VOICE BASED HOME AUTOMATION SYSTEM USING ANDRIOD OPERATING SYSTEM

Suhail Mustafa[1], Mr. Mohd. Shahid[2]
[1]M.tech Scholar, [2]Professor Alfalah University Dhauj Faridabad

Abstract: The study presents the experimental investigation carried out to evaluate the development of a home automation system using voice control. The basic objective of this study was to provide systems to support elderly and disabled people, mostly the ones that live alone. The effect of voice control on automation is evaluated in this study. By using voice commands a user shall be able to switch on and off home devices. The results obtained show that the home automation system can be controlled remotely from anywhere using bluethooth and android applications.

I. INTRODUCTION

The project aims at designing an advanced home automation system using Bluetooth technology. The devices can be switched ON/OFF using an android mobile through Bluetooth. Automation is the most frequently spelled term in the field of electronics. The hunger for automation brought many revolutions in the existing technologies. These had greater importance than any other technologies due to its user-friendly nature. These can be used as a replacement of the existing switches in home which produces sparks and also results in fire accidents in few situations. Considering the advantages of Bluetooth an advanced automation system was developed to control the appliances in the house. Bluetooth is a wireless technology that uses radio frequency to transmit data through the air. Bluetooth has initial speeds of 1mbps to 2mbps. Bluetooth transmits data in the frequency band of 2.4 GHz. It implements the concept of frequency division multiplexing technology. Range of Bluetooth technology is 30 feet. The controlling device for the automation in the project is a Microcontroller. The data sent from mobile over Bluetooth will be received by Bluetooth module connected to Microcontroller. Microcontroller reads the data and decides the switching action of electrical devices connected to it through Relays. The Microcontroller is programmed used embedded 'C' language. An embedded system is a combination of software and hardware to perform a dedicated task. Some of the main devices used in embedded products are Microprocessors and Microcontrollers. Microprocessors are commonly referred to as general purpose processors as they simply accept the inputs, process it and give the output. In contrast, a microcontroller not only accepts the data as inputs but also manipulates it, interfaces the data with various devices, controls the data and thus finally gives the result.

II. ARCHITECTURE

The CPU uses Harvard architecture with separate Program and Variable (data) memory interface. This facilitates instruction fetch and the operation on data/accessing of variables simultaneously.
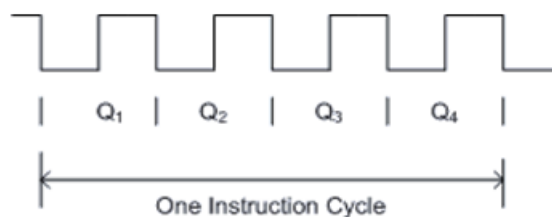
Architecture of PIC microcontroller
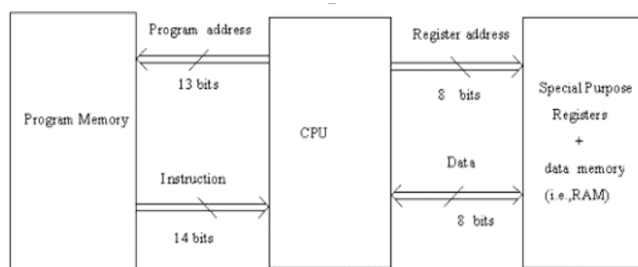
PIC Microcontroller Clock:
Most of the PIC microcontrollers can operate up to 20MHz. One instructions cycle (machine cycle) consists of four clock cycles
Relation between instruction cycles and clock cycles for PIC microcontrollers

Instructions that do not require modification of program counter content get executed in one instruction cycle.

III. FEATURES

Regular Appliance support: The voice based home automation system won't require any specialized appliances with support for bluethooth or technology.

Voice Command: The project will have an android application in the android device. The application is designed to receive the voice commands from the user. The users' applications automatically convert the voice signals into digital data and send these signals to the microcontroller.

LPG Sensor: MQ_6 Sensor is simple to use liquefied petroleum gas (LPG) sensor, suitable for sensing LPG which is composed of mostly propane and butane concentrations in the air. This sensor can detect gas concentrations anywhere from 200-10000 ppm.
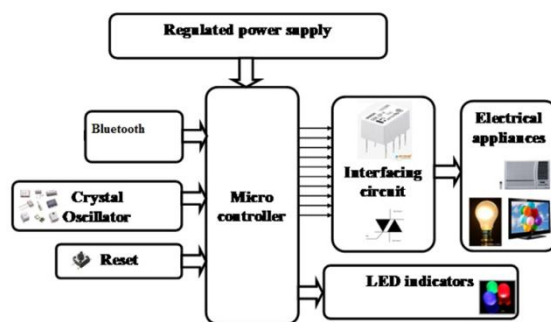
IV. SOFTWARE REQUIREMEMTS

BASIC 4 ANDROID: Used for coding of android application.
ARDUINO.CC

V. LITERATURE REVIEW

As per our survey currently there exists system neither at cheaper rates nor easy to handle. Various systems are hard to install, difficult to use and maintain. Current systems are generally proprietary, closed and not very user friendly. By using ARUDINO or GSM and low cost sensors for the first time we can increase the user friendly nature of the system. In the automation part of the project an android applications has been proposed which will act as user interface through a menu like display will be created from which a user accordingly to his wish can choose any option for any automation in the home design.First time android application is used to automate the automation system.

VI. BLOCK DIAGRAM

VII. CONCLUSION

Integrating features of all the hardware components used have been developed in it. Presence of every module has been reasoned out and placed carefully, thus contributing to the best working of the unit. Secondly, using highly advanced IC's with the help of growing technology, the project has been successfully implemented. Thus the project has been successfully designed and tested.

Future Scope:

Our project "Bluetooth based Wireless advanced Home Automation system" is mainly intended to control devices using PC through Bluetooth module. The controlling device of the whole system is a Microcontroller. Bluetooth module, relays are interfaced to the Microcontroller. Relays are fed as input to the Microcontroller. The Microcontroller processes this data and transmits over Bluetooth, which will be received from PC. In achieving the task the controller is loaded with a program written using Embedded 'C' language. The controlling device for the automation in the project is a Microcontroller. The data sent from PC over Bluetooth will be received by Bluetooth module connected to Microcontroller. Microcontroller reads the data and decides the switching action of electrical devices connected to it through Relays and Triac switches. The Microcontroller is programmed used embedded 'C' language.

REFERENCES

[1] Raj kamal –Microcontrollers Architecture, Programming, Interfacing and System Design.
[2] Mazidi and Mazidi –Embedded Systems.
[3] PCB Design Tutorial –David.L.Jones.
[4] PIC Microcontroller Manual – Microchip.
[5] Pyroelectric Sensor Module- Murata.
[6] Embedded C –Michael.J.Pont.
[7] Mohhamad Izhar Ramli, Mohhamad Helmy ABD Wahab – " TOWARDSSMART HOME CONTROL ELECTRICAL DEVICES
[8] E.Yavuz, B. Hasan, I.Serkan – Safe and Secure PIC based remote control application for intelligent home.