CHAPTER 1
INTRODUCTION

Agriculture is a crucial part and it is requisite for the nation's prudence. The main aim of this forecast is to diminish the extra efforts of farmers by using a computer-aided system which helps in proper irrigation and water supply. As in fact, it's is designed for the nations where economy is agriculture dependent way too much but it can be affected by scarcity of water happens due to climatic circumstances. The farmers working in the farm are essence to the torrent of the rain, tube well or drill for water system. Nonetheless the agriculture yields have a water pump which is to be turned on/Off when needed. The undertaking is offered to spread an organized water system which can operate the pump on/Off after detecting the moisture mud material.

Chapter 2
Hardware Component

GSM Modem

GSM is a versatile correspondence modem; it is representing worldwide framework for portable correspondence (GSM). The possibility of GSM was created at Bell Laboratories in 1970. It is mainly utilized portable correspondence tofarmer on the planet. GSM is a advance cell phone technology which help to transmit voice and text message.

GSM Modem

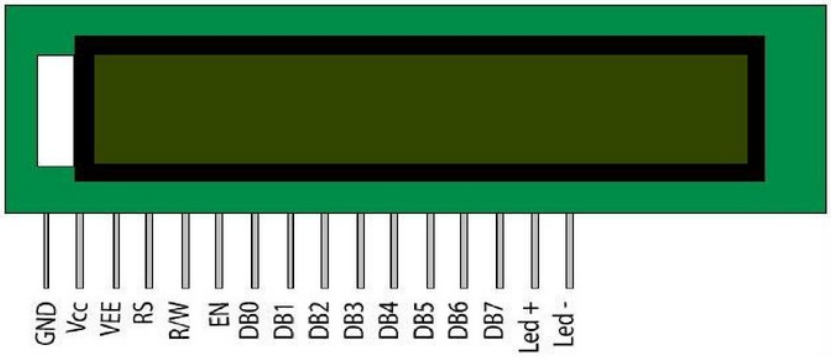
Moisture sensor (Model: SEN92355P)

The Moisture sensor is utilized to gauge the water content(moisture) of soil. At the point when the dirt is having water lack, the module yield is at abnormal state, else the yield is at low dimension. This sensor reminds the client to water their plants and furthermore screens the dampness substance of soil. It has been broadly utilized in agribusiness, land water system and herbal planting.

Moisture Sensor

LCD (Liquid Crystal Display)

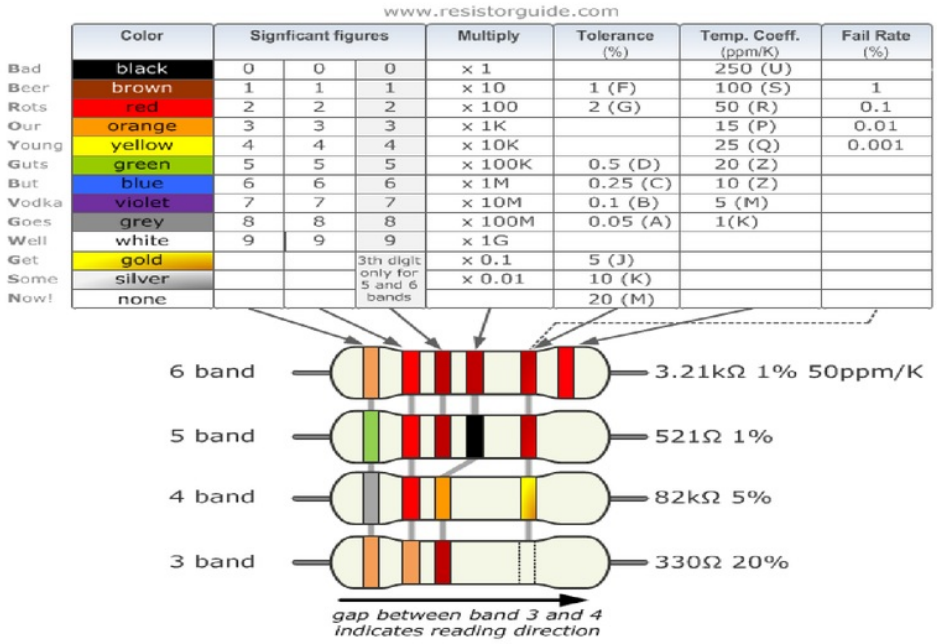
LCD expended as (Liquid Crystal Display) is an electronic presentation module ordinarily utilized in different gadgets and circuits. LCD is efficient, effectively it was programmable, have no restriction of showing exceptional and also even custom characters, etc. This LCD have two registers which specifically Command and Data. The order register stores the direction guidelines given to the LCD. A direction is a guidance given to LCD to complete a predefined task like instating it, clearing its screen, setting the cursor position, controlling presentation and so forth.



Pin Configuration of LCD

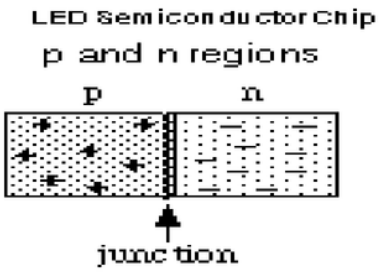
Resistor

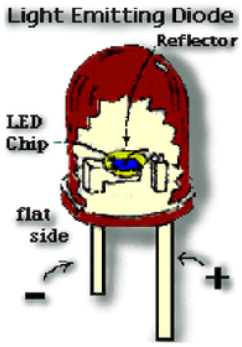
Resistor is a component Which used in electrical circuits. Resistor can resist the flow of current weather current is direct or alternating. Resistor provide heat in huge manner. The value of resistance in any Resistor can be determined by different colour code. The value of resistance can be determined by voltage and current ratio by using ohm's law. Resistance is directly proportional to the temperature if temperature increases the resistive property of material also increases



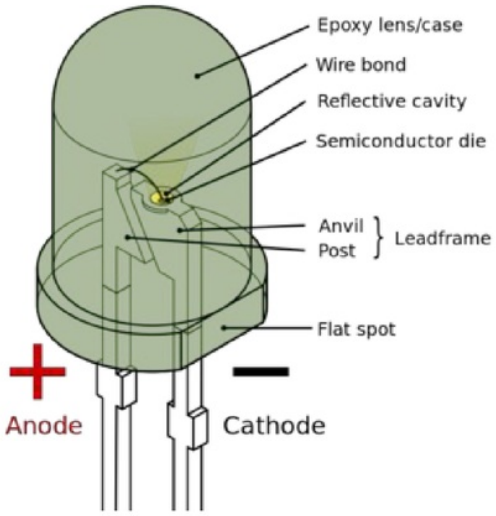
(LED)

Led is light emitting diodes that produce light when current flows through it. They are very often used as "pilot" lights in electronic gadgets to stipulate the circuit is active or not. A strong adhesive case bounded the body of an LED, the semiconductor chip





The n region consists negatively charged electrons. The junction starts functioning as a barrier to the flow process between p and n regions. Whenever requisite amount of voltage applied to the chip, it will result in current flow and the crossover of the electrons through junction to p region.

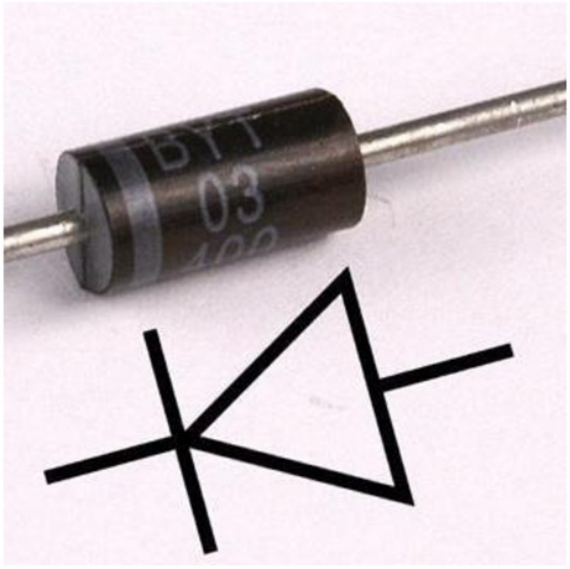


LED

In the unavailability of a abundant electric voltage across the LED, the junctions are responsible for the fencing of flow of electrons.

Diode

Diode is semiconductor device. Which is using as switching device. Diode contains PN junction. PN junction have electrons and holes. If P terminal is connected to the positive terminal of the battery, the circuit is in the forward biased and current flows. If N terminal is connected to positive terminal of the battery, the circuit is in the reverse biased so there is no current then the circuit gets OFF. Semiconductor diodes were the first semiconductor electronic devices.



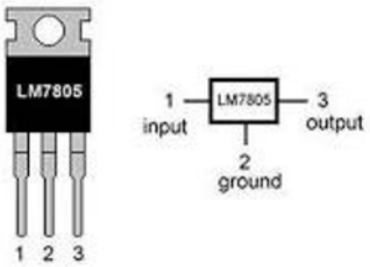
Diode

The function of Diode is to flow the current in only one direction. That's why diode is call unidirectional device Which allow the current flow in only one direction. Diode allow the current in forward biased condition and does not allow current in reverse biased condition. The behaviour of unidirectional device is known as rectification.So Diode is used as rectifier Which converts alternating current in to the direct current

Closeup of the image below, showing the square shaped semiconductor crystal.

Regulator IC (LM 7805)

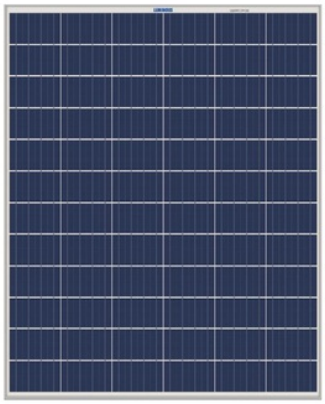
The LM7805 solid 3-terminal positive voltage controllers utilize inward current-restricting, warm shutdown and safe-region remuneration, making them basically indestructible. On the off chance that satisfactory warmth sinking is given, they can convey over 1.0A yield current. They are planned as fixed voltage controllers in a wide scope of utilizations including neighbourhood (on-card) guideline for end of commotion and dispersion issues related with single-point guideline. Notwithstanding use as fixed voltage controllers, these gadgets can be utilized with outside parts to get customizable yield voltages and flows. Significant exertion was consumed to make the whole arrangement of controllers simple to utilize and limit the quantity of outer segments. It isn't important to sidestep the yield, despite the fact that this improves transient reaction. Information bypassing is required just if the controller is situated a long way forchannel capacitor of the power supply



Pinout Diagram

Solar panels

Solar panels are device which convert sun energy to electrical energy. A photovoltaic module which is a sun powered board and create power. In photovoltaic module cluster are present which supplies sun energy to our device.



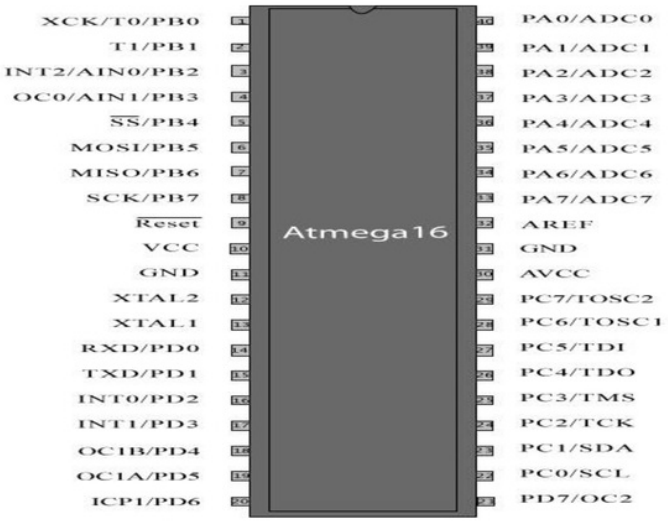
Relay

Relay is also a switching device. It is three terminal device Which is mechanically spaced in a manner that on terminal is connected to Second terminal then switch is on if the one terminal is connected to third terminal them switch gets off. Its works on the principal of magnetic coil, and self or mutual induction. A specific value of allowable current is fixed in the Relay after that value of current and voltage relay switch on and off the circuit.Relay widely used for the protection purpose in electrical power system.

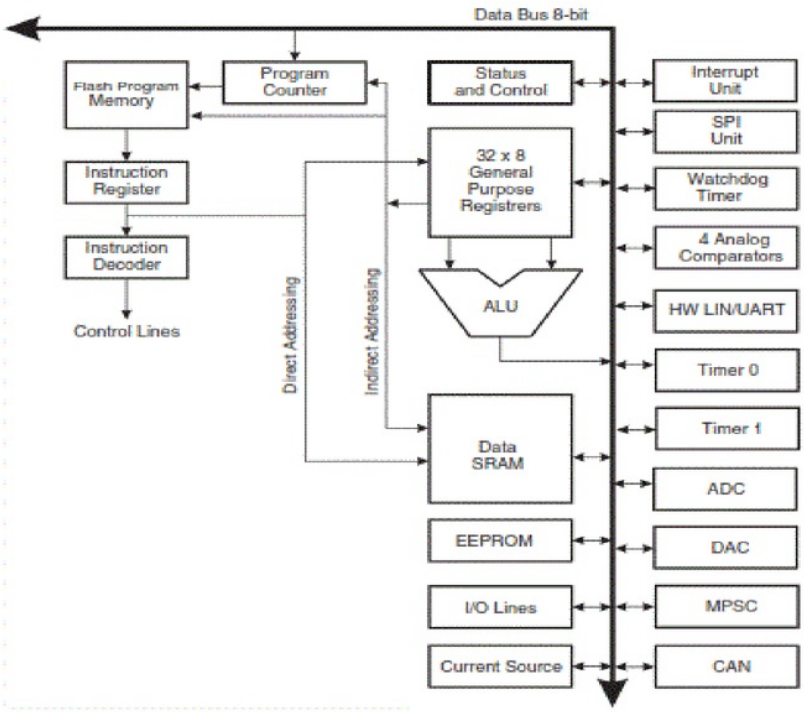
Relay

ATmega16

ATmega16 is an 8-bit microcontroller of Atmel's Mega AVR family which use low power. Atmega16 relies upon updated RISC (Reduced Instruction Set of Computing, know progressively as RISC and CISC Architecture) builded with 131 mind blowing headings. Most of the bearings execute in only one machine cycle. Atmega16 can manage a biggestnumber repeat of 16MHz. The working voltage for ATmega16 is 2.7V to 5.5V at the comprehensive working temperature of 233K to 153K.



Pin configuration of ATmega16.



Pin descriptions and Architecture of ATmega16

Battery

Battery will be used to store the solar energy it will we our energy storage device.

Motor

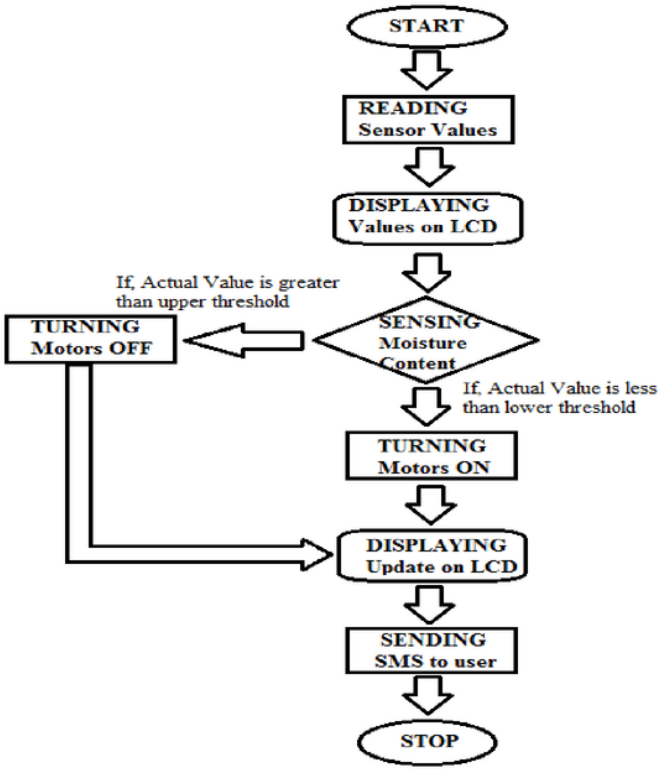
A DC motor is a rotational device which help to changes over the electrical power into mechanical power. The most well-known sorts of engine rely upon powers created by the attractive field. A number of DC engine has some inside system which is mainly electromechanical or as we know electronic so as to alter the course of current stream in the piece of engine. DC engines are accessible in two kinds: Brushless DC engine and DC engine with Brush. Brushless DC engines are more proficient than when contrasted with brushed DC engines as they require less support when contrasted with brushed DC engines. In this task we are utilizing 12-volt DC water engine to draw water from the water tank and supply it to the water system fields. DC 12-volt water engine

DC 12-volt water motor

Chapter 3

WORKING PRINCIPLE

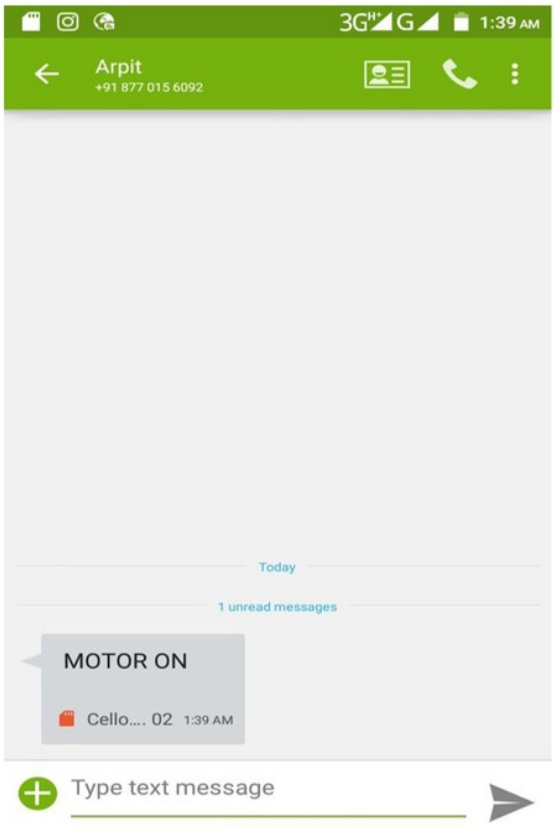
The working rule of our project is straightforward, sunlight will be collected by solar panel-based board which will be stored to a DC battery. The battery will store the vitality for further applications. Presently we are interfacing a water pump to the battery so the engine should keep running on the power created by the sun-based board. In this project the water supply will be one that implies the siphon will supply the water just whenever the land is dry and needs it.

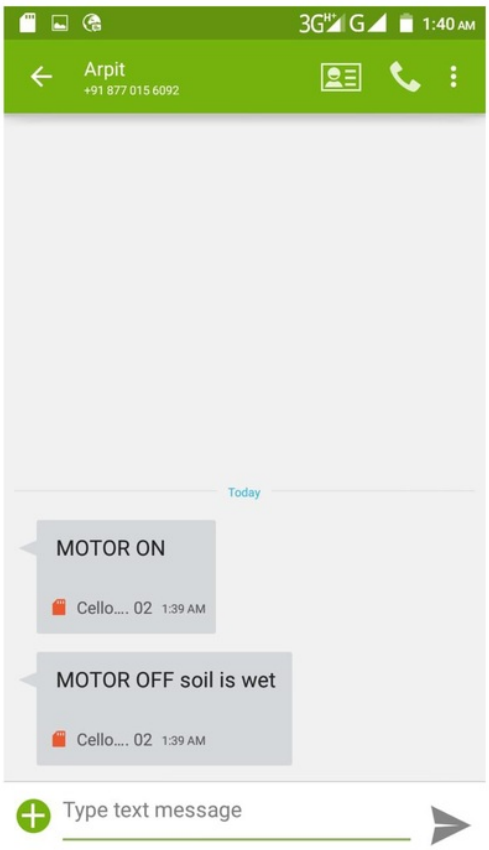


Flowchart of Automatic Irrigation process

RESULTS

On sending "ON" SMS message to the system, it gets On. It starts the water pump if the humidity I less than the threshold value the system automatically switches off the pump if the humidity rises beyond threshold value.




1:40 AM
Arpit
+91 877 015 6092
Today
MOTOR ON
Cello.... 02 1:39 AM
MOTOR OFF soil is wet
Cello.... 02 1:39 AM
Type text message

Chapter 4
Conclusion & Future Scope

CONCLUSION AND FUTURE SCOPE

Now a day's automation plays a huge role in different kind of operations in the world like industries and all other area to overcome men workSimilarly, in agriculture automation is very helpful to do work in field. For irrigation purpose we can control the action of equipment's like motor and supply by using soil sensors, relays, and microcontroller. We can operate the motor by text messaging with GSM controller's gives the information of soil in the farmers mobile phone.