

Verbalised Home Automation

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ABSTRACT:

The past decade has seen significant advancement in the field of electronics. Various 'intelligent' appliances such as cellular phones, air-conditioners, home security devices, etc. are said to realize the concept of a smart home. They have given rise to a Personal Area Network in home environment, where all these appliances can be interconnected and monitored using a single controller. A wireless home network that does not incur additional cost of wiring would be desirable. Voice technology which has emerged in late in 1960s is an ideal solution for this purpose. The reason for choosing voice is the fact that it is easily being reproduced by humans. Besides that, usage of voice gives the control system that can be effective and convenient. This project involves a simple switching system that uses the transmission along with relays to do all the connection of the power to the devices. The project asks to hear the command given by the user and successfully executes the correct output. The project is a small scale design which consists of 8 commands that will be used to control 2 different switches. The command is able to switch on and off each of the switches.

I. INTRODUCTION:

Home automation system is characterized by the ability of the system to perform tasks to initiate or control appliances or devices in home. From long time, the controlling is done manually by the users such as walking to the switch and switching the button on but as time passed, the arrival of remote control system gave the users the alternative way to control such appliances without doing it manually. This advanced technology is using the voice to act as a controlling medium to initiate or control the appliance. Verbalised Home Automation for home appliances project is a project to produce one system that can control any electrical appliances in the house such as lamp, fan, radio, television, etc. by using user's voice. User's voice is an input to activate the electrical appliances through this system. This system can make the daily work at home easier for disabled user who uses the system; this disabled user does not need any other person's help each time they want to use some electrical appliances.

II. PREVIOUS WORK:

For the first time people noticed the high technology in dwelling, they did some connection with home automation, and it was 1960s. Experts considered that by the end of the century people would live in smart homes that contained independent household machines. Although many of the machines in these visions are today technically possible to manufacture the present situation is not exactly the same as what the expert's decades ago. In the 1960s, there were not so much interactive technologies. Even though Stanford University researched a lot of this kind of technology, they didn't become so successful. They concluded some principal reason for not succeeding is scientific research. Some of the factors are due to the lack of motivation to increase productivity in domestic work. They considered the less involvement of users of the technology in the design process. They also concluded the view held by product designers that domestic technology is unexciting and the continued focus on stand-alone appliances in the design of new technology. Home automation satisfies the resident's needs and desires by adjustable light, temperature, ambient music, safety and security, even arrangement of wire. Home automation technologies are the latest fascinations with housing mechanism. However, with the appearance of new electronic technologies and their combination with older, traditional building technologies the smart home is at last becoming a reality. In 1975, a company called Pico Electronics developed and patented

the X10 Power Line carrier technology. The company had already tried nine different approaches with no success, but while developing the system for tenth time they finally managed to succeed, so they decided to call the technology X10. The idea behind X10 was to transmit a 120kHz signal on the electrical power line. Every signal was specifically coded with a House and Unit Code. Although, such technologies had been developed for the past 50 years none of them was implemented in any similar fashion. After the patented work it just took a few years for introducing their first production into the market. So in 1978 they release the X10 protocol to the market. Due to the fact that transmission was done reusing power lines, it was relatively cheap because no additional wiring was needed.

III. PROPOSED WORK:

The project includes hardware and software as well. There are some major parts that are included in hardware such as:

3.1 TRANSFORMERS:

We have used the step down transformer that is used to convert 220V to 12V power such that so that the system can work. It converts high voltage, low current power into low voltage and high current power.

3.2 RECTIFIER :

For rectifiers, some of the components that we used are as follows:

3.2.1 DIODE (IN4007):

PN junction diode is used because of its two main features that are low forward voltage drop and high surge current capability.

3.2.2 CAPACITORS:

It is a passive two-terminal electrical component used to store electrical energy temporarily in an electric field. In the project, 2 capacitors of 1000 micro farad are used.

3.2.3 REGULATOR:

We have used the 7805 (IC) regulator. The AC power supply gets converted into constant DC by this circuit. By the help of voltage regulator, DC unregulated output will be fixed to a constant voltage. The circuit is made up of linear voltage regulator 7805 along with rectifier made up from diodes.

3.3 CONTROLLER:

The 40 pin 89C52 we have used belongs to 8051 micro controller family.

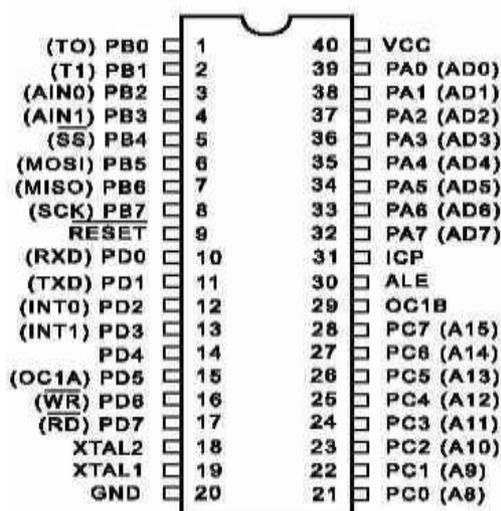


Fig. 1 Pin Diagram of AT89C52 Microcontroller

There are 4 ports in 89C52 microcontroller that is P0, P1, P2 and P3. 80C52 microcontroller belongs to 8051 microcontroller family. All the 4 ports have further 8 pins. 1-20 are negative pins. 31-40 are positive pins.

P0- External count input to timer.

P1- Reload trigger and direction control.

P2- These are 8 bit input/output port pins.

Pin number 9 is the reset pin.

Pin number 20 is the ground pin.

Now, pin number 21 to pin number 28 are 8 bit input/output pins. These are high-order address bits when interfering with external memory.

Pin number 29 is Program Store Enable (PSEN). It reads from external program memory.

Pin number 30 is ALE/Prog where ALE is address latch enable and Prog is Program pulse input during flash programming.

Pin number 31 is EA/VPD that is External Access Enable and Programming Enable Voltage; 12V (during flash programming).

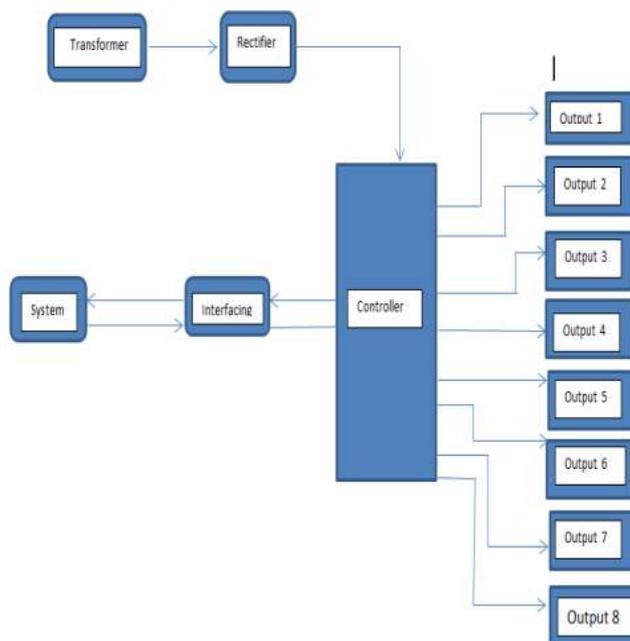
Pin number 32 to Pin number 39 that is P0.7/AD7 to P0.0/AD0 are 8 bit input/output port (P0) pins. These are low address order bits.

Pin number 40 is supply voltage (Vcc) that is 5v (upto 6.6V).

3.4 INTERFACING:

For interfacing, IC max 232 is used. The max 232 is an integrated circuit that converts TTL (Transistor to Transistor Language) to serial language or vice-e-versa. TTL became the foundation of computers and other digital electronics. Even after much larger integrated circuits made multiple circuit-board processors obsolete, TTL devices still found extensive use as the “glue” logic interfacing more densely integrated components. TTL devices were originally made in ceramic and plastic dual-in-line (DIP) packages, and flat pack form. TTL chips are now also made in surface-mount packages. Successors to the original bipolar TTL logic often are interchangeable in function with the original circuits, but with improved speed or lower power dissipation. IC has 16 pins.

3.5 Block Diagram



IV. CONCLUSION:

So far we have displayed a real time based model having ability to demonstrate the control of basic home appliances on human voice. To provide greater performance and speed, your voice should remain compatible with the hardware and that’s what we have tried in our project. And sometimes problem can be there when some letters or phrases cannot be determined by the software. The scope of the project is

quite high as it can be possible by developing an app to your cell phone and control can be made through them.

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