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README

SMART IRRIGATION SYSTEM USING WATER PUMP

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OBJECTIVE- We have designed a system which controls the Water pump based on Moisture detection.

The pump automatically turns Off and, On the pump, based on the timer & Moisture detection. For this project we need a Moisture sensor and a pump apart from the Rpi Kit.

Components & KIT- Raspberry pi 3 Model B, Grove pi, sensors, Universal Serial Bus(USB) & Water Pump 5V.

KIT- GrovePi+ Cana Kit- Plug and Play kit of sensors that turns any object into an Internet-connected device. No soldering required. C & Python libraries are available for Linux, C# libraries available for Wimdows IOT.

Installation- We have initially set up a grove pi with Raspberry pi and configure the RPI and set up the software. Then we installed Python Version 3.

Sensors - We have given the raspberry pi with all the sensors. The sensors that we used for our project are-

- LCD
- LED
- Light sensor
- Moisture sensor
- A Relay- 3.3 volt
- Temperature & Humidity sensor
- Pump- 5 volts
- GPIO
- Connecting Cables-20cm

How to run our project- The important Libraries that we need for our project-

Json, grovepi, paho.mqtt.client as mqtt, grove_rgb_lcd.

Raspberry pi & grove pi setup- The RPI has Analog ports and Digital ports.

Temperature & humidity sensors are connected to **Digital port 3**

Moisture sensor is connected to **analog port A0**

Light sensor is connected to **analog port A1**

Relay is connected to **digital port 8**

Led is connected to **digital port 4**

Electronics set up- We have a motor which is 5 volts and relay which is 3.3 volts. Cables connected to GPIO pins, ground to pin number 6 and positive to pin number 2(5 v - output). To control the pump, we used the 3.3 V relay in series and controlled the relay with 3.3 V controllable digital port 8

As the pump has the USB connector we modified a car charger plug to take the above 5 V output and connect the pump to it via USB.

File Name, Path and folder-

Our code is under the file name "group_10". Inside this folder we have a python script name "**Project_G10.py".** The file contains the details & documentation of our project.

Path- /Group_10/Project_G10.py

The code includes IBM Watson cloud platform set up that is connected to Watson cloud and store data on cloud.

We have the Node-Red flow for project which displays the real time Moisture, Temperature and Humidity and Visualization on Node-Red with Gauges

To run the project, we have a file name Project_G10.py. We need to type the command –

$ sudo python Project_G10.py.

Development platform- The development platform that we have used is Raspberry pi, IBM Watson and Node-red. In IBM Watson we have used Dashboard to create our gauges. There are total of 8 gauges on IBM Watson which represent all real time data reading from sensors through python script and stores all real time data on IBM Watson cloud platform. For Node-Red we have displayed the real time data of moisture, temperature and humidity with the flows and display it on gauges.

Reference- we can visit the link www.canakit.com, seeed.cc/grovepi-kit, www.grovepi.com from DEXTER Industries.

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