An approach to Create IOT based Automated Smart Farming System for Paddy Cultivation

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science Computer Science and Engineering.

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APPROVAL

This Project titled “An Approach to Create IOT Based Smart Paddy Farming System” submitted by Atia sultana, ID: 171-15-1310 and Md. Abul Hasan,ID:173-15-9948 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Bachelor of Science in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on November, 2019.

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DECLARATION

We hereby declare that this project has been done by us under the supervision of Tajim Md. Niamat Ullah Akhund, Department of CSE, Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree of diploma.

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Abstract

In Bangladesh, paddy can be grown 2-3 times in a year. Paddy fields need to irrigate, once with nature's water and the rest of the times with machine for 1-2 times through water pump. This project name IOT Based Smart Farming monitoring system for paddy field is a smart system that can monitor the condition of a paddy field and automatically controls the water level of the field. The system has several sensors to measure the water level, moisture, temperature and humidity of the field. Then it will show the collected data to an LCD monitor. By the value of the collected data it will turn on or off the relay module to control the water pump. When the field need water then the motor will turn on automatically. If the field is not in need of water then the pump will be turned off. The automation will be done on the basis of the ambient temperature, humidity, water level and moisture level, which data were collected via the sensors.

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Chapter 1
Introduction

1.1 Introduction:

Agriculture is the major input sector for economic development of any country. In this project, how to develop a Smart Farming System and uses that we can increase the yield of the crop. water pump is turned on depending on the data that is receives through various sensors. by collecting data through the sensor's farmers can make the most accurate decision which is very far-reaching for the farmers.

1.2 Motivation:

IoT **s**mart farming very useful for farmers .it collects different data from different sensors. As a result, the farmers can easily make any decision. The IoT smart farming receives data through various sensors (water level sensors, moisture sensors, humidity sensors) based on which the automatically is turned on the motor, through which we can prevent power outages and water wastage.

1.3 Objective:

1. Can collect sensor data from farm and send those data to a cloud database.
2. Give notification if any unusual condition arises.
3. Collects data of temperature, humidity, toxic gas, water level and moisture.

1.4 Expected outcome:

To build a project based on IoT so that farmers can increase their crop production.
Implementation of this project will prevent electricity waste and water wastage.

1.5 Report layout:

Pictorial presentation an easy way to focus the whole image to present content and more.

CHAPTER 1: INTRODUCTION (About the Project, Motivation, Objective, expected outcome, Report layout)

CHAPTER 2: BACKGROUND (Developing the Site, Works and Background Studies, Framework)

CHAPTER3: REQUIREMENTS (Requirements, specification)

CHAPTER 4: IMPLEMENT AND RESULT (Development Methodology, Used Language and Technique, Diagram)

CHAPTER 5: SUMMERY, CONCLUSION, RECOMMENDATION AND IMPLEMENTATION (Summary of the Study, Conclusion, Recommendations, Implication for Further Study)

1.1. Fig layout

Chapter 2
Background

2.1Backround

Smart agriculture for paddy/rice. Is one of the most important crops in the Agriculture field. Farmers have made many improvements by producing rice. The role of smart farming in producing rice is immense. Using smart farming, farmers are able to produce not only paddy crops but also other crops. When water problems arise, we water the crops through irrigation machines. This has been made possible by technology development. 20 years ago, rice was produced only 3 times in that year, the yield of rice was not as productive. Today, due to modernization of agriculture, farmers can produce paddy three times in a year. As a result, there is no food shortage in the country. Attacking insects while eating rice can help us get rid of pesticides. This is also possible as a result of modernization of agriculture. The crop production is increasing day by day, there are farmers and beneficiaries, the country is moving towards improvement. About 3-5% of the people of Bangladesh are agro-dependent, and 4-5% of the agricultural dependent countries play a major role in modernization of agriculture.[1]

Jute is one of the crops of Bangladesh. Jute in Bangladesh is called golden ash. Jute production in Bangladesh is decreasing day by day due to the closure of jute mills in Bangladesh. Bangladesh produces about 8.5-9.2 million jute. As a result of the development of agricultural technology, weeding of the crop can be done through remote control of any crop. Jute is one of the cultivators of agriculture. Jute production in Bangladesh is also decreasing due to the deterioration of the weather. Due to the lack of rain, the farmer faces danger during the jute year.

Jute is also produced in India at 1.2 million. Jute crop production is declining day by day. To increase the production of these jute crops, modernization of jute mills, increase of prices, improved marketing of jute, the farmers will be encouraged to produce jute.[2]

India plays a leading role in agriculture. India is famous for its crops: such as Rice, Wheat, Maize, Bajra, Jowar, Pulses. In India, 1.5 percent of the population is dependent on agriculture. Paddy and wheat are the main crops in this country. India is far ahead of Bangladesh in agriculture, and has made many improvements in agriculture. It is able to meet the food needs of 1.2 million people in other agricultural dependent countries as well as other countries. The reason for this is that IoT uses smart farming technology. such that: Remote control, Technology

machine etc. As a result of this smart farming system, India is exporting 1.2 million food to foreign countries, despite being agriculture dependent in India. As a result, India has moved towards improving agriculture today.[3]

Today, many scientists have discovered new technology in the field of agriculture. Because of this, the farmers test the soil on which crop will be good, produce such crops and produce good crops from there. China and Japan are at the forefront of technology use in agriculture. Because of this, China and Japan have made many improvements in terms of export to other crops of all kinds. All types of farming systems were invented there. A variety of technology machines are made in China and Japan in the agricultural field. Water irrigation machines, soil testing machines, and other types of agricultural machinery are used in that country. It is also possible to use any kind of fertilizer, pesticides at any time by measuring soil moisture. More and more new innovations in smart agriculture are in the process. With the discovery of these, smart farming will lead to further improvement.[4]

In agriculture, the role of smart farming is immense. Because, by the use of smart farming it is possible to double the production of the crop. There are advantages to using smart farming as well. For example, if it takes 3-5 labor to work in a field, then using a machine can be done with 1 labor. More than the disadvantages, the use of technology doubles the yield, so there is no food shortage in the country. Bangladesh will also have to increase the smart farming system, so that the country will move towards improving both nations. In Bangladesh, soil testing, irrigation, pesticide use, quality seed fixation, weeding, etc. are also covered by smart farming.

India, like Bangladesh, lags behind in the use of smart farming systems. Looking at the production of a country, one can understand the number of smart farming systems used in that country. The use of smart farming system in other countries will have to increase, so that no food shortage will occur in any country.[5]

As IoT has expanded, not all farmers use this IoT system. As a result, they cannot even produce twice the yield. Researchers are researching and discovering new systems, so the IoT system is moving forward in all countries at the speed of electricity, and farmers are using it to make many improvements in agriculture. The IoT smart farming system can be reflected in all crops. Using the IoT system is very expensive. Farmers have to spend a lot of money to buy a piece. This does not affect the smart farming system. Different types of parts are used in agriculture, which is also the contribution of IoT. For example, rice harvesting machine, weed cleaning machine, paddy

killing machine, spray machine, soil testing machine, etc. Due to this IoT system, agriculture and agricultural technology are advancing at a fast pace. [6]

IoT system is a digital formulation of smart farming. This system allows easy release of any disease in the crop. As a result, farmers are fearlessly producing all kinds of sash. Smart farming technology can be used in all fields. IoT is the full meaning of all the technology used by the Internet. Researchers discover new technologies and upload them to the website. As a result, all the information available in the field of agriculture is easily accessible from the Internet. From the Internet we can also find when to use pesticides and chemical fertilizers in a crop. All information on agriculture is the crop of researchers' research. They have continued to do more research so far as there is no easier way or better production of a crop at a lower cost. This is how one day, with the use of smart farming technology, the agriculture sector will move forward.[7]

Smart agriculture is the Internet of Things. All information about agriculture is available on the Internet. In Bangladesh, about 75-77 of the people are dependent on agriculture. By 2021, smart agriculture will be better reflected in Bangladesh. By assessing the quality of the soil by moistening the soil, it is possible to produce such crops in the soil. Determining different varieties of different types of crops through smart agriculture. With the use of agricultural technology it is possible to use different types of parts in agriculture. Smart agriculture plays an important role in increasing a country's income source. Agricultural technology has become more prosperous in the country where it is more developed. Farmers will be able to get all the information related to agriculture very easily if there is internet.[8]

[9] Internet of thing(IOT) is the latest web development. Which makes it useful for device such as camera sensors, RFID smartphone and wearables. IOT device used different Companies and people use their own purpose. IoT device can collect information and solve internet problems before problems were very difficult to solve. IoT device requires app.in order to awaken some of these new possibilities, each application requires devices collect and integrate them and further enhance our it solution to spread the information needed for each app. we need to provide solution that allow these tasks to cloud and securely run in real-time. This paper presents an overview of the internet of things solution that we have developed in partnership with others and their definition. A platform to tackle these Technological Challenge and organize its equilibrium.

By Internet of things research, we can advance the technology further in the future. We define many IOT application (smart farming, Smart paddy field, smart grid) which used Internet of thing. [10] presently, CT benefit bring about bizarre possibilities and innovations to improve agricultural work. Ongoing innovations inclusive of cell, social media, agricultural drones, Internet of Things (IoT), big data, and cloud computing may be redefined which will obtain new challenges. With recent advances in infrastructure, data (collection, garage and retrieval), delivered new demanding situations and opportunities with a higher information of all elements of the food chain. challenges to modern tactics for decision making, and calls for a focal point on analytics for Unstructured data is now being generated in real time, in massive volumes, at high pace and unknown excellent. These new assets of records create the possibility to tell and drive a alternate in selection making from one that is highly intuitive to 1 that is records pushed and processed in actual-time. This paper highlights latest tendencies in ICT and introduces hybrid cloud architecture for smart farming. The proposed architecture emphasizes facts-driven, farmer-focused, and knowledge-based totally choice equipment via carrier integration, aggregation and interoperation. As a custom designed answer for farmers, the proposed architecture incorporates additives of facts integration of on-farm sensors and facts from public assets, farm control modules, expertise-based totally software program answers from distinct carriers, carrier integration, aggregation and interoperation and a custom designed dashboard targeted on usefulness and usability. This cloud-based totally answer permits the combination of groups services, things, and era from any channel and can be used anywhere. At this time, hybrid cloud environments have shown promise to combine those different services and offer clever farming solutions to both big and smallholder farmers.

[11] Day by way of day clever agriculture is transforming from traditional agriculture due to the prominence of the Internet of Things (IoT). IoT network beneficial and desirable to the farmers for Low-value and occasional-electricity are the important thing elements. In this paper, we've got raised a low-power, low-cost IoT network for smart agriculture. The soil moisture content material, we've got used an in-house evolved sensor. In the proposed network for tracking, the IITH affords low-power communication and IITH mote is used as a sink and sensor node. We have evaluated our network with ultra-modern networks, proposed for agriculture monitoring. Used for evaluation of these networks is strength and fee are the 2 metrics.in this paper, we

endorse electricity-efficient IoT network for the smart key. Index Terms—Smart Agriculture, Internet of Things, Soil monitoring, Environmental-tracking.

[12] Agriculture contributes to the environmental sustainability required to boom crop yields and decrease costs. Plants are offering a way to supply the right quantity of water to capture in depth use of plant life. The Internet of Things (IoT) is the herbal preference for clever water management applications, even though it isn't always yet entire, integrating the diverse technologies had to make it paintings seamlessly. The SWAMP project develops an IoT-primarily based smart water management platform for precision irrigation in agriculture with a arms-on approach based on four pilots in Brazil and Europe. This paper offering the SWAMP structure, platform, and device deployments and is used as a scalability and primary subject for IoT programs, used inside the Platform it consists of a overall performance analysis of FIWARE components. Including overall performance analysis of FIWARE fabric, the effects display that it's miles capable of supplying enough overall performance for it, however calls for computationally superior specially designed configuration and some additives.

[13] Agriculture plays a first-rate function in most countries and this enterprise needs to come to be "smart." Industry is now transferring towards agricultural modernization through the use of latest smart generation to find solutions for the efficient use of scarce sources via assembly the developing consumption needs of the worldwide population. With the arrival of the Internet of Things and Virtual Rural Area Transformation, those technologies may be used to tune soil moisture remotely, grow plants and take preventive measures to come across crop harm and threats. Using analytics focused on synthetic intelligence to without difficulty evaluate operational records blended with expertise from 1/3 parties, along with climate offerings, professional recommendation, and so on. Using synthetic intelligence-based totally analytics to fast analyze operational records blended with third birthday party knowledge, which includes weather offerings, professional advice, and so on., to provide new insights and better selection-making by allowing farmers to carry out' clever agriculture.' The emphasis is on far off control and automation of agricultural operations the usage of new technologies. A sun powered remote control and automation machine for agricultural operations, inclusive of wireless sensors and the Internet of Things, a hardware platform based on the Raspberry Pi Microcomputer, designed

to hook up with a customer device and handy thru the Internet community. The records collection gadget incorporates a series of wi-fi sensors to song and capture agricultural activities. User device e.g. telephone, laptop, etc. may be connected to a web community, making it easier for the utility platform (net-app) hooked up on the user pc to view a set of wi-fi sensors obtained using the Internet of Things and a hard and fast of power buttons. This article is a study and thought report on the causes and trials leading to this patent pending operation.

[14] This paper explores the role of Things (IoT) Internet within the Agricultural Sector. Today, agriculture is embedded with enhance carrier together with GPS, sensors that enable statistics evaluation and records exchange between them to be communicated to every other. IT gives agriculture with cloud-primarily based service. Agriculture cloud and IT machine offers farmers with unique abilities in plant manufacturing, pricing, fertilizers, diseases statistics cure technique for use Scientists operating on agriculture will provide their consequences, suggestions on current cultivation strategies. The use of fertilizers will gather the place's history. The look at become based totally at the software of a cloud-primarily based farming utility. This is based on agri-cloud that increases agricultural production and the availability of information associated with failed research initiatives, the impact of doing this could save time and value making conversation less complicated and faster.

[15] The higher the population in that country, the higher the need to use the IoT system. Without the IoT system in most countries, populations like China and India will not be able to meet the country's food needs. India is far behind China in terms of IoT system usage. Paddy and wheat are one of the major food crops in India. They have to import 1.2 million food. The biggest challenge in agriculture is soil fertility.

The higher the fertility power, the more productive the soil. One of the inventions of IoT is the soil testing method. With the invention of IoT, the farmer is getting efficient crop yields on his land. A farmer is one of the most productive farmers. All have been able to implement the IoT system in agriculture.

[16] In the ancient times, people were not dependent on agriculture. They hunted and made a living. Farming has changed over the years. In this field, farmers can produce their own food by growing crops and can meet the needs of other people and food in the country. As a result of the change of civilization, people have made many improvements in social as well as agriculture. In ancient times, people could not cook, so they ate raw meat. The invention of fire has changed in

the era. As a result, people can cook and eat all the food. This is possible because of the technology used in the era. (ICT) because people are getting new information and using it. IoT systems in agriculture are playing a particularly important role in increasing production. Changes in agriculture have come as a result of the use of IoT systems. Due to this change, farmers are doubling their yields. As a result, the country's economic growth is accelerating. In India, the IoT system needs to be further enhanced. In the meantime, the 1.2 million food imported from outside the country will not have to be done anymore.

[17]. The essential undertaking within the agricultural area is to enhance farm productivity and agricultural nice without non-stop manual monitoring to satisfy swiftly increasing meals call for. Because of the increasing populace, agriculture is becoming an essential developing area international. Climate alternate is likewise a major concern within the agricultural quarter, other than growing populace. The purpose of this studies work is to signify an Internet of Things (IoT) based smart farming method for handling damaging situations. It is viable to adopt smart farming that offers high-precision crop control, useful information series and automatic farming strategies. This painting introduces a clever monitoring system for the agricultural area that controls soil moisture and temperature. After processing the sensed data, action is important without human intervention on the premise of these values. Temperature and soil moisture are measured right here and those sensed values are saved for future records processing inside the Thing Speak cloud.

IoT programs are presently being implemented in lots of fields and in many areas, consisting of clever houses, smart cities, clever grids, self-reliant motors, and the digital net, lifestyles is converting. The Internet of Things (IoT) has acquired a number of attentions in the commercial and educational fields in latest years. Nevertheless, conventional agriculture nonetheless awaits many advances in techno networking. Several scientists and engineers are focusing on the utility of IoT technology to conventional farming strategies. Aeroponics farming is an efficient and green system without the use of soil to grow vegetation. When we apply IoT era to an aeroponics gadget, many improvements are anticipated, together with reducing water use, growing plant yield, and minimizing the fee. Our device includes 3 principal components: a cellular app, a service platform, and sensor-based IoT devices. In this paper, we used IoT gadgets to layout and put into effect a brand new automated aeroponics gadget. The cellular utility gives a graphical consumer interface for aeroponics device manage and adjustment.

Minimizing growth rates and increasing the staff. The provider interface is a middleware machine that provides facts inside the aeroponics network for the cell application to shop the facts gathered from IoT gadgets the usage of sensors. The IoT tool uses sensors to govern every pump and get right of entry to information in the aeroponics device. The carrier interface is a middleware machine that provides the cellular utility with records in the aeroponics network to store the statistics gathered the usage of sensors from IoT devices. In the aeroponics gadget, the IoT device uses sensors to control every pump and get right of entry to statistics. [18]

The carrier interface is a middleware machine that gives the cellular application with records within the aeroponics network to save the records gathered the usage of sensors from IoT devices. In the aeroponics machine, the IoT tool makes use of sensors to manipulate every pump and get entry to records.IT is a advantage to farming as a cloud. Agriculture cloud and IT benefit gives ranchers a splendid capability to manage the manufacturing of yields, projections, composts, sicknesses statistics method cure for use Scientists taking a shot in agriculture can make their disclosures, hints for modern-day design techniques, use of manures can be made. Taking into consideration agriculture, the evaluation relied on implementing a cloud production framework. It relies upon at the agro-cloud that the improve agricultural era and availability of research-associated records extends within the fizzled, the end result of doing so would save the price and time making the correspondence simpler and faster. [19]

2.2 Scope of the problem:

We are found this problem

1)Using Rechargeable battery.

2)Sensors only work within a specific area.

3)Moisture sensors not 100% success.

4)Some problem cannot solve this.

2.3 Challenges:

Selecting a suitable platform and depend projecting the hardware is an important factor. IoT based smart farming is basically hardware project. But it’s combination of hardware and programming. Through IDE software using Arduino microcontroller control various sensor. this project made to improve the farmers of Bangladesh.

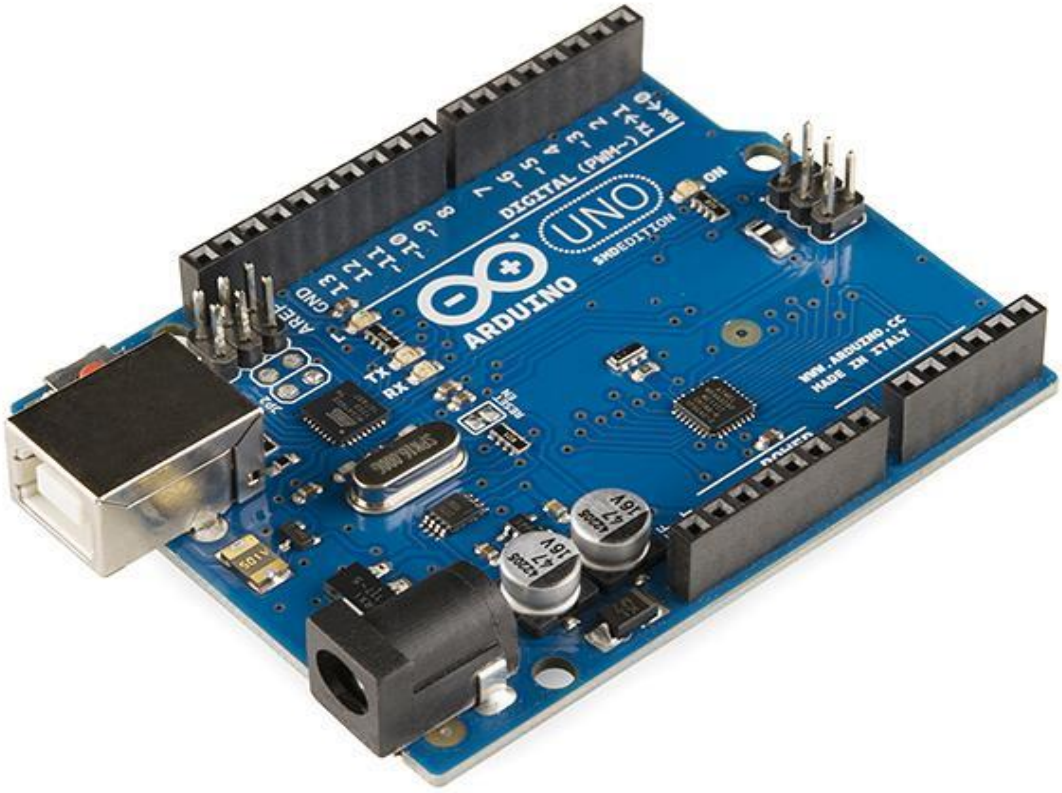
Chapter-3
Requirements

3.1Introduction:

The research methodology examines specific methods or techniques in order to in order to select and process information about an examine. Laboratory is a simple knowledge and general honesty and credibility in a test.

3.2Requirements:

3.3. Arduino: Is an open-source platform used for building electronics tasks. It is also referred to as microcontroller. Arduino is programming circuit board. Is software or IDE (integrated development environment) this is used to write and upload computer code for your pc.

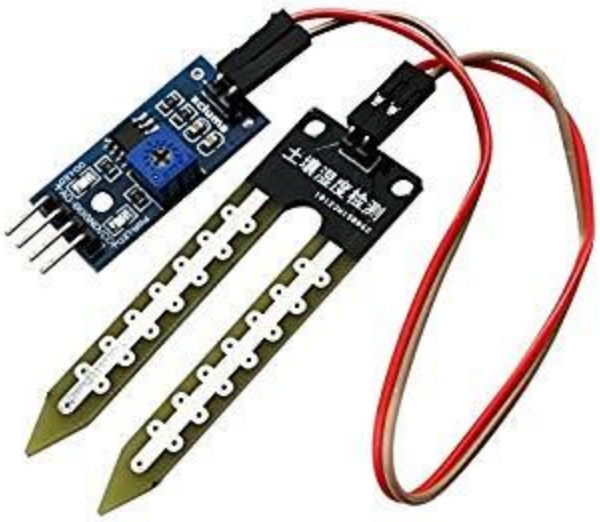


3.3 Fig:Arduino

3.4Arduino specification:

Microcontroller	ATmega328P-b bit
Operating Voltage	5v
Recommended input voltage	7-12v
Input voltage limits	6-20v
Analog input pins	A0-A5
Digital I/O pins	14 (out of which 6 provide PWM output)
Dc current on I/O pins	40 mA
Dc current on 3.3v pin	50 mA
Flash memory	32kB where 0.5 KB use for bootloader
SRAM	2 KB
EEPROM	1 KB
Frequency (Clock speed)	16 MHz

3.5Moisture sensor: Soil moisture sensors degree the volumetric water content material in soil.[1] Since the direct gravimetric size of unfastened soil moisture calls for eliminating, drying, and weighing of a sample, soil moisture sensors measure the volumetric water content material indirectly by way of the usage of some other property of the soil, which include electrical resistance, dielectric consistent, or interaction with neutrons, as a proxy for the moisture content material.



3.5 Fig: Soil Moisture

3.6Moisture Sensor specification:

Battery type	CR2450 x1
Battery life	3 years (typical)
Range	700ft (210m) line of sight (at default setting.)
Moisture	0~100%, 8-bit
Temperature	**Temperature** Operation range: -40°C (-40°F) to 85°C (185°F) Operation range: -40°C (-40°F) to 85°C (185°F)Sensor accuracy: +/-1°C typical, -2/+4°C maxSensor quantization level (resolution): 10-bit, about 0.25°C (0.45°F) Logging and notification

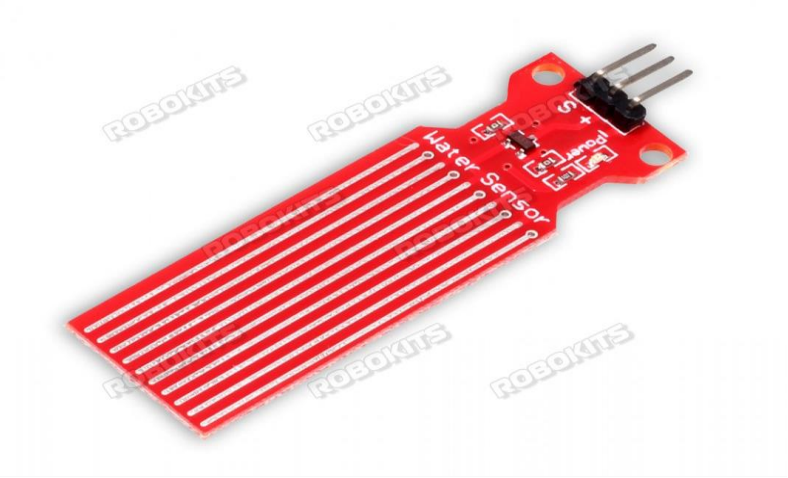
3.7 Buzzer: Buzzer is audio signaling device, which may be mechanical and electrical. it sends a signal to the user by getting up. in this case of a smart farming, when it can't solve a problem, buzzer is ringing.

3.7 Fig: Buzzer

3.8Buzzer Features and Specifications

- Rated Voltage: 6V DC.
- Operating Voltage: 4-8V DC.
- Rated current: <30mA.
- Sound Type: Continuous Beep.
- Resonant Frequency: ~2300 Hz.
- Small and neat sealed package.
- Breadboard and Perf board friendly.

3.9Water level sensor: Arduino water level determine the water level using a ping sensor.ping sensors determine the level of water using of gold.the project is Implemented by connecting it to the microcontroller.



3.9 Fig: Water level sensor

3.10Water Level Depth Detection Sensor for Arduino

- Operating voltage: DC3-5V.
- Operating current: less than 20mA.
- Sensor Type: Analog.
- Detection Area: 40mmx16mm.
- Operating temperature: 10 °C-30 °C
- Humidity: 10% -90% non-condensing

3.11Temperature sensor: the sensors element built into the temperature constitution transforms the actual measured and measured temperature into electrical signal. The term temperature sensors with electric stop meter describes one or more temperatures and their usages specific.

3.12 Small pump: Water pump is a electronic device, Through which water if lifted from the bottom of the soil. Pump motor used for various projects and residences.

3.12Fig: Water level sensor

Specification Of pump:

Voltage	**Dc 12 v**
power	**8 w**
flow	**10 mm**

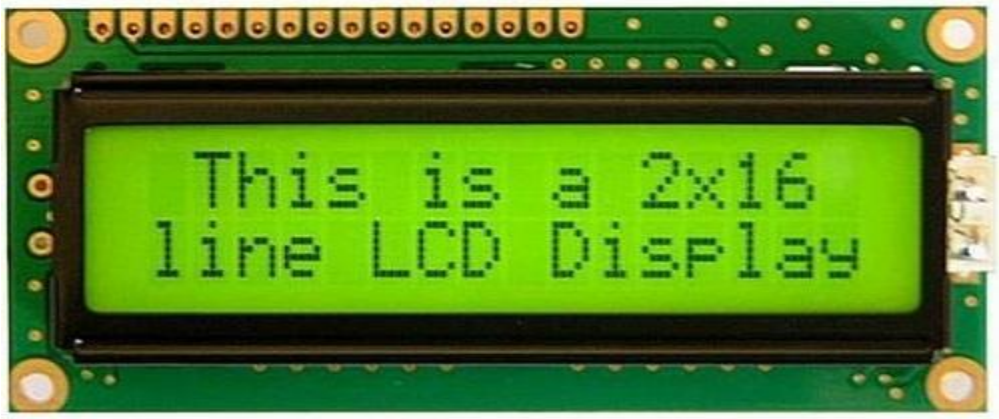
3.13 Humidity sensor: A humidity sensor measure relative humidity in air and report and measure temperature. relative humidity is is calculated by measuring the amount of moisture stored in the air.

3.13Fig: Humidity Sensor

3.14 Humidity sensor specification: DHT11 Specifications:

- Operating Voltage: 3.5V to five.5V
- Operating modern-day: zero.3mA (measuring) 60uA (standby)
- Output: Serial statistics
- Temperature Range: 0°C to 50°C
- Humidity Range: 20% to ninety%
- Resolution: Temperature and Humidity both are sixteen-bit
- Accuracy: ±1°C and ±1%

3.14 LCD Module: The data stored on the LCD is stored through various images. Arduino sets the pins used to connect to the LCD. Arduino digital pin is used to control the LCD.



3.14 Fig: LCD module

3.15 LCD Module Specification:

Operating voltage	5 V
Controller	Hitachi HD44780
LCD controller	Screen resolution2-lines x 16 characters
Character resolution	5 x 8 pixels
Module dimensions	80 x 36 x 12 mm
Viewing area	V dimensions64.5 x 16.4 mm Cost
cost	250

3.16 Relay Module: Relay module is a one kind of switch. The relay module is operated by electric magnets. we will give a small voltage from arduino to activated the electromagnet .and when it is activated it will have the connectivity to make the high voltage circuit.

3.16 Fig: Relay module

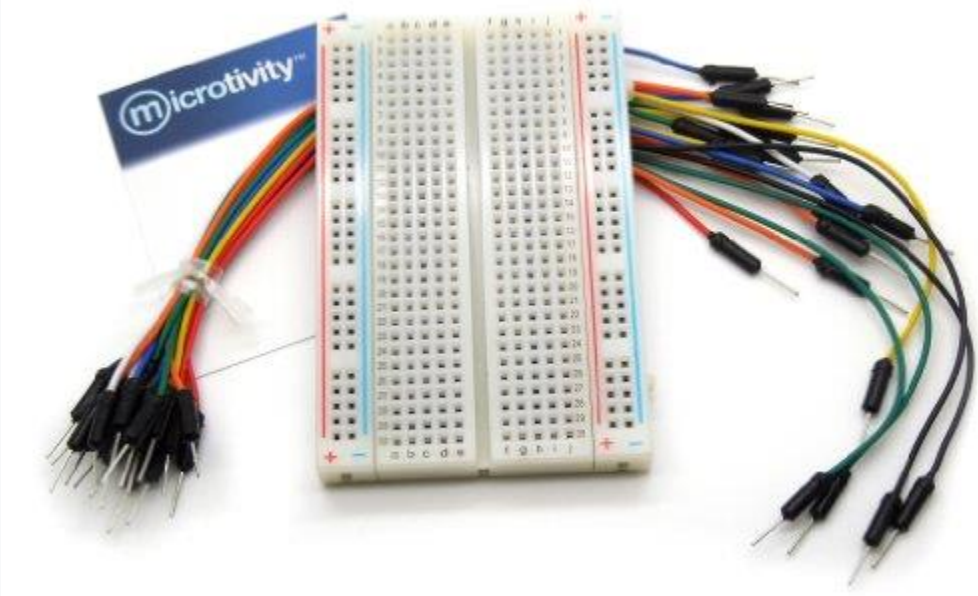
3.17 Features:

- Size: 75mm in Length * 55mm in Width * 19.3mm in Height.
- Weight: 61g.
- PCB Color: Blue.
- There are 4 fixed screw holes at each nook of the board, smooth for installation and fix. The diameter of the hole is three.1mm.
- High high-quality Single relay is used with unmarried pole double throw, a common terminal, a normally open terminal, and a generally closed terminal.
- Optical coupling isolation, precise anti-interference.
- Closed at low stage with indicator on, released at excessive stage with indicator off.
- VCC is system electricity source, and JD_VCC is relay energy supply. Ship 5V relay by using default. Plug jumper cap to apply.
- The most output of the relay: DC 30V/10A, AC 250V/10A

3.18 Battery: A battery is container in which chemical energy is converted into electrical energy .it consists of one or more cells, which is used as a source of energy.

3.18 Fig: Battery

3.19 Breadboard: A breadboard is a solder much less tool for temporary prototype with electronics and test circuit designs. Most digital components in digital circuits may be interconnected by putting their leads or terminals into the holes and then making connections through wires wherein suitable.



3.19 Fig: Breadboard

3.20 Typical specifications

The rank number of the breadboard is specified on the breadboard. Each clips has gap of about 0.1 inch .

3.21 Wire: Wire is usually cylindrical flexible space or metal resistor .it is used to telecommunication signals, carry electrical and mechanical loads. it is usually made by pelting a draw in the from of metal

3.21 Fig: wire

3.22 Glugan : Glue gun is electrical device, Through which the glue stick in inserted and heated out glue.

3.22 Fig:glue gun

3.23 Glue stick : This is a glue thing that looks like long pipe. which is melted using electric energy through glue gun.

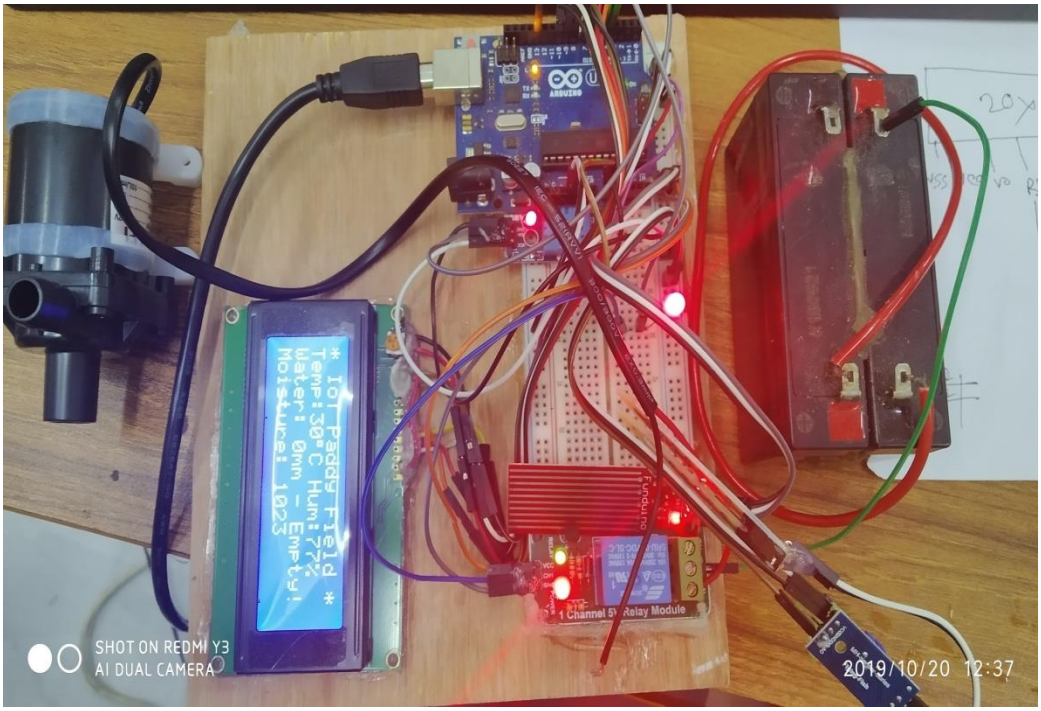
3.23 Fig: Glue stick

Chapter-4
Implementation and result

4.1Introduction:

If a project is not implemented properly ,we can't expect good result. so every project has to be implemented properly. We have to used different types of sensors to implement this project, so that we could get better out of this project. different types of sensors perform different function.

4.2Circuit design:



4.2 Fig:Circuit design

4.3Features:

1.utomaticlly motor start
2.automatically motor off
3.Moisture check
4.water level check
5.temparature check
6.humudity check
7.Lcd display

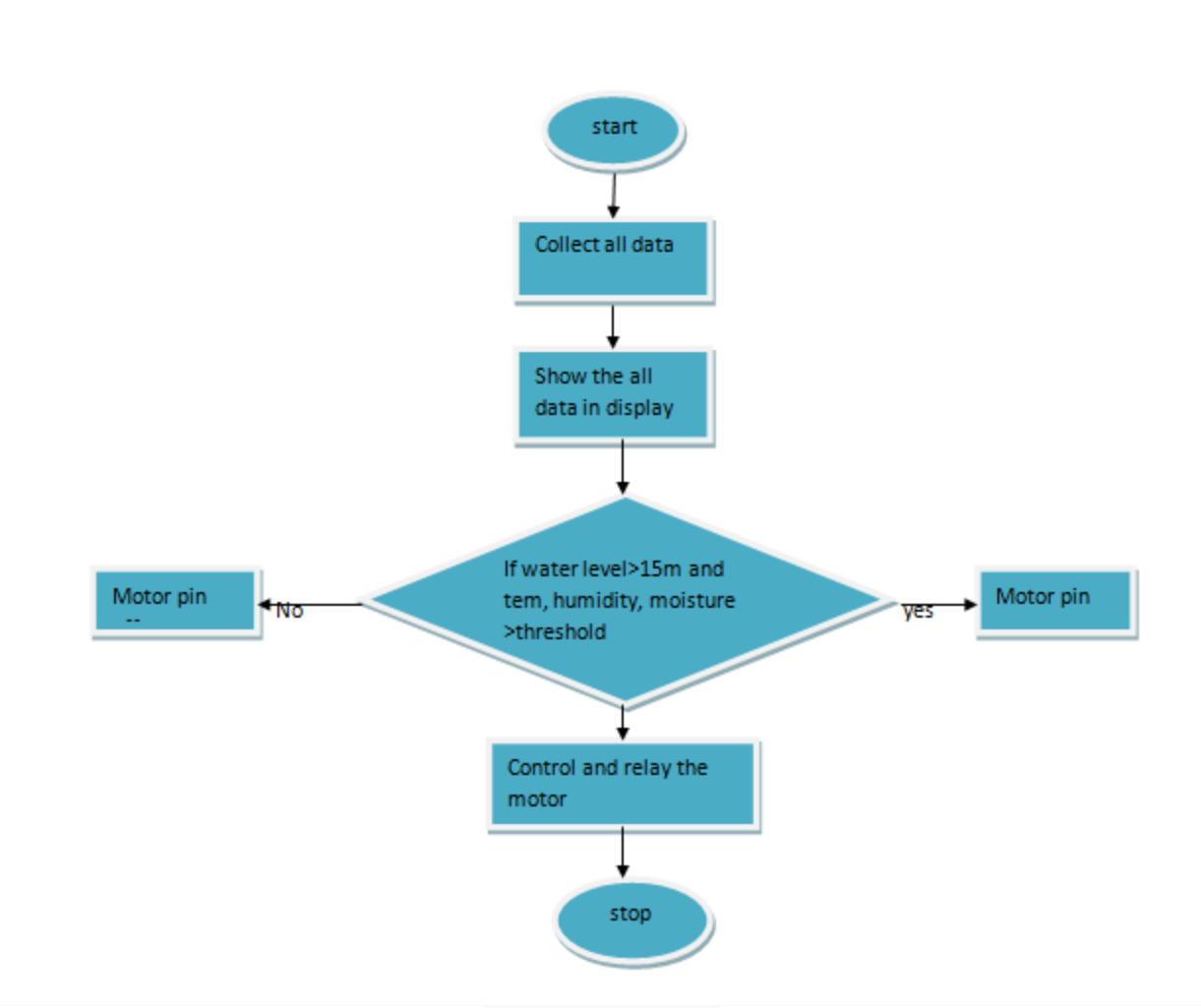
4.4That's what works:

Water falls below a certain level in the paddy field, then in case of smart farming pump motor turns on automatically and humidity rises, it starts automatically. farmers can monitor soil moisture, water level, humidity from anywhere by combining sensors. if there 15 mm of water in the paddy field, the motor will turn off and if their water below 15mm, the motor will be farmers can come and solve the problem.

4.5 Algorithm:

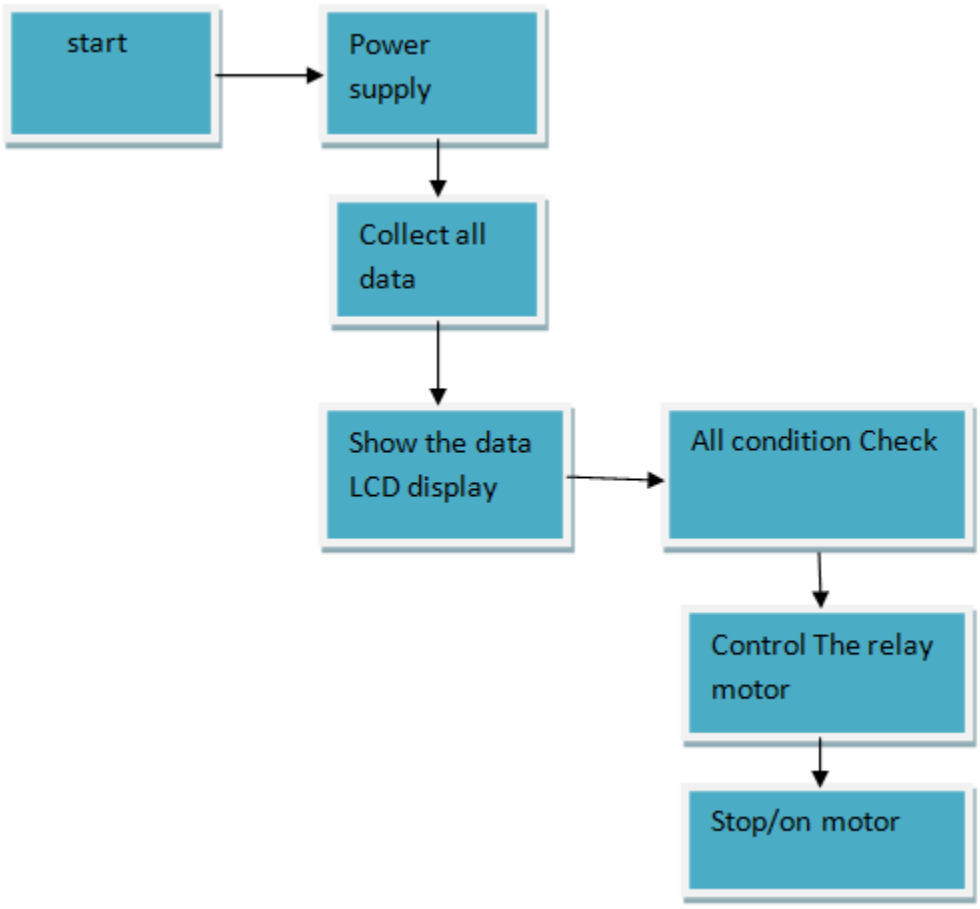
Step 1: power on
Step 2: Temperature, humidity, moisture, water level data collected.
Step 3: Show the data in LCD display
Step 4: if water level>15 mm
-motor of
Else if water level<15 mm
-motor pin on
if moisture>15 mm
-motor of
Else if moisture<15 mm
-motor pin on
if humidity>15 mm
-motor pin of
Else if humidity<15 mm
-motor pin on
if temperature>30 c
-motor pin of
Else if temperature<30 c
-motor pin on
Step 5: control the relay and motor
Step 6: stop.

4.6 Flow chart :



4.6 Fig: Flowchart

4.7 Block Diagram:



4.7 Fig: block diagram

4.8 Result:

This project we have to tested 100 times.

1)water level<15 mm

Motor on

Success 100%

2)Temperature>30

Motor on

Success 90%

Different paddy field require different Temperatures.

3)Moisture

Success 50%

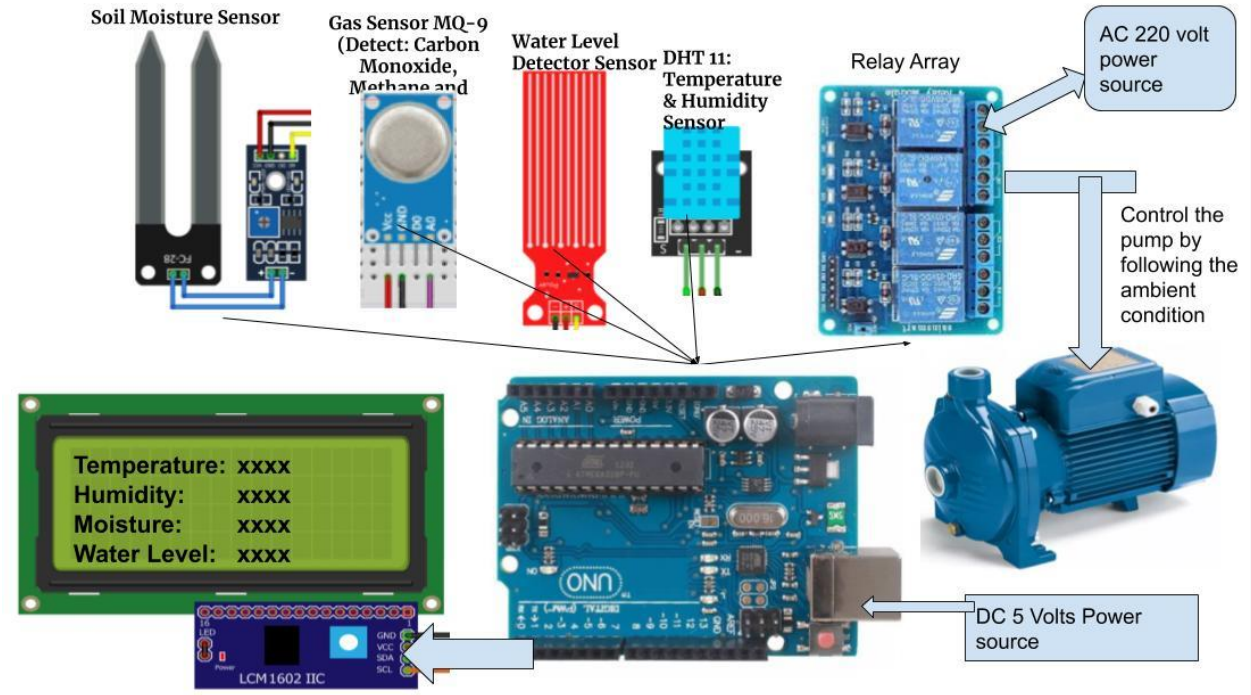
Motor on

4)Humidity

Success 50%

Motor on

4.9 Conceptual Circuit Diagram:



4.9 Fig: circuit diagram

Chapter-5
Conclusion

In this project we used water level**,** Moisture, humidity, temperature sensor, little pump, relay module completes our project. After complete our project, we analysis this project in an agriculture field (paddy field). Our project worked successfully. Smart paddy farming automatically turn on and off the pump using various sensors. Besides if the smart farming cannot solve any problem then send the news to the farmers through the buzzer ringing.

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