Smart Garden Management System

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Abstract: - **As India being agricultural based country water resources are shortof at fatal rate aggressive accumulation control of procurable belongings for soaking and burghal gardening. In this project, we aim to develop a data driven sensor based smart solution to epitomize the supply of water nutrition and sunlight for nurturing the plants/trees to resources in a practical way for super fetch live data from soil moisture level, soil ph level, temperature and humidity, A micro controller established system will charge the absolution of basic water, nutrition levels. The micro controller acceptation is programatically altered by superficial specification such as climate prognosis and information_ center level inputs respective plants/trees. The data collected in the process will become a archive which will be passed-down for added assay for accomplishing system bright based on actual data/mining as the time goes on. The system will be scalable at elongation and expiration. System single unit acts as earliest array cell. Each system cell will be identify with its intrinsic set of parameters such as plant species code where the unit is connected to and sensor value. government entities such as corporaion, municipal authorities for paks, urban forest management , farmers, farming societies and home gardeners .Here we use client server technology with microcontroller from ATmega family such as ATmega328 .**

Keywords **:- Arduino uno, Temp, humidity, GPRS, soil moisture sensor,motors heating devices**

I. INTRODUCTION

The internet of things (IOT)is based upon software and hardware .it describes the real time experience to world which develops small things with limited storage and processing capacity ,and consequential issues regarding reliability ,performance ,security ,privacy .on other side embedded system are designed to do some specific task with software programming and real time performance constraints that must be met ,safety and reliability .the software written for embedded system is often called firmware and is stored in read only memory. Transmission advice has assume form of an importunate article considering monetary compound moreover a leading fact-finding case in a period of extreme ten years. There are now extended mobile phone subscriptions than wired-line subscriptions. In recent times, one area of fiscal interest has been low-cost, low-power, and short-distance wireless communion recycled for \peculiar wireless networks." Technology amelioration are administer lesser and more practical invention for systemize computational processing, wireless communication, and a host of other functionalities. These embedded elucidation devices will be combined into applications pasturing from homeland security to industry automation and monitoring.

II .RELATED WORK

This section describes study of the previous works related to the proposed system. There is increased pressure on existing water allocations and has increased the importance of water management for the sustainability of irrigated agriculture [1]. The objectives idea is: To optimize the water supply to crops, to reduce manual intervention, to make the irrigation system smart, autonomous and efficient. According to the mental health problem in elderly, gardening and IoT technology, they propose the IoT Planting for the elderly that is controlled by Android application which help mental health and memory's problem in elderly [2]. We use the application to reduce spaces between elderly and technology by use planting tree's activity as an intermediate and avoid accident from planting trees activity. Smart Terrace Garden In the paper [3] problem is systems are too expensive and not compatible with the app or both. A solution of this problem is it will help to save time, money and help the environment through reducing water loss. The proposed system is composed of three main components: monitoring node, central node, and the cloud [4]. The monitoring nodes are installed in the several places in the field with sensors to monitor both soil and the environment. These nodes connect and send data to the central node using ZigBee network.

From a study of the existing system, it is observed that it has various limitations. These limitations can be overcome using the proposed system

III.PROPOSED SYSTEM

In this section, there is a description of the overall proposed system which is going to overcome all the limitations of the existing system. The proposed system is composed of five main components which are connected to arduino uno:Soilmoisture,DHT11,Motor1 for watering ,Motor 2 for giving nutrition to plants,and Heating device providing heat to plants whenever they are in wet condition..Here this components are taken as a input devices to the arduino and send the data which are tested by the devices to the system(Arduino Uno).The system sends the received data to GPRS and Gets output through LCD.In this way the system will be updated according to the change by the input devices automatically.
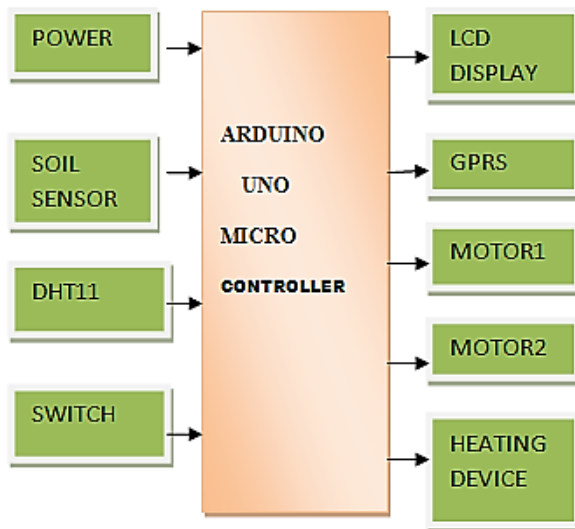
IV.HARDWARE SYSTEM

Figure.1: High Level Architectureof Smart Garden Management System

V.METHODOLOGY

i) Micro controller: This section forms the control unit of the whole project. This section basically consists of a Microcontroller with its associated circuitry like Crystal with capacitors, Reset circuitry, Pull up resistors (if needed) and so on. The Microcontroller forms the heart of the project because it controls the devices being interfaced and communicates with the devices according to the program being written.

ii) Arduino:
It is the name of a class of processors, and is the name of a kind technology too. The RISC instruction set, and related decode mechanism are much simpler than those of Complex Instruction Set Computer (CISC) designs. Arduino is an open-source electronics prototyping platform based on flexible, easy-to-use hardware and software. It's intended for artists, designers, hobbyists, and anyone interested in creating interactive objects or environments.
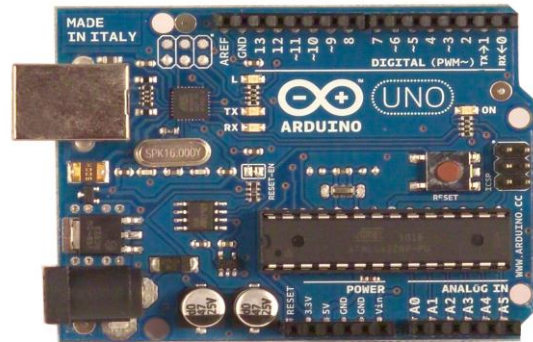

Figure.2:Arduino Uno

iii)SOIL MOISTURE:

In Soil Moisture sensor there are two copperleads which are immersed under the ground to test the soil level.If the soil level ranges between 6-7 then it says to b normal condition for the growth and cultivation of plants.
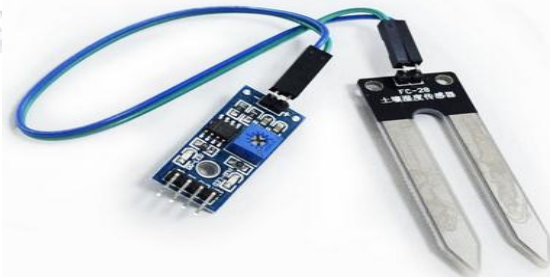

Figure.3: Soil Moisture Sensor.

STEP1: Dry condition- The probes are placed in the soil under dry conditions and are inserted up to a fair depth of the soil. As there is no conduction path between the two copper leads the sensor circuit remains open. The voltage output of the emitter in this case ranges from 0 to 0.5V.

STEP2: Optimum condition- When water is added to the soil, it percolates through the successive layers of it and spreads across the layers of soil due to capillary force. This water increases the moisture content of the soil. This leads to an increase in its conductivity which forms a conductive

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path between the two sensor probes leading to a close path for the current flowing from the supply to the transistor through the sensor probes. The voltage output of the circuit taken at the emitter of the transistor in the optimum case ranges from 1.9 to 3.4V approximately. STEP3: Excess water condition- With the increase in water content beyond the optimum level, the conductivity of the soil increases drastically and a steady conduction path is established between the two sensor leads and the voltage output from the sensor increases no further beyond a certain limit. The maximum possible value for it is not more than 4.2V
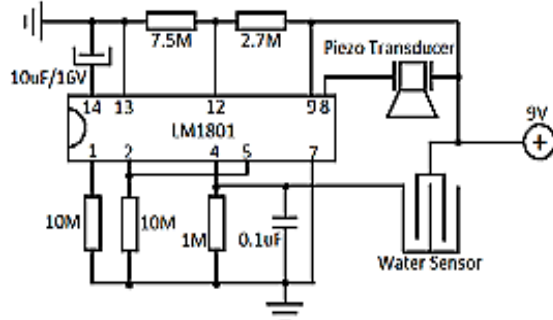

Figure.4: It describes about the levels of water and soil with the help of two copperleads.

iv) Liquid-crystal display (LCD):

It is a flat panel display, electronic visual display that uses the light modulation properties of liquid crystals. Liquid crystals do not emit light directly. LCDs are available to display arbitrary images or fixed images which can be displayed or hidden, such as preset words, digits, and 7-segment displays as in a digital clock.

v) Temperature and Humidity (DHT11): Digital temperature and humidity sensor is a composite Sensor contains a calibrated digital signal output of the temperature and humidity. Application of a dedicated digital modules collection technology and the temperature and humidity sensing technology, to ensure that the product has high reliability and excellent long - term stability. The sensor includes a resistive sense of wet components and an NTC temperature measurement devices, and connected with a high-performance 8-bit microcontroller. Dehumidifier, testing and inspection equipment, consumer goods, automotive, automatic control, data loggers, weather stations, home appliances, humidity regulator, medical and other humidity measurement and control.

Figure.5:DHT11

vi)GPRS: GPRS (general packet radio service) is a packet-based data bearer service for wireless communication services that is delivered as a network overlay for GSM, CDMA and TDMA (ANSI-I36) networks. GPRS applies a packet radio principle to transfer user data packets in an efficient way between GSM mobile stations and external packet data networks. Packet switching is where data is split into packets that are transmitted separately and then reassembled at the receiving end. GPRS supports the world's leading packet-based Internet communication protocols, Internet protocol (IP) and X.25, a protocol that is used mainly in Europe. GPRS enables any existing IP or X.25 application to operate over a GSM cellular connection. Cellular networks with GPRS capabilities are wireless extensions of the Internet and X.25 networks.
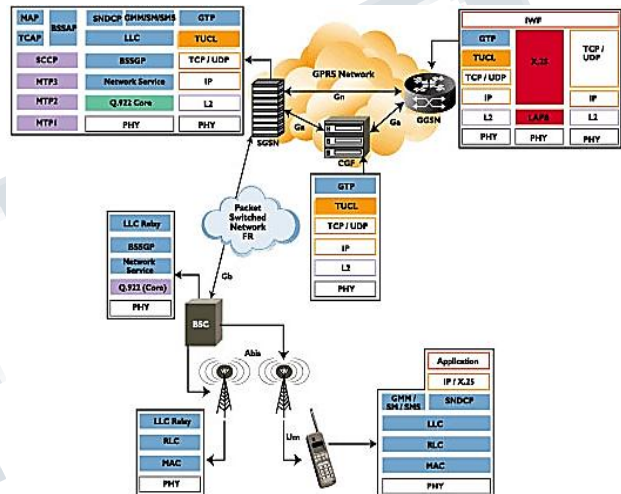

Figure.6: GPRS Architecture

vii) DC Motor:

A DC motor relies on the fact that like magnet poles repels and unlike magnetic poles attracts each other. A coil of wire with a current running through it generates an electromagnetic field aligned with the center of the coil. By switching the current on or off in a coil its magnetic field can be switched on or off or by switching the direction of the current in the coil the direction of the generated magnetic field can be switched 180°.
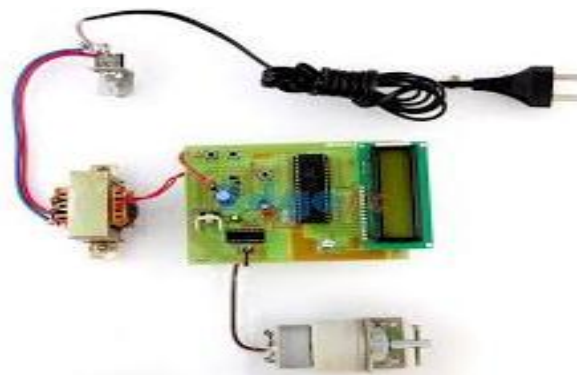
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Figure.7: DC Motor

viii)Motor driver (L293D):

DC motors are typically controlled by using a transistor configuration called an "H-bridge". This consists of a minimum of four mechanical or solid-state switches, such as two NPN and two PNP transistors. One NPN and one PNP transistor are activated at a time. Both NPN and PNP transistors can be activated to cause a short across the motor terminals, which can be useful for slowing down the motor from the back EMF it creates. H-bridge. Sometimes called a "full bridge" the H-bridge is so named because it has four switching elements at the "corners" of the H and the motor forms the cross bar. The switches are turned on in pairs, either high left and lower right, or lower left and high right, but never both switches on the same "side" of the bridge. If both switches on one side of a bridge are turned on it creates a short circuit between the battery plus and battery minus terminals. If the bridge is sufficiently powerful it will absorb that load and your batteries will simply drain quickly. Usually however the switches in question melt.
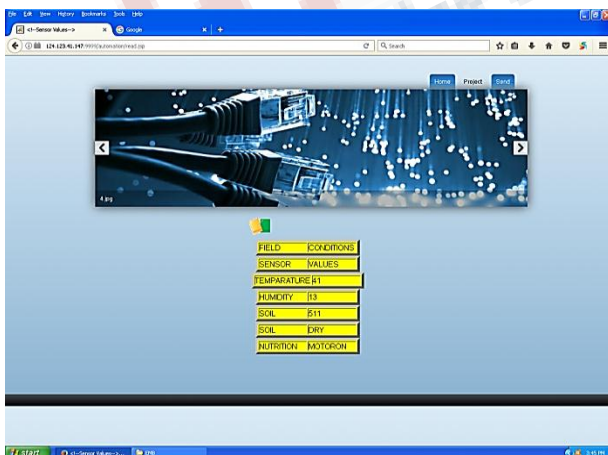
IV. RESULT

Figure.8:This login page of the projects describes about the input value from the soil moisture which is gets dry,and Motor1 was "ON "to provide water to the plant.After

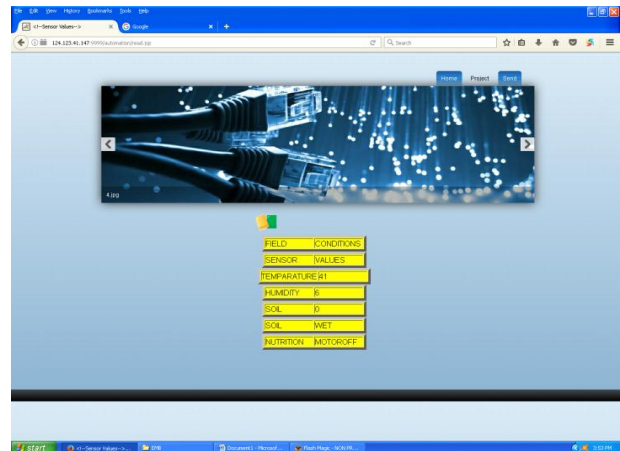reaching sufficient amount of water the motor automatically turns "OFF".

Figure.9: This is the updated page where the ground level is got wet by water and the motor1 gets OFF.

Figure.10: This webpage of the project gets an alert of temperature which is" 0".Here the Heating Device to be "ON".

Figure.10: This is the updated page in which the temperature is ranges normal and the Ground level is Dry .Here the MOTOR2 gets "ON".

VI. COMPARATIVE STUDY

The current framework has numerous constraints, for example, the issue of vitality utilization, wastage of water, youngster security and so on. By utilizing proposed framework the vitality utilization will diminish because of which the cost of the vitality bills is additionally going to decrease. Presently a day, wastage of water is the huge issue and the current framework isn't fit for managing these issues, yet these issues can be comprehended by the proposed framework. Presently a days guardians are working or huge numbers of the time they are out of the home and they are stressed over their kid security for e.g. The kid comes back to home from school or not. In this regard no other existing framework which will tell the guardians that youngster comes to at home from school securely. Be that as it may, by utilizing proposed framework guardians will think about their youngster, regardless of whether returns or not.

VII.CONCLUSION

After comparative study and considerations of literature survey of other existing systems, there was a proposal of a system The venture "Savvy GARDEN MANAGEMENT SYSTEM" has been effectively composed and tried. Coordinating highlights of all the equipment parts utilized have created it. Nearness of each module has been contemplated out and set precisely subsequently adding to the best working of the unit. Furthermore, utilizing exceptionally propelled IC's and with the assistance of developing innovation the task has been effectively executed.

REFERENCES

[1] Vinay sagar K N,Kusuma S M Student IV SEM, M.Tech, Digital Communication. Engg., MSRIT, Bangalore, India,"Home Automation Using Internet of Things",International Research Journal of Engineering and Technology (IRJET),Volume:02 Issue:03 June-2015.

[2] Shruti Deshinge, Prof. M. N. Kakatkar, Dept. of E\&TC, Sinhgad College of Engineering, Pune, India,"IoT based Smart Home System for Monitoring Surrounding Condition",International Journal of Innovative Research in Computer and Communication Engineering, Vol. 4, Issue 6, June 2016.

[3] Vinod Choudhary, Aniket Parab, Satyajit Bhapkar, Neetesh Jha, Ms. Medha Kulkarni, PVPPCOE/Dept. of IT, Mumbai, 400022, India, "Desgin and Implementation of Wi-Fi based Smart Home System", International Journal Of Engineering And Computer Science, Volume – 5 Issue -02 February, 2016.

[4] Prof.M. Shobana, Prof.M. Amsaveni, Prof.S. Sugapriya, "Smart LED lighting system for street light", The International Journal of Engineering and Science (IJES) ISSN (e): 2319 – 1813 ISSN (p): 2319 – 1805, March-2015.

[5] Gaurav Waradkar, Hitesh Ramina, Vinay Maitry, Tejasvi Ansurkar Prof. Mrs. Asha Rawat, Prof. Mr. Parth Das, "Automated room light controller with visitor counter", Imperial Journal of Interdisciplinary Research (IJIR) Vol-2, Issue-4, 2016.

[6] Imran Ahmed Khan, Khushboo Gupta, "Design of rain detection system for power window", International Journal of Advanced Research in Computer Science and Software Engineering, Volume 5, Issue 4, April 2015.

[7] S. Parameshwara, Manu.S, Manjunath, Suren Sharan Navalgi, Vinay Mahadev Hunachyal, "Power windows using touch screen", International Research Journal of Engineering and Technology (IRJET), Volume: 03 Issue: 01, Jan-2016.

[8] Suma L , Rajeshwari R , Vivekanand ,U.G. Student, Department of Computer Engineering, SKIT, Chikkabanavara, Karnataka, India,"Raspberry pi Home Automation with Arduino", International Journal of Innovative Research in Science,Engineering and Technology(IJIRSET),Vol. 5, Special Issue 10, May 2016.

[9] Mohamed Abd El-Latif Mowad, Ahmed Fathy, Ahmed Hafez,"Smart Home Automated Control System Using Android Application and Microcontroller",International Journal of Scientific \& Engineering Research,Volume 5, Issue 5, May-2014.

[10] Subhankar Chattoraj Techno India University, Salt Lake Main Campus, EM /4 Salt Lake,"Smart Home Automation based on different sensors and Arduino as the master controller",International Journal of Scientific and Research Publications,Volume 5, Issue 10, October 2015.

[11] Abhijeet Rajurkar, Onkar Shinde, Vinayak Shinde, Bhushan Waghmode Computer Engineering, Dr D.Y. Patil School of Engineering, Pune, India, "Smart Home Control and Monitor System Using Power of IoT's" in International Journal of Advanced Research in Computer and Communication Engineering Vsol. 5, Issue 5, May 2016.