A PROJECT REPORT

"GSM BASED WATER PUMP CONTROL SYSTEM"

UNDER THE GUIDANCE OF

PROF.NAZISH FATIMA

SUBMITTED BY

Ayman Attar
Sumedh Pathrudkar
Bhagyashri Kalkure

DEPARTMENT OF

ELECTRONICS AND TELECOMMUNICATION ENGINEERING

SHALAKA FOUNDATION

KEYSTONE SCHOOL OF ENGINEERING

(2021-2022)

SHALAKA FOUNDATION'S
KEYSTONE SCHOOL OF ENGINEERING

CERTIFICATE

THIS IS TO CERTIFY THAT PROJECT ENTITIES

"GSM BASED WATER PUMP CONTROL SYSTEM"

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Is a record of the bonafide work carried out under the supervision of Prof. Nazish Fatima and is approved as the partial fulfillment of the requirement of the award of degree in Electronic and TelecommunicationEngineering of the University of Pune.

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Principal

ABSTRACT

In present days, we prefer automation in every sector and are bendy to use. It offers large precision and consistency with high term operation as fair as the manual operated systems. Our project is the automation of the Electric Water Pump used in households, industries, agriculture etc. Our effort is to make and achieve the mechanization implementation to manage electrical motor with the help of GSM module in agriculture use case.

With this the user can monitor the Water Pump by just sending commands through the SMS. The main contribution of this work is to offer automatic water supply for plants to saving time as well as water. This will ease the work of farmers as they can monitor the Water Pump by just sending commands through SMS which will reduce their physical work.

The proposed system is controlled by Arduino to turn ON/OFF of pump by checking the moister level with the help of moisture sensors. The GSM technology is also used to switch ON/OFF of the pump using mobile phone by sending the commands to the kit through the GSM modem.

ACKNOWLEDGMENT

Every orientation work has an imprint of many people and it becomes duty of author to express deep gratitude for the same.

We would like to take this opportunity to express true sense of gratitude towards our project

Guide **Prof. Nazish Fatima** for her valuable co-operation and guidance that gave us for this project.

We would also like to thank our head of the department **Prof. R. A. Barapate** for inspiring us and providing us all lab facilities with internet, which helped us with the project work.

We would also like to express our appreciation and thanks to all those who knowingly or unknowingly have assisted us & encouraged us for our project.

INDEX

CHAPTER NO.1

INTRODUCTION

1. INTRODUCTION

Agriculture based economy could lead a country towards an economically independent nation. Undoubtedly, India is an agricultural country, and its economy depends on farming. One of the essential elements for successful farming is that we should lighten the burden on the farmers so that their productivity level can be increased.

We can reduce the burden on farmers by automating the water supply system. That's not a lot but can be helpful. Our proposed system automates the monitoring of the water supply and water requirements of the plants with the help of specific sensors.
In the traditional water supply system the farmer would have to monitor the water supply by himself and would have to turn on and off the water pump accordingly. But in this system the controller will do the work for farmer.
Besides the system also gives the farmer full control of the water pump. He can turn on and off the pump whenever it is necessary by just sending a text message through his mobile phone.

This will not only lighten the burden of the farmer but also will help him reduce the wastage of water and much more. In this article, we will learn how to operate a motor from remote locations using Arduino and GSM Module. The idea behind this project is powered by the problems faced by the Indian Farmers.

You might have noticed that in most of the cases the crop-fields are located far away from the farmer's residence. Farmers have to travel significant distances to go to their crop fields. Irrigation is an essential part of farming. As we know, it needs to be done daily, and due to this fact, whatever may be the distance between farm and home, the farmer has to go to their crop fields every day to turn on the irrigation system and supply water to crops.

There are two cons of this daily travel to crop fields, waste of both time and money. So, we felt like traveling is not a viable option when it can be done remotely. With GSM based agriculture motor control it's that simple; sitting at home, clicking a button on your Smartphone and controlling motors.

CHAPTER NO.2

LITERATURE SURVEY

2. LITERATURE SURVEY

This supported system was based on the arrangement of the sensors and impel network knowledge. Here fuzzy judgment is used to hold irrigation executive in agriculture. Farmers practice and apply are modeled through via fuzzy law sets and the result of arithmetic soil and crop model are provided a resource irrigation schedule. Some of measures which are followed to reduce the misuse of water and exploit the give up according the weather situation.

The methodology is embedded in gate way network making scheme, a smart and self-governing wireless decision system support. Some of notable number justification and experiments perform the north Italy point. Water economy methods which are based on the threshold parameters were improved utilization of the irrigated stream to reduce the percolation phenomenon without effecting quality of crop.

Technological development takes place in every sphere of life. Many developed and developing countries are trying to establish a correlation between technology and agriculture. In this perspective, some previous work done by Prof. Rupali S. Sawant et al. (2015) [3], R. Subalakshmi et al. (2016) [4], M. A. Murtaza et al. (2017) [5] are praiseworthy. Addressing the issues stated, a solar-based automatic irrigation system having a GSM module for smart communication is presented in this paper. This project uses renewable sources of energy, could save wasting water, and makes it possible for automatic control of the system. As a result, it is a right candidate for the industry 4.0 revolution.

The automated water systems are helped to assisting in the rising of agricultural harvests, maintenance of landscapes and re-vegetation of disturbed soils in dry places and during periods of inadequate rainfall. It is the artificial application of water to the land or soil. Presently, automated-water-supply system is effected by unawareness in method of growing plants, lack of use in technology, etc. However, some automatic systems exist in market, but it is costlier and mostly not suitable for small gardens. Therefore, the new system needs to pour water automatically that can be used in day-to-day life and can be manufactured easily. The advantage of this idea includes low cost, easy to handle, low maintenance, low power consumption. In manual system, over watering of the garden will affect the growth of the plant. This can be overcome by automated system using moisture sensor, which keeps measure of the water content in the soil. It will run the pump only when moisture content in the soil is below the desired level. In the conventional system, it is necessary that someone is required to turn ON-OFF of the pump so that the agriculture becomes very difficult process in day to day life. In current available system reads only the moisture sensor value. Sometimes these values are correct as per the design, but as per the atmospheric condition manual corrections also required. In these situations, manual operations like start-stop required to the currently available systems also these operations control at the field only. This adds additional man power. By using GSM technology, user can turn ON-OFF of the pump from any place as required by sending appropriate command through the mobile phone

CHAPTER NO.3

PROBLEM STATEMENT

& OBJECTIVE

3.1 PROBLEM STATEMENT

To implement GSM based water pump control system by Using Arduino At mega 2560 and programming language embedded c

3.2 OBJECTIVE

The purpose of this project is to save wastage of water, which is done by detecting soil moisture using soil moisture sensor.

The GSM based water pump control system transfers SMS to the receiver mobile by track the status of moisture level.

CHAPTER NO. 4

SPECIFICATIONS

4.SPECIFICATIONS

Hardware

- Power supply adapters
- Arduino Uno
- GSM SIM800A module
- Soil moisture sensor(FC-28)
- Water flow sensor (YF – S201)
- WATER PUMP
- Relay module

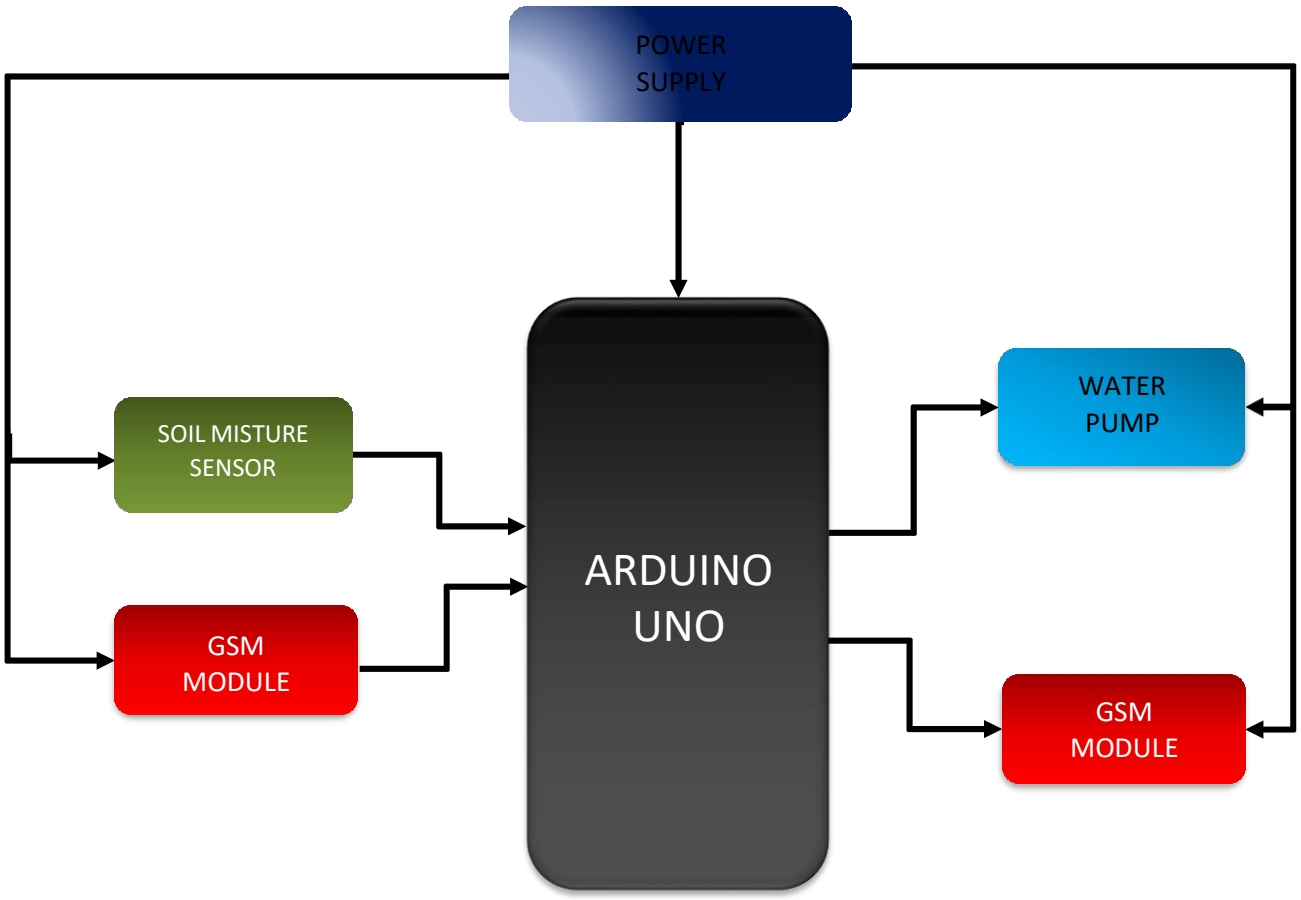
Software Specification

- Proteus 8
- Arduino Software (IDE)

CHAPTER NO.5

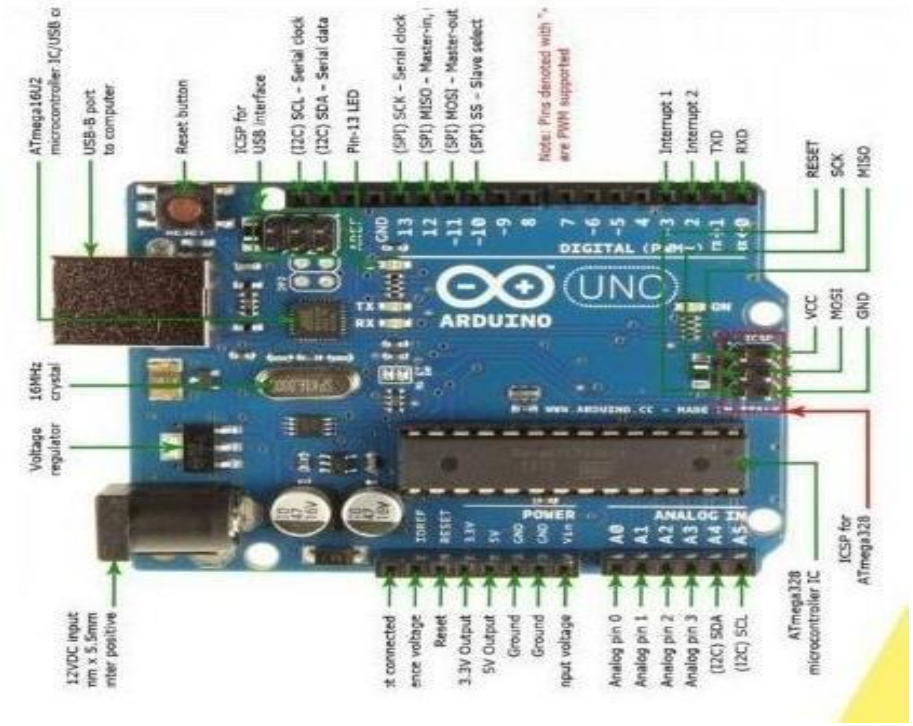
BLOCK DIAGRAM & DESCRIPTION

5.1 BLOCK DIAGRAM



4.DESCRIPTION

1. Arduino UNO :

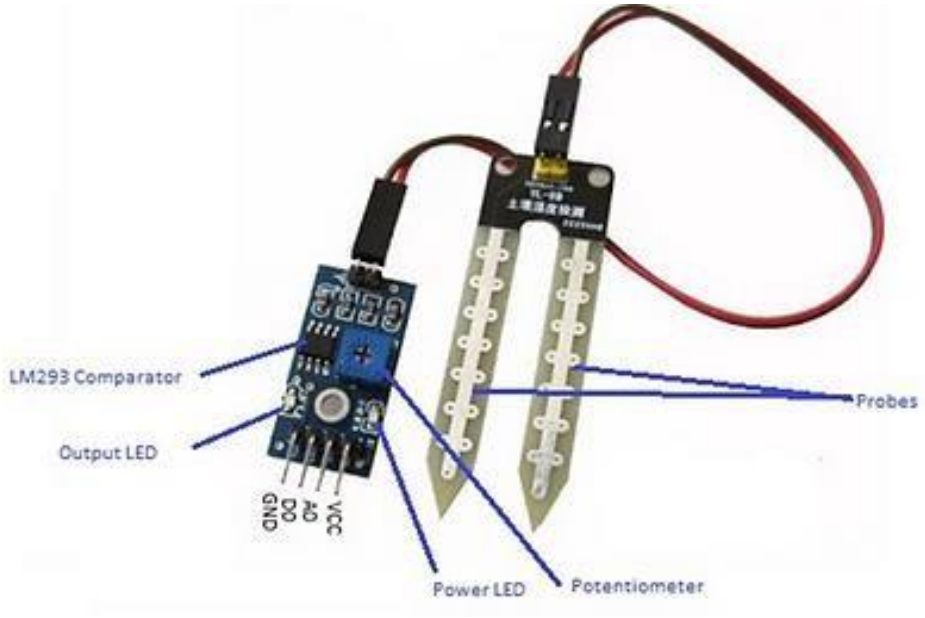


Microcontroller	ATmega328P-8 bit AVR family microcontroller
Operating voltage	5V
Recommended input voltage	7-12V
Analog input pins	A0-A5
Digital I/O pins	6(13,12,8,7,4,2)
PWM digital I/O pins	6(11,10,9,6,5,3)
Serial pin	0(Rx) 1(Tx)
SPI	10(SS) 11,12(MOSI) 13(SCK)
DC current on I/O pins	40mA
DC current on 3.3V pin	50mA
Flash memory	32Kb (0.5 used for bootloader)
SRAM	2Kb
EEPROM	1Kb
Frequency	16MHz

2. GSM SIM 800A module :

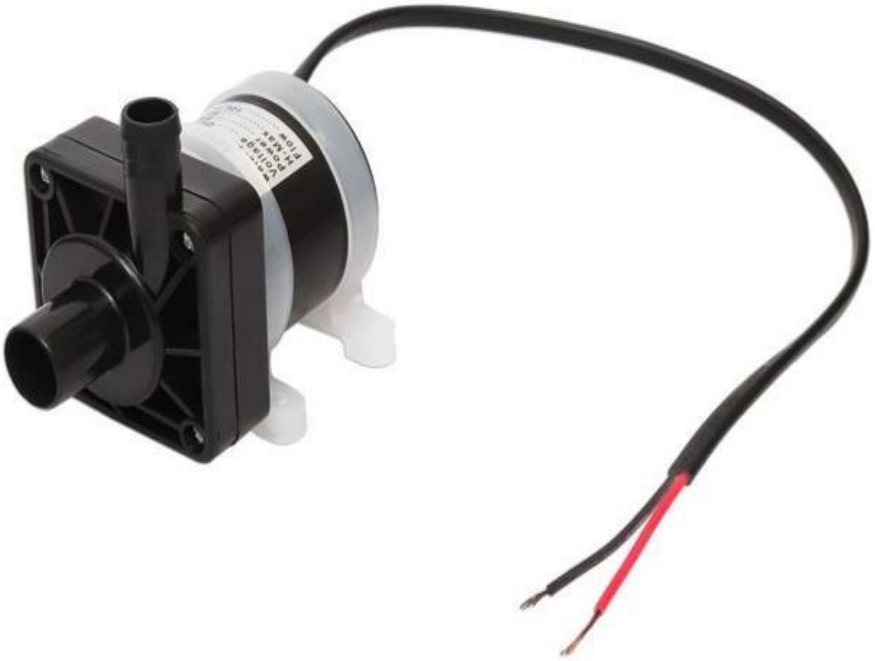
Name	SIM800A quad band GSM module
Bands	850/900/1800/1900MHz
Pins	TXD,RXD,VCC,MCP,SPP,SPH,MCN,SCL,SDA
Voltage supply	9vDC-12vDC
Supply current	2A
Cooding schemes	CS-1, CS-2, CS-3, CS-4
Class	4 (2W), Class 1 (1W)
Control via AT commands	(3GPP TS 27.007, 27.005 and SIMCOM enhanced AT command set)

3. Soil Moisture Sensor specification (FC-28)



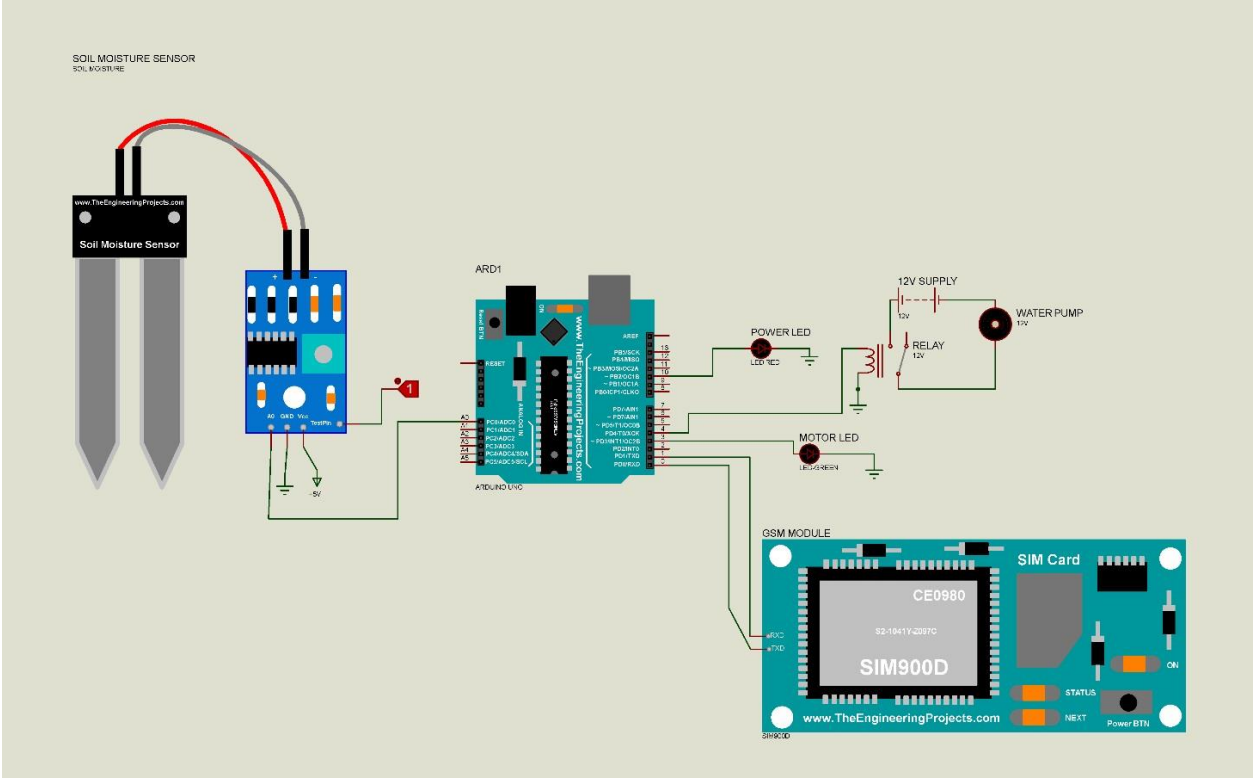
Name	Soil moisture sensor
Operating Voltage	: 3.3V to 5V DC
Operating Current:	15mA
Output Digital	0V to 5V, Adjustable trigger level from preset
Output Analog	0V to 5V based on infrared radiation from fire flame falling on the sensor
Pins	VCC(The Vcc pin powers the module, typically with +5V)
	GND(Power Supply Ground)
	DO(Digital Out Pin for Digital Output)
	AO(Analog Out Pin for Analog Output)

4. Water pump specification



Voltage	DC 12V
Power	8W
H-max	5m
Flow	10L/min

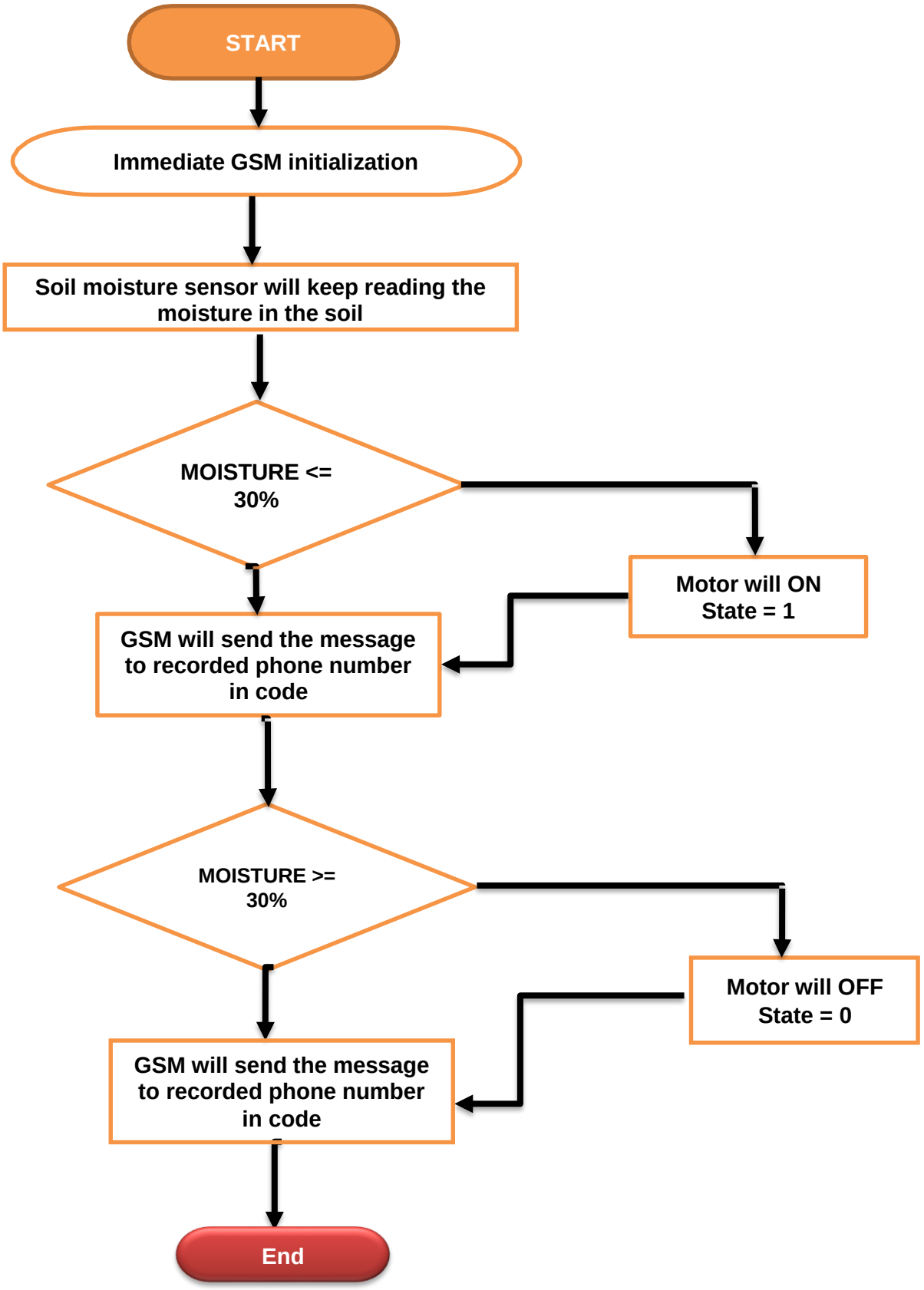
5.3 CIRCUIT DIAGRAM



CHAPTER NO.6

SOFTWARE IMPLEMENTATION

6.1. FLOW CHART



CHAPTER NO.7

ADVANTAGES & APPLICATIONS

ADVANTAGES

- Use of this system will save farmers time and money.
- Reduces the burden of farmers also increases their productivity.
- It can be easily implemented in the fields.
- It is user friendly**.**

APPLICATIONS

- This system can be used in the agricultural watering pumps.
- It also has wide applications in the industrial as well as household water pumps

CHAPTER NO. 8

CONCLUSION

8. CONCLUSION

1. If the power supply of the system goes OFF, we cannot get the status of the system so a backup power supply system can be provided for the microcontroller and the GSM unit. It will give the system information even if the power supply is not available. It helps us to control the system as necessary.
2. A provision for the manual change in the moisture level can be provided so that the user can set the moisture level as required for the different types of the systems cultivated by him.
3. A voltage protection system can be provided when the system is installed on single phase or three phase lines so that the system is not effected with the high or low voltage profile occurring in the power supply system.

CHAPTER NO.9

FUTURE SCOPE

9. FUTURE SCOPE

Addition of IOT to the system would give great outcomes.
PLC version can also be designed for factories

CHAPTER NO.10

REFERENCE

10. REFERENCE

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[10] B H Band1, A D Ingole2 Assistant Professor, Electrical Engineering Department, PRMCEAM, Badnera,
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CHAPTER NO.11

WORK PLAN

WORK PLAN

	II - SEMESTER	
SR.NO	**Project Details**	**Month**
1	Selection of Project	March
2	Collection of Information	March (1-10)
3	Circuit Diagram & PPT Making	March (11-31)
4	PPT Presentation	April (1-20)
5	Simulation	April (21-30)
6	Coding And Testing	May(1-20)
7	Final Demonstration	May(21) to June(10)
8	Final Project Report	June (11-25)

COMPONENT LIST

SR.NO	COMPONENT NAME	QUANTITY	PRICE
1	I TO C CONVERTER	1	75
2	1 CHANNEL RELAY BOARD 5V	1	50
3	VOLTAGE SENSOR	1	65
4	GSM MODULE	1	750
5	1 CHANNEL RELAY BOARD 12V	1	50
6	WATER FLOW SENSOR	1	210
7	SOIL MOISTURE SENSOR	1	50
8	GREEN LCD	1	150
9	ADAPTOR	1	180
10	CORD JUMPER 150/151/149	6	240
12	BUR 3/14	8	60
13	CASIO MALE CONNECTOR	2	60
14	DC SOCKET	2	12
15	SINLGE STAND	2	14
16	LED(RED,YELLOW,GREEN)	15	15
17	MOTOR PUMP	1	438
		TOTAL	**2776/-**