

Wi-fi Based Home Automation System

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Abstract – We are presenting a design and prototype implementation of new home automation system which is used on WIFI technology as new infrastructure connecting by parts. This system consist two main components, first is web server for presenting system controls, manages & monitors user home. Users and system administrator can locally (LAN) or remotely manage & control system code. Second part is hardware interface module. It is provide appropriate interface to sensor and actuator of home automation system. In market most of the automation system is scalable that one server can manage many hardware interface module as long as exists on WIFI network coverage. This system support a widely used range of automation device like power management components and security components. This system is better from the scalability and exhibility point of view than the commercially available home automation system.

Keywords – Arduino, Wifi, Automation

I. INTRODUCTION

Home automation is a system of controlling electronics appliances with less man power. The fundamental of home automation system is increasing day-by-day with various benefits. Industrialist and researchers are working to make an efficient and low cost automatically system to control different home appliances like Light, Fan, AC etc. based on the human requirements. Automation makes efficient as well as economical use of electricity and saves the electrical energy. One of the greatest advantage of home automation system is that it can be controlled comfortly by Smartphone, Tablet computer or laptop.

Arduino UNO -

Arduino Uno is an opensourcemicromicrocontroller board based on the ATmega328P (datasheet). An Arduino has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. It consists of everything that needed to hold up the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started.

Features -

- Operating voltage 6-20 volt
- Digital pins 14 (6 is used for PWM o/p)
- Analog input pins 0-5
- DC current 400mA
- Flash memory 32 kb
- SRAM 2 kb

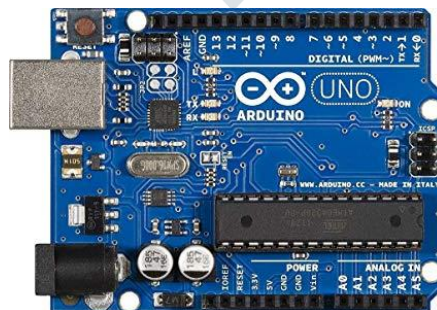
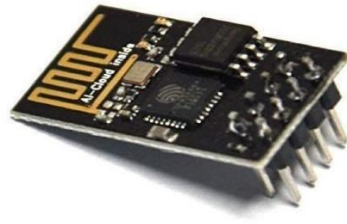


Fig 1. Arduino uno

ESP 8266 wifi module –



The **ESP8266** is a low-cost Wi-Fi microchip with full TCP/IP stack and microcontroller capability produced by Shanghai-based Chinese manufacturer Espressif Systems.

The chip first noticed by western makers in August 2014 with the **ESP-01** module, made by a third-party manufacturer Ai-Thinker. This small module permits microcontrollers to connect to a Wi-Fi network and make simple TCP/IP connections using Hayes-style commands. Although, at that time there was almost no English-language documentation on the chip and the commands it accepted. This is very low cost and the fact that there are very less external components on the module, which suggested that it could eventually be very inexpensive in volume, attracted many hackers to explore the module, chip, and the application on it, as well as to translate the Chinese documentation.

II. PROPOSED METHODOLOGY

Block Diagram:

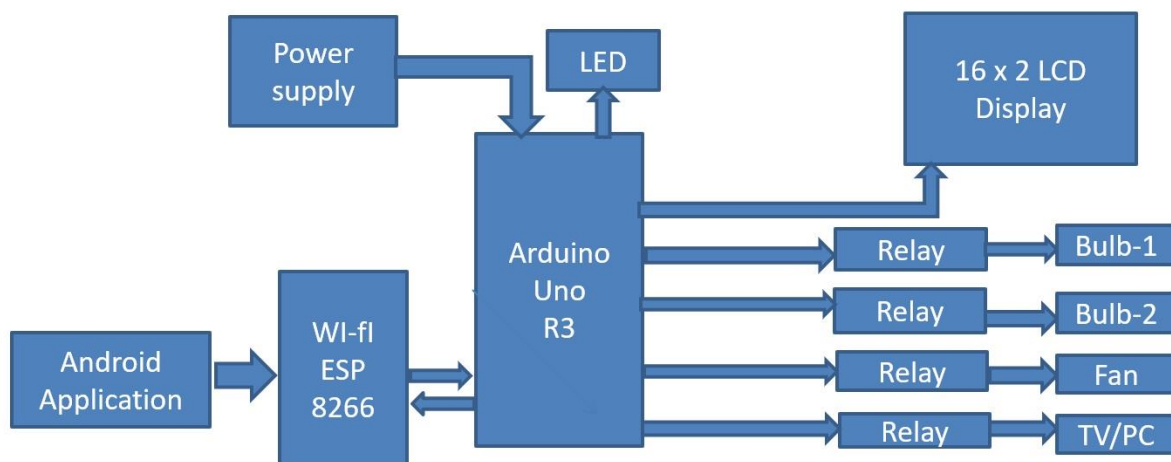
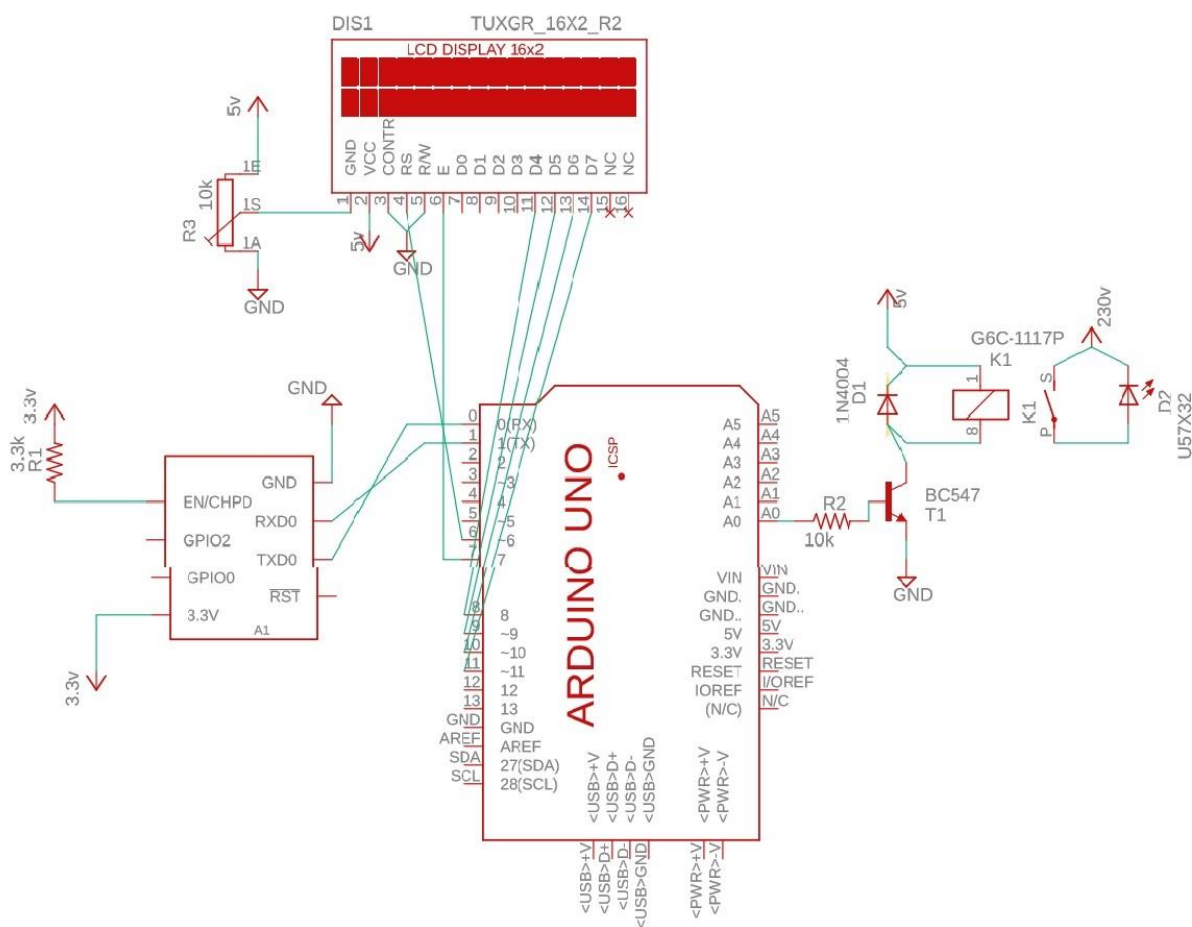


Fig 4. Block diagram

- Wfi module connected to arduino produces wifi (hotspot). User connect this hotspot to his/her smartphone. Then through the remote XY app he/she can controlled the home appliances which are connected to relay. There is code burned in arduino, using arduino IDE software, according to which process will be carried out.
- The four home appliances can connect to this system, like lights, fan, AC, TV, etc.
- Whatever the process is going on, it will be displayed on the 16*2 LCD Display.
- The 5v power supply is given to arduino and LCD Display by using power supply.
- Wifi module needs 3.3v power supply which is given through the arduino board.

Circuit Diagram :



III. EXPERIMENTAL RESULTS

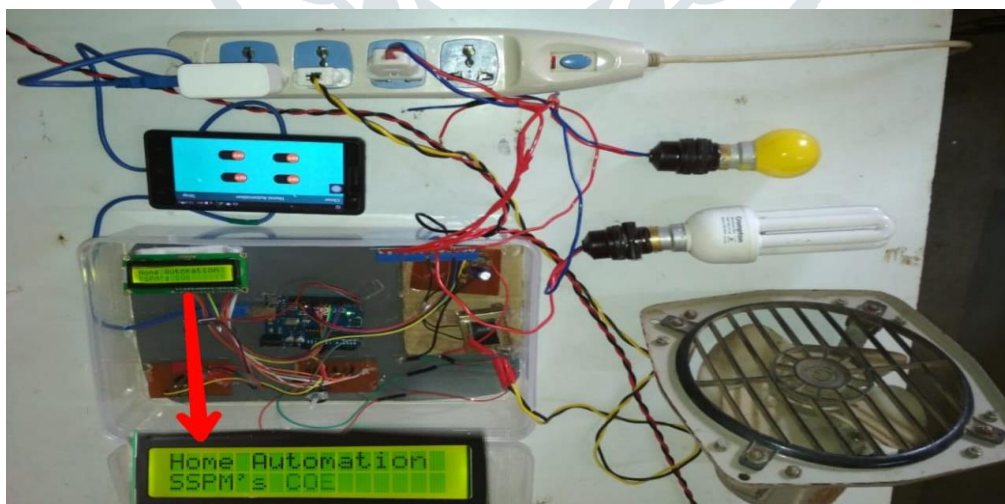


Fig .Initial state When all switches are off

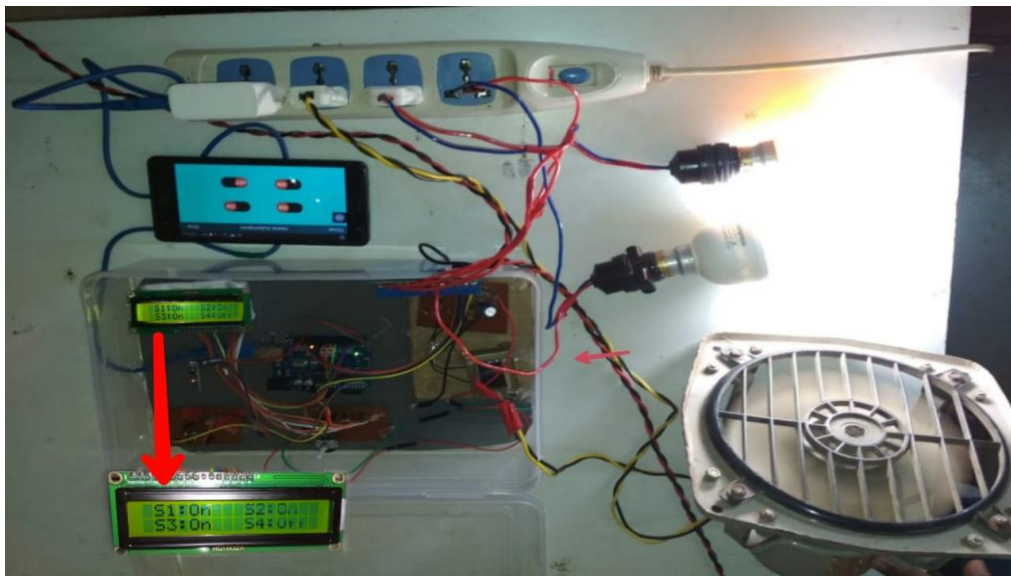


Fig. When switches are ON

IV. CONCLUSION

We can conclude that in our project “WI-FI BASED HOME AUTOMATION SYSTEM”. We have controlled up to 4 devices using an android application via wi-fi. This makes easy for us to control devices using a smartphone from anywhere in our home. The objective of this project were achieved, i.e to develop low cost and high reliability home automation system. In addition, a android application is very efficient, as an alternative to the remote control unit of a home automation system has also been developed.

V. FUTURE SCOPE

Future homes will be able to offer almost all required services, eg. Communication, Medical, Energy, Entertainment, More and more devices will begin to connect to one another. The dream is a future in which data is communicated between devices and humans without replying on manual input of individual bytes. Computers that can automatically getting the data and then use that data for creating new aspects of the smart home environment is the future. For eg. a smart thermostat that is able to automatically gauge the temperature of a room and then adjust central heating and cooling units as necessary. This is the next generation home automation innovation, that lets you control, monitor and secure your home with your smartphone.

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