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WIRELESS SOIL MOISTURE PARAMETER MONITORING AND LOGGING FOR CLASSIFICATION OF GERMS DEVELOPMENT CONDITIONS

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Abstract- The ability to monitor environmental conditions is crucial to research in fields ranging from climate variability to agriculture and zoology. Being able to document baseline and changing environmental parameters over time is increasingly essential important and researchers are relying more and more on unattended weather stations for this propose. A GSM Based Smart Sensing Platform for Monitoring Environmental Parameters has been designed and developed. The smart weather station consists of microcontroller based measuring units which collect the value of the temperature, relative humidity, and soil moisture. These units send their wireless data to a central station, which collects the data, stores and them into a database. In this project a few more sensors and a few more weather stations has been provided.

Keywords:- Monitoring system, Wireless Sensor Network, GSM Technology etc.



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INTRODUCTION

In the last few years, the occurrences of natural Changes in atmosphere is a have been becoming the cause for the Fungus, Bacterial attacks on the agricultural. If such changes are not aware in time to us the precautions cannot be taken and there will be bad effect on the agricultural production In this project, we present a system that can be used to monitor various parameters like Temperature sensor, Humidity sensor, Soil moisture sensor and again supporting to this we are providing the facility for remotely ON/ OFF of the Motor.

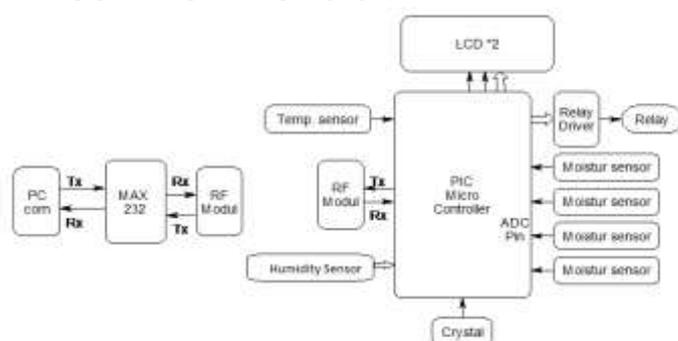
We are using a wireless sensor network based on GSM is utilized as a weather station network sending weather information. This research focuses on developing devices and tools to manage, display and alert the weather/disaster warnings using the advantages of a wireless sensor network system. In case of soil moisture reaches a critical level farmer is intimidated via SMS using GSM modem and as per the feedback from farmer irrigation can be started. Based on moisture sensed and changes in moisture over a period of time soil is classified into different types that shows how fast moisture level changes.

II. NEED OF PROJECT

The common plant diseases that have attacked field crops, vegetables, fruits, turf, and ornamental plants in Illinois in past years are likely to be present this year. The extent of disease development, however, depends on the combination of weather conditions during the growing season. Weather is a term used for the aerial environment. It includes light, temperature, snow, rain, humidity, dew, cloudiness, sunshine, wind, air currents, evaporation, and atmospheric pressure. Any one or some combination of these elements may affect disease occurrence.

For example, In an apple orchard air movements that are either wind or eddy currents may lift scab fungus spores from old leaves on the ground up to moist leaves and fruit on the trees.

III. BLOCK DIAGRAM OF SYSTEM



circuit and re-transmitted it on another circuit. Relays were used extensively in telephone exchanges and early computers to perform logical operations.

3. TEMPERATURE SENSOR

The LM35 series are precision integrated-circuit temperature sensors, whose output voltage is linearly proportional to the Celsius (Centigrade) temperature. The LM35 does not require any external calibration or trimming to provide typical accuracies of $\pm\frac{1}{4}^{\circ}\text{C}$ at room temperature and $\pm\frac{3}{4}^{\circ}\text{C}$ over a full -55 to +150 $^{\circ}\text{C}$ temperature range. Low cost is assured by trimming and calibration at the water level. The LM35's low output impedance, linear output, and precise inherent calibration make interfacing to readout or control circuitry easily.

4. HUMIDITY SENSOR

This module converts the relative humidity to the corresponding output voltage. Operating humidity: 30 –90%RH, standard output: DC 1980mV (at 250C, 60%RH), accuracy: +/-5%RH (at 250C, 60%RH)

5. GSM MODULE

At present the GSM module is used for Remote Control activities such as Gate Control, Temperature Control etc. GSM/GPRS module consists of a GSM/GPRS modem assembled together with power supply circuit and communication interfaces (like RS-232, USB) for computer. The MODEM is the soul of such modules. They generate transmit or decode data from a cellular network, for establishing communication between the cellular network and the computer. These are manufactured for specific cellular network (GSM/UMTS/CDMA) or specific cellular data (GSM/UMTS/GPRS/EDGE/HSDPA) or technology (GPS/SIM). They use serial communication to interface with the user and need Hayes compatible AT (Attention) commands for communication with the computer (any microprocessor or microcontroller system).

An RS-232 port was standard feature of a personal computer for connections to modems, printers, mice, data storage, un-interruptible power supplies, and other peripheral devices. The limited transmission speed, relatively large voltage swing, and large standard connectors motivated development of the universal serial bus which has displaced RS-232 from most of its peripheral interface roles. Many modern personal computers have no RS-232 ports and must use an external converter to connect to older peripherals. Some RS-232 devices are still found especially in industrial machines or scientific instruments.

V. SOFTWARE DESIGNS

The C language can also use very simple commands control the device, releasing up the limited memory of the device to hold many commands or parameters. C can be written for both microcontrollers and digital signal processors. Code is written in C on a programmer's PC.

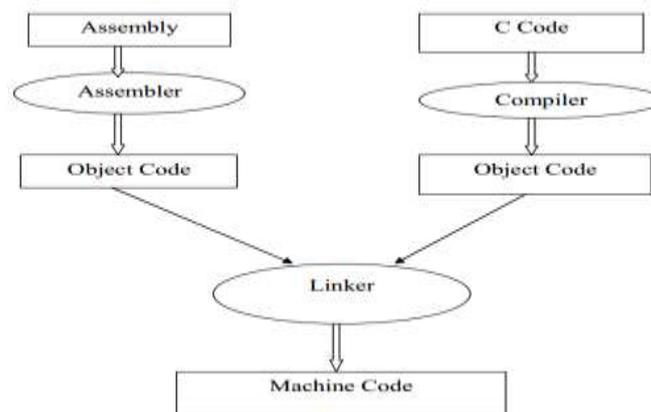


FIG. CODE GENERATION FOR ASSEMBLY C LANGUAGE

VI. SYSTEM TEST

The “Visual Basic 6.0” used to create the graphical user interface (GUI). Rather than writing numerous lines of code to describe the appearance and location of interface elements, you simply add prebuilt objects into place on screen. We have ever used a drawing program such as Paint, we already have most of the skills necessary to create an effective user interface. Visual Basic has evolved from the original BASIC language and contains several hundred statements, functions, and keywords. Many of which relate directly to the Windows GUI. Beginners can create useful applications by learning just a few of the keywords, yet the power of the language allows professionals to accomplish anything that can be accomplished using any other Windows programming language.

In 800 sq. meters, we distributed six temperature humidity sensor nodes each node can achieve routing functions. Soil, temperature, humidity sensor node is set into soil for 8cm, completes the data collection, sending. Then the nodes will be hidden until the next one sampling period.

VII. ADVANTAGES

1. Moisture level of soil is measured so that we can provide water as per requirement of the soil. It prevents water logging of soil.
2. Message is sent to the user's mobile phone so he can understand the moisture level and user can handle the situation also at the distant location.
3. This project can be use in large agriculture area where human efforts needs to be minimized.

VIII. CONCLUSION

GSM-based agriculture monitoring system serves as a reliable and efficient system for efficiently monitor the environmental parameters. Wireless monitoring of field not only allows user to reduce the human power, but it also allows user to see accurate changes in it.

This research focuses on developing devices and tools to manage, display and alert the weather/disaster warnings using the advantages of a wireless sensor network system.

By knowing the status of moisture and temperature through GSM with the use of moisture and temperature sensors, water flow can be controlled by just sending a message from our mobile. Conservation of water and labor. Since the systems are automatic, they do not require continuous monitoring by labor.

IX. REFERENCES

1. N. G Shah and I. Das, "Precision Irrigation Sensor Network Based Irrigation", a book on Problems, Perspectives and Challenges of Agricultural Water Management, IIT Bombay, India, pp. 217–232, April 2008.
2. M. K. Haefke, S. Mukhopadhyay and H. Ewald, "A Zigbee Based Smart Sensing Platform for Monitoring Environmental Parameters", IEEE Conference on Instrumentation and Measurement Technology, . 1–8, May 2011.
3. Kay, M., "Smallholder irrigation technology: Prospects for sub-Saharan Africa" International Program for Technology and Research in Irrigation and Drainage, FAO, Rome, 2001, pp. 1–25.
4. N. Shah and I. Das, "Precision Irrigation Sensor Network Based Irrigation", a book on Problems, Perspectives and Challenges of Agricultural Water Management, IIT Bombay, India, pp. 217–232, April 2008
5. Fangmeier, D. D., Garrot, D. J., Mancino, C.F and Husman, S. H., "Automated irrigation systems using plant and soil sensors", American Society of Agricultural Engineers, ASAE Publication, 1990, pp. 533-537.
6. Benzekri, A., Meghriche, K., and Refoufi, L., "PC-based automation of a multi-mode control for an irrigation system Proceedings of International symposium on industrial embedded systems", Lisbon, July 2007, pp. 310-315.
7. Shinghal, K., Noor, A., Srivastava, N., and Singh, R.," Wireless sensor networks in agriculture for potato farming" International Journal of Engineering, Science and Technology, Vol. 2, No. 8, 2010, pp. 3955-3963.
8. Gautam, I., and Reddy, S. R. N., Innovative "GSM-Bluetooth based remote controlled embedded system for irrigation" International Journal of Computer Applications, Vol. 47, No. 8, 2012, pp. 1.