Home Automation System Using Dual Tone Multi Frequency (DTMF)

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I. INTRODUCTION

Generally, we control the home appliances using electrical wires and switches but there are two problems. First, the switches are located on walls and one has to go near them and control the light/fan/bulb. This is mainly problem for the elderly and physically handicapped person to operates these switches. Second problem is fire due to short circuit of electrical wires. So, in this project we are controlling the home appliances wirelessly using Dual Tone Multi Frequency (DTMF) technology. Other important feature is that we are not using any microcontroller for this project. Here we are using MT8870 IC which will decode the dial tone to digital output for controlling the devices.

In DTMF technology, we are using mobile phones for controlling the appliances. When we press a key in phone, it generates a tone which is the combination of two frequencies. These two frequencies are row and column frequencies. The row frequency is low and column is high and they are design in such a way they will not produce any harmonics to create the distortion. So the tone generated from each button is different from each other. The tone generated by keypad button will be detected by DTMF decoder and relay will turn on/off to control the device connected.

Keyword: Home Automation, DTMF decoder, Relay, Cell-phone etc.
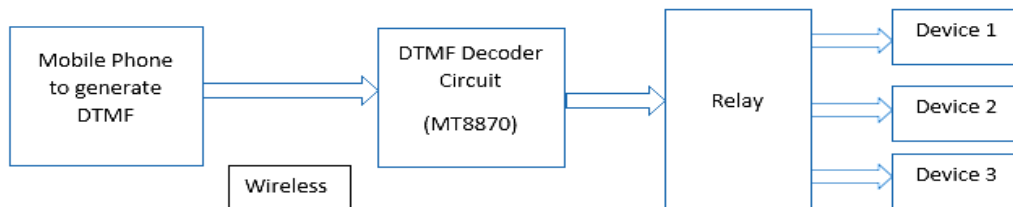
II. BLOCK DIAGRAM

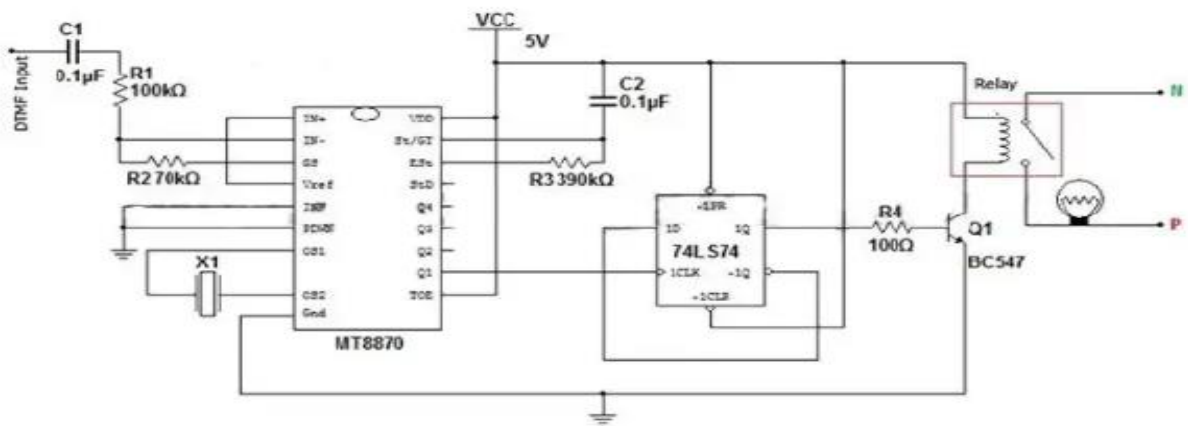Fig. 1 Block diagram of DTMF System

III. CIRCUIT DIAGRAM

Fig. 2 Circuit Diagram

IV. COMPONENT USED

- Regulated power supply
- DTMF decoder IC (MT-8870)
- Resistors (100Ω; 100kΩ; 70kΩ; 390kΩ)
- Capacitors (100µF x 2)
- Audio Jack
- Male headers
- Capacitors (0.1µF x 4)
- Crystal oscillator (3.57 MHz)
- IC 7474 D flip flop
- BC5478 Transistor
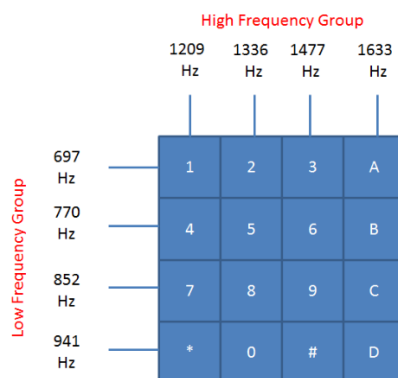- 6 V Relay
- LED's
- Diodes
- Switch

DTMF Touch Pad

Fig. 3   DTMF Touch Pad

V. CONCLUSION

In this project we have controlled a bulb using the relay (as switch), When we press a button on mobile keypad, a tone is generated and the relay is controlled to on/off the bulb.
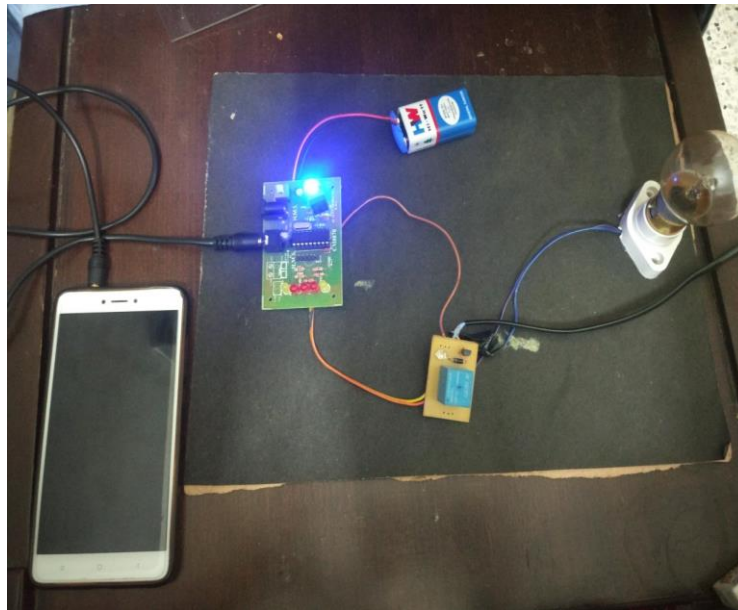

Fig. 4   Practical project snap

VI. APPLICATIONS

1. Any high voltage appliance can be controlled.
2. This technology is free from electrical wire to reduce the fire hazards
3. This system can be used in industrial applications.
4. This system can be employed in houses, where people often forget to switch off electrical appliances

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