
بسم الله الرحمن الرحيم

SMART IRRIGATION SYSTEM

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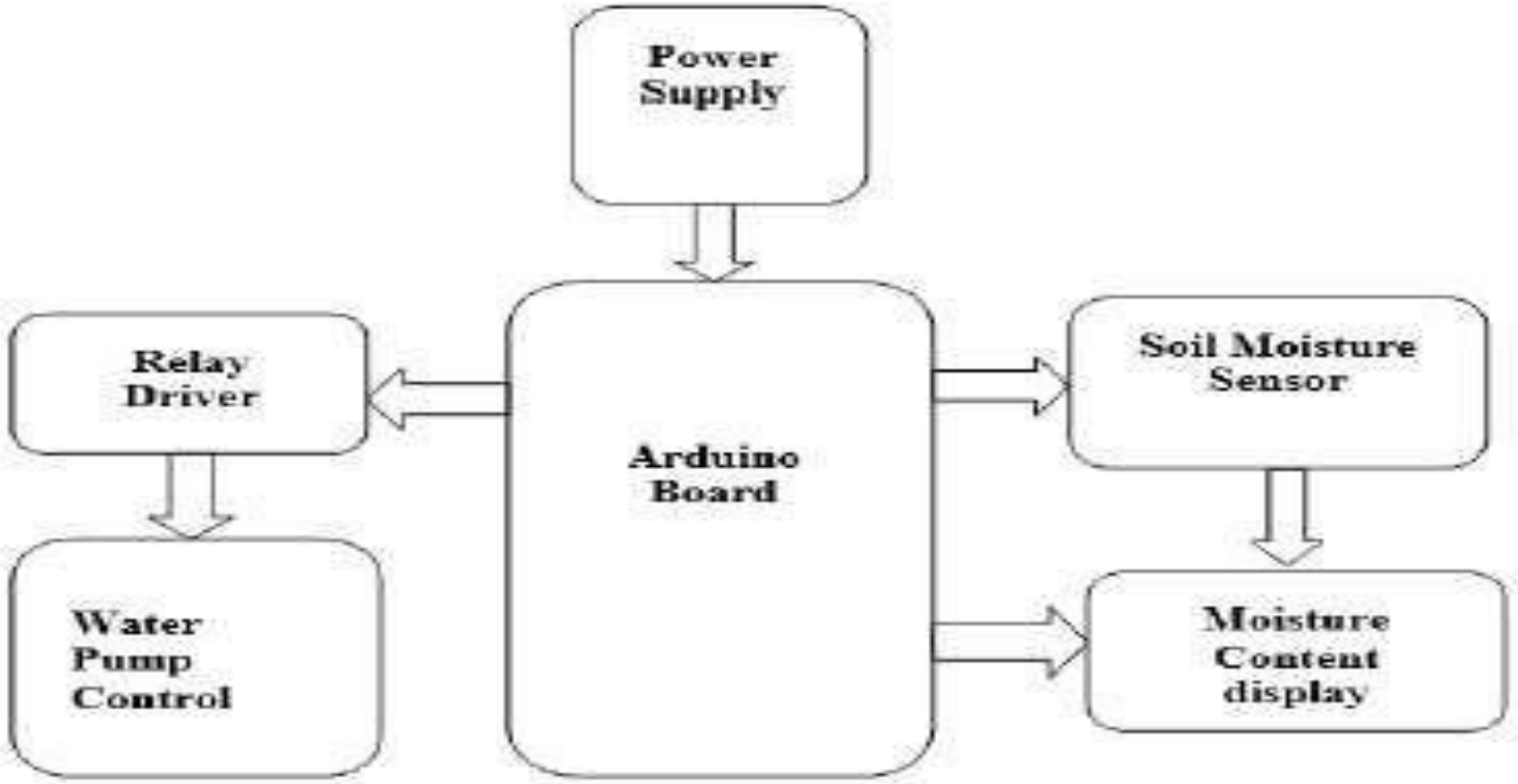
INTRODUCTION

- Irrigation is the artificial application of water to the land or soil to assist in the growing of agricultural crops.
- oil moisture, air humidity, temperature and water level in the soil are wirelessly transmitted using wireless technology for better production.
- Interfacing of microcontroller through moisture sensor and hence to GSM through raspberry pi.

OBJECTIVES

- Reduce the man power & conserve the water
- Real time sensing and control
- To get the output of soil water sensor and provide water to crop
- To observe other parameters for better yield

BLOCK DIAGRAM OF SMART IRRIGATION SYSTEM



RESOURCES

- SENSOR
- MICROCONTROLLER
- GSM MODULE
- POWER SUPPLY

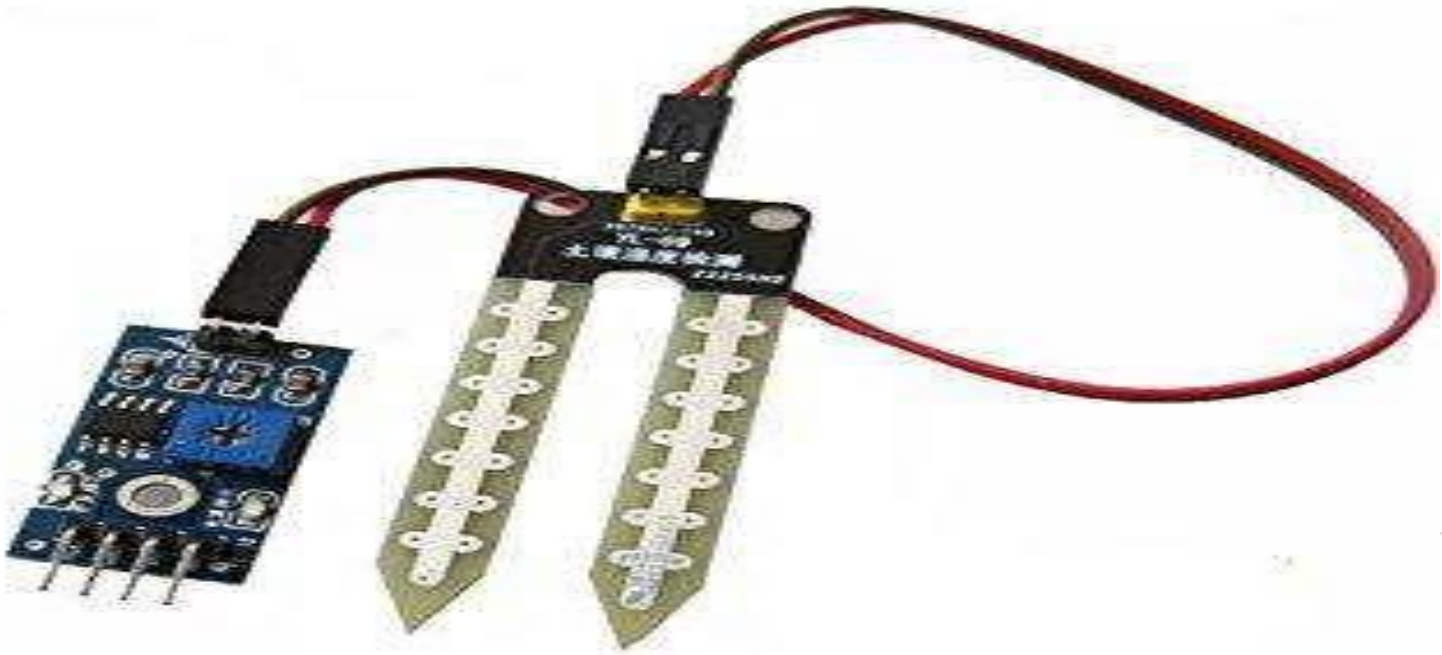
SENSOR

Three sensor used in this system are as follow:

1. Soil moisture sensor
2. PIR sensor (Passive infrared sensor)
3. Humidity and temperature sensor DHT11

SOIL MOISTURE SENSOR

- This sensor used to sense the moister level of the soil

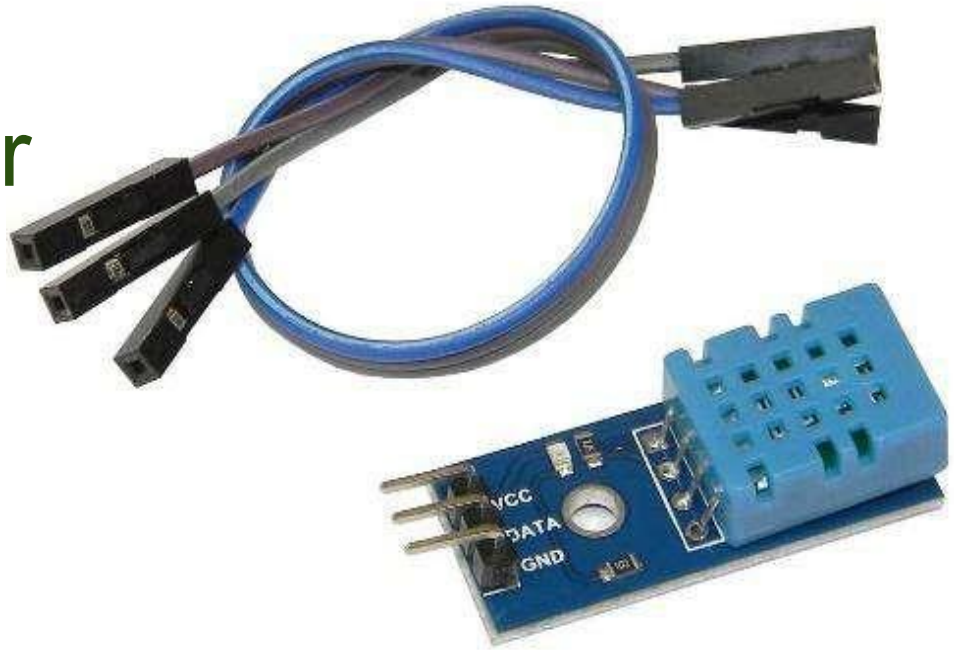


PIR sensor (Passive infrared sensor)

- A PIR based sensor is measure the infrared radiations are emitted from the field.

Humidity and temperature sensor DHT11

- Both measure moisture and air temperature



MICROCONTROLLER

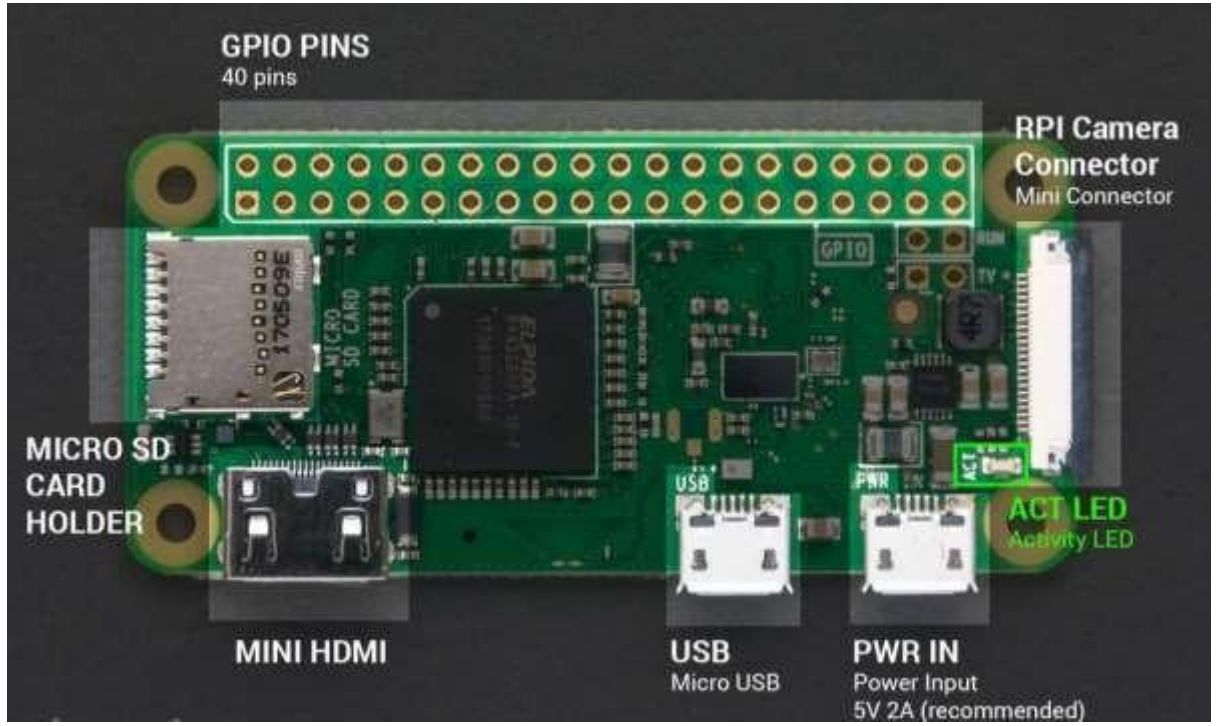
There are two types of microcontroller:

1. ARDUINO Mega 2560
2. Raspberry pi

ARDUINO Mega 2560

RASPBERRY PI

- The Raspberry Pi is a small, powerful and lightweight ARM based computer which can do many of the things a desktop PC can do



GSM MODULE

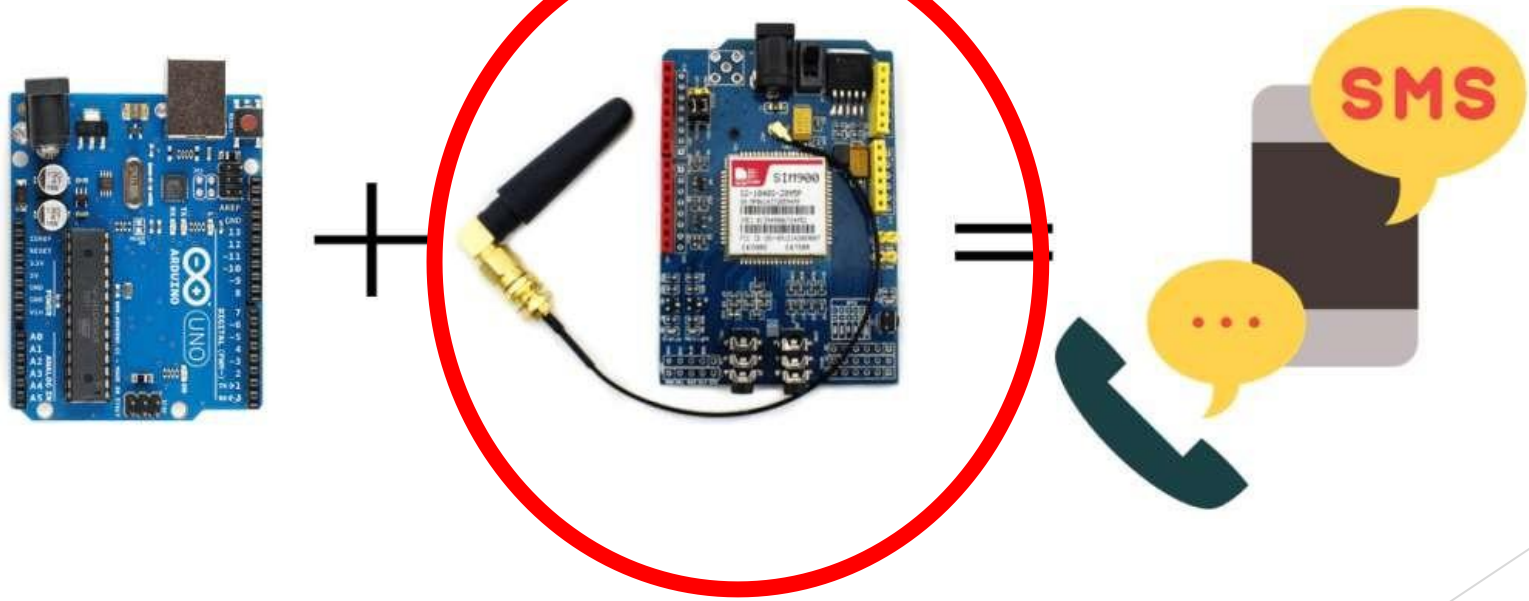
SIM900 GSM MODULE

- The SIM900 can be used embedded in many of the applications.
- The SIM900 has the capability of delivering GSM/GPRS 850/900/1800/1900MHz performance for voice, Data, SMS and requires low power consumption.

SIM900 GSM Module

Microcontroller sends the measured values to wireless communication SIM900 module and further uses GSM module to send message to the farmer.

Microcontroller sends the measured values of different parameter and according that water is given to the crops



Sensors and devices	working	Advantages and disadvantages
RASPBERRY PI	Type of controller	It is small in size and control web traffic. It is the type of normal computer but cannot replaceable.
ARDUINO MEGA 2560	As a microcontroller in irrigation system	It is better than raspberry pi because raspberry pi usually a Linux operating system and it have ability to run many programs so it is complicated to use than arduino
SOIL MOISTURE SENSOR	This sensor used to sense the moisture level of the soil.	Their results immediate but sensor provides less accuracy in sandy soils because of large particles
DHT11 (TEMPERATURE AND HUMIDITY SENSOR)	Both measure moisture and air temperature	It is excellent quality, fastest response and high cost performance.
TEMPERATURE SENSOR (LM35)	For measure temperature	It is the most popular sensor. This is sufficient for Smart configuration for heating and air conditioning system
PIR SENSOR	It is the detector of any movement.	It use for security but it is passive sensor insensitive to very slow motion of the object.
SIM900 GSM MODULE	It is connector network with the irrigation system using at command	Is provides cost effective products and solution. It provides limited data rate.

ADVANTAGES

- Increase in productivity
- reduced water consumption
- Safe
- No manpower required
- Reduce soil erosion and nutrient leaching
- Require smaller water sources

CONCLUSION

- The smart irrigation system is feasible and cost effective for optimizing water resources for agricultural production.
- This irrigation system allows cultivation in places with water scarcity thereby improving sustainability.
- It proves that the use of water can be diminished.
- The use of solar power in this system is significantly important for organic crops

THANKY
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