GOVERNMENT COLLEGE OF ENGINEERING

ERODE

(FORMERLY KNOWN AS IRTT)

BE., ELECTRONICS AND COMMUNICATION ENGINEERING

TECHNOLOGY NAME **: INTERNET OF THINGS**

ENVIRONMENTAL MONITORING

AUTOMATIC SOIL IRRIGATION SYSTEM

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Environmental Monitoring - Automatic soil irrigation system

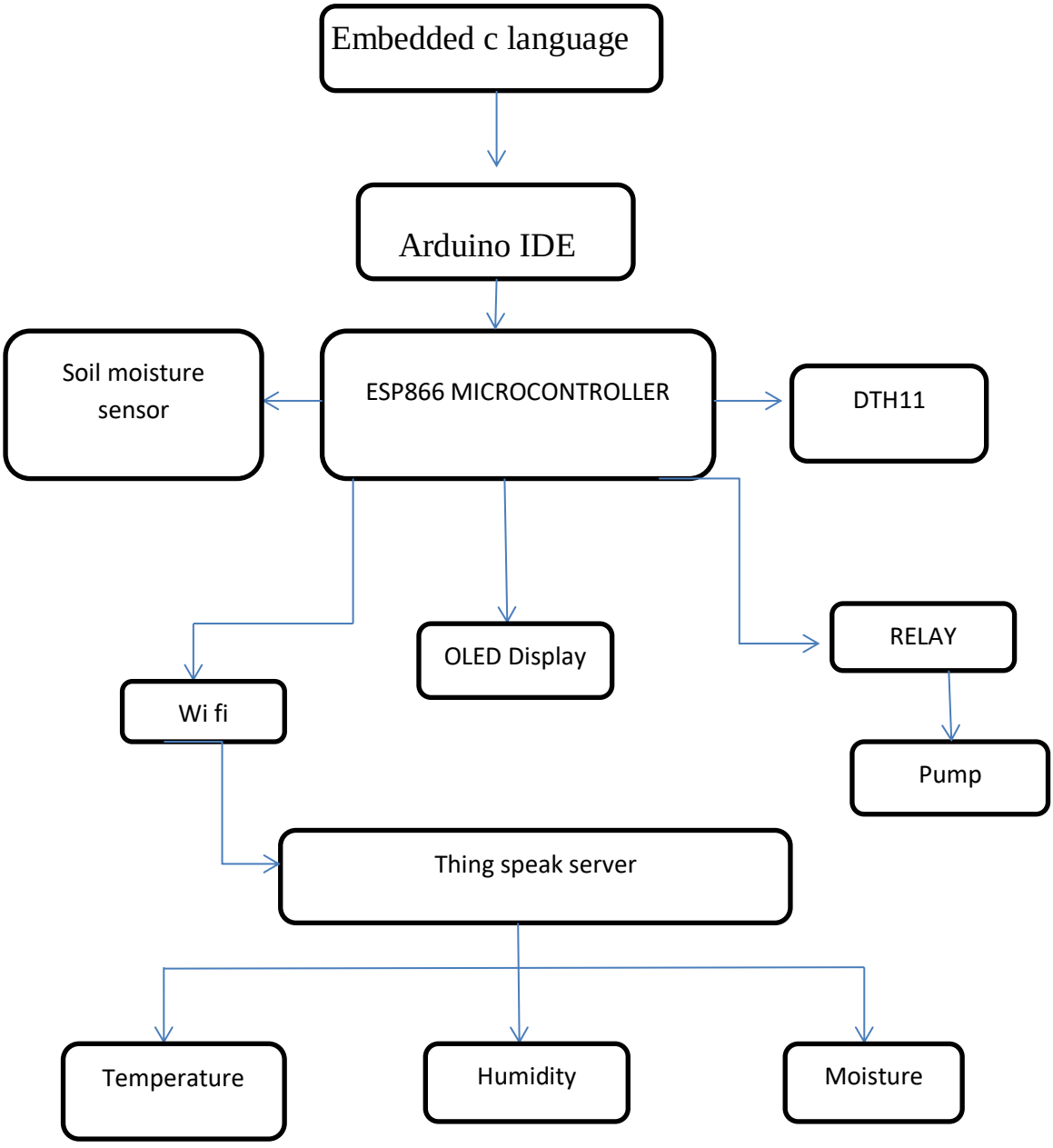
INTRODUCTION

Agricultural lands require water in certain levels.If Water is under minimum level, the plants may die due to the absence of proper watering. In **Automatic Soil Irrigation System** with an **Arduino IDE** which will irrigate the plants automatically and keep the plants healthy even when Man power is out of the cultivation lands for weeks or months. It reduces man power and Controls the wastage of water.

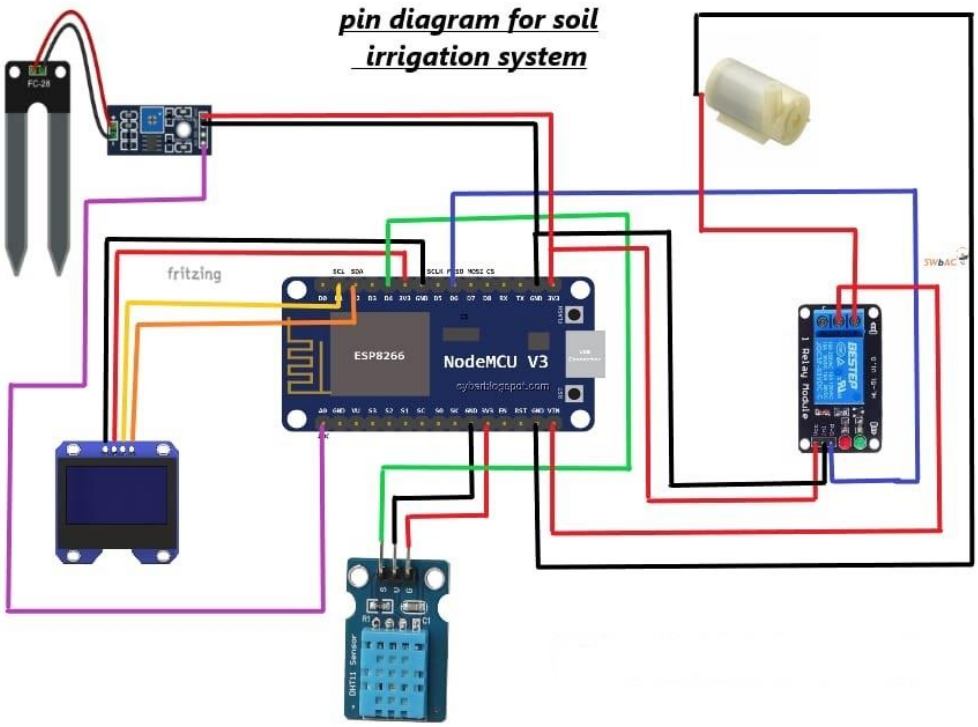
COMPONENTS REQUIRED

- Embedded C Language
- Arduino IDE
- ESP8266 microcontroller
- DTH11 Sensor
- Soil moisture sensor
- OLED
- Relay
- Pump
- Wi fi
- Thing speak sensor server

FLOW CHART


Embedded c language
Arduino IDE
Soil moisture sensor
ESP866 MICROCONTROLLER
DTH11
OLED Display
RELAY
Wi fi
Pump
Thing speak server
Temperature
Humidity
Moisture

CIRCUIT DIAGRAM



WORKING :

- In Automatic Soil Irrigation System ,the working is based on the environmental conditions.
- Sensors used such as Soil moisture sensor and DHT11.
- Soil moisture sensor senses the moisture content of the soil in the cultivation land.

- DHT11 is used to sense the amount of temperature and humidity of the atmosphere in the cultivation land.
- Automatic system is based upon the sensor ,when the moisture level is low, pump will automatically starts work and water is poured into the land After 100% water level in moisture of soil, pump is automatically turn off.

INNOVATIVE IDEAS:

ESP8266 Microcontroller :

ESP8266 is the main component used in our system .It controls the sensors to start the process by sending commands to sensors. ESP8266 WiFi Module is a self contained SOC with integrated TCP/IP protocol stack that can give any microcontroller access to your WiFi network. The ESP8266 is capable of either hosting an application or offloading all Wi-Fi networking functions from another application processor.

Arduino IDE

Arduino IDE used to write software programs to implement the functions in hardware components.It is functioned by uploading the c program to arduino by using pc .

Soil moisture sensor

Soil moisture sensor is a type of sensor that senses the moisture of soil and gives information about the moisture content level to microcontroller. The soil moisture sensor (SMS) is a sensor connected to an irrigation system controller that measures soil moisture content in the active root zone before each scheduled irrigation event and bypasses the cycle if soil moisture is above a user- defined set point.

DHT11 sensor

DHT11Sensor senses the Temperature and Humidity of atmosphere cultivation land. DHT-11 **Digital Temperature And Humidity Sensor** is a basic, ultra low-cost digital temperature and humidity sensor. It uses a capacitive humidity sensor and a thermistor to measure the surrounding air and spits out a digital signal on the data pin (no analog input pins needed).

OLED

OLED is connected to display the amount of Soil moisture level, Temperature and Humidity. OLED stands for **organic light-emitting diode** and is one of the newer technologies available for TVs and other digital displays. OLED technology is called an "emissive" technology because it uses millions of pixels that emit their own light rather than relying on a separate backlight.

Pump

Water pump will starts working as on and off conditions so water is poured to cultivation lands. Water pumps are a type of impulse turbine that works using a spinning wheel to convert potential energy from pressure into kinetic energy. The water is pumped from a lower elevation to a storage area, where it is collected until it's needed.

Wi fi

Wifi is connected with a help of router to make it as IOT massively.

Thing speak server

Thing speak server allows to aggregate, visualize and analyze live data stream in the cloud .

CONCLUSION:

Automatic Soil Irrigating System monitors the Soil moisture level, Temperature and Humidity levels in cultivable land . Temperature, Soil moisture, Humidity conditions are sent to Mobile phones via notifications. These conditions are viewed where ever the man is out of agricultural land.

THANK YOU