBILITY FOR USERS MANAGING PLANTS IN DIFFERENT LOCATIONS.

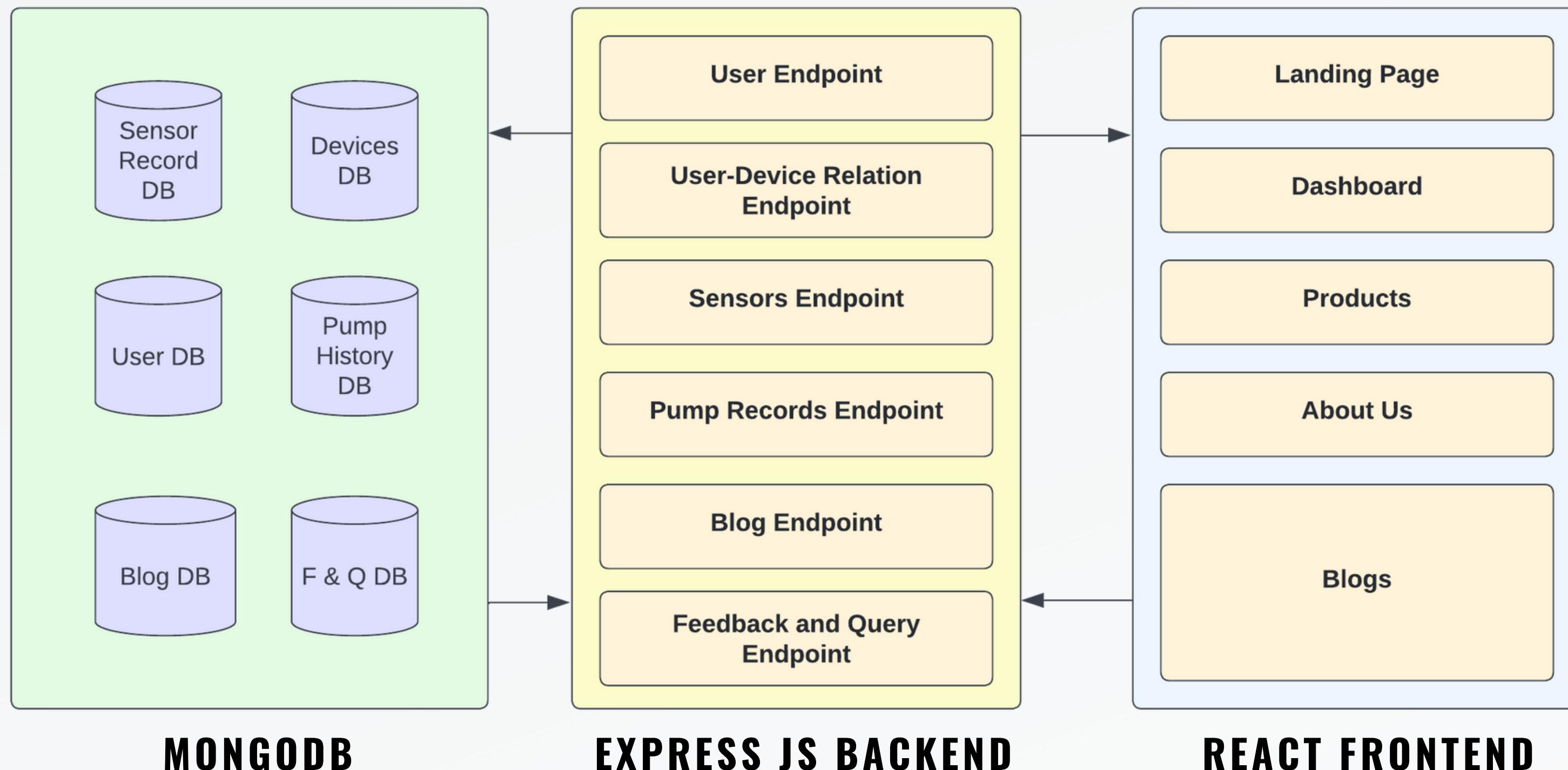
SCOPE

- 1. SENSOR INTEGRATION:** UTILIZE SENSOR DATA FOR REAL TIME MONITORING CRUCIAL FOR PLANT CARE.
- 2. AUTOMATED WATERING SYSTEM:** DEVELOP MECHANISM TO INTERPRET SENSOR DATA, OPTIMIZING WATERING BASED ON SOIL MOISTURE DATA THROUGH AN EFFICIENT AUTOMATED SYSTEM.
- 3. BACKEND & DATABASE INTEGRATION:** ESTABLISH A BACKEND WITH MONGODB, ENABLING REAL-TIME DATA TRANSFER AND STORAGE.
- 4. FRONTEND INTERFACE:** CREATE AN ACCESSIBLE WEB INTERFACE FOR EASY USER ACCESS TO PLANT DATA.
- 5. SCALABILITY & COMPATIBILITY:** DESIGN A SCALABLE SYSTEM FOR GROWING PLANTS AND ADDITIONAL SENSORS.

ARCHITECTURE DIAGRAM (IOT DEVICE)



ARCHITECTURE DIAGRAM (WEBSITE)



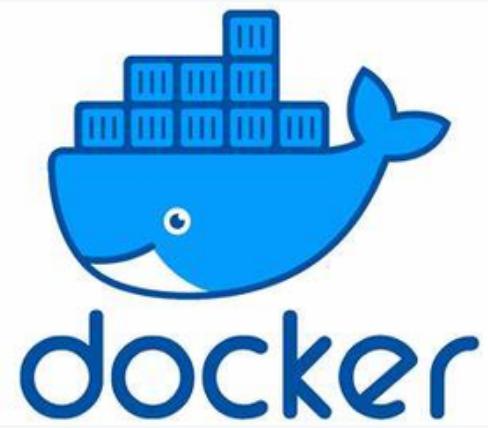
TECHINAL STACK

FOR IOT DEVICE:



**C++ USING ARDUINO IDE
(ARDUINO SKETCHES)**

FOR IMAGING:



FOR FRONTEND:



REACT JS

FOR DATABASE:



**MONGODB
NOSQL CLOUD DB**

FOR BACKEND

Express



FRAMEWORK



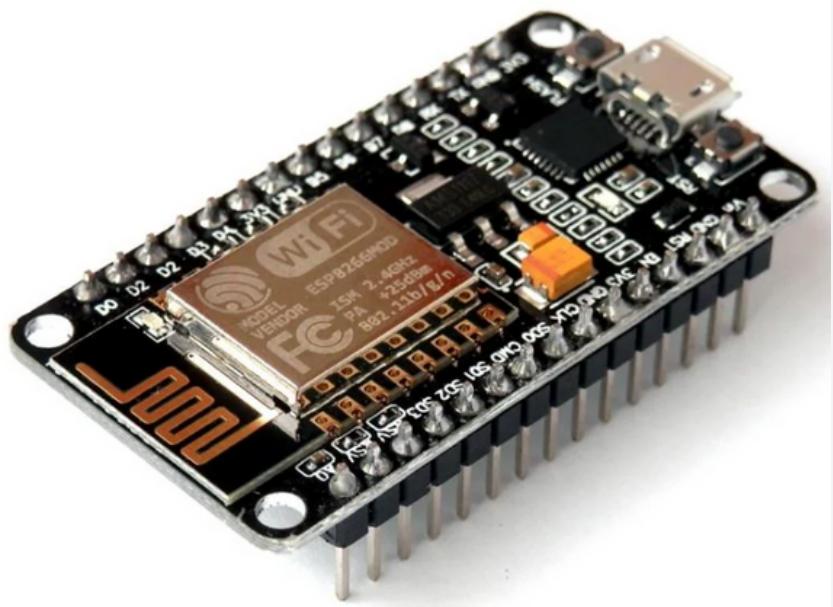
USING NODEJS

FOR DEPLOYMENT:

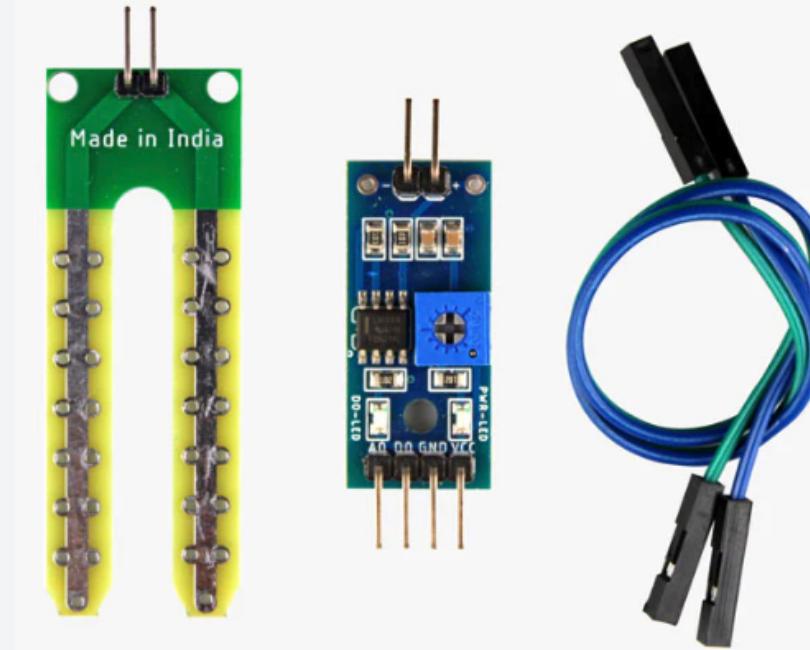


Google Cloud

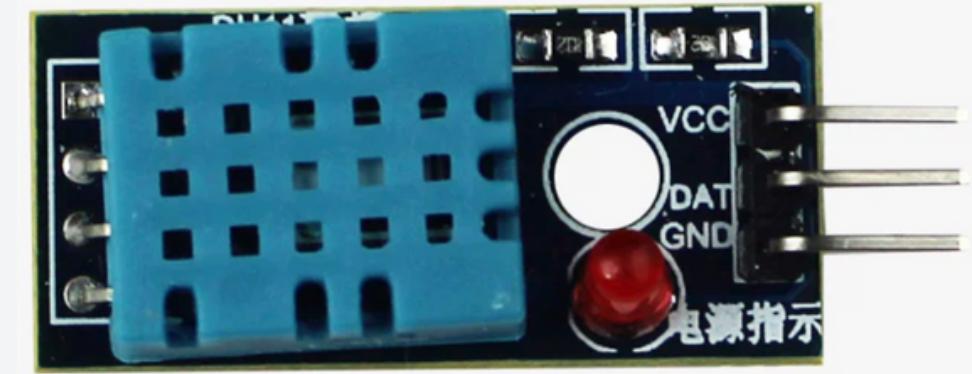
IOT DEVICES



NODEMCU ESP8266



SOIL MOISTURE SENSOR



DHT11 SENSOR



SUBMERSIBLE MINI
WATER PUMP



RELAY COMPONENT

PROJECT DEPLOYMENT PLAN

- 1. WE SETUP THE IOT DEVICES USING ARDUINO IDE.**
- 2. CONNECTED THE PINS AND SENSORS ACCORDINGLY.**
- 3. CREATED BACKEND USING NODE JS**
- 4. CREATED DIFFERENT DATA MODELS FOR MONGODB**
- 5. CREATED MULTIPLE ENDPOINTS TO BE USED TO FETCH AND PUSH DATA TO MONGODB**
- 6. STARTED CREATING THE FRONTEND USING REACT JS.**
- 7. CREATED ROUTES AND CONNECTED COMPONENTS.**
- 8. CREATED GRAPHS COMPONENTS TO DISPLAY SENSOR DATA.**

PROJECT DEPLOYMENT PLAN

BACKEND:

1. CREATE STABLE LOCAL DEVELOPEMENT VERSION
2. GENERATE A DOCKER IMAGE
3. TEST CONTAINER REFERENCING THE IMAGE
4. DEPLOY ON CLOUD
5. TEST USING POSTMAN
6. EXPRESS API DEPLOYED

FRONTEND:

1. CREATE STABLE LOCAL DEVELOPEMENT VERSION
2. GENERATE A DOCKER IMAGE
3. TEST CONTAINER REFERENCING THE IMAGE
4. DEPLOY ON CLOUD
5. TEST ALL FUNCTIONALITIES
6. REACTJS APP DEPLOYED

MODULES COMPLETED:

IOT DEVICES

- Nodemcu connected to WiFi
- Settings fetched by Nodemcu (Intervals)
- Sensor data received by Nodemcu
- Waterpump activation based on soil moisture
- Sensor data and pump activation data being sent to Backend server

BACKEND

- Storing sensor data to MongoDB.
- Fetch sensor data from MongoDB for frontend.
- Store water pump activation history.
- CRUD operation on users
- CRUD operation on user devices

MODULES COMPLETED:

FRONTEND

- LANDING PAGE
- CONTACT FORM
- ABOUT US
- PRODUCTS
- DASHBOARD GRAPHS
- BLOGS

PENDING WORK:

FRONTEND

- LOGIN/SIGNUP USING GOOGLE AUTHENTICATION
- PRODUCTS
- DASHBOARD DEVICES VIEW AND EDITING
- BLOGS ADDITION AND SEARCH

BACKEND

- QUERIES AND FEEDBACK BACKEND
- BLOGS BACKEND

THANKYOU