**Abstract -:**

The greenhouse monitoring and controlling can be done by using various technologies. This technologies are used to yield higher growth of plants and production of new plants. This is our main basic objective of our project. The project is designed to develop an automated green house monitoring system which switches the pump motor ON/OFF on sensing the moisture of the soil, and light , cooler fan ON/OFF on sensing light and temperature of the atmosphere surrounding on the gerbera plant respectively. In the field of agriculture, use of proper method of farming is important. The advantage of using this method is to reduce human intervention and still ensure proper farming. The project uses an Arduino Uno microcontroller which is programmed to receive the input signal of varying moisture condition of the soil, humidity, and temperature of the atmosphere through the sensing arrangement. This is achieved by using an analog to digital converter which acts as interface between the sensing arrangement and the microcontroller. Once the controller receives this signal, it generates an output that drives a relay for operating the water pump, cooler fan and bulb . An LCD display is also interfaced to the microcontroller to display the status of the soil, humidity and temperature.

Introduction-:

The automation is the feature of human civilization. India is a developing country whose more than 40% of peoples do farming. The main source of income for India is agriculture. So, India is an agriculture-based country. In a world where everything can be controlled and operated automatically, but there are still few important sector in our country where automation has not be adopted not be put to a fully fledge use, perhaps because of several reasons. One such a reason is cost and one such field is agriculture. Agriculture has been one of the primary occupation of man since early civilization and even today manual interventions in forming are inevitable. Green house form an important part and horticulture sectors. In our country, as they can be used to grow plant under controlled climatic parameters which directly or indirectly governed the plant growth and hence they produced. Automatic is process control of industrial machinery and a process they by replacing human operators. This system consist of various sensors namely soil moisture sensor, temperature sensors and humidity sensor. This sensor sense various parameter soil moisture, temperature and the humidity and are then send to the Arduino Uno . The microcontroller constantly monitors the digitalized parameter of various sensor and verify them with the predefined threshold values under check if any corrective action to be taken for contain at that instant time in case such situation arises it activate the actuator to perform a controlled operation. An 4 Channel Relay can be used in the system are used to turn on AC devices such as water pump, light, and cooler fan. A complete working system can be realized by simply replacing this simulation device by actual devices. The project is a sophisticated set-up which is well equipped to react to most of the climatic changes occurring inside the greenhouse. It works on a feedback system which helps it to respond to the external stimuli efficiently. Although this set-up overcomes the problems caused due to human errors it is not completely automated and expensive.

Literature Survey-:

This system is made up of Arduino Uno microcontroller. Arduino Uno can receive input from various sensors and it can control water pump, light and cooling & exhaust fan. Some sensors DHT11 (temperature & humidity ) sensor, Soil moisture sensor is used in this project. Working with a DHT11 sensor is to measure the temperature and humidity of the environment. The soil moisture sensor is used to measures the water content inside the soil. Devices like a cooling fan, exhaust fan, water pump, light, and water pump are also connected to the Arduino Uno which help to maintain the to the mobile user, and the mobile user turns on the fan by sending another SMS. When the temperature comes to the normal range, the mobile user turns off the fan by sending another SMS. When humidity exceeds a defined level, the system sends SMS to the mobile user, and the mobile user turns on the exhaust fan by sending another SMS. When the humidity comes to the normal range, the mobile user turns off the exhaust fan by sending another SMS. When the soil moisture sensor does not sense moisture in the soil then the system sends SMS to the mobile user, and the mobile user turns on the water pump by sending another SMS. To eliminate SMS charges, all environmental parameters are sending to the server through Ethernet and stored in the database. It has disadvantage that the water pump is going to be operated using Wi-Fi module through mobile, so controlling water pump user should carry his mobile phone, or any other device with internet connectivity.

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| Sr. No. | Author Name | Statement |
| 1 | Kiran Sahu & Susmita Mazumdar  ( Digitally Greenhouse Monitoring & Controlling of System based on Embedded System ) | Monitoring & control the greenhouse environment play an important role in greenhouse production & management. |
| 2 | Nill P. Shah & Priyang P. Bhatt  ( Greenhouse Automation & Monitoring system design & implementation ) | The use of sensors nodes, internet connection &the cloud will deliver real –time update about plant & help people to grow plant more efficiently. |
| 3 | Nitin Kumar Sahu & Pratik Chandrakar ( Automated Greenhouse Monitoring System ) | The automated greenhouse monitoring system eliminates risk of greenhouse not being maintained at specific environmental conditions due to human error and labour cost can be reduced & it is eco-friendly. |
| 4 | Shi-feng Yang & Daudi S. Simbeye  ( Computerised Greenhouse Environmental Monitoring & Control System Based on Lab Window/CVI ) | The system can monitor automatically the data of temperature, humidity & carbon dioxide in real-time & continuously every 5 seconds. The result indicates the periodic variation of these parameter depending on the daily weather condition. |
| 5 | Prof. D.O.Shirsath & Prof. R.S.More  ( IOT Based Smart Greenhouse Automation Using Arduino ) | IT is implemented with Arduino platform for greenhouse monitoring, controlling temperature and soil moisture with the help of Web srever using IOT. |
| 6 | T. Saha , M. S. Ali & M.K. Rahman  ( Construction & Development of an Automated Greenhouse System Using Arduino Uno ) | The proposed system is able to measure the acture amount of moisture that present in the soil & it is tough for human to measure actual light intensity, temperature & humidity while this proposed system can do the all very accurately. |
| 7 | Joshun Hrisko  ( Capacitive soil moisture sensor theory, calibration & testing ) | Using an Arduino board & digital scale the real-time measurement of both the mass of soil & the reading from the capacitive sensor were recorded. |

Problem Statement-:

The economy of many countries depends on agriculture. To achieve the best quality from this research, it is important to focus on some vital characteristics such as the appropriate amount of electricity as well as water supply and a suitable schedule for irrigation of crops. Farmers are facing these problems especially those living in poverty. For proper growth of Gerbera plant some environmental parameter must be controlled, like Temperature range in between 20°C to 30°C, Humidity range in between 70% to 80% & also soil pH level between 5.5 to 6.5.

In Traditional Greenhouse (without automation) the person is assigned for supervision of plant but the problem is that it is difficult to control this environmental parameters.

Objective Of Proposed Work-:

1. To automatically monitor and control the temperature, moisture and humidity inside the green house
2. To reduce the workers required on field.
3. The designed system should be remotely controllable.
4. To enhance crop quality and increase the production rate.
5. To develop system that automatically regulates the moisture of the soil.

Working Diagram -:

WI-FI MODULE

GSM MODULE

HUMIDITY SENSOR

SMARTPHONE

BULB

WATER PUMP

FAN

RELAY MODULE

ARDUINO UNO

TEPMPERATURE SENSOR

MOISTURE SENSOR

BLOCK DIAGRAM

Methodolgy-: