

ARDUINO IRRIGATION SYSTEM

Written by

Group 13

FADE IN:

1. INTRODUCTION

(V.O.)

Good evening everyone, I am your host, Joseph and I would like to welcome everyone to the first episode on our series for the ultimate automatic irrigation system that is powered by Arduino. This project is designed for those wanting to build a DIY smart irrigation system that doesn't break the bank. This project that caters to both people experienced with Arduino and for those starting their first project. Now lets get started.

FADE TO:
TITLECARD

2. TITLECARD

AN INTRODUCTION SEQUENCE PLAYS.

FADE TO: HOST

3. KIT OVERVIEW & DESCRIPTION

(V.O.)

Now, I'd like to think that I'm a pretty good gardener, and yes, I may have killed a dozen or so plants, but the circumstances usually come down to things that are outside of our control, like not being able to physically be there to care for our plants.

Here is where we found a way to combine our hobby in horticulture with our interest in Information Technology. We have designed the Sprinklernator, which is a Arduino based smart irrigation controller.

(MORE)

(V.O.) (CONT'D)

You're probably wondering how this is any different to an off-the-shelf alternative? Well the answer to that is here you will get many more features that are usually only included in high-end expensive irrigation controllers.

FADE TO:
COMPARISON
IMAGERY

Some of these high-end features included in this kit is the ability to detect weather conditions and automatically switch off the irrigation, or during particularly warm days, the moisture sensor will also increase the frequency of watering, attuning the water needs of your plants.

FADE TO: IMAGES
OF UI AND BOM
IMAGES

(V.O.)

But what makes this set-up a truly smart system is how this is able to connect to the internet and pull weather data, and other relevant information, and best thing yet, that the entire device controlled from your smart phone.

Now, apart from actual plants and irrigation equipment, you're going to need A PC such as a laptop, or a mobile phone device, a good attitude to learning how to program your Arduino and a little bit of time and money that in the end will give you the satisfaction of building your own irrigation system.

FADE TO: SHOT OF
ARDUINO DEVICE

(V.O.)

Now you're probably wondering what actual Arduino hardware is required for this build!

(MORE)

(V.O.) (CONT'D)

And obviously you're going to need A Arduino microcontroller, this is where we went with a Arduino Mega 2560, this device contains 70 I/O pins with 16 of them being analogue and the remaining 54 being digital, Additionally the board has a 16 MHz crystal oscillator with 256kb of flash memory and 8kb of memory, this microcontroller will run code compiled within the C programming language and fortunately there are many repositories and guides throughout the internet to assist you in coding, so if this is your first time, don't think you're going to be left behind because you don't know how to program, with some time and dedication you can learn everything required to conduct this project, and throughout this series we will also have the relevant code accessible to you. Finally an important note about this micro controller is that it has recommended power input of 12 volts and a maximum of 20 volts, it is important to try and keep within the recommended power supply to increase the life of the board.

FADE TO: SHOT OF
DISPLAY AND
ENCLOSURE

(V.O.)

This arduino project is going to have a handful of sensors and a display. The LCD used in this project has a 32 character display with an integrated backlight to assist in low-light conditions, additionally this display has six programmable buttons that can be used as a selection menu.

FADE TO:
HUMIDITY SENSOR

(V.O.)

The first sensor related to horticulture will be the Humidity sensor, this device works through measuring the resistance between two electrodes separated by an absorbent substrate, this device will assist us in fine tuning the water requirements for the plants increasing and decreasing the water frequency when used in combination of the other sensors.

FADE TO:
TEMPERATURE
SENSOR

(V.O.)

The next sensor on the list is the Temperature sensor, which obviously tell us what the temperature is, but how it works is a semi-conductive material that in this project will use a negative temperature coefficient where the resistance will decrease as the temperature increases.

FADE TO:
SUNLIGHT SENSOR

(V.O.)

The next sensor within our list will be the sunlight sensor, also known as a Light dependant resistor with voltage levels increasing or decreases as the amount of light fluctuates throughout the day and night. When light decreases as does the voltage and vice versa.

FADE TO: SOIL
MOISTURE SENSOR

(CONT'D)

(CONT'D)

(V.O.)

The last sensor used within this project will be a rain sensor, which where voltage is increased or decreased. The voltage in this module will decrease in wet weather conditions.

FADE TO:
CONNECTIVITY
MODULES

(V.O.)

Now if you're wondering with how this set-up is controlled through your phone, and if you guessed an additional module, you would be correct. There is no inbuilt Wi-Fi transceiver built into the main arduino board. This module is called the XC3802 Wi-Fi Mini, this device will allow the arduino board to connect to the internet, and do functions such as set the date and time via NTP & connect to weather services, which we will cover in a later episode.

4. COST OF SET-UP

FADE TO: TOTAL
COST OF HARDWARE

(V.O.)

Now you're probably wondering how much this set up is going to cost you, which we have made a handy sheet here that will show you the cost breakdown, As you can see the total cost of the entire set-up comes to a final price of xxx.

5. OUTTRO

FADE TO: HOST

HOST (V.O.)

This here comes to the conclusion of the first episode of our arduino irrigation project, in episode two, we're going to go into more detail about the software requirements of the set-up, and begin to connect the sensors to the main board. If you liked this video hit that like button and if you want see more videos, don't forget to subscribe and hit the bell for notifications!