SMART WATER FOUNTAINS
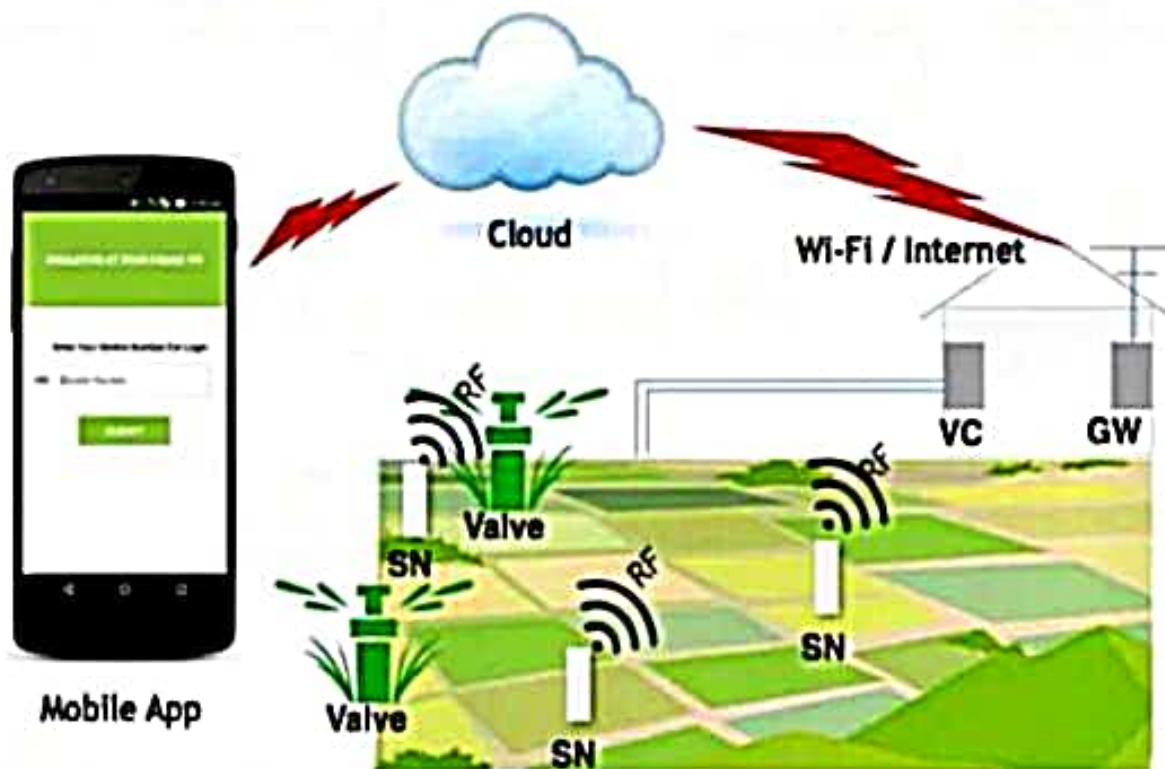

SN: Sensor Node; GW: Gateway; VC: Valve Controller; RF: Radio Frequency

Introduction

➤ India's population crossing **1.3 billion in 2016**

➤ So balance between the **optimum population growth** and a **healthy of nation** is far to be achieved.

➤ The **rising population** need **for increased agricultural production**

➤ Irrigated agriculture has **been important source** increased agricultural production

➤ **"IOT based smart irrigation system"** is for to create an IOT base automated irrigation mechanism which turns the pumping motor ON and OFF pass command through IOT platform.

IoT Platform

Applications

Connectivity
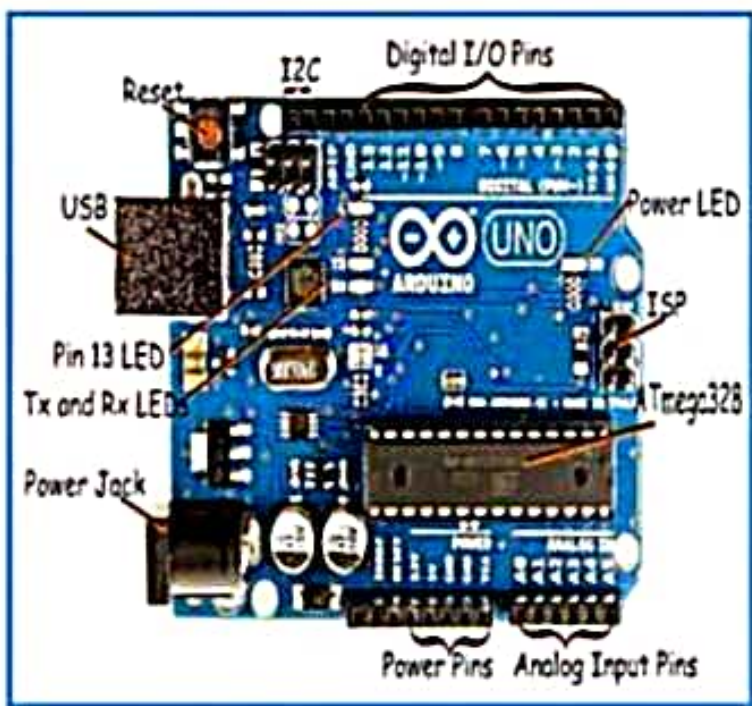
IOT Cloud

ZigBee-WiFi
IOT Gateway

IOT Gateway

IOT Gateway

Sensor/ Controllers /Actuators

System Component: Hardware and Software

- **1. Arduino:** It is an open-source platform based on easy-to-use hardware and software:

➢ **Hardware :-Arduino**

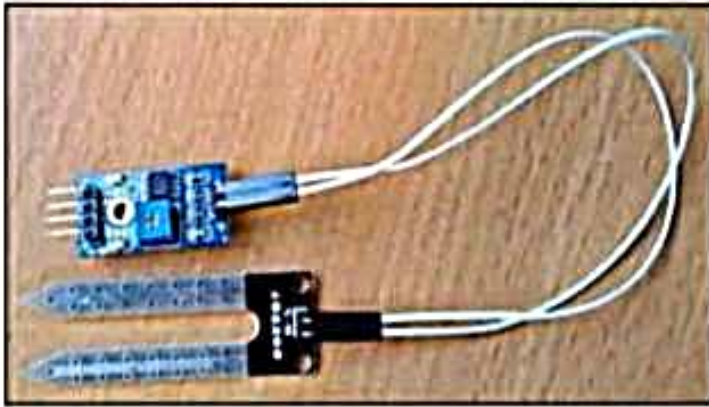➢ Arduino board designs use a variety of **microprocessors** and **controllers** in system

1) To read inputs - light on a sensor

2) To twitter message - and turn it into an output - activating a motor

3) Turning on an LED

Raspberry Pi 3:

➤ This is a small, powerful and lightweight microcomputer   which can do many of the things that a desktop PC can do
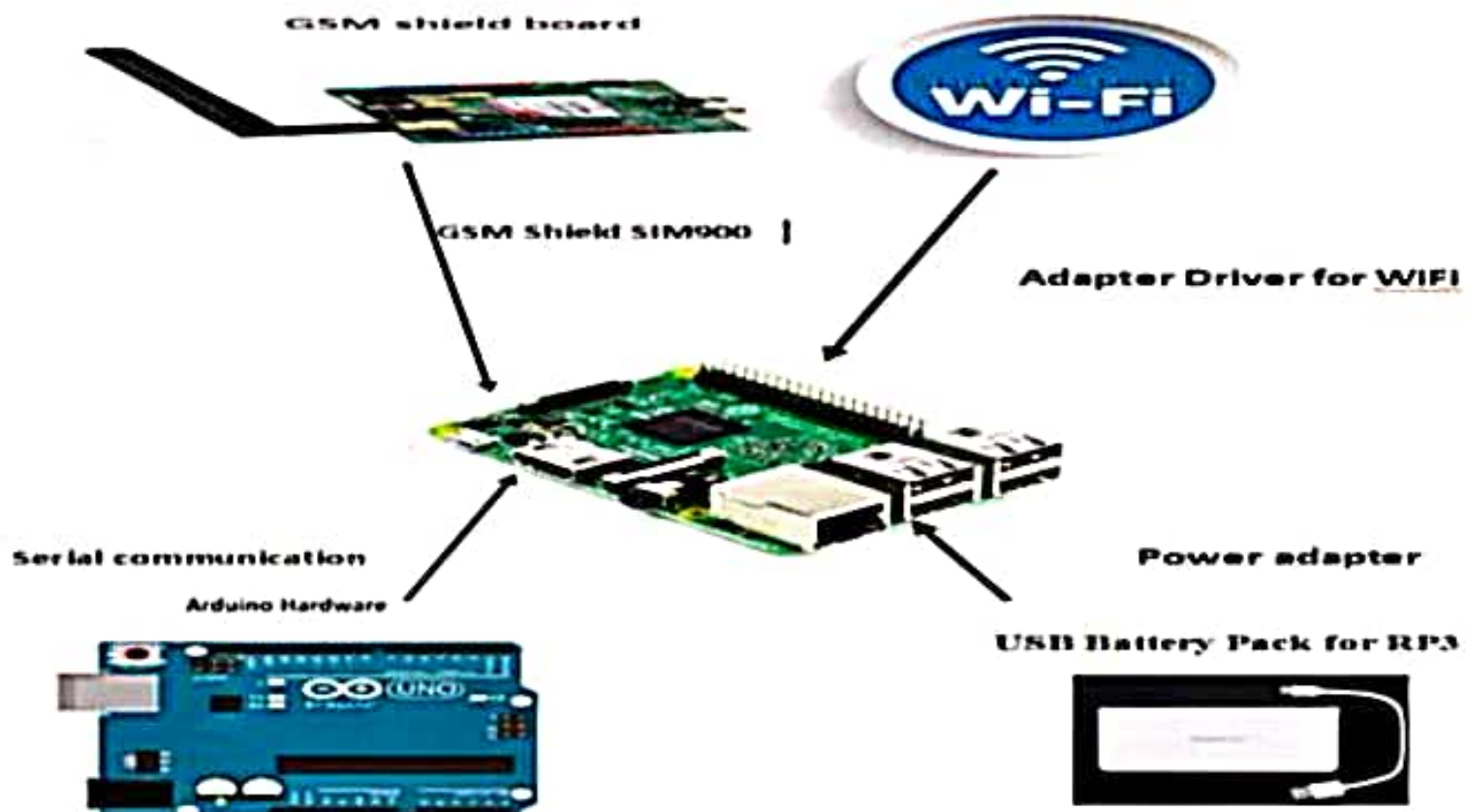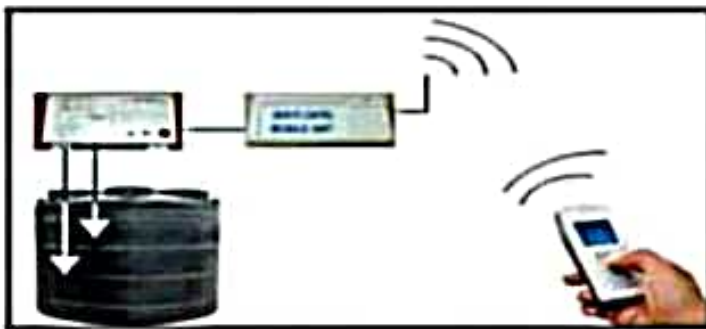
Soil Moisture sensor

- Use: To measure the moisture content of the soil.

- Copper electrodes are used to sense the moisture content of soil.

Wireless water level detector sensor

- Use:

  The *water level* sensor mechanism to detect and indicate the *water level* in an water source.

How the system works?

➢ **Step 1:**

- Login :(Enter Username/Password) and
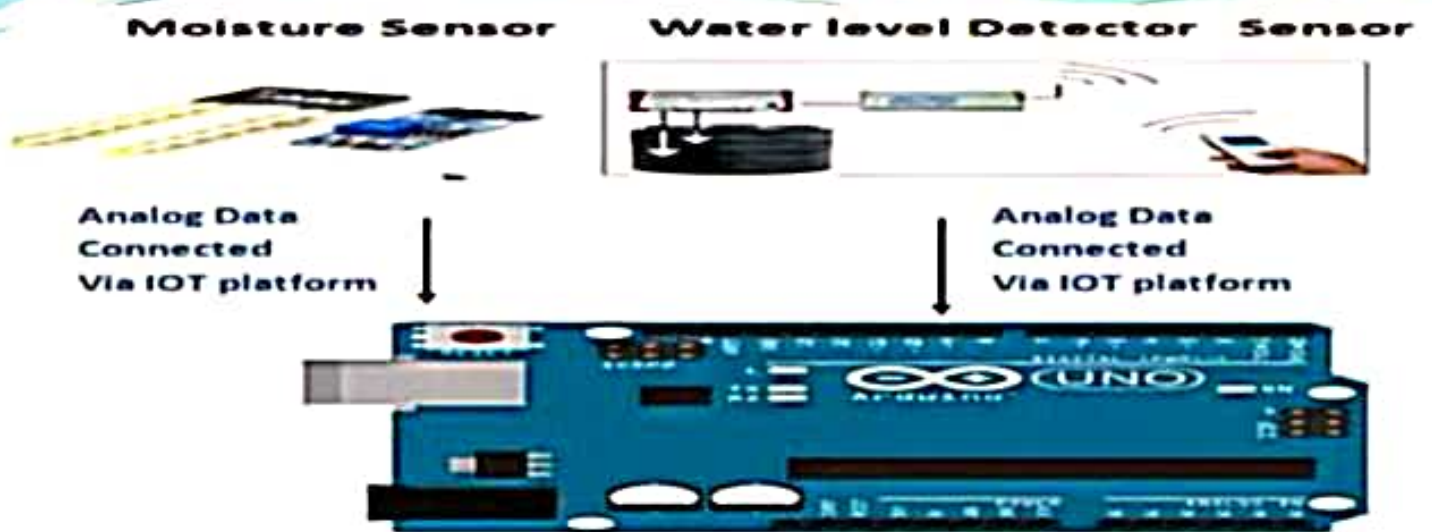- Give Command   (ON/OFF) to your application

➢**Step 2:**

- IOT base platform: Collect and send all Analog data to GSM Shield
- GSM Shield connected in   RP3 (Raspberry Pi 3)(Microcomputer)
- Now command(ON/OFF) command pass to RP3

Step 3:

Moisture Sensor   **Water level Detector Sensor**

Analog Data
Connected
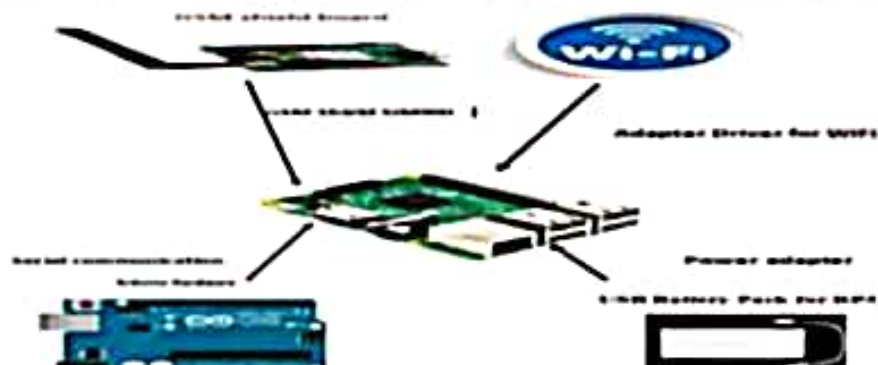Via IOT platform

Analog Data
Connected
Via IOT platform

Step 4:

Microcomputer (Raspberry Pi 3)

•RP3 is just like main controller of this system: Convert all analog data into digital form
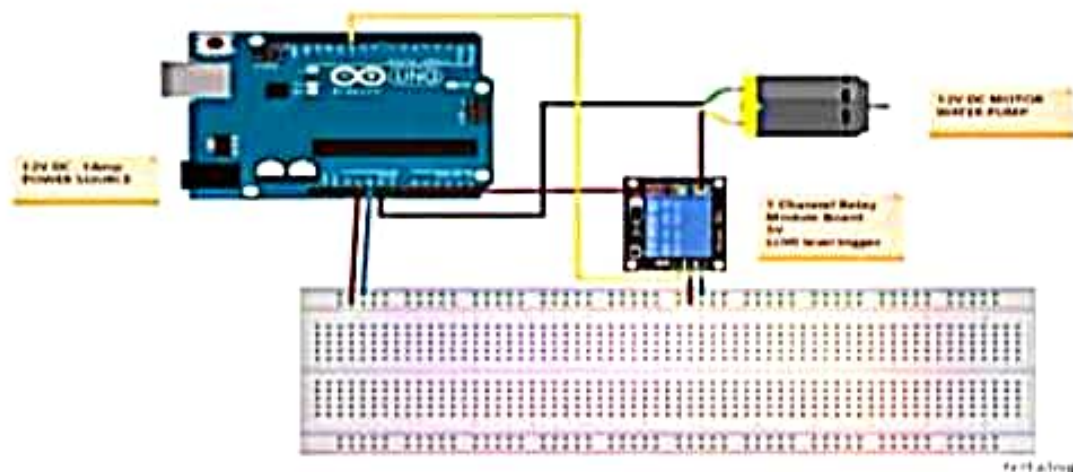
Step 5:

Arduino software:

> Check Conditions:
1. If soil moisture content is greater than a fixed value, then there is no need of irrigation
2. If the soil moisture content is less than a fixed value, then start irrigation.
3. If the water reaches the prescribed point of water level, then sensor gives data to system to stop the irrigation.
> **Command sends to Relay Module**

Step 6:

➢ Raspberry Pi 3 Connected -Arduino give command ON/OFF to relay
➢ Relays are switches that open and close Motors **Based on Command of** Arduino

Step 7:

GSM shield board Connected via Internet

➢ Now this **GSM Shield** connected with **microcomputer (RP3) access digital data from RP3**
➢ The Arduino GSM Shield SIM connect to the internet send/receive SMS messages from Smartphone and tablet or computer

Step 8:

Farmer is getting SMS:
- Motor: ON or OFF
- Current moisture content (Ex. 50%)
- Current water level (Ex: 90 DEPTH Feet)

Conclusion

➤ I conclude that this system is easy to implement and time, money and manpower saving solution for irrigating fields.

➤ A farmer should **visualize** his agricultural land's moisture content from time to time and water level of source is sufficient or not. **IOT based smart irrigation system** displays the values of the sensors continuously in smart phone or on computer's web page and farmer can operate them anytime from and anywhere.