Controlling the Home Appliances Using Keil Software


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Abstract-
In the recent times, we are using the computers and other devices for controlling the electronic devices like motor, speaker, bulb and etc. These we done either by using man power or switches. So, in order to overcome this difficulty, we have made use of controlling the home appliances using keil and proteus software’s for simulation. In this paper, we are controlling the home appliances by using the microcontroller 8051 by interfacing it with the driver circuit ULN2003a in a faster, cheaper and efficient way. For example by pressing the button we can control the switching operations. In order to do that, we are writing a KEIL program and then creating the hex file and simulating the program by using the PROTEUS software.

Keywords-Microcontroller, ULN2003a, KeilVision 3.0, Proteus.

I. INTRODUCTION
Home automation is a modern technology that modifies our home to perform different sets of task by itself. Home automation is profiting more recognition among the people not just for home modification but in industrial and business fields too. It is constantly improving its flexibility by incorporating modernized features to satisfy the increasing demand of the people. With the help of advanced home technologies, there is increased comfort, greater security in life and safety.

8051 is an 8-bit class of microcontroller developed by Intel in 1981. This is the most popular class of microcontroller being utilized almost all around the world. This microcontroller had been likewise called as “system over a chip” given it features 128 bytes associated with RAM MEMORY, 4K bytes associated with ROM, 2 Timers, 1 Serial slot, in addition to several plug-ins using one chip. The CPU could work for only 8 bits associated with files at a time because 8051 can be an 8-bit brand. In the event that your data is larger than 8 pieces after that the item really needs to be cracked in to elements in order that the CPU can easily procedure easily. Almost all suppliers have put 4K bytes associated with ROM though the amount of ROM may be exceeded up to 64K bytes.

The ULN2001A, ULN2002A, ULN2003 and ULN2004A tend to be higher voltage, higher recent

Darlington arrays just about every comprising 7 open up extractor

Darlington pairs with frequent emitters. Each route scored on 500mA and will withstand peak currents regarding 600mA. Reductions diodes tend to be integrated with regard to inductive load driving plus the advices tend to be pinned other your components to de-stress aboard page layout. These kinds of versatile devices are of help with regard to driving an array of lots which include solenoids, relays DC motors; LED displays filament lamps, energy produce brains and higher power buffers. The ULN2001A/2002A/2003A and 2004A tend to be furnished throughout of sixteen flag plastic-type DROP programs having a birdwatcher guide body to relieve energy level of resistance.

II. METHODOLOGY
The proposed design is an intelligent home appliance control system which controls the home appliances like Bulb, Fan, TV, fridge, microwave, etc. This system has evolved as a result of thorough study of the different system.

This proposed intelligent home appliance control system is developed through Intel MICROCONTROLLER 8051. Here we have taken the stepper motor and electric bulb for this process.

III. EXISTING METHOD:

i. Stepper Motor:
This is an extraction to two phase unipolarstepper motor interfacing with AT89C51. In the previous methods, transistors switches were used to interface the stepper motor with the microcontroller.

ii. Electric Bulb:
An electromagnet relay is a switch which is used to switch High Voltage or Current using Low power circuits. It magnetically isolates low power consuming circuits from high power circuits. It is activated by energizing an electromagnet, coil wounded on a soft iron core. A relay should not be directly connected to a microcontroller; it needs a driving circuit due to the following reasons.

- A microcontroller will not be able to supply current required for the proper working of a relay. The maximum current that an AT89C51 microcontroller can source or sink is 15mA while a relay needs about 50 – 100mA current.
- A relay is activated by energizing its coil. Microcontroller might stop working by negative voltages produced in the relay due to its back EMF.

IV. PROPOSED METHOD

a. Stepper Motor:
The traditional means of dominant the speed of DC motor that is by controlling coil voltage and current reduces the potency, a large quantity power is wasted in controller resistance and this can be price too. So, associate electronic means is plan to control speed of
DC motor that reduces value, has higher efficiency, larger responsibilities, and fast response.

b. Interfacing relay with 8051 using uln2003:

When we need more than one relays, using transistors and diodes become heavy. In these cases we can make use of ULN drivers. These are monolithic IC’s which consists of High Voltage High Current Darlington transistor arrays. When using these driver ICs we don’t need to connect the diode as they have built in clamp diodes. Here we are using ULN2003a for demonstration.

A. WORKING OF STEPPER MOTOR

In coming with embedded controlling home appliances Interfacing DC motor to 8051 forms in a necessary halfan eleganc 8051-dc motor system has basically two components.

The primary half may be appropriate package to operate and second half may be a appropriate driver circuit. Interfacing the Dc motor onto 8051 micro controller is not potential. Connecting DC motor with microcontroller directly, causes many issues like voltage spikes whereas reversing the direction of rotation may simply injury the microcontroller, most current which will be source or ruined from a 8051 microcontroller is fifteen mA at 5v. However a DC motor want a lot of currents than the present delivered by microcontroller and to work motor, will solely be consummated if the voltages measure 6v, 12v etc, relying upon the sort of motor used.

The proper functioning of the microcontroller is additionally littered with the rear electromotive created by Emotor. Thus to beat such downside H-bridge using freewheeling diode, electronic transistor or clamp diodes square measure used. Clamp diodes square measure measure on to overcome the impact of back electromotive force. But using electronic transistor, diodes makes our circuit large. Thence to beat this we have a tendency to use L293D drivers. It is quadruple H-bridge driver. Such variety of ICs needn’t have to be compelled to connect any electronic transistor or diode. We are able to simply management the switch of L293D employing a microcontroller. And thence speed of DC motor is controlled via small controller.

B. CONSTRUCTION

The first combine of drivers is connected to DC motor and it’s enabled by connecting EN1 to logic HIGH (5V). L293D receives the logic voltage from the Vss pin; thence the logic voltage is 5v.

C. PROTEUS OUTPUT

D. TABULATION:

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<td></td>
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</tr>
<tr>
<td>2</td>
<td>Crystal oscillator</td>
<td>X1</td>
<td>24mhz</td>
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</tr>
<tr>
<td>3</td>
<td>Dc motor</td>
<td>Ammeter</td>
<td>12v</td>
<td>1</td>
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<tr>
<td>4</td>
<td>Driver Circuit</td>
<td>Analog</td>
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</tr>
</tbody>
</table>

Table.1: Stepper motor requirements

E. WORKING OF ELECTRIC BULB

Write the assembly code in 8051 machine, compile it and check for errors. Once the code is error free, run it and check the output within the machine. After checking the code within the machine, load the code (in .HEX format) into Atmel 89C51 microcontroller mistreatment Universal SP3 coder. Make connections as shown within the circuit diagram. Switch on the circuit provided and observe the blinking of light-emitting diode. Now decrease the delay time within the code and observe the rise in blinking rate.

F. INTERFACING RELAY WITH 8051 USING DRIVER CIRCUIT

Transistor is wire as a switch which drives the relay. When the first pin of port P2 goes high, the base current flows through the 10k resistor. This in turn switches the transistor ON. The relay gets enough current through the 12v supply to switch the secondary circuit ON.

G. PROTEUS OUTPUT

Fig.2: Electric bulb result
H. TABULATION

<table>
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<tr>
<th>S.NO</th>
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<th>TYPE</th>
<th>RANGE</th>
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<td>5</td>
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<td>AC</td>
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</tbody>
</table>

| Table.2: Requirements of electric bulb |

I. WORKING OF SPEAKER

Audio systems are typically enclosed within a fencing which usually can be a rectangle or square field crafted from timber as well as occasionally plastic material. Whereby substantial fidelity imitation involving noise is required, numerous audio system could be mounted from the exact same fencing, every recreating a part of the particular hear able volume assortment.

V. CONCLUSION:

This design is novel and has achieved the target of controlling home appliances to work at a low cost, secure and remotely. This system provides home safety and convenience and is cost effective as compared to the previously existing systems. This design is suitable for most of the applications in the field of electronics. This system is convenient to use and more levels can be further developed.

VI. REFERENCES

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