ES-PROJECT

(*Auto Irrigation System*)

Abstract:

This report specifies the various and techniques used in gathering requirements, designing, implementing, and testing for the project on the irrigation system around the world. The problems regarding the manual irrigation system were analyzed and noted. This project aims to solve those problems and thus, add more value to the new and efficient ***Auto-irrigation system***. The requirements were gathered from Amazon and we created a model to implement this system.

Acknowledgement:

First, we would like to thank St. Xavier's College, Mumbai for implementing Embedded Systems as a subject for our course.

We would like to thank our Embedded Systems Professor Aaron Johns for giving us an opportunity to teach us all about Arduino's and modern technology which helped us a lot in the making of this project.

43 Naveen Chandel 195211

06 Abey George 195220

Why we build it?

I, ***Naveen Chandel*** come from an agriculture family in Himachal Pradesh. Agriculture has always been an important part of our family. But agriculture emerge as a challenge sometimes, when it comes to old and manual irrigation system which affects crop so much like ***wastage of water, over irrigation, delays in completion of projects, irrigation in nighttime***.

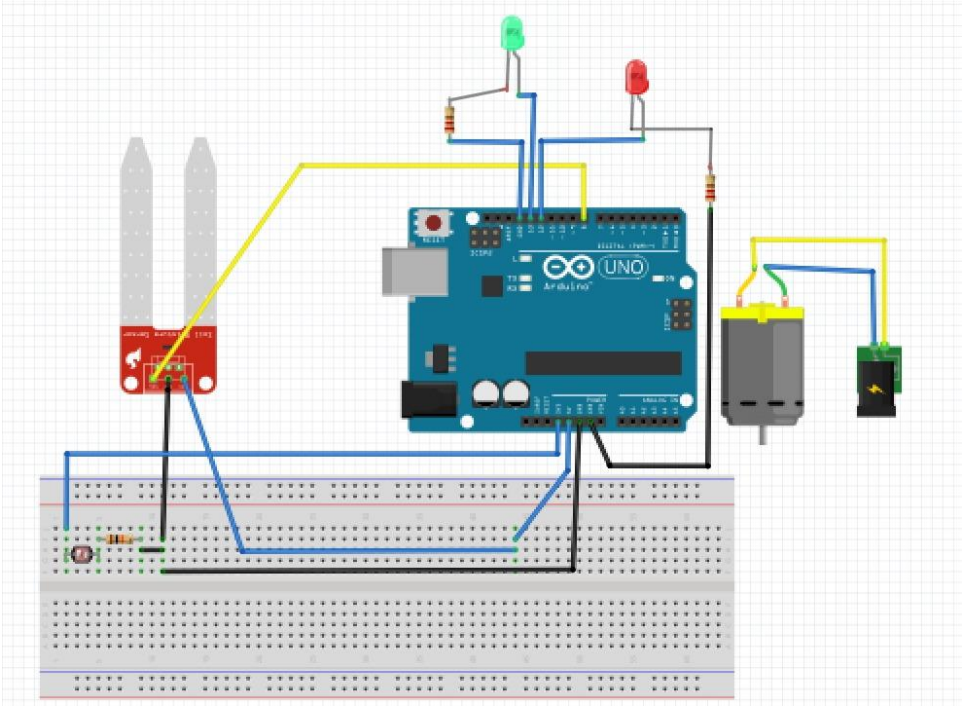
So, after getting an opportunity to make a project with Arduino. I discussed it with my partner ***Abey George*** that why don't we make a project which will help us in overcoming these irrigation problems. So, we starting collecting information regarding our project.

Features:

Hardware used:

Our system provide water to the plants whenever the soil is dry. In this system, we have used a ***soil moisture*** to sense the moisture level of the soil. We have used a ***light dependent resistor (LDR)*** to identify day or night. We have used ***submersible water pump*** to provide water to the soil. ***Resistors 10k and 100 ohms*** have been used here to control current flow and divide the voltages, ***breadboard*** for prototyping our project, ***jumper wires*** to make connections between all the hardware components, ***LED's*** to detect the signals we want the user to receive. And last, but not least, ***Arduino-UNO*** to interacts through sensor with environment and process according to the program stored in it and performs output operation.

Circuit:



Working:

First soil moisture sensor detects the moisture whether it is perfect or not. Secondly, LDR sensor detects the day or night time.

CASE 1:

- If moisture is low, and a daytime then

LED gives you the ***green*** signal to turn on the water pump. And LED gets back to ***red*** color when moisture gets perfect in the soil.

- If moisture is perfect, and a daytime then

LED gives you the ***red*** signal always. So that you don't do any over irrigation.

CASE 2:

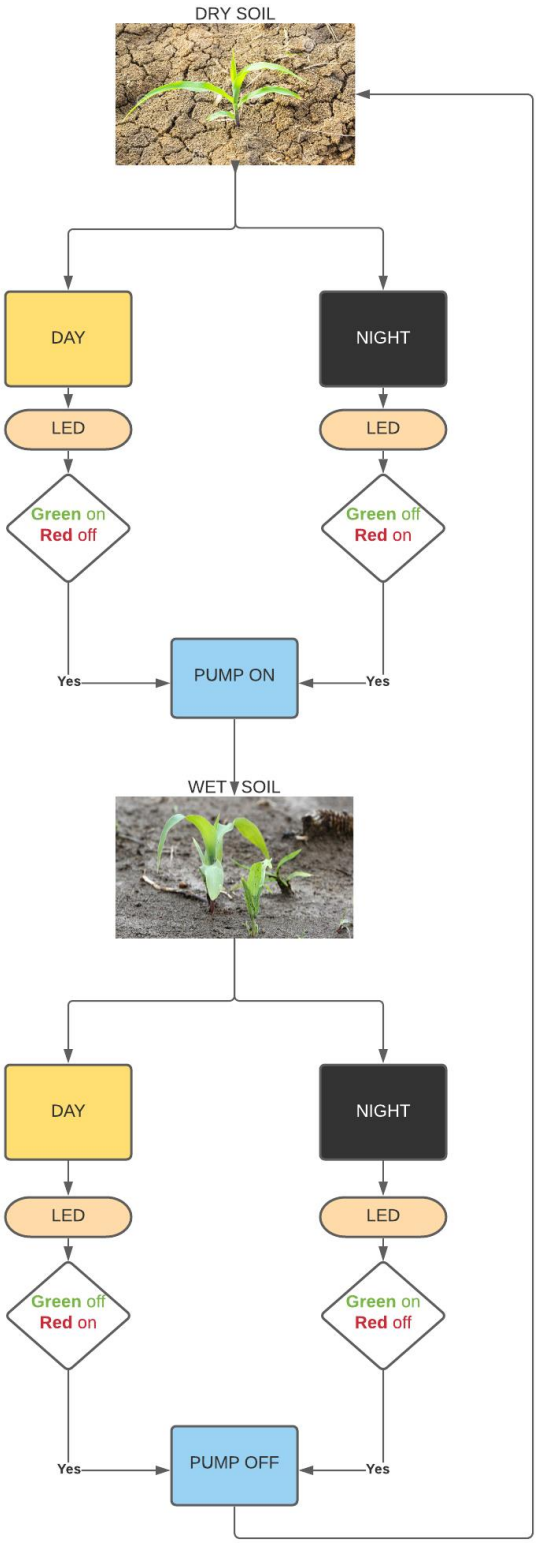
- If moisture is low, and a nighttime then

LED gives you the ***red*** signal to turn you the water pump but with low intensity because there's always a factor of dew in the nighttime. You can control intensity with pump. And LED gets back to ***green*** color when moisture gets perfect in the soil.

- If moisture is perfect, and a nighttime then

LED gives you the ***green*** signal in night. So that you don't do any over irrigation.

Flowchart:


DRY SOIL
DAY
NIGHT
LED
LED
Green on
Red off
Green off
Red on
Yes
PUMP ON
Yes
WET SOIL
DAY
NIGHT
LED
LED
Green off
Red on
Green on
Red off
Yes
PUMP OFF
Yes

Innovation:

With our project, we can change the old irrigation system with a new and robust way to give water to the plants. Our project will help farmers to decrease ***wastage of water***, ***over irrigation***, ***delays in completion of projects***, and achieve ***irrigation in nighttime.***

With our project, farmers don't have to be in doubt all the time whether soil needs water or not. Soil will itself tell the farmer whether to give water to the crops or not.

Our ***Auto Irrigation System*** will help the irrigation with shortage of water. Without over-irrigation, crops will not get ruined.

OUTPUT: