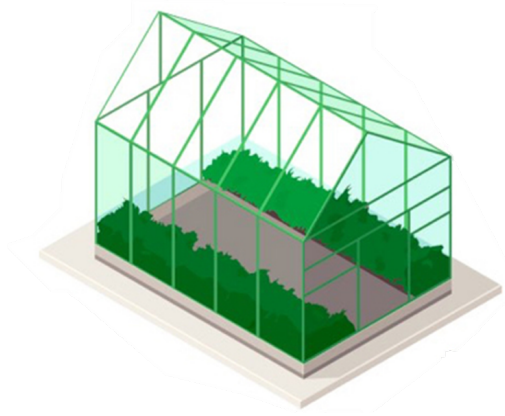


# GREEN HOUSE MANAGEMENT SYSTEM USING IOT



# GREEN HOUSE MANEGEMENT SYSTEM

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# Introduction



- A greenhouse can be defined as a closed structure that is used to protect the plants from external factors such as climatic conditions, pollution, etc.
- Basic factors affecting plant growth are sunlight, the water content in the soil, temperature, humidity.
- As we are aware that India is a developing country and the Agriculture sector contributes to the majority of the economy it is necessary to implement newer technologies in the field of agriculture.
- Green house management using IoT helps to innovate traditional ways of agriculture.



# Literature survey

## Existing System

- This system is made up of Arduino microcontrollers.
- Some sensors, DHT11 sensor, LDR sensor, Soil moisture sensor, and pH sensor is used in this project.
- The soil moisture sensor is used to measures the water content inside the soil. pH sensor measures the pH of the soil.
- LDR sensor is used to measure light intensity.
- The Arduino is also connected to devices such as a DHT11 sensor, LDR sensor, soil moisture sensor, water pump, artificial light, and servo motor.



# Literature Survey

## Proposed system



- The proposed system supports water management by sensing soil moisture and controlling the environment inside a greenhouse by measuring the parameters like temperature and humidity.
- The system continuously monitors the soil moisture and provides an accurate amount of water required to the crop by adding nutrients inside water automatically.
- There are no interruptions in the system's operation. It's a low-cost solution that's also efficient, consuming less electricity and requiring no manual intervention.



# Problem definition and scope



- Recent climate change scenario and their effect on the environment have motivated farmers to install greenhouses in their fields.
- But maintaining a greenhouse and its plantation is very labor-intensive and the majority of them perform vital operations intuitively.
- Thus we have developed such a cost-effective system using Internet of Things (IoT) technology.



# Problem definition and scope

## Goals and Objectives



- The GOAL of greenhouse management system is to simplify the complexity of managing greenhouse's environment
- The aim of the project is to manage and control the greenhouse system that will automatically control greenhouse environment,
- Using a microcontroller, sensors, cloud-based application which will collect the data like temperature, moisture, humidity.



## Problem definition and scope

- The objective of this project is to implement a low cost, reliable and scalable greenhouse management system that can help to manage factors that affect crop growth.
- This project work is complete based on electronic sensors which are connected to cloud services and automatically control the components of greenhouse and also collect data and stream data to cloud on user's dashboard.
- Thus we have developed such a cost effective system using Internet of Things (IoT) technology which is focused on solving these particular problems.





## Application and outcomes

- Live to monitoring of fields
- Detecting the percentage of Greenhouse gases like  $\text{NH}_3$  (azane),  $\text{NO}_x$  (nitric oxide), alcohol, benzene, smoke, and  $\text{CO}_2$  (carbon dioxide) in the closed environment.
- Water supply is provided by the submersible water pump when required and vice-versa
- Graphical representation of all components is provided on web application.
- Consequently, the greenhouse environment is established in the field.



# Software and hardware requirement

## Software

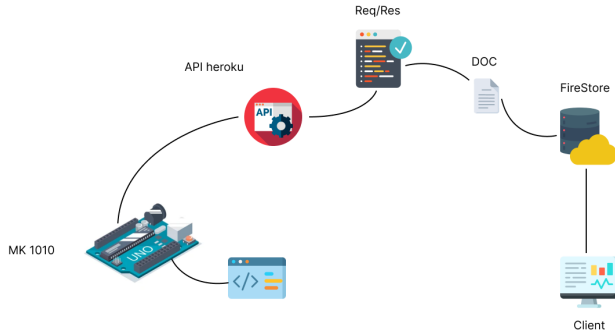
- Node.js
- Firebase
- React framework
- Arduino IDE
- Browser

## Hardware

- MKR 1010 WIFI (Micro-controller)
- DHT 11 (Temperature and humidity sensor)
- MQ 135 (Air quality sensor)
- LDR (Photoresistor)
- Soil Moisture Sensor Module
- Motor(Submersible Water Pump)
- Arduino UNO (Microcontroller)



# Overview



The End

