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Home Automation - Home Appliances Controlled Using Mobile Phone Call

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Abstract: Here we have chosen our Topic as "Home Automation". The main idea for this project is due to change in our life style we likely to settle in a place in peace. Due to various emerging technologies our life style is becoming more sophisticated, in adding to the various growing technologies we like to add our small concept of "Luxurious Home", where it means the home automation. The way of automation may take in many ways such as through remote or voice controlled. Here in our project we have implemented the Home Automation by using GSM Mobile phones. The main reason for choosing the Mobile Phone as remote is that, most of the times we are with our lovable mobile phones only, and also with a theme that "ONE DEVICE FOR ALL CONTROLLING PURPOSE". The main advantage in using this way of Home Automation than compared to other home automation in the market is that it could be used or operated from anywhere i.e.: either being inside the home or outside, the electronic devices could be operated. Inside home the appliance could be operated by using the fixed mobile phone as a remote control. If outside from home the appliance in home place can be controlled using a phone call made from the owner mobile to the inbuilt phone at the home premise. So the call would be automatically attended by the inbuilt mobile phone and accepts the owner keypad instruction and control the appliances according to the owners instruction.

Keyword: GSM-Global System for Mobile Communications, PIC-Peripheral Interface Controllers, LED-Light Emitting Diode, IC-Integrated Circuit, MHZ-Mega Hertz, mF-Micro Farad, AC-Alternating Current.

I. INTRODUCTION

Here in our project the main theme is to control the lights and fans through a mobile phone, not only from inside the home but also from outside even from the distance of Kilometers. The thing is that when we call from any mobile from outside to the one that is attached inside the home, the switching system can be controlled. For this we use a Mobile phone, for low level execution we make the use of LED'S (as Lights) and Motors (as Fans). For example when we press NUM - 1 in mobile keypad, it switches ON the light, If we again press NUM - 1 it will turn off the light.

NOTE: This is a ongoing process by APPLE Inc., where he has planned to control the entire home switching systems, cameras, etc., only through a single I-PAD. ***Source*** : *http://www.apple.com/in/ios/homekit/*

II. CONSTRUCTION

The circuit is connected to the 230V AC line in the home and is converted into 12V using step down transformer and further is reduced to 5V using IC 7805, which is the input voltage to the micro controller and the LED driver IC's. The Home Automation construction is so simple, it consists of a PIC 16F877A, Micro controller and two LED Driver IC's. The

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reason for using the LED Driver IC is that if we connect the load directly to the micro controller in the long run it may cause some damage either to the PIC Controller or the Load's that are connected to the Micro controller. The entire construction can be split into two stages. **(a)**The first part consists of interfacing the PIC 16F877A to the Load, The Pins 27 to 30 of PIC are connected to a 330ohm resistor and in turn connected to the Driver IC respectively. From one Driver IC it is again connected to another Driver IC where loads (LED's) are connected. **(b)**The second part of the construction is that the interfacing of PIC 16F877A and the Mobile Phone. This is the main thing in our project since when we make a call from outside to the mobile that is inside, the call has to be automatically attended and the dialings from the external phone must be acceptable there is simple program for the Controller for the control of switching systems. The Mobile Phone is connected not to the controller directly is also in turn connected to the Driver IC. Hence the home automation kit construction consists of a fixed mobile at the premise which acts as a receiver to receive the inputs from the owner, In turn this fixed mobile phone can also act as a remote for controlling the appliances from indoor also. So while you are in home you can control the appliances connected to the home automation kit can be directly controlled using a single fixed mobile phone.

A.Figures

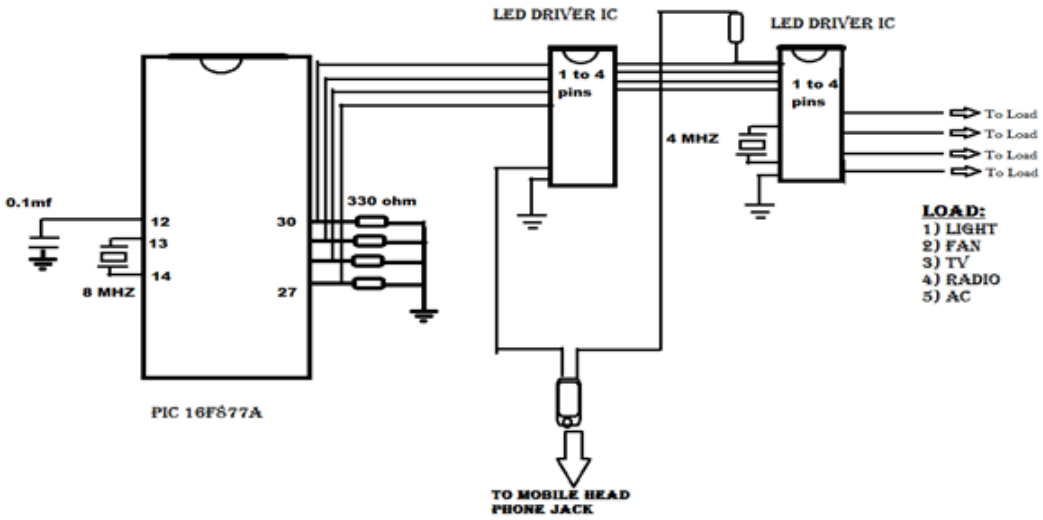

Fig. 1. Home Automation using Mobile phone

III. WORKING

The working of our "HOME AUTOMATION USING MOBILE PHONES" is so advantageous to all our needs, after the construction by connecting the required home appliances to the kit, we can control the appliances from anywhere in the world through just a phone call. We need to power the kit by directly connecting the home automation kit to the AC line in our home. And then when we make a call to the number that is present in the home automation setup kit it would automatically attend the call and once the call is attended, the owner now can control the home appliances. By just pressing the Num-pad of his/her mobile the kit gets the input and it would switch ON or OFF the lights and fans according to his/her wish. This is possible even from very long distances also.

Since we have a fixed mobile phone in the home premise also we can control the appliances connected to the home automation kit using the fixed mobile phone too, hence this fixed mobile phone acts as a remote to control the appliances.

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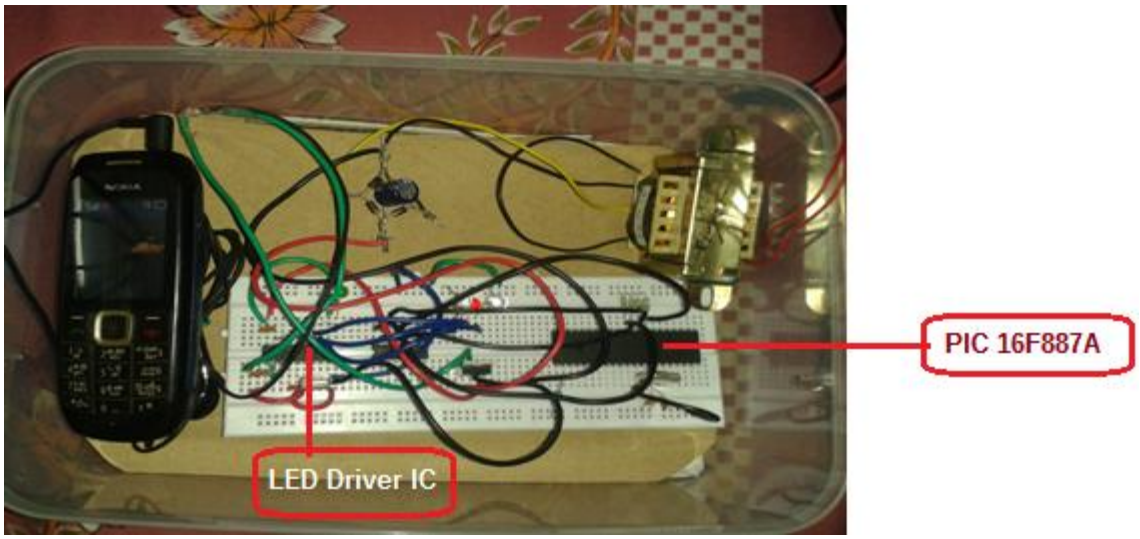
Hence this home automation kit serves two purposes by either controlling the home appliances through a remote like control and also operate from anywhere in the world by making a phone call.

B. Actual Circuit



IV. PRACTICAL TESTING

Once the setup is ready with the appliance to be controlled are connected to the kit, I practically tested by controlling the appliances from various places, like the kit was placed in Coimbatore and controlled the appliances connected to the kit from Chennai, Bombay, Salem. It was able to work properly under all circumstances. The main advantage compared to other existing Home automation kits is that it has a reset button. So when the user needs to control a appliance, say he is out of his home and needs to switch ON the light in his home by 6pm, but he is not sure whether the light is already switched ON or not. So in order to ensure that he could initially use the reset button and reset the present state of the light and then he could make his/her decision.

V. ADVANTAGE

The main advantage of "HOME AUTOMATION USING MOBILE PHONES" compared to other Home Automation in the market is that it has a reset button which is used under situation when the owner is away from home and don't know whether the appliance is already ON or not. So using the reset button he could actually clear the present status and then activate to his/her wish. Home automation kit also adds one more advantage like controlling the home appliances using a remote control by using the fixed mobile phone in the home premise.

* It is done practically and is working accurately. The main advantage is that the home appliances could be controlled even from very long distances that range even kilometers.

* I practically tested by having the home automation kit setup arranged in Coimbatore and by it from Chennai, Salem and Bombay.

VI. VIDEO

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Please scan the below QR code to view the working prototype video of Home Automation - Home Appliances Controlled using Mobile Phone Call.

VII. VIDEO DESCRIPTION

In the video for demo purpose I have connected three LED's (White, Red and White) at the load side, where in real scenario the real appliances(like light, fan) could be connected and a Receiver LED (Green) that blinks when the command from the owner is received. So first it shows that the load (3 LED's) are controlled by the inbuilt mobile phone that acts a remote control for the appliances. Then a call is made from another mobile to the in built mobile, the call would be automatically attended and receives the input from the owner. And control the appliances (load) according to the owner's instruction. The feature that makes this home automation kit unique is that its reset button. Here the reset button is keypad 8. So when the owner is away from home and not sure of the present state of that appliance, he/she could first reset the present state(means OFF) by pressing the keypad 8 and then make his/her decision.

VIII. CONCLUSION

Henceforth this Home automation kit can be made at a comparatively less amount compared to other home kit appliances available in the market. The total cost involved for the construction and setup of the kit would be around 2000 INR. This serves a great purpose in controlling our home from any place just through a phone call. In future we could develop it through an app too.

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