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TRENDY RESIDENCE MECHANIZATION USING BLUTOOTH AND SMART PHONE

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Abstract

The main objective of this project is to develop a home automation system with mechanical man application controlled remote.

Modern homes are bit by bit shifting from typical switches to centralized system, involving wireless controlled switches.

Presently, conventional wall switches are more difficult for the elderly or physically handicapped people to do.

In Bluetooth based home automation system the home appliances are connected to the microcontroller PCB board at input output ports using TRIAC. The program of microcontroller PCB board is based on high level interactive C language of microcontrollers; the connection is made via Bluetooth. The password protection is provided so only authorized user is allowed to access the appliances. The Bluetooth connection is established between microcontroller PCB board and phone for wireless communication. One circuit is designed and implemented for receiving the feedback from the android smart phone, which indicate the status of the device

Remote operation is achieved by any smart-phone/Tablet etc., with Android OS, upon a GUI (Graphical User Interface) based touch screen operation.

In order to achieve this, Android application act as transmitter, which sends ON/OFF commands to the receiver where loads are connected.

By operational the required remote activate the transmitter, the hundreds is turned ON/OFF remotely through wireless technology.

The microcontroller used here is of 8051 family. The loads are interfaced to the microcontroller using Opto-isolators and TRIAC's.

Key words: Microcontroller, Blue thooth sensor, Opto isolator, Triac, Light, TV,Fan.

1.Introduction

Automation of the surrounding environment of a modern human being allows increasing his work efficiency and comfort. The fundamental of building an automation system for an office or home is increasing day-by-day with numerous benefits. Industrialist and researchers are working to build efficient and affordability automatic systems to monitor and control different machines like lights, fans, TV, AC based on the requirement. In the present times, we can find most of the people clinging to their mobile phones and smart devices throughout the day. Hence with the help of his companion a mobile phone, some daily household tasks can be accomplished by personifying the use of the mobile phone.

Definition

A Smart Home is one that provides its home owners comfort, security, energy efficiency (low operating costs) and convenience at all times, regardless of whether anyone is home. "Smart Home" is the term commonly used to define a residence that has appliances, lighting, heating, air conditioning, TVs, computers, entertainment audio & video systems, security, and camera systems that are capable of communicating with one another and can be controlled remotely by a time schedule, from any room in the home, as well as remotely from any location in the world by phone or internet.

1.1 Problem Statement

The house we are living has its own draw back. Some of the drawback of our present house are: - In our present home everything is controlled manually because of this to control every material we must go to the device, so it kills' time, it is difficult to control emergency things, especially for disable and old people it is hard for managing themselves.

1.2 Significance of the project

This project intends to design and simulate smart home automation.

- To make life pretty easy by saving time and energy
- It authors easy accessibility for old and disable people

1.3 Objective of the project

General objective

Our project aim is to design smart home automation by using Bluetooth, android smart phone and different electronics devices.

Specific objective

- To develop the block diagram of the project
- To design C code that will be loaded to the microcontroller.
- To interface microcontroller with Bluetooth module, LCD, optoisolator and TRIAC by using μ Keil code
- To simulate the design results in order to achieve the general objective

Goal of the project

- It can be used to control various home appliances.
- Managing all of your home devices from one place
- Flexibility for new devices and appliances.
- Save money and environment
- We can control device from a long distance, thus in case of access.
- Home appliances controlling using mobile is having a faster operation and very efficient.
- No need to carry separate remote or any other controlling unit.
- It is a robust and easy to use system.
- There is no need for extra training of that person who is using it

1.4 Methodology

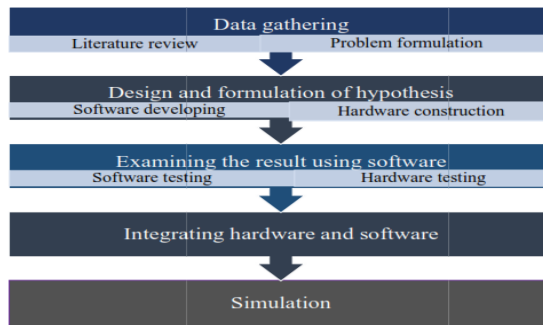


Figure 1. 1. Methodology of project

3. System Design

3.1 Project description

There are several steps to be applied in designing and simulation of smart home automation. The relevant information is gathered through literature review. Data on different hardware materials and smart home automation appliances in different developed countries, different researches and projects has been collected where the theoretical design is studied based on microcontroller.

The hardware development according to the circuit designed. This process is just only being preceded if each part of the circuit being improved is valid, else, it will be repeated until it is valid as the theoretical. Once the hardware development circuits have the output as the expected, then, the comparison for both hardware and theoretical analysis will be done. The next step will be where software structure is developed.

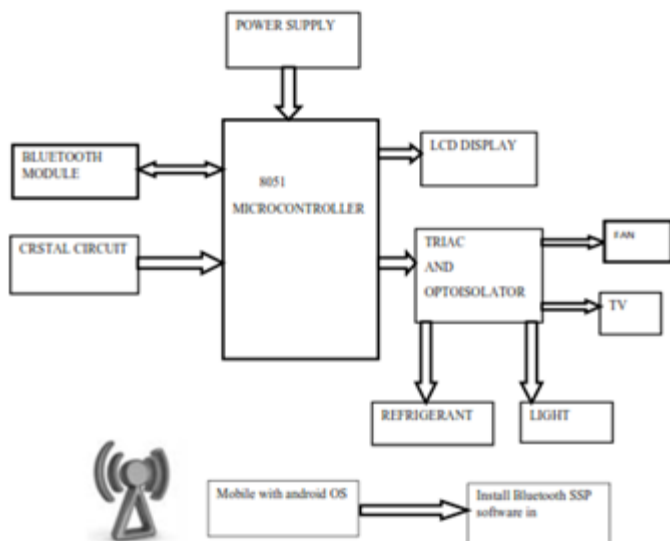


Fig 1.2 block diagram of system

4 Result and discussion

The power supply is provided first to the hardware and through voltage regulator, the circuit components receive their proper supply voltage. The command is received by the Bluetooth module from android smart phone and processed by the microcontroller in order to operate different loads. This all is done by the following procedure.

The overall Proteus circuit design:

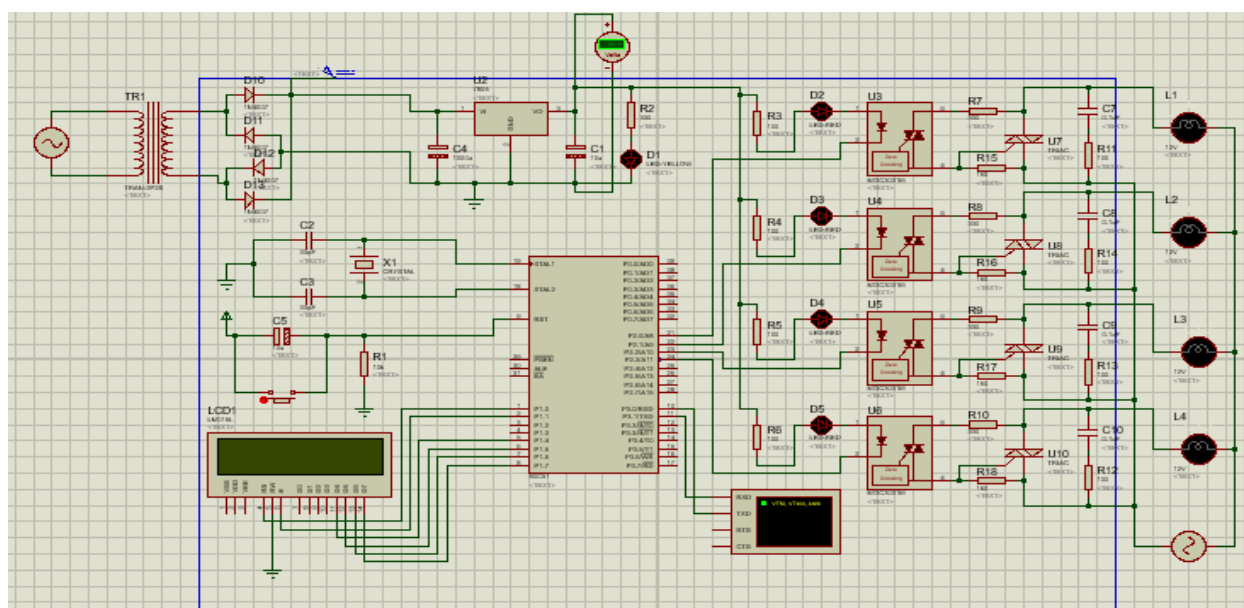


Figure 1. 3 overall Proteus circuit

When we start the overall program and the system is at normal function:

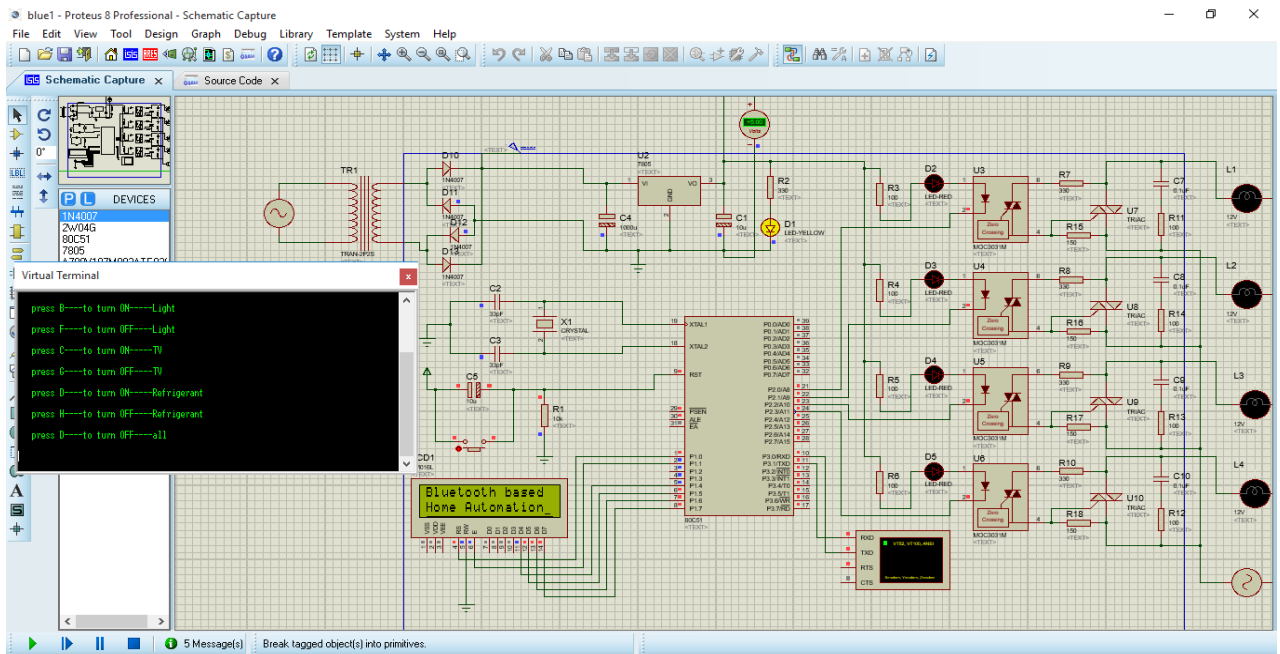


Figure 1. 4schematic diagram when the system at normal condition.

The virtual terminal

This show all the key elements and their purpose.

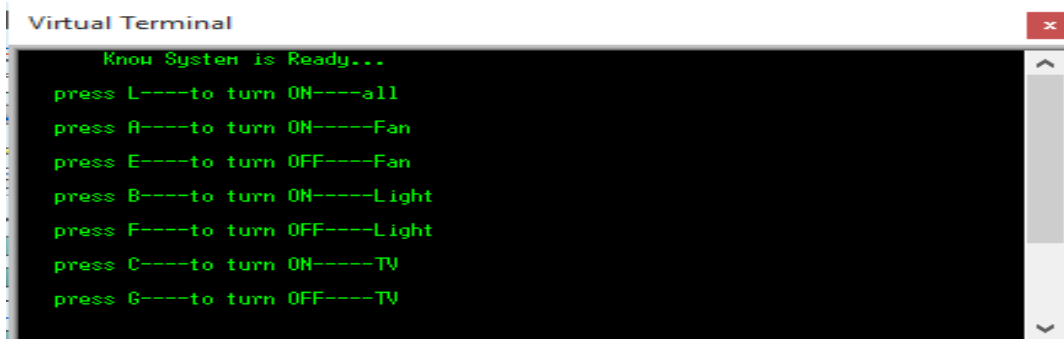


Figure 1. 5 virtual terminal

When we press L all switches are turn on

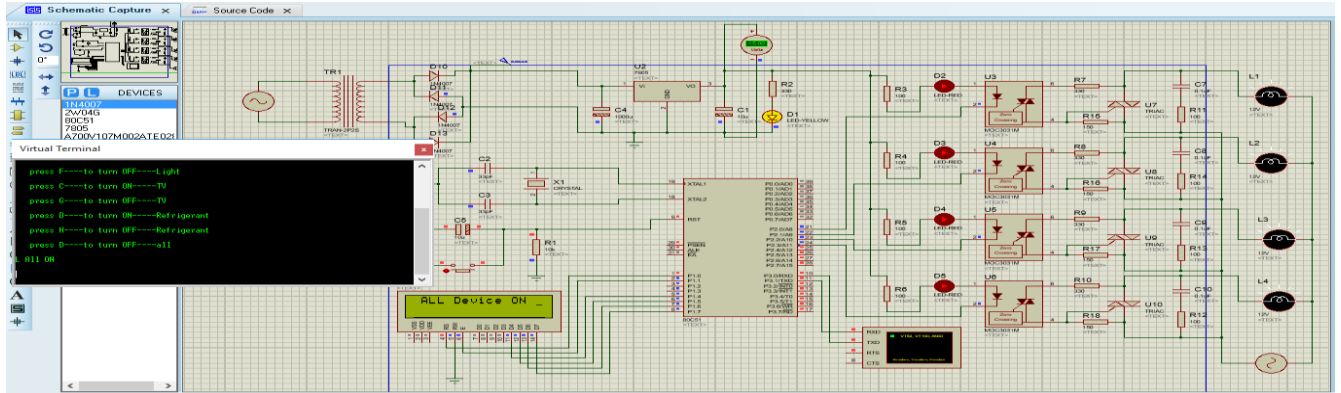


figure 1. 6 all loads are on

When we press R all switch are turn off

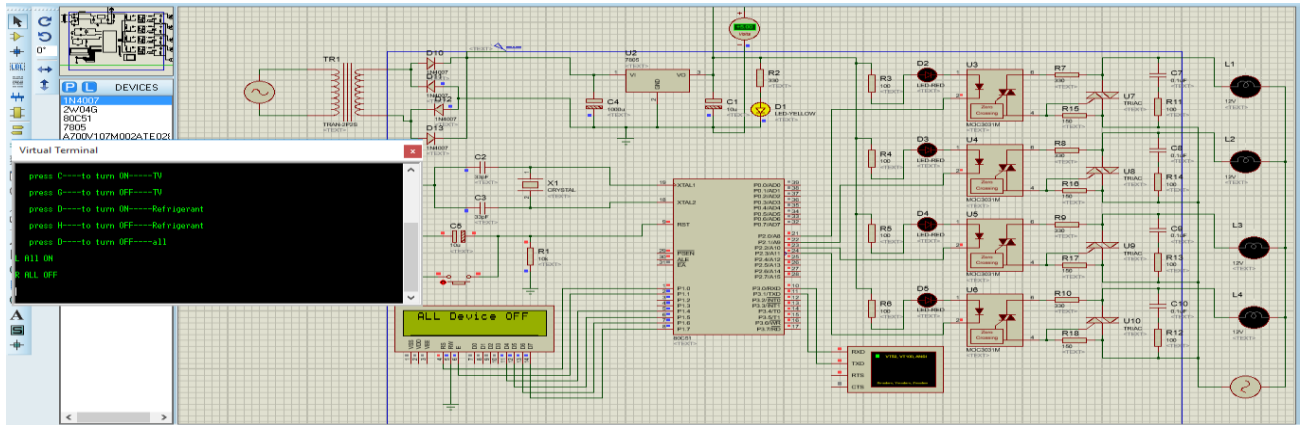


figure 1. 7 all loads are off

When we press A the Fan switch is on

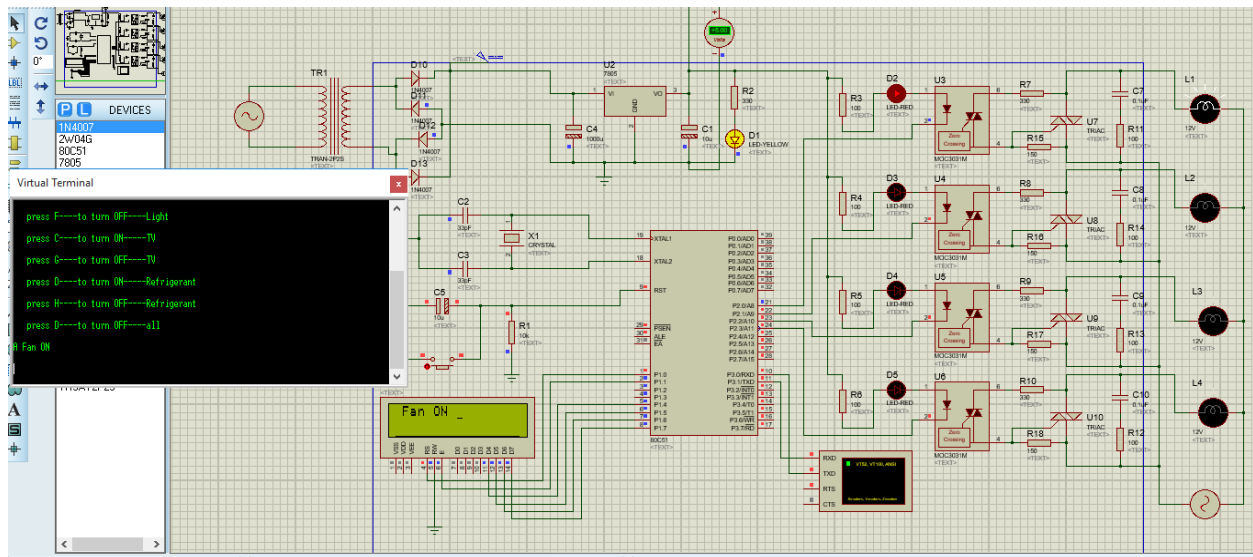


figure 1. 8 fan is on

When we press C the TV switch is on and also at this time the switch A is still on this means we can turn on any device Simulations as we wish.

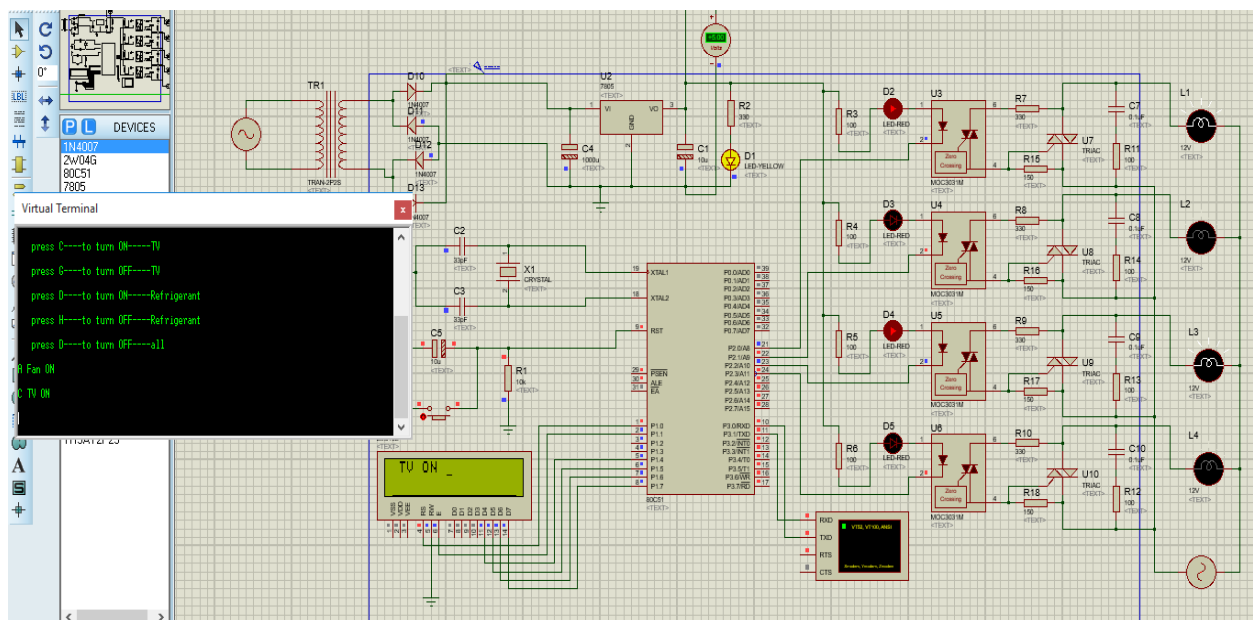


figure 1. 9 TV is on

When we press E switch the Fan is off

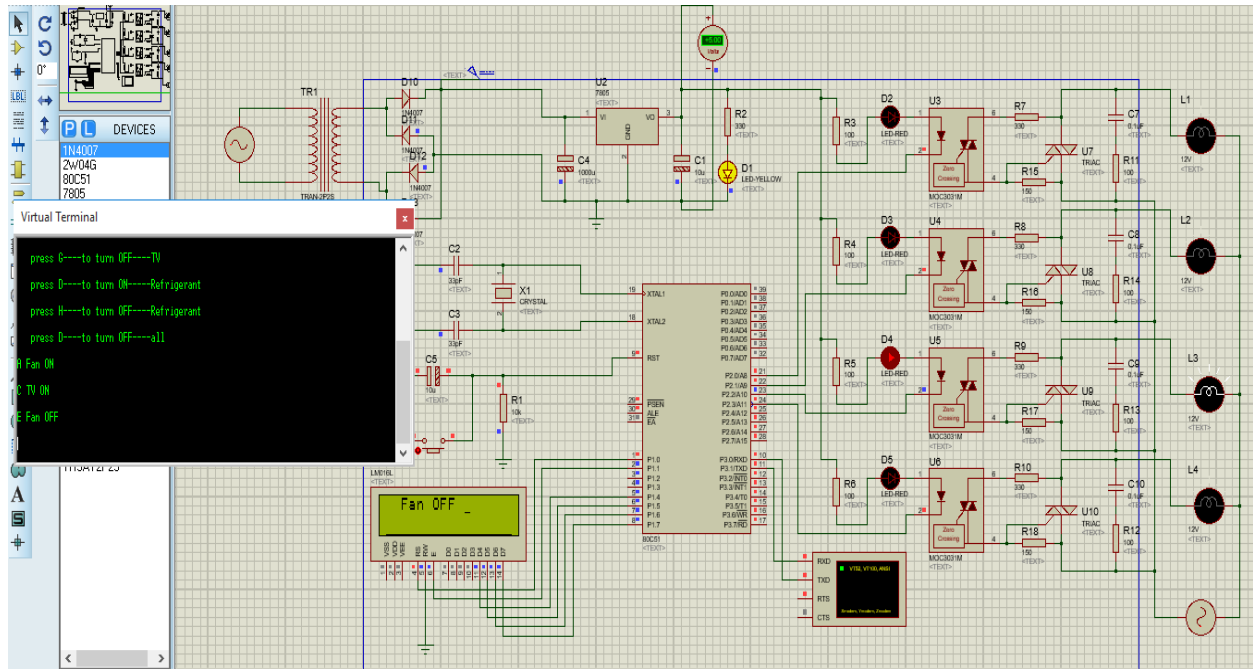


figure 1. 10 fan off

If we press any key rather than our key element it will display incorrect string

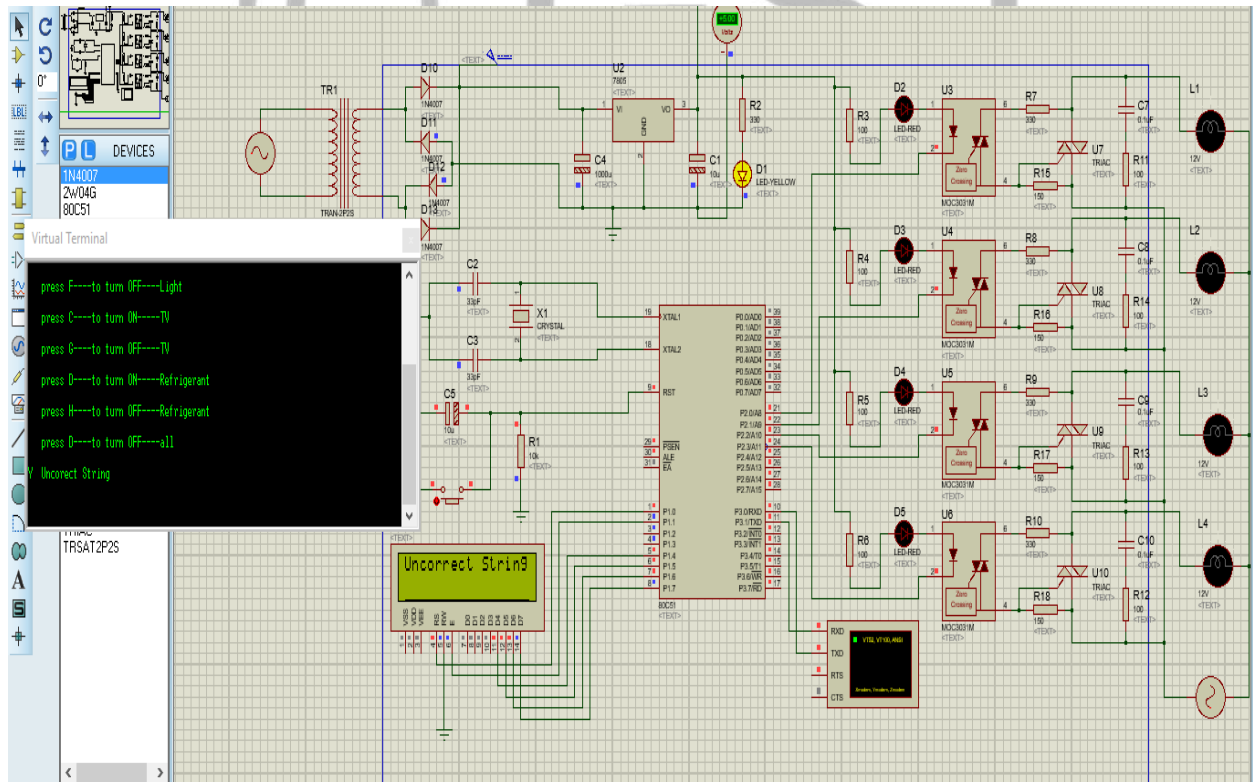


Figure 1. 11 incorrec string

5. Conclusion

The project we have undertaken has helped us gain a better perspective on various aspects related to our course of study as well as practical knowledge of electronic equipment's and communication. We became familiar with software analysis, with our project.

The extensive capabilities of this system are what make it so interesting. From the convenience of an android phone, a user is able to control and monitor virtually any electrical devices by using Bluetooth. This makes it possible for users to control home appliances from long distance without going to any device manually. The end product will have a simplistic design making it easy for users to interact with. This will be essential because of the wide range of technical knowledge that homeowners have. Finally we try to implement this system using hardware equipment's.

Trendy residence mechanization using Bluetooth and smart phone has met our objective and tested with troubleshooting to the best of our knowledge.

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