GREENHOUSE MONITORING SYSTEM

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Abstract
The greenhouse monitoring is an important aspect for the growth of the plants over there. The main features involve in the maintenance of greenhouse are the temperature and the humidity. Humidity is the content of moisture present in the air. If the levels are very high the plants can' t grow properly. So in this proposed project the temperature levels are monitored and when the level is above 30%, an exhaust fan is operated to blow out the air in the greenhouse, so that the humidity level will be set to lower than previous levels . In the same manner the temperature is also being monitored and when the level increases above the set value, again another fan is operated as the cooling mechanism to cool the greenhouse environment . And also it detects if any intruder is entered .In addition to these parameters, natural light and harmful gases are also sensed and the outdoor lights are operated automatically during the night time.

Keywords: humidity, temperature, cooling mechanism, microcontroller.

1.INTRODUCTION

In fashionable greenhouses, many activity points are needed to trace the native climate parameters in numerous elements of the massive greenhouse to create the greenhouse automation system work properly . And additionally we have a tendency to are able to show that the network will discover the native variations within the greenhouse atmosphere and climate caused by varied disturbances, like direct sunshine close to the greenhouse walls. this technique is our beginning within the space of greenhouse observance and management, and it's all concerning the developed detector network practicableness and dependability. Analysis of information , management solutions and additional advanced network setups are going to be left to be the most directions of our future work.

2. BACKGROUND THEORY

1. Ravi This is to demonstrate how combining electronics with the mechanical area may revolutionise the vehicle industry and the way people travel. The ECU (Electronic Control Unit) is a device that performs a variety of tasks and is based on the principles of the computer.

System that are integrated provides intelligence to the vehicle and allows it to operate independently. any kind of tension or perplexity The standards of safety and comfort have been greatly raised. The automobiles Smart vehicles are those that are equipped with the suggested system and work in accordance with it.based on the scenario Accidents are quite unlikely, so you may feel safe. The future of lighting is intelligent lighting.

current mainstream technology, as well as a new advancement, the intelligent headlight system developed by microcomputer control, microcomputer to gather data from the car's electronic sensors The sensors' data is used to identify a variety of illumination conditions . However, in this instance,The basic signal processing of several parameters, such as LDR and infrared, is the focus of this study.sensor. Various sensors are employed to measure the values of various parameters, and the output of these sensors is used to calculate the results.These sensors are transformed into relay contacts that control all of the lights.

3. COMPONENTS

3.1. Arduino

A software application for coding, a message space, a text interface, a taskbar with icons for basic tasks, The Arduino Development Environment (ide) includes all of this, as well as a menu framework (IDE). It establishes a connection with the Hardware component in order to switch and communicate with it.
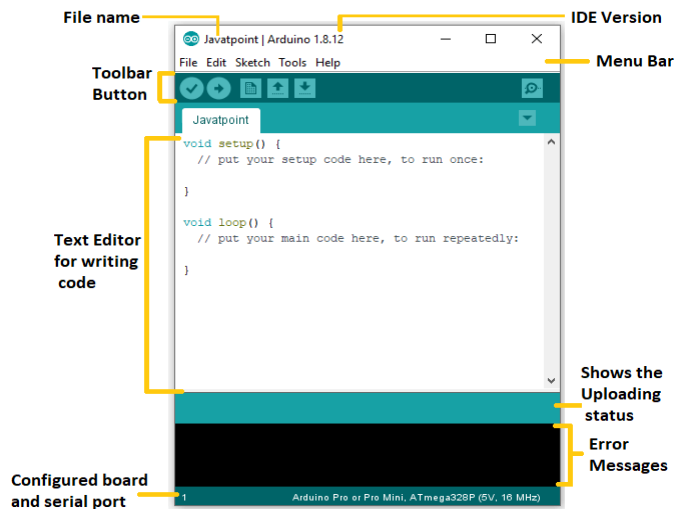
Fig.1. Arduino

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3.2. Jumper Wires

It has male and female connectors for connecting between different components.
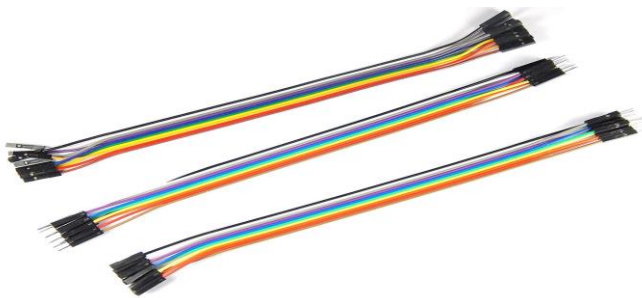

Fig.2.Jumper Wires

3.3. DHT11 Sensor

It is normal, very cheap digital temperature and humidity sensor. This sensor can be easily connected to any micro controlled board like Arduino, Raspberry Pi, NodeMCU etc. For collecting surrounding air temperature and humidity, it uses thermistor and capacitive humidity sensor. There are a number of DHT11 components to pick from. The DHT11 device unit is a coupled relative humidity sensor with a mark digital signal result, including a relative humidity complicated with such a mark digital signal output.

The working principle of DHT11 sensor is as follows:

- .Humidity Sensing**:** It has capacitor consist of two electrodes, in which it has moisture collecting substrate between them known as dielectric. Difference in Capacitance value gives us result. Then IC, by processing the changed resistive value and converts into digital form.
- Temperature Sensing: Negative co-efficient thermistor is used for measuring it. It cause decrease
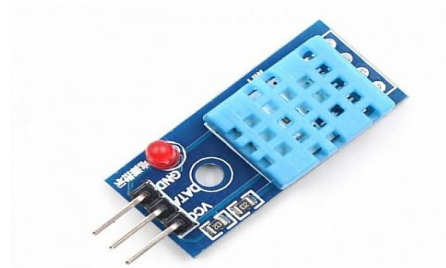
in resistance value with increasing in temperature value.

Fig.3.DHT11 Sensor

3.4. DC Motor

A direct current motor (DC motor) converts dc power to alternative current power. The energy supply to a DC motor is direct current, which it translates to mechanical rotation. A direct current (DC motor) electrical machine converts electricity into organization largely utilizing dc voltage.
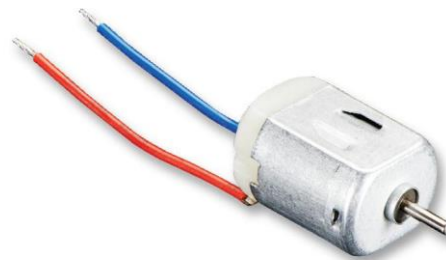

Fig.4.DC Motor

3.5. GSM Module

The A GSM modem or GSM module is a device that uses GSM mobile telephone technology to provide a wireless data link to a network. GSM modems are used in mobile telephones and other equipment that communicates with mobile telephone networks. They use SIMs to identify their device to the network.
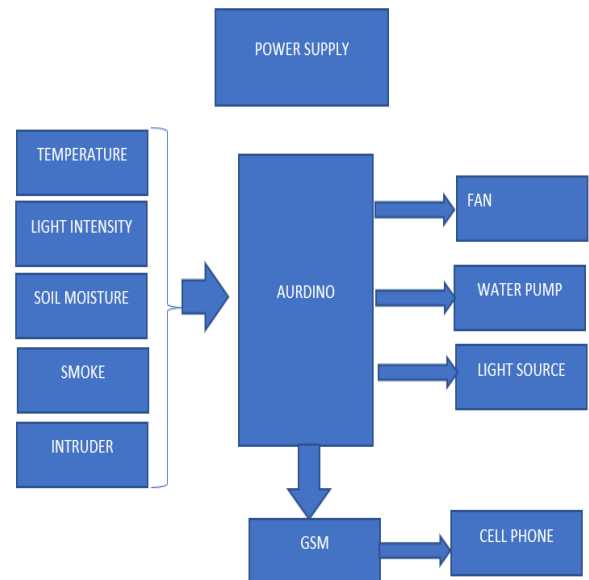
Fig.5.GSM Module

Fig.7. Block Diagram

3.6. LEDs

A light emitting diode (LED) functions as a beam of light by producing light when electricity passes through it. Electrons collide with electron-hole pairs in silicon to make photon energy. The amount of energy it takes for electrons to flow through the band gap of a silicon finds the color of light (it equals the photon's energy). White light is produced by combining different semiconductors or a light-emitting phosphor coating on the semiconductor material.
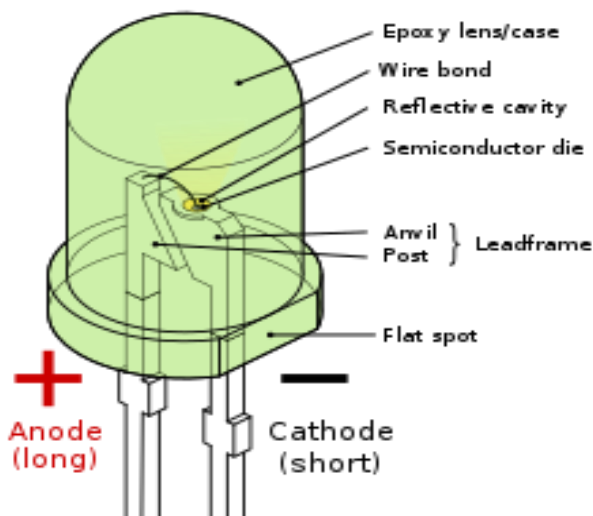
5. WORKING

The project The main goal of this project is to create an Automatic Green House Monitoring system that uses a GSM module to send data about temperature, humidity, light intensity, soil moisture, and the status of appliances (fans, sprays, artificial lights, and water pumps) that are connected to a circuit for controlling Green House effects or parameters (Temperature, Humidity, Light intensity and Water supply for plants). In this system, Arduino serves as the brains of the system, controlling the entire operation. When sensors detect a change in the environment or in the soil, Arduino activates and performs the needed action. When the soil moisture sensor detects no moisture in the soil, Arduino activates the water pump and notifies the owner of the status that the motor has been activated. If the LDR detects a lack of light, Arduino takes over and turns on the artificial lights. And sends an alert message it display status for all operations such as motor on or off, temperature, moisture , and light status. ULN2003 is used to drive the relay, and pin number 10 on the Arduino is used to control it.

Humidity (moisture) and temperature sensors are attached directly to Arduino's Analog port A1 for sensing moisture and temperature. By utilizing a relay, the fan is connected to pin 8 of the Arduino, and the CFL light (in. The water pump with motor is also connected via relay and controlled by Arduino pin number 12; the sensor for measuring soil moisture is controlled by Arduino pin number 9. This circuit is connected to a GSM module for sending a message alert of the status to the owner. The Receiver pin of the GSM module is wired directly to the Arduino's Transmitting pin. Please see our past projects for more details on transmitting messages using GSM.

6. RESULT

Fig.6.Light Emitting Diode (LED)
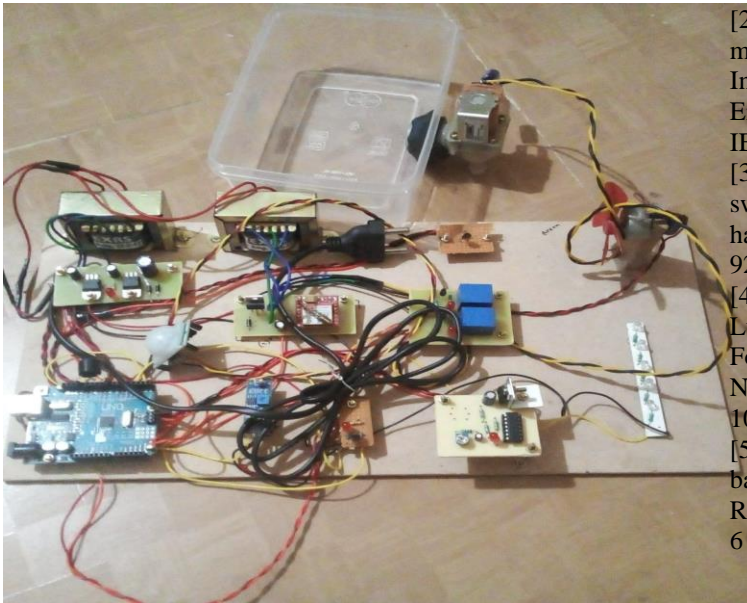
4. DESIGN IMPLEMENTATION DETAILS

BLOCK DIAGRAM

Fig.7.greenhouse system

[2] Shinde D , Siddiqui N . IOT Based environment change monitoring & controlling in greenhouse using WSN . In2018 International Conference on Information, Communication, Engineering and Technology (ICICET) 2018 Aug 29 (pp. 1-5) IEEE.

[3] H. Anandakumar and K. Umamaheswar i, A bio-inspired swarm intelligence technique for social aware cognitive radio handovers, Computers & Electrical Engineering, vol. 71, pp. 925– 937, Oct.2018. doi:10.1016/j.compeleceng.2017.09.016

[4] R. Arulmurugan and H Anandakumar , Early Detection of Lung Cancer Using Wavelet Feature Descriptor and Feed Forward Back Propagation Neural Networks Classifier , Lecture Notes in Computational Vision and Biomechanics , pp . 103– 110, 2018 . doi:10.1007/978-3-319-71767-8_9

[5] Rupali S , Hemant G , Shoaib K , Aaditya I , Deep D IOT based greenhouse monitoring system. International Journal for Research in Applied Science and Engineering Technology2018 6 (4):2084-

7. CONCLUSIONS

We can use this system in nurseries , gardens .This system helps us to know about the climate conditions of surrounding environment of plants**.**The Arduino-based greenhouse control and power system is brilliant. Temperature, wetness, adhesive content, and light strength are all assessed using the temperature sensor, Earth moisture , smoke sensor Sensor, LDR sensor, and the fundamental sensors employed in this project . This method of monitoring and monitoring ecological factors using a reasonable smartphone application is common in children's nurseries. For sending phone and desktop information, the Node MCU esp8266 is employed. Physical activity is reduced as a result of this surgery. This machine can be utilized in plant fields, nurseries, and home center.

8. FUTURE SCOPE

The suggested system comprises of different sensor modules, with a common aurduino for receiving parameters and necessary action to be implemented . The addition of a chemical sensor is another important update. Chemical sensors can be used to determine the PH of soil and its chemical components. The suggested advanced system has advantages include different sensors , wireless connectivity, and extensive control and monitoring capabilities. Simple to implement, User-defined and automatic modes, and parameter recording on cloud servers Reduce the use of insecticides and water**.**

9.REFERENCES

[1] Jayasuriya YP , Elvitigala CS , Wamakulasooriya K , Sudantha BH. Low Cost and IoT Based Greenhouse with Climate Monitoring and Controlling System for Tropical Countries In2018 International Conference on System Science and Engineering (ICSSE) 2018 Jun 28 (pp. 1-6) . IEEE.