FARMERS E-MARKET

TEAM RAMANUJAN

17BCE0819 ANSHUMAN
17BCE0880 LAKSHYA
17BCE0944 MAHIKA
17BCE2213 PRANAV
17BCI0165 FARHAAN

Motivation

- Farmer's in India are being exploited for years from the middle-men till the present day. Over the course of the decade, production of agricultural goods has increased yet farmers struggle to recover their spent costs. In the agricultural ecosystem the post - harvest management is the weakest link.
- So far, the government has not been able to address to this sore point. Therefore, the main aim of this project is to remove the middle-men thereby, connecting the farmer and consumer directly at a standardised rates which ultimately removes the constraint of the middlemen.


“If you had a great meal today,
thank a farmer.”

Introduction

- This project aims to support farmers in a symbiotic manner, freeing them from being exploited by middlemen who extort them for profit. As well as freeing the consumer from being exploited by the monopoly of the middle-men, this can buy produce at a lower price than from the market.
- We will be basically making a website where buyers and sellers can interact directly. They can bargain and get the products at a standardised price. It will be responsive and highly interactive with security features.

Problems

- Exploitation of farmers due to middlemen
- Farmers don't get the right price for their crops
- They struggle even to cover their basic costs
- Government unable to solve the issue
- Post harvest management is the weakest link

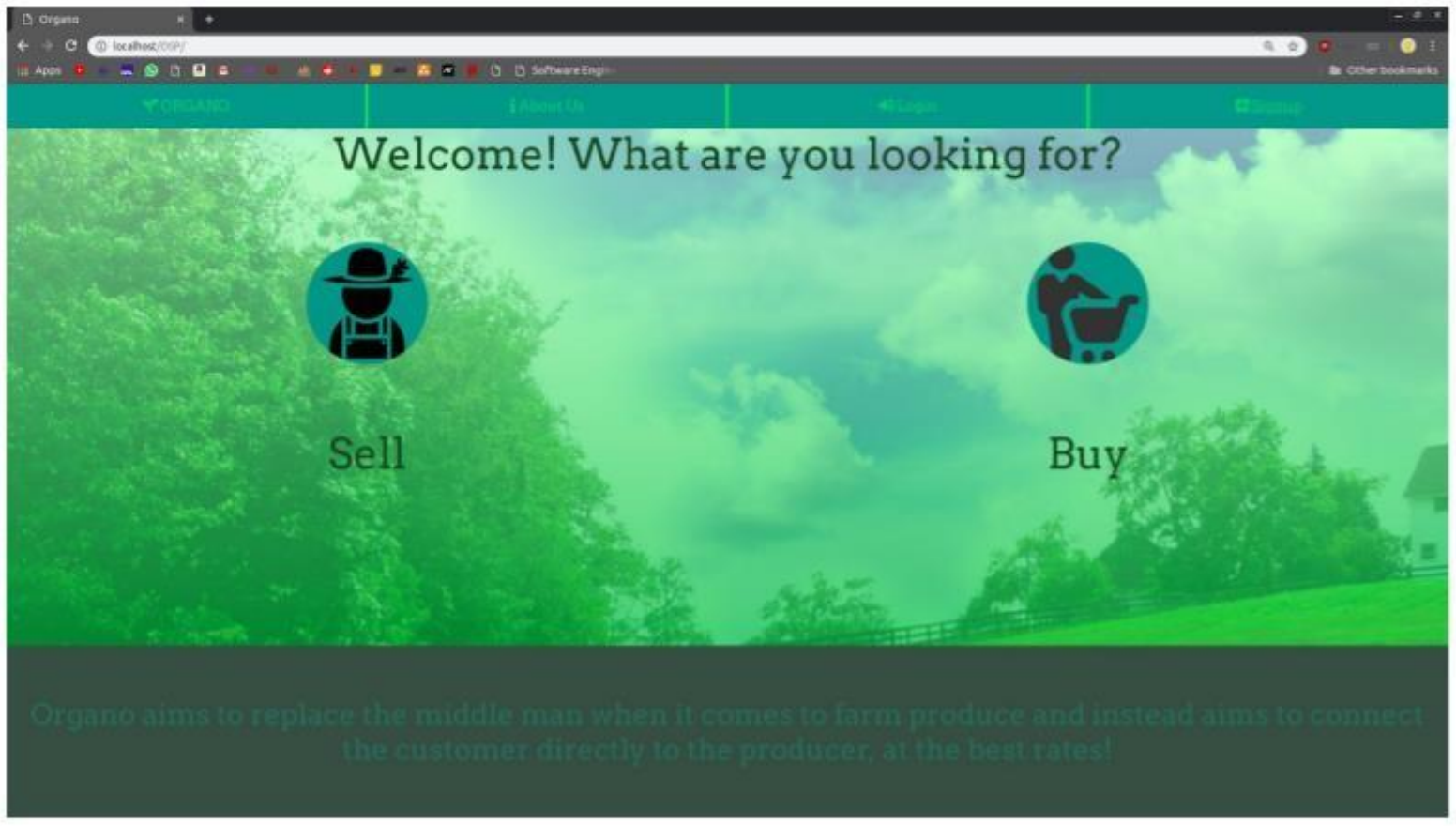
Solution – A Website !!!

- A website where farmer and consumer can interact directly
- Eliminates the problem of middlemen
- Farmers get the appropriate value for their crops
- Consumers also get the products at a lower price as there is no middleman involved

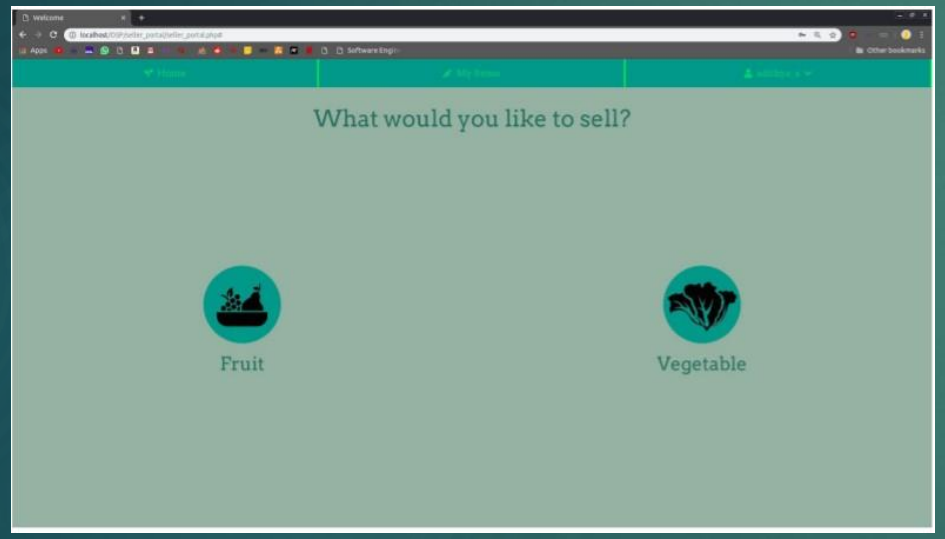
Working of the E portal for farmers

- We are designing a simplistic web portal which will allow the farmers to sell crops at the standard price and not at a bloated price given to them by the middlemen.
- The price suggested will be taken from the latest prices in the market today and sellers can directly interact with them.
- This way farmers are given their fair share and can live prosperously
- The design is simplistic and basic and even a novice user can access them

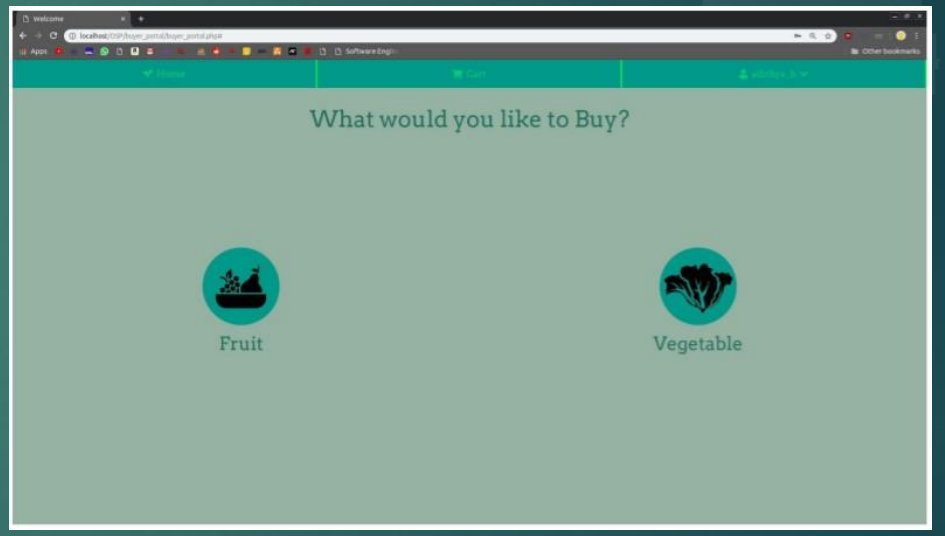
A standard design



Consumer



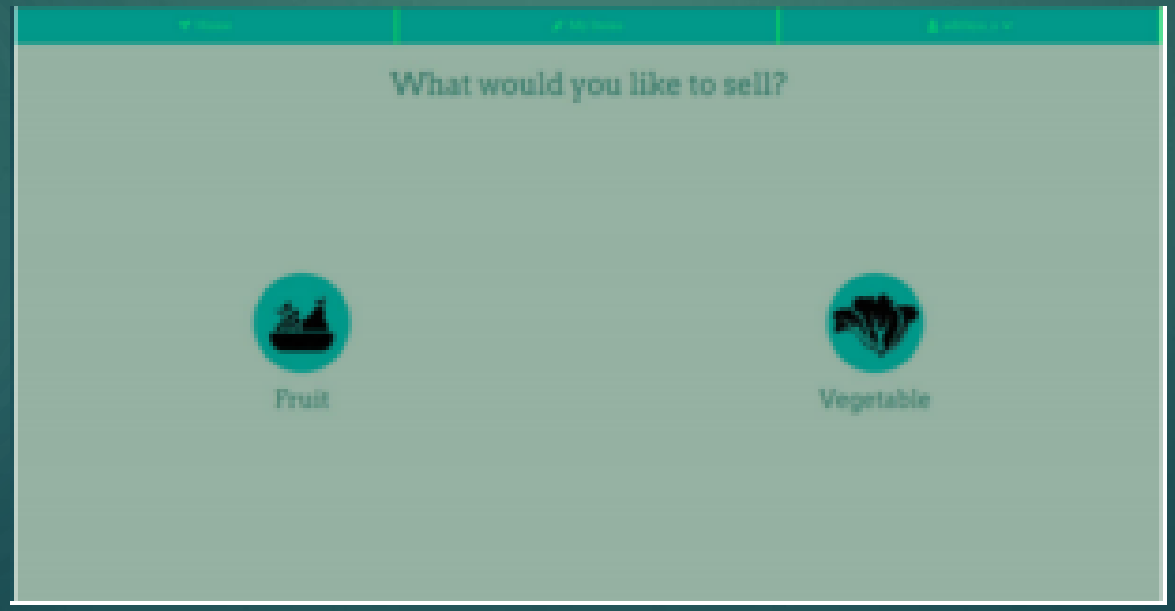
Farmer



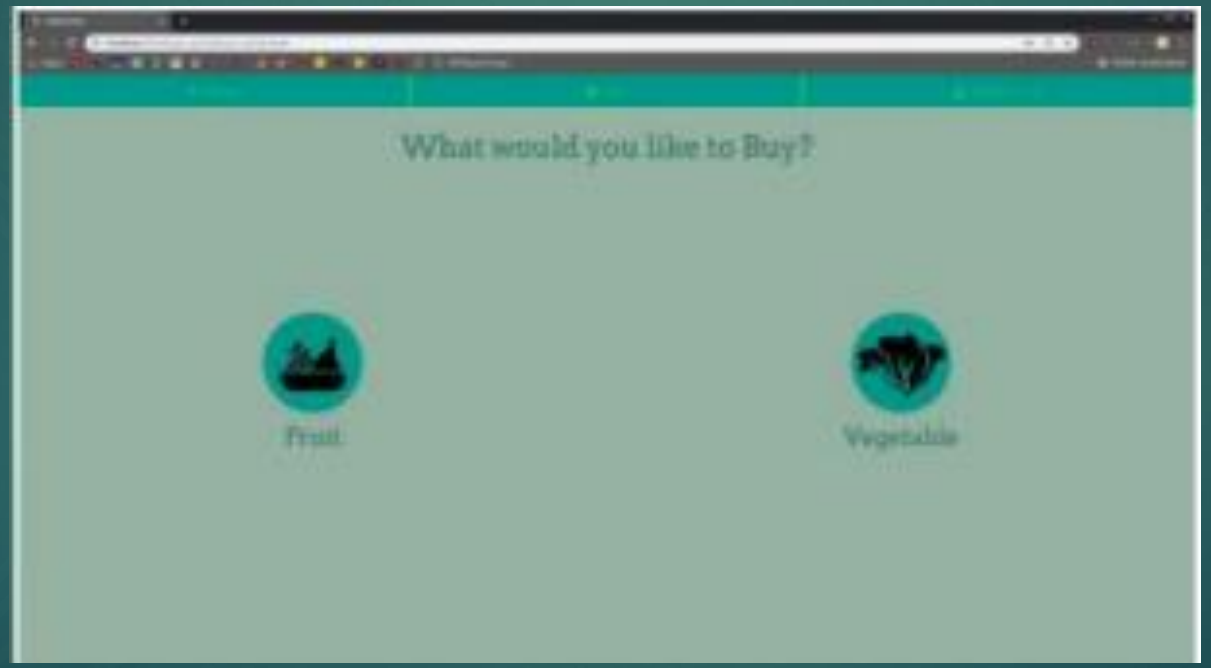
How customers use our product

Software Component Our website has two portals:

1) **Seller portal**: This portal will be accessed by the farmers. They will have the option to sell either fruits or vegetables. They will also have the option to upload pictures of the fruit/vegetable that they are selling along with some description. Farmers can add, delete, and update the crops anytime they want. To make sure the design is easy for the farmers to understand we have used as many pictorial representations as possible.



2) **Buyer portal**: This portal will be accessed by the vendors and other consumers who want to buy either fruits or vegetables directly from the farmer. The buyer can view the product photo along with its description. Buyers can also contact the farmer directly using our website. The customers can sort the fruits/vegetables according to the prices and select the best option for them.

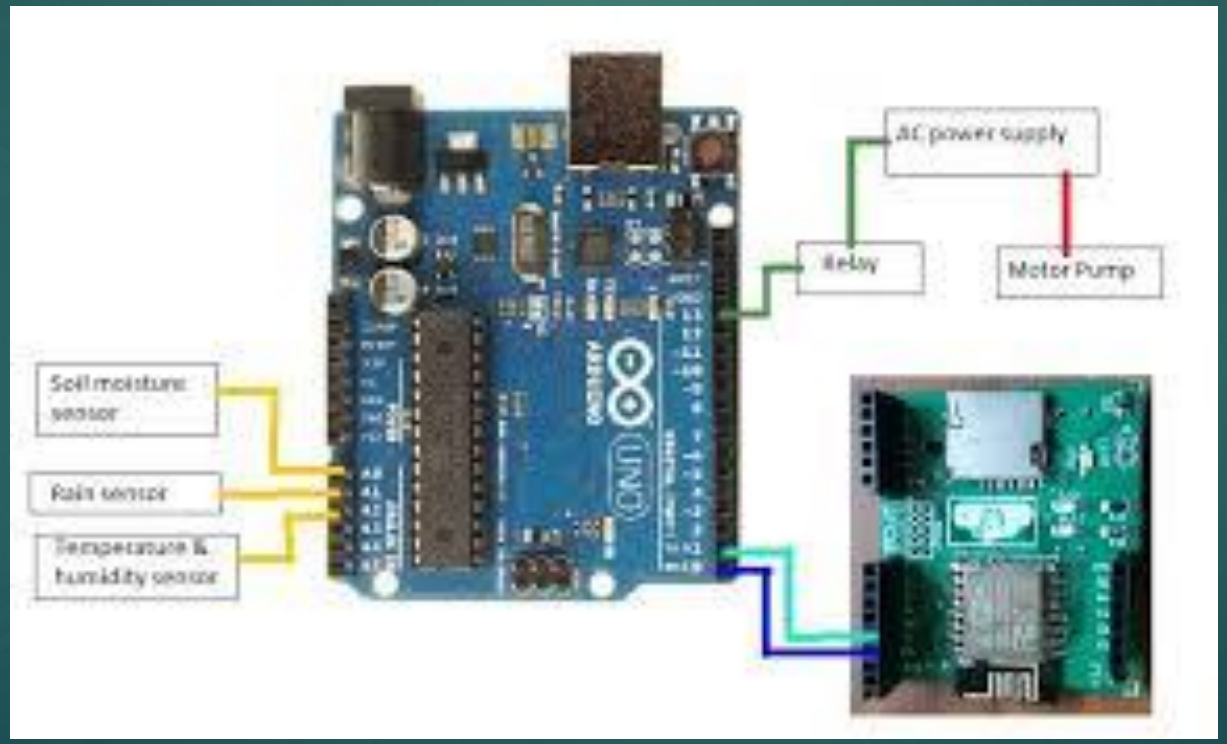


IOT BASED SMART IRRIGATION

Most of the farmers use large portions of farming land and it becomes very difficult to reach and track each corner of large lands. Sometimes there is a possibility of uneven water sprinkles. This results in bad quality crops which further leads to financial losses. In this scenario the Smart Irrigation System using Latest IoT technology is helpful and leads to ease of farming.

Hardware component

After the setup of the hardware components and the smart irrigation system on the crop fields, the technician will install a lightweight mobile application on the farmer's portable handheld device. Using this application the farmers will receive regular updates and notifications regarding the moisture content of the soil and the other significant needs of the yield. Using this information the farmer can optimize the crop productivity.



COMPONENTS

NodeMCU ESP8266 - NodeMCU is an open-source firmware and development kit that helps us to prototype or build IoT product. The device features 4MB of flash memory, 80MHz of system clock, around 50k of usable RAM and an on chip Wifi Transceiver.

Soil Moisture sensor module FC 28 - This sensor measures the volumetric content of water inside the soil and gives us the moisture level as output. The sensor is equipped with both analog and digital output, so it can be used in both analog and digital mode.

Temperature Sensor - This DHT11 Temperature and Humidity Sensor features a calibrated digital signal output with the temperature and humidity sensor capability. It is integrated with a high-performance 8-bit microcontroller. Its technology ensures the high reliability and excellent long-term stability.

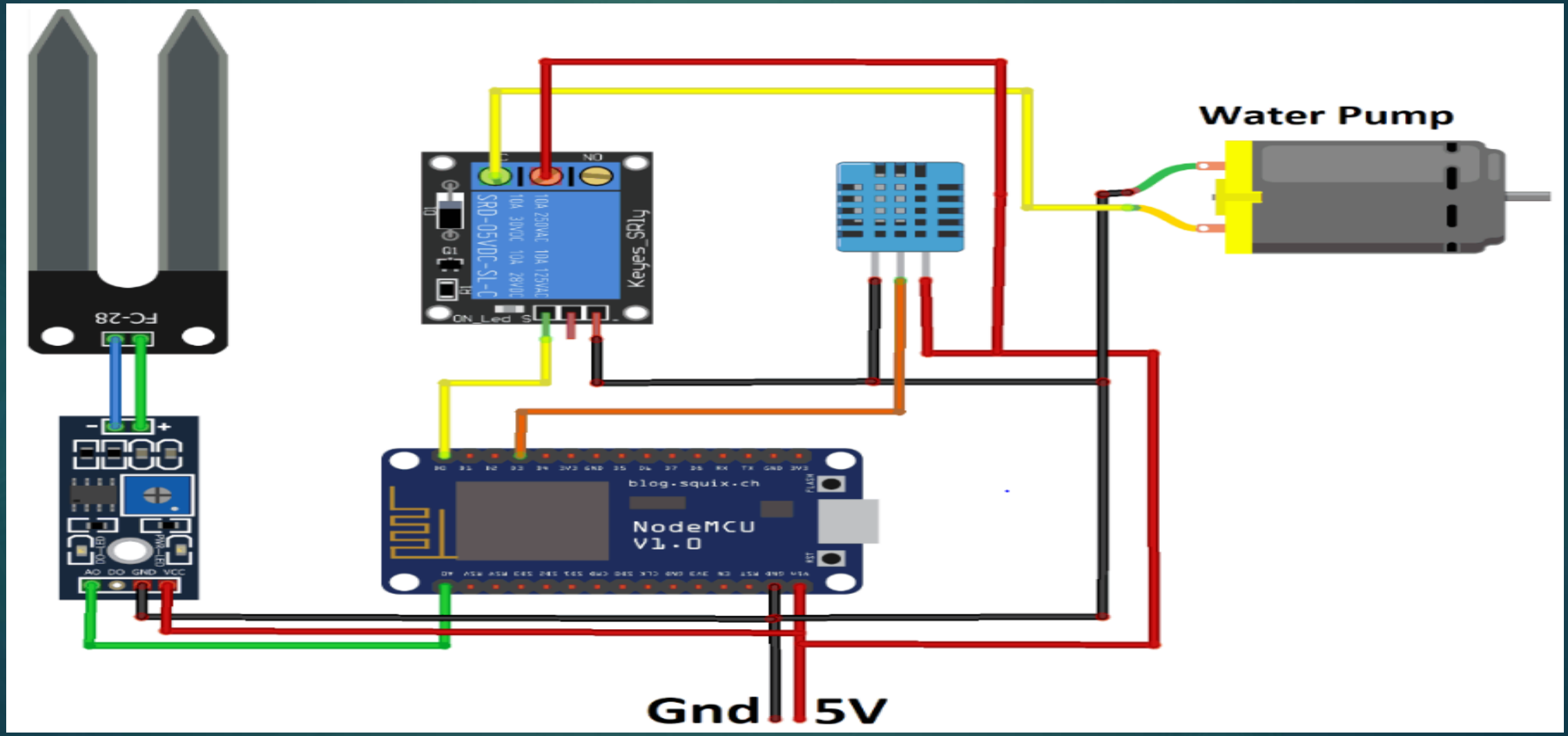
Relay Module - A relay is an electrically operated switch that can be turned on or off, letting the current go through or not, and can be controlled with low voltages, like the 5V provided by the Arduino pins.

Water Pump - It is used to supply water to the fields depending on the moisture content of the soli.

Working

For programming the ESP8266 NodeMCU module, only the DHT11 sensor library is used as external library. The moisture sensor gives analog output which can be read through the ESP8266 NodeMCU analog pin A0. Since the NodeMCU cannot give output voltage greater than 3.3V from its GPIO so we are using a relay module to drive the 5V motor pump. Also the Moisture sensor and DHT11 sensor is powered from external 5V power supply.

Circuit Diagram



How we distribute our product

1) We will conduct various events and talks for farmers to help them understand the need of our website. This will ensure the willingness of farmers to accept technology integrated into what they do to ensure a progressive and efficient work environment and harvest.
2) Our website design is very user friendly and easy to understand. We will provide the required training to the farmers and buyers to learn the operations and working of our E-Farmer’s portal.
3) We will spread awareness of the benefits and pros of this implementation to other farmers in a similar plight

Key operational tasks

1) Server Maintenance-: We need to make sure that the website is available at all times to the user and that he can use the application whenever required without having to face crash issues
2) Application Integrity-: The operations of the application like buying/selling the product will be active at all times and will be tested for bugs and other issues at all times
3) User Security-: We understand the risks and problems that the farmer may have with regards to giving his information to the website but strict assurances will be provided that his data will not be misused or mishandled at any point of time
4) PR Management-: We will make sure that the distribution of our product will not have any operation that would be deemed unethical by the constitution or by law
5) Regular Hardware checkup-: The technicians will visit the field regularly to review and update the components to make sure the system is optimized in terms of accuracy and ease of use.
6) Testing:- The team tests the working of the application before it’s deployment in a large scale and if any such debugging is needed it’s done by the team

Staffing

1) Front End Developers-: To keep updating the website and to keep adding functionalities to the product whenever required and to maintain the design of the website as per industry standards.
2) Back End Developers-: To keep track of the database and to make sure there are no errors in terms of data consistency and data redundancy
3) Call Centre Specialists-: To make sure the Customers are happy at all times and to answer any queries or problems they might be facing during their time using the application
4) Headquarter Management Staff-: These staff maintain the situation at the headquarters and make sure the execution of the application takes place with minimal problems or disturbances.
5) A Marketing team-: They would be responsible for PR and Management work of the application
6) System and hardware engineers-: They maintain the hardware functionalities of the component and will maintain the overall working and deployment of the app on a large scale.
7) Hardware repair centers-: They solve any problems which are encountered by the system or when any failure occurs in it.

Resource Requirements

1) A Large Web Server-: To deploy our website we would need a large space over the internet to place our web app which we would have to request from any domain name website like goibibo or godaddy.
2) A large database-: The amount of users of the application will be in plenty so we need a huge storage space to store all of their data
3) An Advertisement Campaign-: For publicity of our application and to help raise awareness amongst the farmers in the public we would need a strong marketing team which will help us spread the word
4) A Plot of Land-: To setup the headquarters of the company and the official building
5) Partnership-: Partnership with a large scale electronic manufacturer for the components.
6) Electronic Engineers-: Technicians for installation and setup
7) Sensor Manufacturer-: Needed for bulk ordering of equipment and devices needed for deployment

Revenue Model

Software

1. From the website we can generate revenue with the help of advertisements.
2. It will ensure that the farmers or the consumers will not have to pay for the using the website.
3. The initial domain name and server cost would come up to Rs 1000

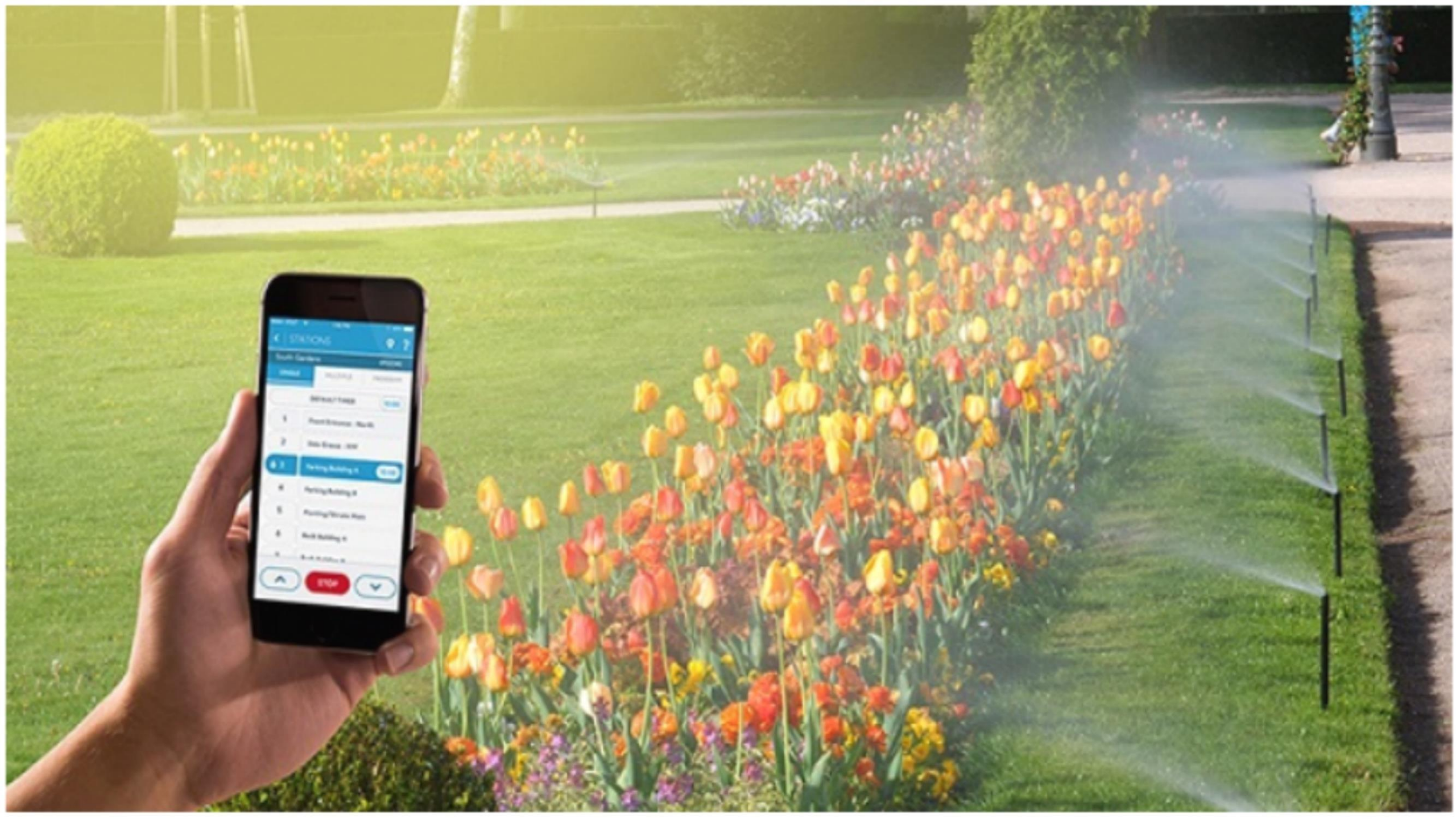
Budget

Hardware

The various components used for smart irrigation will cost the following

- NodeMCU ESP8266 – Rs 250
- Soil Moisture Sensor Module – Rs 150
- Water Pump Module – Rs 50
- Relay Module – Rs 70
- DHT11 – Rs 120

So in total all the components will cost Rs 640. If we manufacture all the components on a large scale the total cost will be around 350. So if we sell the whole set at around 400-420 there will be a profit of 50-70 Rs for each set.


STATIONS

Lets Make Farming Great Again