International Journal of Multidisciplinary Engineering in Current Research - IJMEC
Volume 8, Issue 4, April-2023, http://ijmec.com/, ISSN: 2456-4265

HOME APPLIANCES CONTROL USING REMOTE CONTROL SYSTEM

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Abstract: In recent years, wireless home automation systems have gained widespread interest. Controlling household appliances is simplified and safeguarded with a smart home. Smart home automation is the development of RF-based home automation technology. A "smart home" is a residence outfitted with automation technology. The technology behind home automation is rapidly developing, and it's already making houses safer and more comfortable places to live. Lights, fans, entertainment systems, security, temperature control, and more may all be remotely monitored and managed with the aid of these capabilities. We introduce a low-cost and trustworthy smart home solution that allows users to control household equipment without being there. Using radio frequency (RF) operated remotes, the developers of this concept automated the operation of standard household lighting controls (wall switches).

I. INTRODUCTION

Home automation based on wireless technology is getting huge attention of mass people in recent years. Smart home eases and secures the management of the home appliances.

Home automation creating new automation technologies for houses that will make them smart using RF technologies. These homes that use home automation technologies are smart home. This field of home automation is fastly emerging in technology making homes safer and better places to live. These features help users to virtually monitor and control home appliances like lights, fans, entertainment system, security, climate control etc.

We are presenting a low cost and reliable smart home system that assists the users to manage home appliances without the need of their physical presence.

The project RF based home automation system is developed to automate the use of conventional lighting mechanism(wall switches) in house by using RF controlled remote.

II. LITERATURE SURVEY

The project RF based home automation system is developed to automate the use of conventional lighting mechanism (wall switches) in our houses by using RF remote.The project requires a RF remote that is interfaced to moicrocotroller on transmitting side which sends ON/OFF signals to the receiver.Receiver are connected with loads that can be turned ON/OFF by operating remote switches on transmitter wirelessly.

Here the loads are interfaced to microcontroller by utilizing opto isolators and triacs.Thus the system serves a convenient way of lighting up the house without any physical movements.As technology is advancing so houses are also getting smarter.modern houses are gradually shifting from conventional switches to centralized control system,

ISSN: 2456-4265
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DOI: https://doi-ds.org/doilink/04.2023-76468878

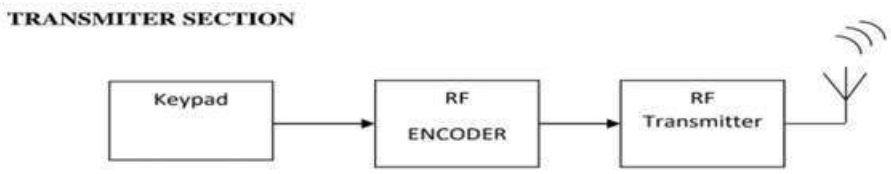
involving RF controlled switches. Presently, conventional wall switches located in different parts of the house makes it difficult for the user to go near them to operate. Even more it becomes more difficult for the elderly or physically handicapped people to do so. Remote controlled home automation system provides a simpler solution with RF technology.

III. WORKINGPRINCIPLE

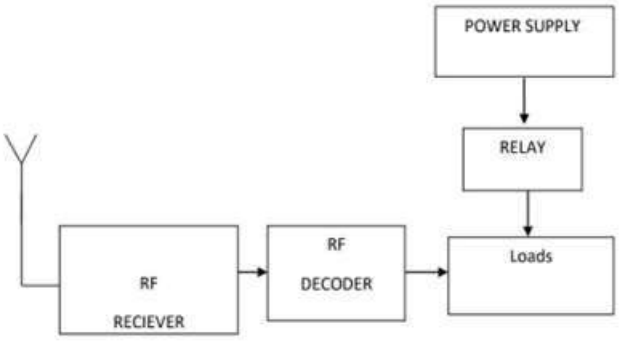
The project requires a RF remote that is interfaced to microcontroller on transmitter side which sends ON/OFF signals to the receiver. when we are pressing the button on RF remote, the encoder converts the parallel inputs into serial set of signals. These signals are serially transferred through RF transmitter to the receiveiving point. Receiver are connected with loads that can be turned ON/OFF by operating remote switches on transmitter wirelessly. At the receiver side decoder is present, decoder will decode the serial format and retrieve the original signals as outputs and here we are connected relay, it sends the signal to circuit breaker. Hence circuit breaker ON/OFF according to the command/condition.

IV. BLOCKDIAGRAM

TRANSMITTER:



RECEIVER:



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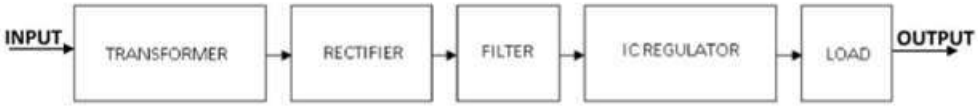
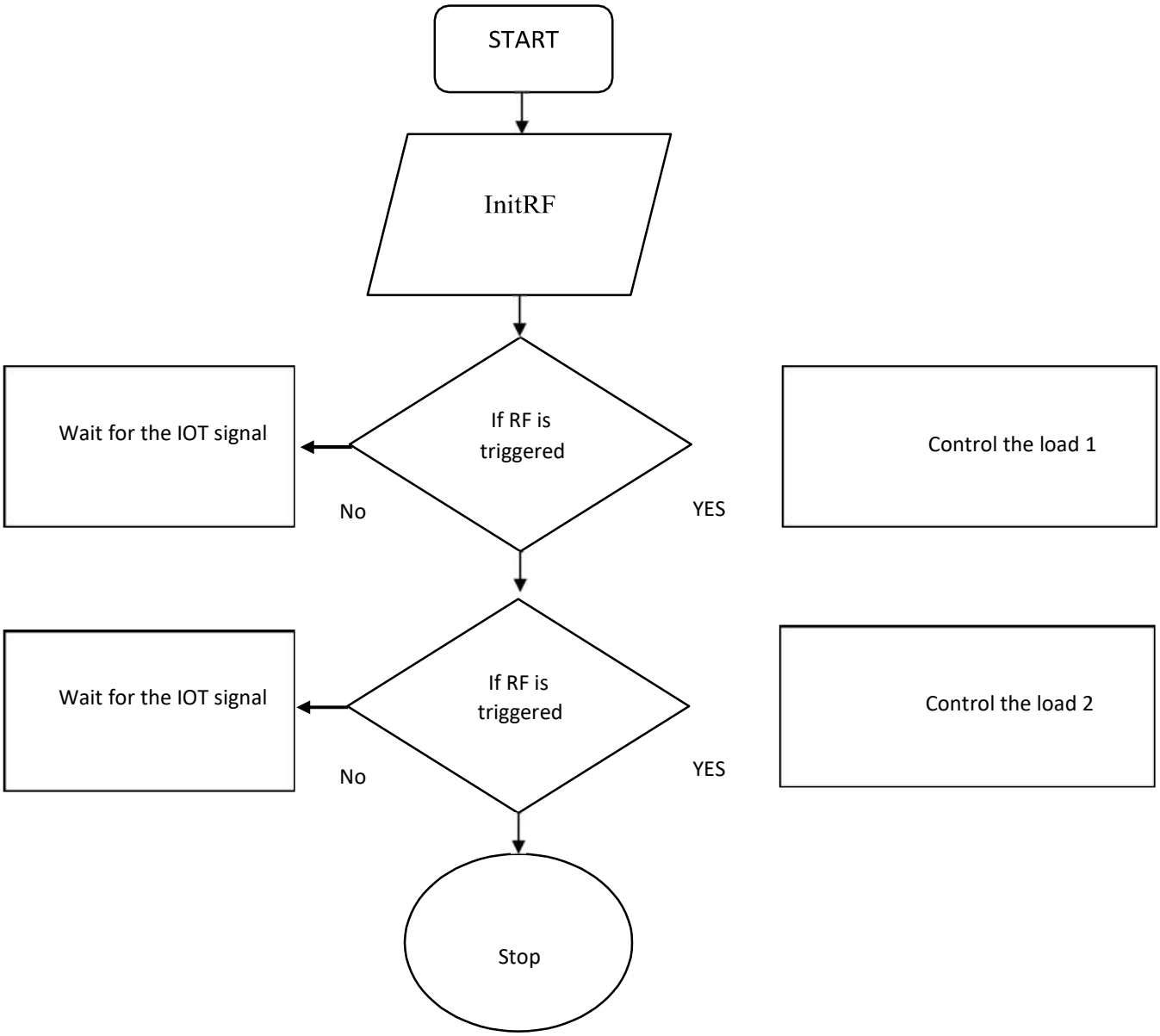
POWER SUPPLY:



V. FLOWCHART



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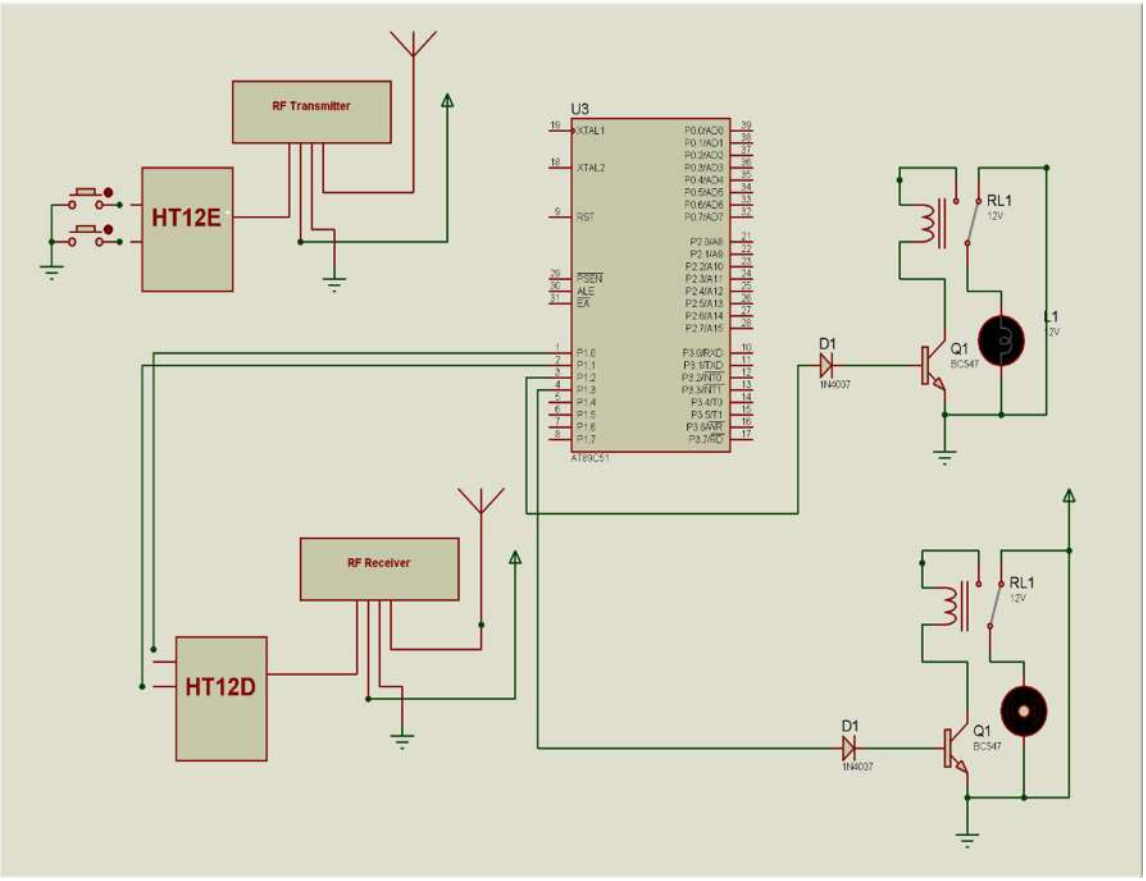
VI. SCHEMATICDIAGRAM



VII. HARDWAREDESCRIPTION

a. *POWERSUPPLY*

The power supply section is the section which provides +5V for the components to work.ICLM7805 isused for providing a constant power of +5V.

The ac voltage, typically 220V, is connected to a transformer, which steps down the ac voltage down to the level of the desired dc output. A diode rectifier then provides a full-wave rectified voltage that is initially filtered by a simple capacitor filter to produce a dc voltage.This resulting dc voltage usually has some ripple or ac voltage variation.

A regulator circuit removes the ripples and also retains the same dc value even if the input dc voltage varies, or the load connected to the output dc voltage changes. This voltage regulation is usually obtained using one of the popular voltage regulator IC units.

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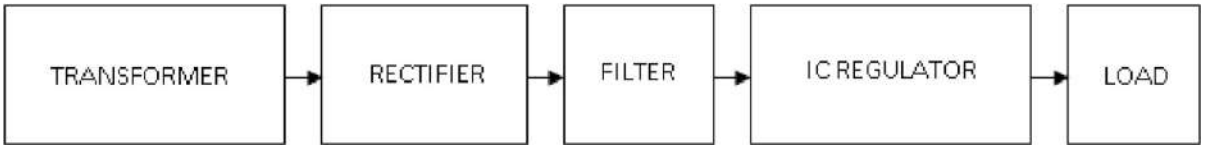

Figure3.1 Block Diagramof Power Supply

b. ***MICROCONTROLLER***

A Microcontroller (orMCU) is a computer-on-a-chip used to control electronic devices. It is a type of microprocessor emphasizing self-sufficiency and cost-effectiveness, in contrast to a general-purpose microprocessor (the kind used in a PC).A typical microcontroller contains all the memory and interfaces needed for a simple application,where as a general purpose microprocessor requires additional chips to provide these functions.

A microcontroller is a single integrated circuit with the following key features:

- central processing unit - ranging from small and simple 8-bit processors to sophisticated 32-or 64-bit processors
- input/output interfaces such as serial ports
- RAM for data storage
- ROM,EEPROM or Flash memory for program storage
- Clock generator - often an oscillator for a quartz timing crystal, resonator or RC circuit Microcontroller sare inside many kinds of electronic equipment(see embedded system).

They are the vast majority of all processor chips sold.Over 50% are "simple" controllers, and another 20% are more specialized digital signal processors (DSPs)(ref?).A typical home in a developed country is likely to have only one or two general-purpose microprocessors but somewhere between one and two dozen microcontrollers. A typical mid range vehicle has as many as 50 or more microcontrollers. They can also be found in almost any electrical device: washing machines, microwave ovens, telephones etc.

c.RFMODULE (RadioFrequency)

Radio Frequency, any frequency within the electromagnetic spectrum associated with radio wave propagation. When an RF current Is supplied to an antenna,an electromagnetic field is created that then is able to propagate through space.Many wireless technologies are based on RF field propagation.

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(a).ReceiverModul

(b).Transmitter Modules

Radio Frequency. The 10k Hz to 300 GHz frequency range that can be used for wireless communication.

Radio Frequency.Also used generally to refer to the radio signal generated by the system transmitter, orto energy present from other sources that may picked up by a wireless receiver.

- Wireless mouse,key board
- Wireless data communication
- Alarm and security systems
- Home Automation,Remote control
- Automotive Telemetry
- Intelligent sports equipment
- Hand held terminals,Data loggers
- Industrial telemetry and tele–communications In-building environmental monitoring and control.

d.IR SENSOR

IR sensor is very useful if you are trying to make a obstacle avoider robot or a line follower. In this project we are going to make a simple IR sensor which can detect a object around6-7cm.IR sensor is nothing but a diode,which is sensitive for infrared radiation.This infrared transmitter and receiver is called as IR TX-RXpair.

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VIII. RESULT & DISCUSSION

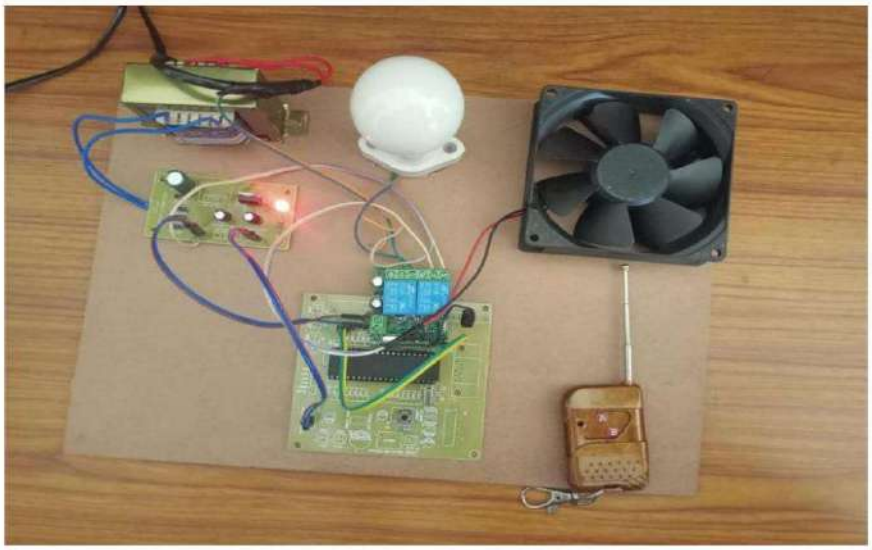

Figure 1. Receiver Side

Figure 2. Transmitting Side

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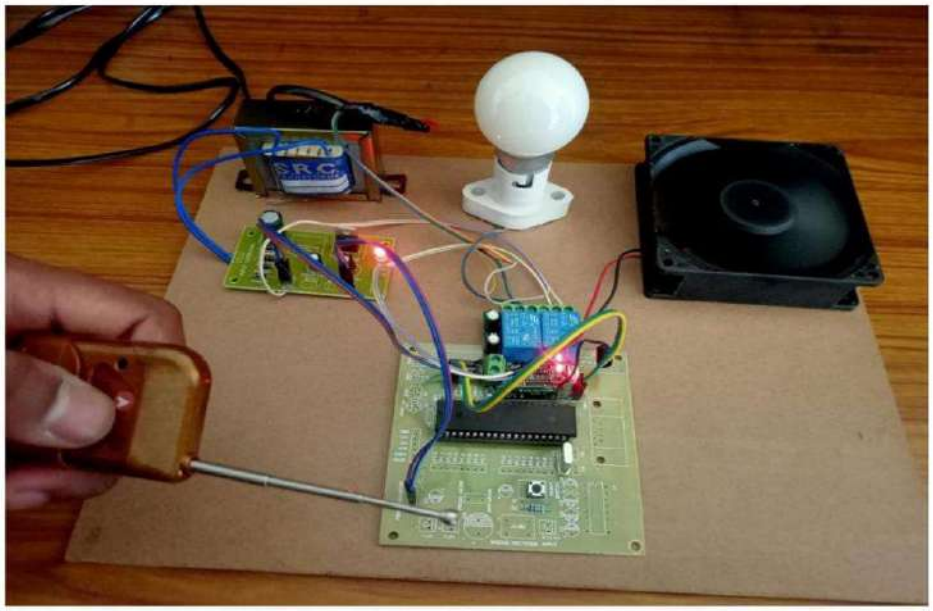

Figure 3. Circuit when controlling only one load

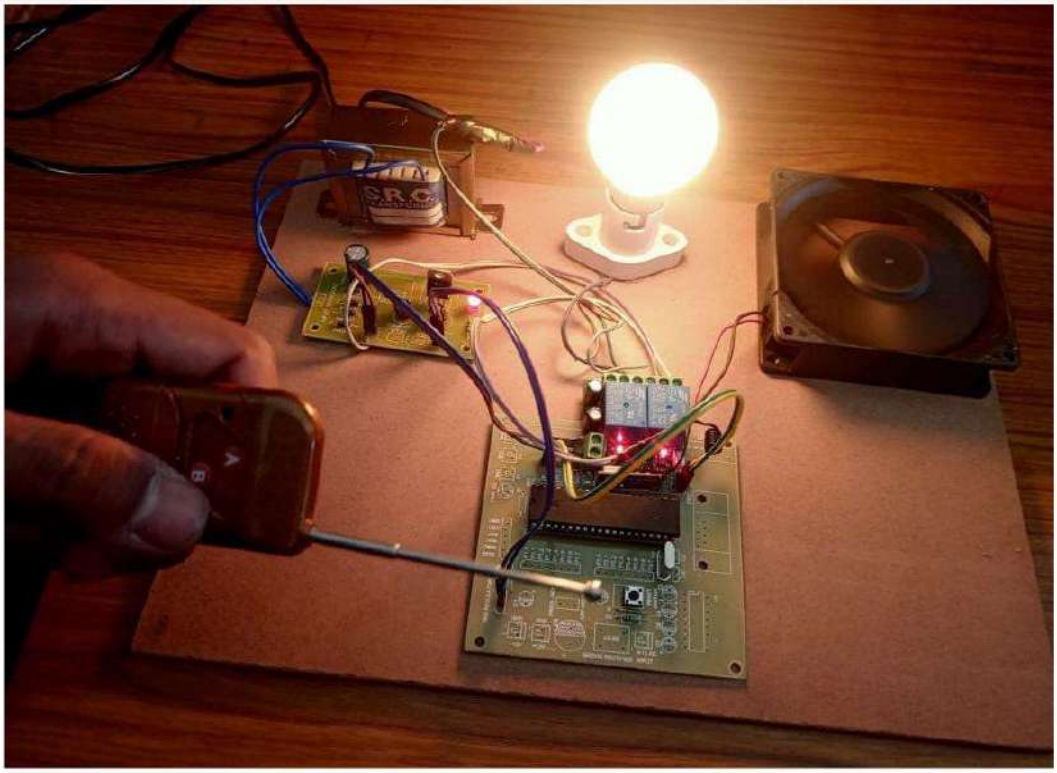

FIGURE 4. CIRCUIT WORKING WHEN TWO LOADS ARE CONTROLLING

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IX. CONCLUSION

The project **"HOME APPLIANCE CONTROL USING WIRELESS TECHNOLOGY"** has been successfully designed and tested. It has been developed by integrating features of all the hardware components used.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 and with the help of growing technology the project has been successfully implemented.

X. REFRENCES

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ISSN: 2456-4265
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