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A Novel Technique for Wireless Home Automation

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ABSTRACT: This idea came from a very basic thought why can't we control appliances remotely and provide security when the user is away from the place .This thought lead us to a great project in Internet of Things. The proposed system is made to control the electric and electronic appliances just by sending an e-mail, which will make a good use of technology of low cost. This project is the combination of mainly two things 1. Microsoft Outlook and 2. Hardware Module. In order to show feasibility and effectiveness of the system, this paper experiments results of Internet Of Things and some experiences of practical implementation.

KEYWORDS: Internet of things, Home automation, SMTP, POP3, E.mail

I. INTRODUCTION

The aim of the paper is to investigate a cost effective solution that will provide controlling ofhome appliances remotely and will also enable home security against intrusion in the absence ofhouse owner.The motivation is to facilitate the users to automate their homes having ubiquitous access. Thesystem provides fully automated access to the appliances in the houseat a low cost system. The home appliances controlsystem with an affordable cost was thought to be built that should be an e-mail providing remoteaccess to the appliances and allowing home security.Home security has been a major issue where crime is increasing and everybody wants to takeproper measures to prevent intrusion. In addition there was a need to automate home so that usercan take advantage of the technological advancement in such a way that a person getting off theoffice does not get melted with the hot climate. Therefore this paper proposes a system that allowsuser to control home appliances ubiquitously and also provide security on detection ofintrusion via E-mail using Ms-Outlook Feature.

II. RELATED WORK

In [1] the authors tried to implement a home automation with centralized control within low cost. In [2] the authors developed monitoring system for civil engineering using micro controllers and rs 232 interface. This monitoring system alerts the owner via SMS which helps in monitoring the equipment. In [4] the authors focused on a model which can be to control domestic appliances using gsm technology and IP controlled home automation. The research definetly provides future scope in designing and implemtation of HAS using IP control. In [5] the authors mainly concentrated on monitoring remotely via microcontroller interfaced with voice commands. In this work authors used microphone connected to pc and then to user mobile so that voice commands are transmitted via GSM to the receiving module controlled by a microcontroller. In the remaining references all HAS's are designed are designed either with GSM or SMS or Bluetooth. In our work we focused on e-mail based HAS's which is low cost and more efficient.

III. EXISTING SYSTEM

This home automation system is first implemented using SMS. This requires a mobile at both transmitting and receiving side. This system is sms based and uses wireless technology to revolutionize the standards of living.The above architecture showing a sms coming from mobile received by GSM modem and given to HACS such that appliances are controlled using GSM technology.

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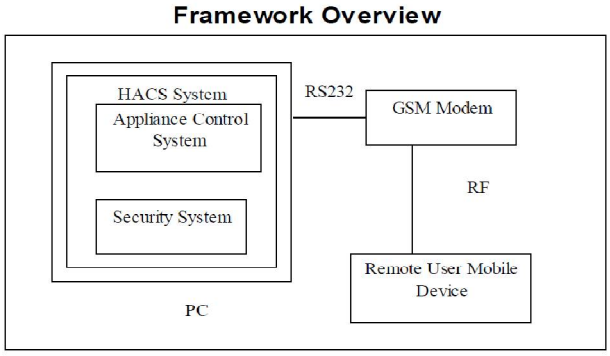

Figure 1: SMS based home automation

IV. PROPOSED SYSTEM

The above architecture shows a brief description about the paper, sending an e-mail through internet and received by outlook in the system and how appliances are controlled. The proposed system characteristics involve remote controlling of appliances, intrusion detection, system security and auto configuration such that,system automatically adjusts the system settings on running hard-ware support check.

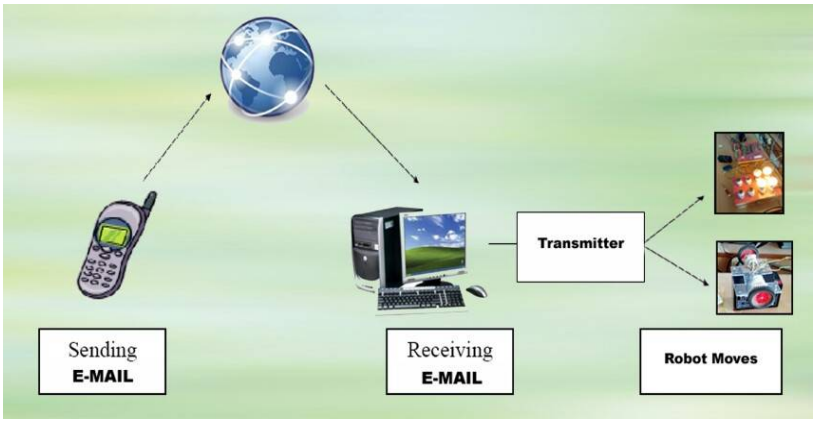

Figure 2 : System Architecture

V. PRELIMINARIES

A. Personal computer

This unit contains the software components such as the Microsoft Outlook, Turbo C through which theappliances are controlled and home security is monitored

B. Hardware Module:

This module is the main part which receives the data from the pc as soon as the mail arrives and sends it to the receiver.

VI. WORKING

Here firstly we configure the outlook with an email such that whatever action is specified in the subject and body of the email , specified action related executed file will be run and related action will be performed. To perform an action we require an executable file which can be created using turbo c. There is a default code that sends data to parallel port which is used to control appliances.

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VII. PSEUDO CODE

```
void main()
{
Outportb(portno,datavalue);
Getch();
}
```

The above is used to send data to hardware module through parallel port having port number=**OX379** and data values are combination of 2 power 8 combination since there are 8 data pins to the parallel port that mean s we can control total 2 pow 8=256 appliances at a time by just sending one email.

But we came across a small problem and we found a solution i.e operating system win 98/NT/2003 only have allowance to access the ports in user mode also like in the kernel mode. The latest versions after 2003 server such as win XP/7/8 etc are not having permission to access ports in user mode. We came across a solution with software called user port which is used to access ports in user mode also in latest versions

VIII. PARALLEL PORT PIN CONFIGURATION & OUTLOOK CONFIGURATION

Where D0 to D7 are eight data pins which are used to send data. As soon as mail arrives in the outlook the action triggers and data is send through the data ports and amplifed in the hardware module with a voltage so that the appliances are controlled.

Configuring Outlook is the main part of project which uses POP3(**POST OFFICE PROTOCOL)** or IMAP(**INTERNET MESSAGE ACCESS PROTOCOL)** and SMTP(**SIMPLE MAIL TRANSFER PROTOCOL)** protocols.These protocols are resposible for incoming and outgoing mails or messages in the outlook.Which are also responsible for running applications.

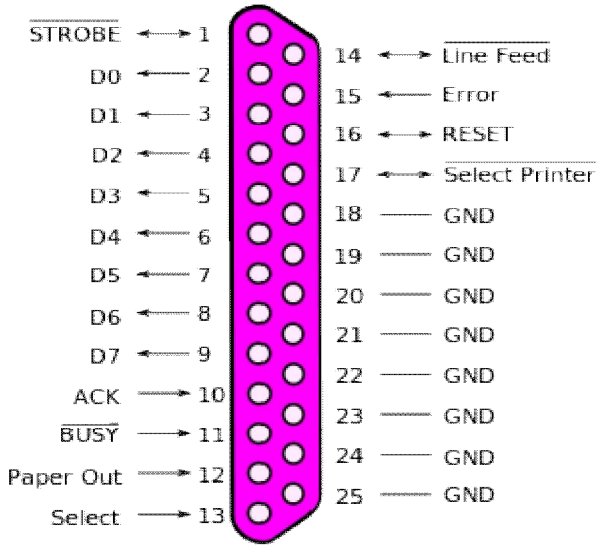

Figure 3 : Parallel Port Pin Configuration & Outlook Configuration

IX. RESULTS

The below prototype shows that different LEDs gets on and off for different data values .As soon as the mail arrives to outlook it executes the specified action configured in the outlook such as matter in the body or subject of the mail. Then the data is sent through parallel port which is received by module as the coming data has low voltage it is amplified to high voltage that is to control the led's.

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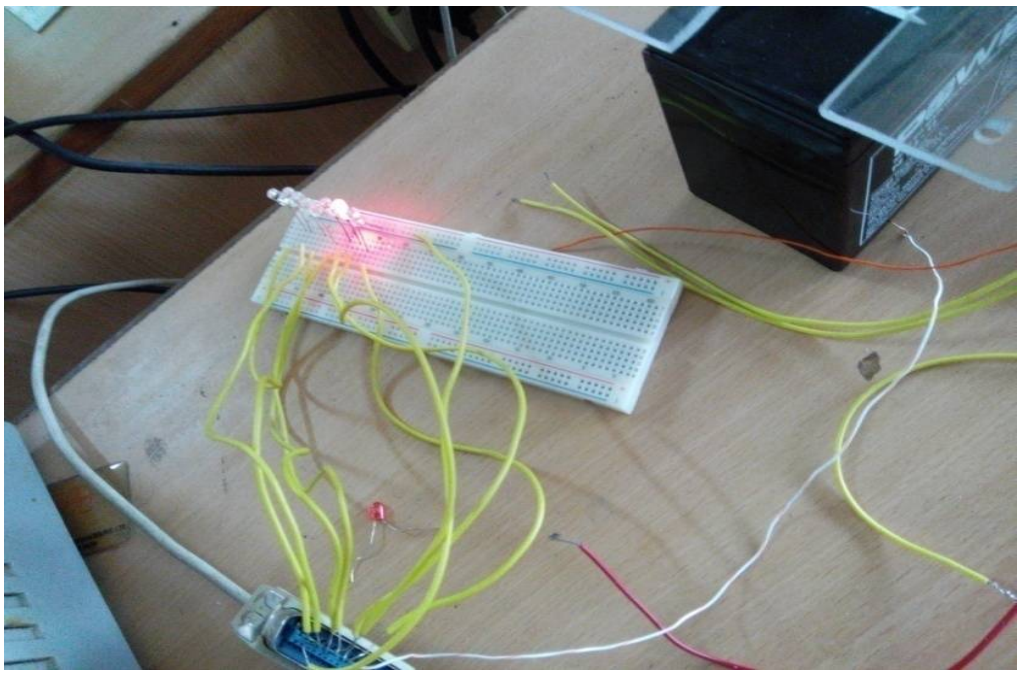

Figure 4: Small Prototype with led's switching OFF and ON

The below module contains 4 bulbs each which can get switched on and off if we assume each bulb as fan, light, motor etc. In the same way we can control multiple numbers of appliances. . Here we have used a car remote handset modified to wireless transmitter and a RF receiver which controls the appliances at a voltage of 230V.Once we send an E-mail to out configured mail to outlook , outlook drops the mail in to the PC with the help of PPOP# protocol. According to the text present in subject of the e- mail in the body corresponding appliance is controlled.

Figure 5 Multiple Appliances**:** Module Containing s of high voltage

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X.CONCLUSION

The proposed system is the future scope of the **SMS** based **HACS** system **(HOME APPLIANCE CONTROLSYSTEM)**.Here we mostly concentrate on receiver side and replaced with system having monitor instead of mobile at receiver side. This System provides ideal solution to problems faced by home owners in daily life. This system is wireless therefore most adaptable and cost effective.In this paper,solution for automation of homes has been introduced with low cost, secure, ubiquitously accessible, auto configurable and remotely controlled. The approach discussed in the paper is novel and has achieved the target to control home appliances remotely using the Email-based system satisfying user needs and requirements.

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BIOGRAPHY

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