PIC Microcontroller Based Green House Control System

A PROJECT REPORT

Submitted by

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'PIC Microcontroller Based Green House Control System'.

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THANK YOU...

Nikhil Krishnakant Kavate

ORGANIZATION

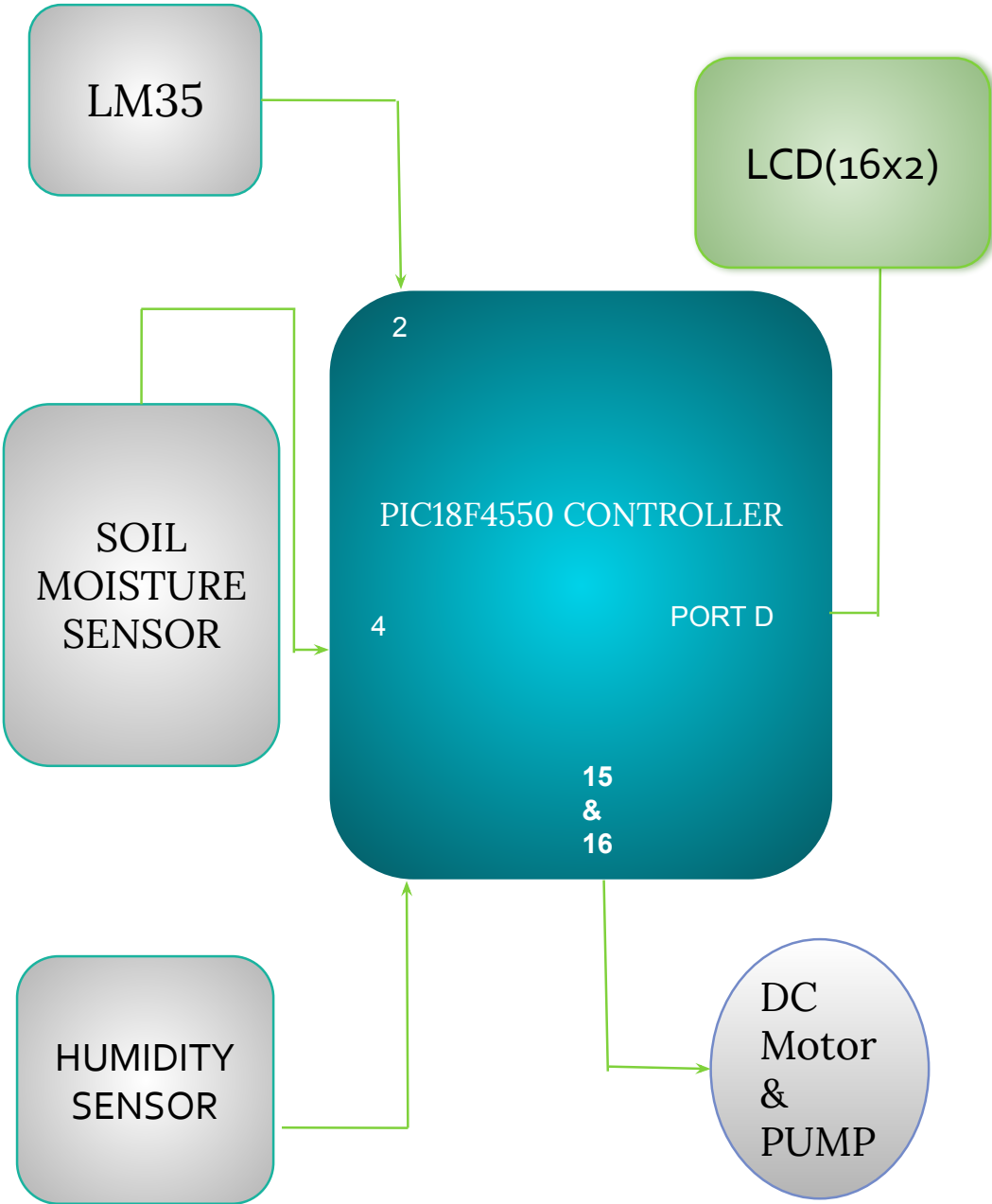| SR No.	Title
1.	Abstract
2.	Introduction
3.	Block Diagram
4.	Simulation Output
5.	Working
6.	Components
7.	Conclusion
8.	Result
9.	Future Work

INTRODUCTION

India is the country of village and agriculture plays an important role for development of country. In our country, agriculture depends on the monsoons which has insufficient source of water. So the irrigation is used in agricultural field. In irrigation system, depending upon the soil type, water is provided to plant. In agriculture, two things are very important, first to get information of about the fertility of soil and second to measure humidity content in air and surrounding temperature. Nowadays, for irrigation different techniques are available which are used to reduce the dependency of rain and mostly this technique is driven by electrical power and on/off scheduling. In this technique, an temperature and soil moisture sensors are placed near the plant and controller unit handles the sensor information and transmit data to the opto-isolator which control the flow of water through the pump.
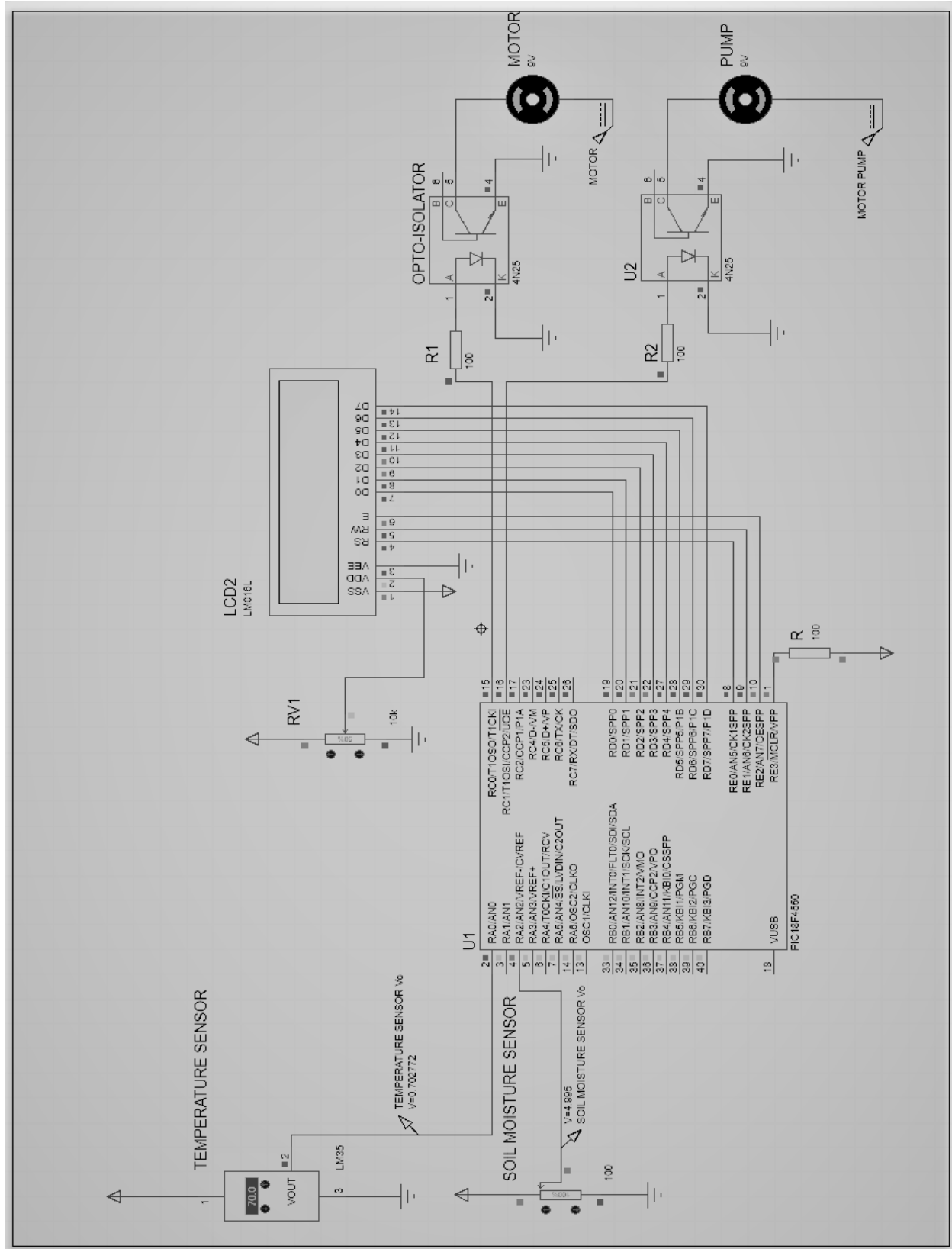
Abstract

In this project we present the automatic irrigation system by using an PIC microcontroller, this irrigation network is controlled by the processing unit which is nothing but the PIC microcontroller, in order to the increasing demand for the food production we implemented the new dimension in the irrigation field with less utilization of humans, it is totally different from the conventional irrigation method used by our Indian farmers which involves manual operation and control, in this electronic era farmers not willing to face the challenges creating by these conventional methods, so we provide this automatic irrigation system which waters the plants based on the atmospheric conditions detecting the dryness of the soil, the temperature and whether conditions are displayed by using LCD.

In this project we use a temperature sensor which senses the temperature and this sensed value is displayed on the screen, a moisture sensing circuit is used to sense the levels of moisture content in the soil and interruption signal is generated whenever the soil maintains appropriate water content
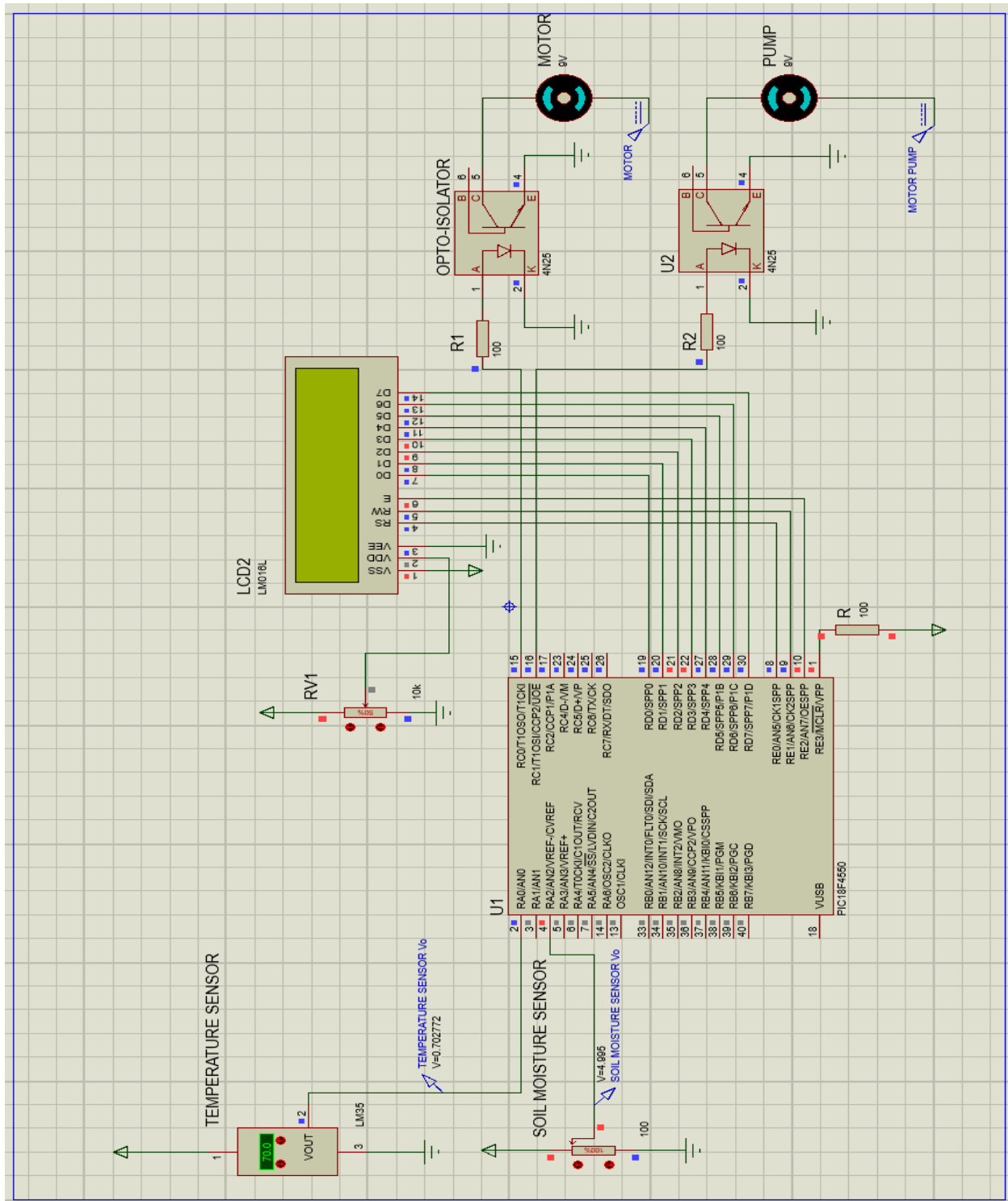
Block diagram :

LM35

LCD(16x2)

SOIL
MOISTURE
SENSOR

PIC18F4550 CONTROLLER

2

4

PORT D

15
&
16

HUMIDITY
SENSOR

DC
Motor
&
PUMP
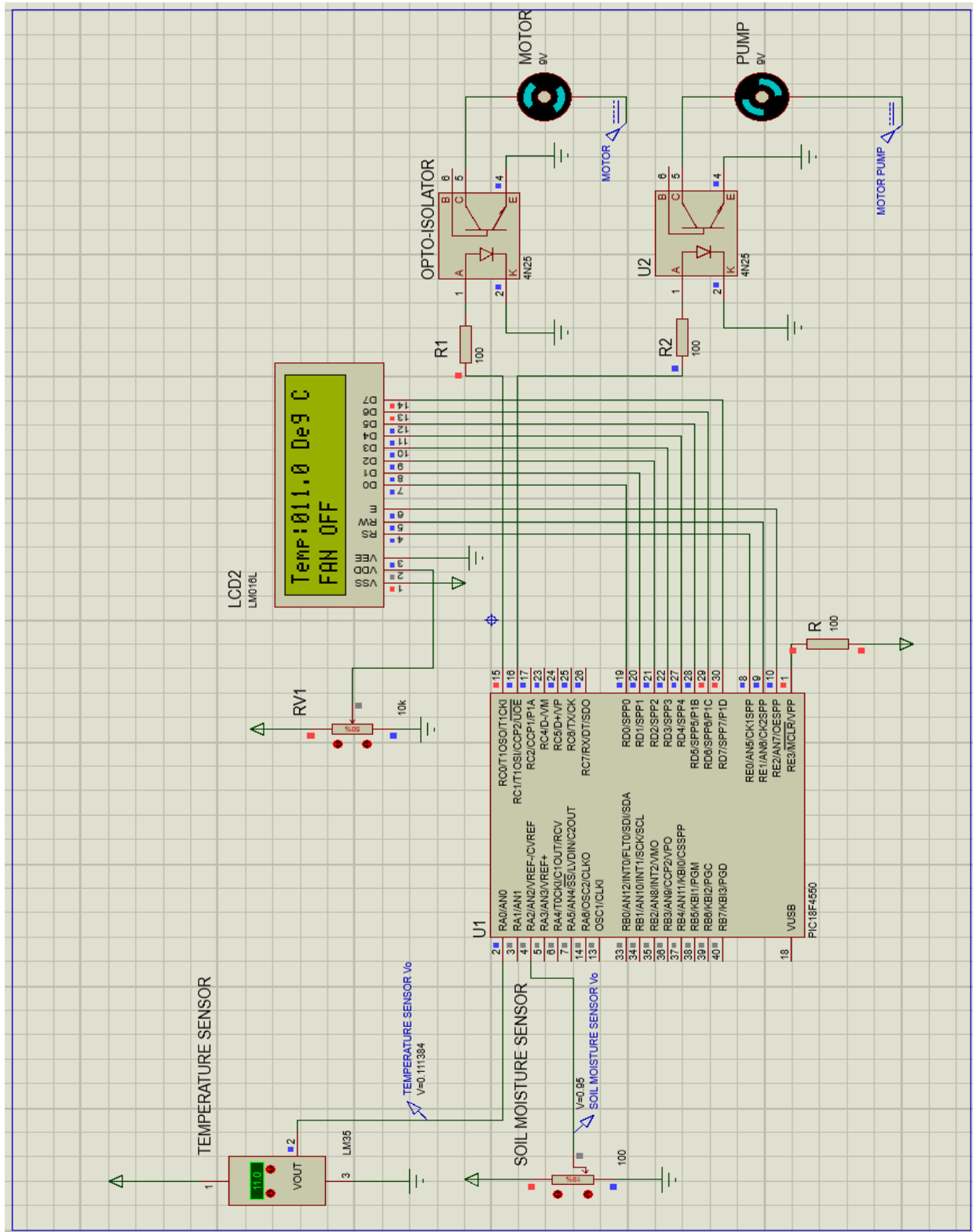
❖ Circuit Diagram

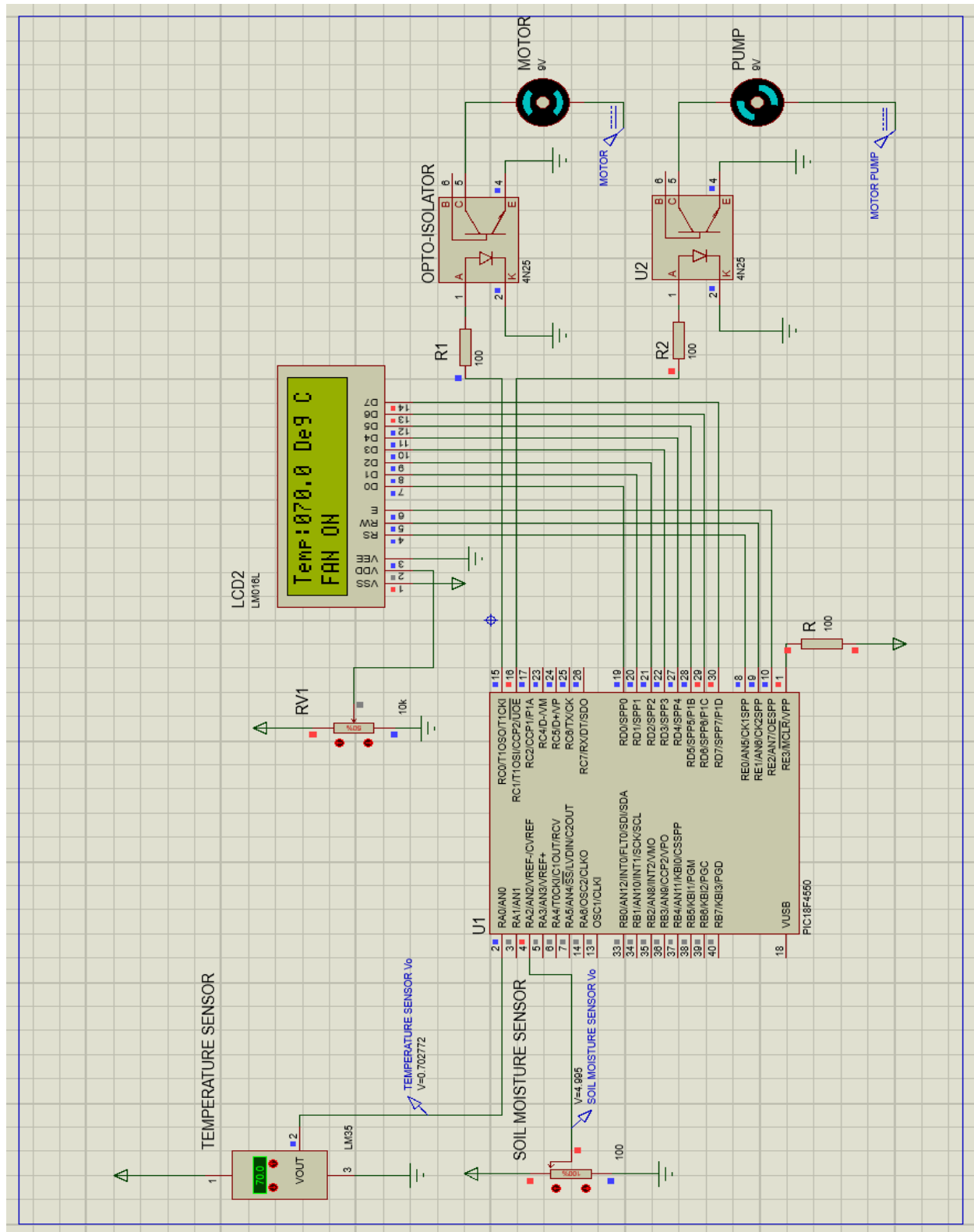## ❖ Simulation Output

STATE 1

Power supply is ON

STATE 2
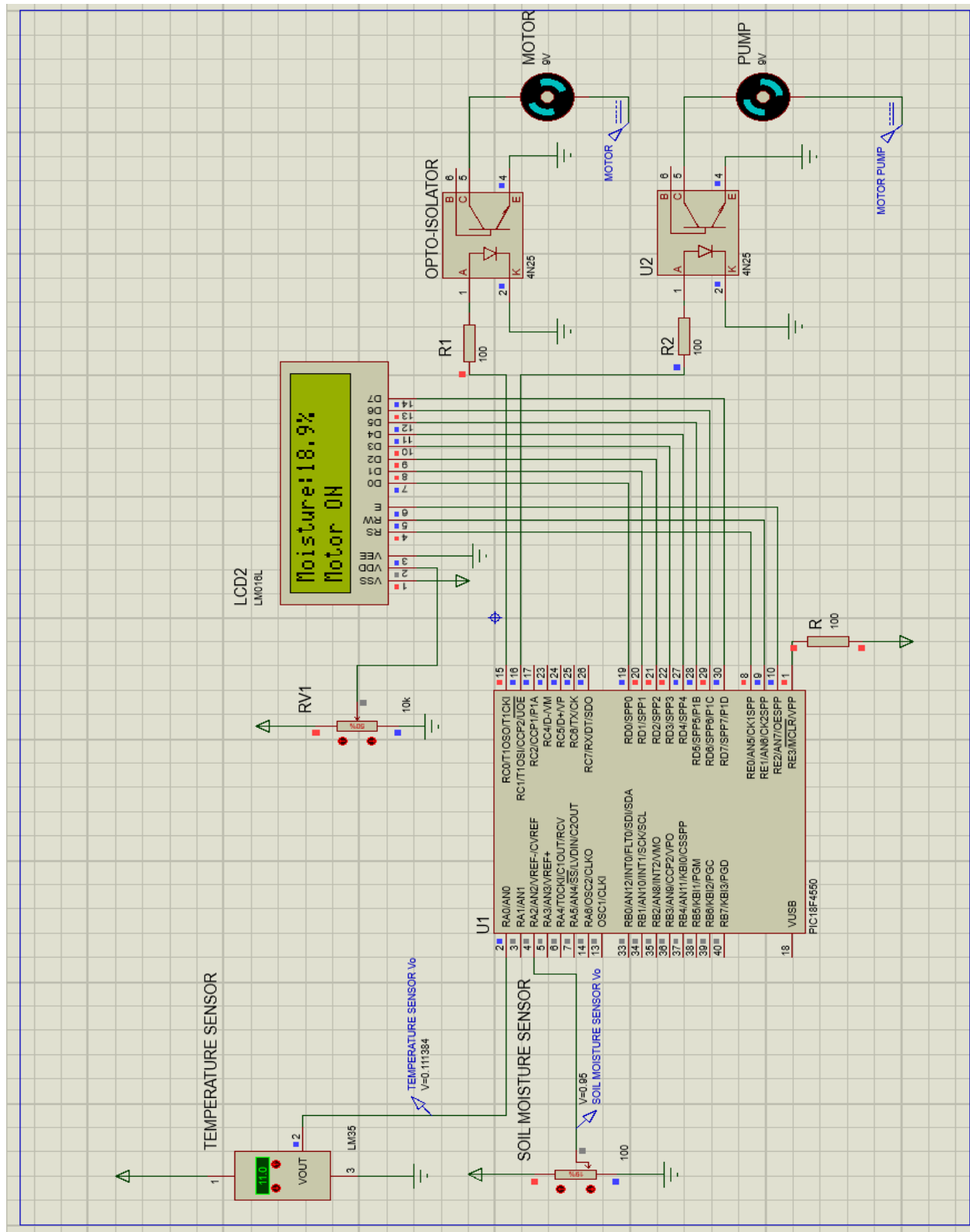Temperature is below set level motor is OFF

STATE 3
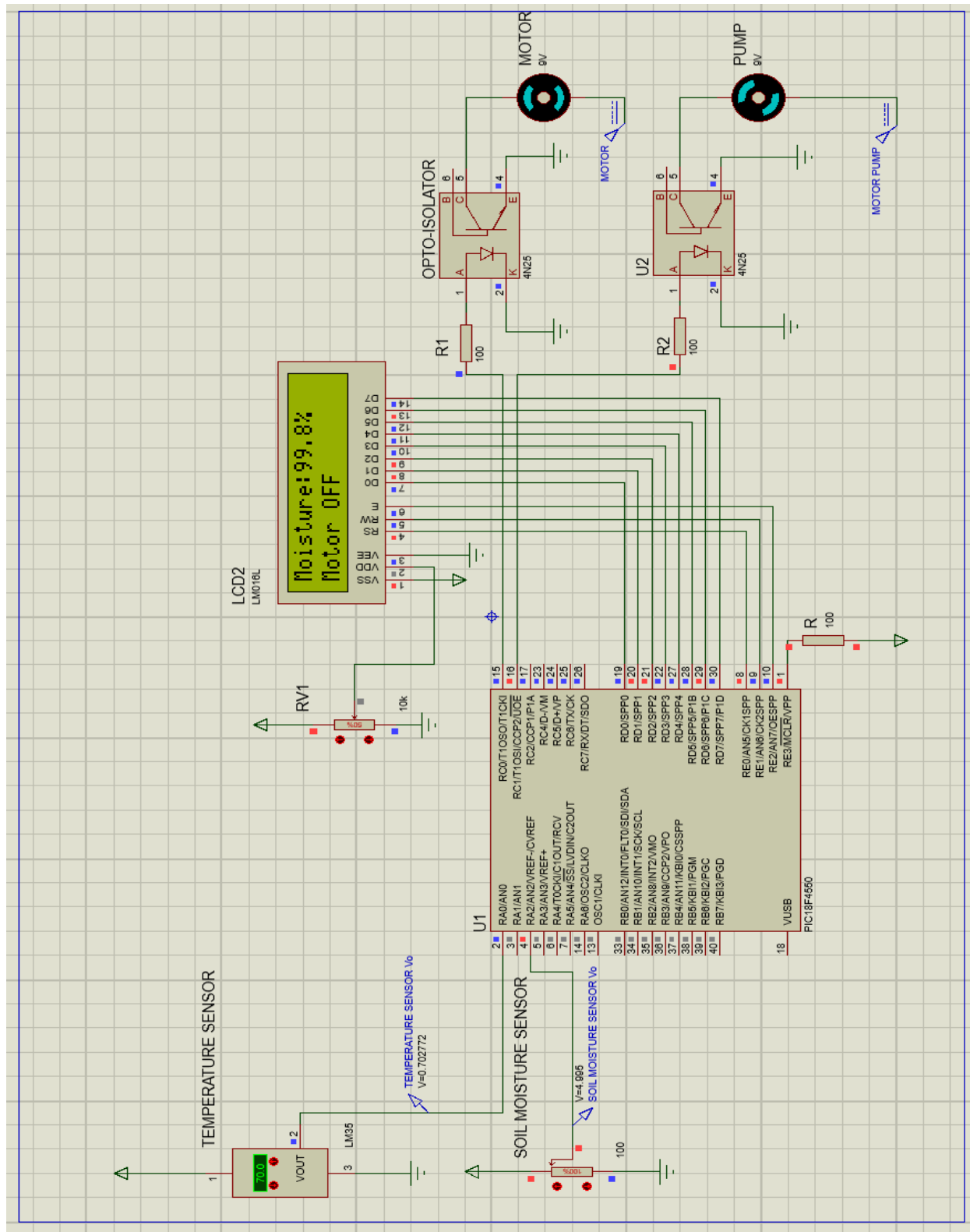Temperature is above set level motor is ON

STATE 4

Soil moisture is below set level motor is ON

STATE 5

Soil moisture is above set level motor is OFF

<u>Working :</u>

The working of this system can be divided into 4 units :

- **MICROCONTROLLER:** Which is the core of the project , here we are utilizing PIC18F4550 controller. This detects the ADC data and calibrates the value & controls the motor pump and fan.

- **A/D CONVERSION :** This part is taking control of getting the analog values to programmable digitals signals.

- **SENSING UNIT :** This part is having the sensors sense the Soil moisture in the soil and Temperature the of surrounding environment.

- **DISPLAY UNIT :** The Temperature & percentage of Soil Moisture is displayed on the LCD.

This is how the entire "AUTOMATIC IRRIGATION PLANT CONTROL SYSTEM " works.

Components (hardware) :

- PIC18F4550 target board
- Soil moisture sensor (capacitive)
- Temperature sensor (LM35)
- Power Supply(5V/9V)
- Water pump
- DC motor (9V)
- Resistors
- LCD display(16X2)
- OPTO Isolator (MCT2E)

Components(software) :

- MPLAB IDE(version 8.8)
- BOOTLODER
- PROTEUS IDE

CONCLUSION :

The automatic irrigation control using PIC Microcontroller has been experimentally proven to work satisfactorily. This process not only records values of temperature and soil moisture it also controls the motor pump and fan. Analyzing the weather condition pump and fan will automatically turn ON & OFF making it possible to maintain greenery without human intervention.

Result :

We successfully Interfaced the LED,LCD & ADC to the PIC18F microcontroller.

FUTURE WORK :

These system can be expanded using mobile application control of motor and wifi controlled monitoring. These will expand the working capability and efficiency of this system.It can be implemented not only in agriculture but also in gardens in any places using the sprinkler concept. It has a vast scope when it is mixed with IOT. Automation will get a new dimension through this.