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Home Automation With Android Mobile And Gsm

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Abstract:-

Nowadays, the remote Home Automation turns out to be more and more significant and appealing. It improves the value of our lives by automating various electrical appliances or instruments. This paper describes GSM (Global System Messaging) based secured device control system using App Inventor for Android mobile phones. App Inventor is a latest visual programming platform for developing mobile applications for Android-based smart phones. The Android Mobile Phone Platform becomes more and more popular among software developers, because of its powerful capabilities and open architecture. It is a fantastic platform for the real world interface control, as it offers an ample of resources and already incorporates a lot of sensors. No need to write programming codes to develop apps in the App Inventor, instead it provides visual design interface as the way the apps looks and use blocks of interlocking components to control the app's behaviour. The App Inventor aims to make programming enjoyable and accessible to novices.

Keywords

GSM, App Inventor, Home Automation, Android, Mobile Phone, Short Messaging Service (SMS)

INTRODUCTION

The App Inventor for Android is a new visual programming platform to create mobile applications (apps) for Android based smart phones . It was developed at Google Labs by a team led by MIT's Hal Abelson. It was released to the general public in July, after being available in alpha and beta versions to a group of invited developers. To develop apps in the App Inventor you do not need to write code. Instead of you have to design visual way of the app's looks and use blocks of interlocking components to control the app's behaviour. In this respect the App Inventor is comparable to Scratch (<http://scratch.mit.edu>) and Alice (<http://www.alice.org>). Like these languages, the App Inventor aims to make programming enjoyable and accessible to novices. It has gained the difference, and perhaps an important reason for the



attention, is that the App Inventor lets you create apps for smart phones. As given the popularity and ubiquity of mobile phones among today's young generation of students, the App Inventor seems to hold great potential for attracting a new generation of students to computing and computational thinking .

This paper presents GSM based Device Control System mobile application developed using the App Inventor for Android smart phones targeting its vast market which will be beneficial for the masses. According to the International Data Corporation (IDC) Worldwide Quarterly Mobile Phone Tracker, Android has maintained its leadership position on highest peak in global market share . The Global System for Mobile Communication (GSM) network is almost everywhere. The preface of the Global System for Mobile Communication (GSM) and mainly the use of cellular phones got the novelty of distance communication at remote location. Paper makes use of this ability for remote control of instruments and appliances; take a look at this example, a person on a drive within his car all of a sudden memorizes that he left the Cooler, ON actually it should be OFF. The usual circumstance is to drive back and switch OFF. But with the Android mobile phone in the hand equipped with GHAS (GSM Home Automation System) Application, one looks on how the same could be used to result control at any point, anywhere and time without worrying geographical locations.

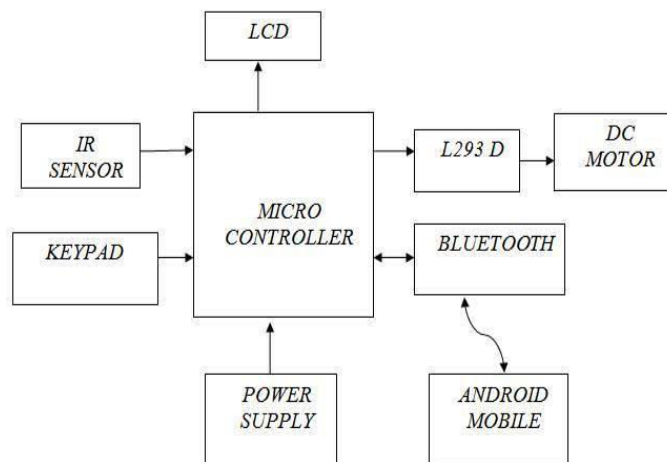
RELATED WORK

There are many definitions of home automation available in the literature. The Paper considers the problems with the implementation of home automation systems. Furthermore the possible solutions are devised through various network technologies. Several issues affecting home automation systems such as lack of robustness, compatibility issue and acceptability among the old and disabled people are discussed. Present a design and implementation of SMS based control for monitoring systems. The paper has three modules involving sensing unit for monitoring the complex applications. A microcontroller works as processing unit and a communication module that uses GPRS modem or cell phone via serial port RS-232. The SMS is used for status reporting such as power failure. The Paper explores primary health-care management for the rural population. A solution proposes the use of the mobile web-technologies providing the PHC services to the rural population. The system involves the use of SMS and cell phone technology for information management, transactional exchange and personal communication. Propose remote monitoring through mobile phone involving the use of spoken commands. The spoken commands are generated and sent in the form of text SMS to the control system and then the microcontroller on the

basis of SMS takes a decision of a particular task. Focuses on the controlling of home appliances remotely and providing security when the user is away from the place. The system is SMS based and uses wireless technology to revolutionize the standards of living. This system provides ideal solution to the problems faced by home owners in daily life. The system is wireless therefore more adaptable and cost-effective. The HACS system provides security against intrusion as well as automates various home appliances using SMS. The system uses GSM technology thus providing ubiquitous access to the system for security and automated appliance control. Describes how to manage and control home appliances using mobile phone, people can use this system to do things in their home from a far place before they reach home. To control an appliance the user sends a command in form of SMS from his/her mobile phone to a computer which is connected to the appliance, once the message is received the computer will send the command to a microcontroller for controlling the appliance appropriately. Propose the system uses Atmel AT89S52 as a central microcontroller and it allows remote control of different appliances through SMS messages.

SYSTEM ARCHITECTURE

The Bluetooth and Wi-Fi based Home Automation System (HAS) is developed using various mobile programming language and cross mobile platform like Windows , Java Me], Android , MoSync App Inventor and , web based using RWD technology respectively during the course of research and now the GSM based Home Automation System Application program using Visual programming Language ‘App Inventor’ is exercised for Android based smart phones, and an 8 bit microcontroller based relay driver circuit with GSM Modem, which is able to communicate with the Home Appliances over GSM Network.



The system is based on serial data transmission using SMS over GSM Network in order to facilitate the appliances control in a global network environment. Present system ensures a secured exchange of data on GSM communication. A user interface (UI) on the Android enabled mobile phone offers system connection and control utilities. ULN 2803 relay driver and Serial 900 type GSM Modem from as well as lpc 2148 for compiling C Language Code and burning HEX file into microcontroller was used for the development. An 32bit microcontroller is used as an embedded relay controller. **HARDWARE** The GHAS Hardware works as client part and connected to GSM Modem and known as circuit for GHAS . It comprises of Arm board with microcontroller Lpc 2148, GSM Modem, octal peripheral driver array ULN2803, Relay and a few discrete components. Here in this circuit, microcontroller Lpc 2148 is works as main program switching unit which receives data from GSM Modem and transferred appropriate program data to ULN2803 for operating relay ON and OFF. The Lpc 2148 is a tool for making computers that can sense and control more of the physical world than desktop computer. It's an open-source physical computing platform based on a simple microcontroller board, and a development environment for writing software for the board. Lpc 2148 can be used to develop interactive objects, taking inputs from a variety of switches or sensors, and controlling a variety of lights, motors, and other physical outputs. Arm projects can be stand-alone, or they can communicate with software running on computer. The boards can be assembled by hand or purchased preassembled; the open-source IDE can be downloaded for free. The arm programming language is an implementation of Wiring, a similar physical computing platform, which is based on the Processing multimedia programming environment.. The Lpc 2148 is RISC based microcontroller combines 32KB ISP flash memory. A GSM modem is a specialized type of modem which accepts a SIM card, and operates over a subscription to a mobile operator, just like a mobile phone. From the mobile operator perspective, a GSM modem looks just like a mobile phone. When a GSM modem is connected to a computer, this allows the computer to use the GSM modem to communicate over the mobile network. While these GSM modems are most frequently used to provide mobile internet connectivity, many of them can also be used for sending and receiving SMS and MMS messages. A GSM modem can be a dedicated modem device with a serial, USB or Bluetooth connection, or it can be a mobile phone that provides GSM modem capabilities .

IMPLEMENTATION

Power up the Circuit and check status of blinking LED of GSM Modem for the availability of GSM network. If everything is done correctly you will be able to see stable LED and GSM Network. Figure 6 shows the real implementation of GHAS. Follow the steps listed below for operating devices on your mobile.



- Open the 'GHAS' application on your Android mobile phone.
- Enter correct password in password box of GHAS app.
- Device Control Screen will appear on your mobile screen.
- Start checking/unchecking option for particular device for making 'ON/OFF' from Grid Menu

CONCLUSION

Design and implementation of the GSM Home Appliance System (GHAS) using the App Inventor for Android mobile phone has been discussed. The purpose of the GHAS is to use mobile phone's inbuilt SMS facility and GSM Modem for automation of Home Appliances. Different hardware and software unit of the GHAS is described. The complete application software has been designed using App Inventor for Android and C Language. The GHAS application program is tested on various Android mobile phones which are quite satisfactory and responses received from the community in general are encouraging. The GHAS furnishes a good paradigm for any Automation System based on Android Mobile Phone and GSM.

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