International Scientific Journal of Engineering and Management (ISJEM) ISSN: 2583-6129
Volume: 04 Issue: 05 | May – 2025 DOI: 10.55041/ISJEM03844
An International Scholarly || Multidisciplinary || Open Access || Indexing in all major Database & Metadata

AUTOMATIC CONTACTLESS SWITCH FOR SMART HOME

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Abstract:- The aim of this project is to control our daily home appliances wirelessly to make life simpler using android devices and applications. We are using android device and applications to control the home appliances through manually and automatically. Ahead we will be using sensors and temperature sensors for making it more efficient and convenient**.** Sensors which are used has different values and algorithms which helps to save the power consumption. And this project is cost and manpower saving.

Keywords:- Wi-Fi module, Ada-Fruit IO, smart phone, ESP8266.

1. INTRODUCTION:-

The project leads to an enhancement of home automation by using Ada-fruit server and Wi-Fi technology. The home devices can be operated and sensors can be read through PC, tablets, mobiles or Wi- Fi. Automation is taking place in common day to day life as compared to older days of manual ON/OFF procedures. It also reduces the tragedies like electric sparks and short circuit. With the help of Wi- Fi technology automations adds the values and used for controlling the home appliances. Wi-Fi uses the radio frequency for signaling purpose to transfer its data wirelessly with the speed of 1 Mbps to 3 Mbps. It has 2.4 GHz frequency and range is 10-50 meter. Smart switch ismaster switch which controls the home appliances. End user can install and register the applications in their smart phone using Wi-Fi.

Then they can manage their electricappliances in a convenient way. This switch operated by three methods:-

1. By using smart phone application.
2. by voice recognition.
3. by manual operation.

For the failure of operation of the smart phone application and voice recognition there is the option ofthe manual operation.

2. LITERATURE SURVEY:-

This project uses the android application which is directly associated with Ada-fruit sever and end user can control their home appliances like fans, lights etc. Smart home system for physically disabled people via Wi-Fi module as the medium to control and monitor home appliances [1]. User can give commands through smart phone and which will transmit the information through MQTT application. Then ESP8266 Wi-Fi module recognizes the specified command, and controls the home appliance switches in the wireless frequency manner to achieve remote control of appliances ultimately [2].

3. MOTIVATION:-

The best motivation this project reveals that a handicap user can also control all his/her home appliances without moving in any of the aspect. For handicapped people it is essential.

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4. METHODOLOGY:-

The system starts by selecting Arduino Uno for local device control and ESP32 for Wi-Fi- based communication. Sensors (temperature, motion, light) and actuators (relays, motors) are integrated with Arduino and ESP32 to control home appliances. A mobile or web application is developed to send control signals and receive real-time data from ESP32. The ESP32 communicates with a cloud platform (such as Firebase or MQTT) for remote access and data storage. Secure data transmission is ensured using encryption and authentication protocols. Finally, the system is tested for reliability and deployed, allowing users to monitor and automate their home remotely.

5. OBJECTIVES:-

1. Develop home automation system which provides the whole control to normal and disabled users to access the home appliances manually and wirelessly.
2. The Smart Switch will have the ability to be controlled from a mobile, computer through the internet with an android mobile based application and manually. Those switches are operated via internet access or without internet access.

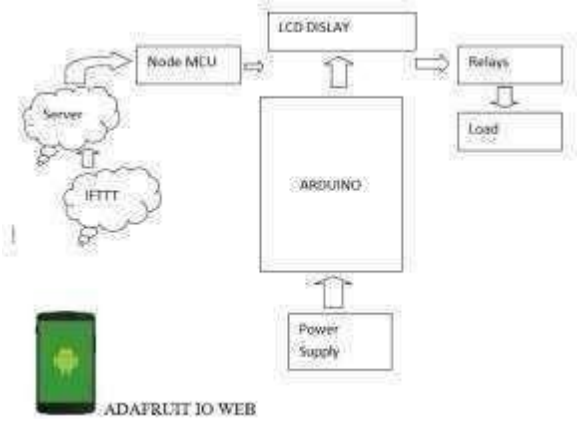

Fig.1.Functional Diagram of System

6. HARDWARE IMPLEMENTATION:-

Hardware setup will consist of ESP8266 Wi- Fi module. It has function with wireless communications for that we have used Wi-Fi module. We have loads that are bulbs and other home appliances. [2]

6.1 ESP8266 WI-FI module:-

Fig ESP8266 WI-FI moduleThis module contained SOC and TCP/IP protocols that provide access through Wi-Fi network. And comes with preprogrammed and set firmware. ESP8266 is flexible and reliable, cost effective board. It is used to regulate the output voltage.

Figure 6.1 : ESP8266 WI-FI Module

6.2 Voltage regulator (LM1117)

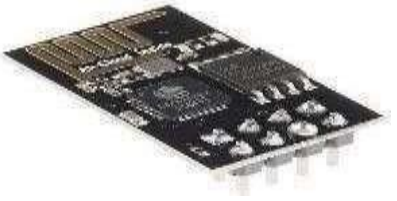

Figure 6.2 Voltage regulator

6.3 Relay driver circuit

Relays are the device which has a pair of movable contact from an open position to a close position and it use the electromagnet. Relays consumes very less power.

Figure 6.3 Relay driver circuit

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heaters, lamps or AC circuits which themselves can draw a lot more electrical power.

6.4 Converter Circuit:-

Figure 6.4 Converter Circuit

SMPS Power Supply(230v to AC-5v DC)
Transformer is converting 230V AC to 5V DC. As the devices which are used in this project it requires less power than the SMPS power supply that is 5V DC that's why converter is used as it converts the 230V AC to 5V DC as required.

7 .Software Implementation

ADA-FRUIT:-

Ada-fruit is an open source prototype platform which provides easy uses of hardware and software. MQTT is a protocol for device transmission and receiving signals to that Ada-fruit I/O supports. With the help of MQTT client can subscribe to feed to send and receive the feed data with Ada-fruit I/O's. You can publish a new value for a feedto its topic, or you can subscribe to a feed's topic to be notified when the feed has anew value. remote signal decoder (TSOP1738), temperature sensor DS18B20, light sensor (LDR), crystal , relay driver switching transistor, relay and

other simple some active or passive device with detailing relevant theory which is crucial:-

7.4 (username)/feeds/(feed name or key)

7.5 (username)/f/(feed name or key)Procedure to run Ada-fruit:-

1. Download ARDUINO IDE code, exampleAdafruit_MQTT_ESP8266.
2. Dashboard Settings.
3. Connection test ESP8266 and Adafruit.IO.

8. SYTEM SNAPSHOT:-

Operation when system in off:-

Operation when system in off

Operation when system in off:-

Fig:8.1 Operation when system in on

SMART SWITCH DESIGN:

9. FEATURES OF ATMEGA8

AVR Category of AVR family some ofthem are:

8kb of flash memory 1kb of SRAM 512bytes of EEPROM

Available in 40-pin dip 8-channel 10-bit ADC One 8-bit timer/counter 4 PWM channels In system programmer (ISP) Serial

Two 8- bit timers/counters Digital to analog comparator

The AVR microcontrollers are based on the advanced RISK architecture and consists of 32x8-bit general purpose working registers. With in one single clock cycle, AVR can take inputs from two general purpose registers and put them to ALU for carrying out the requested operation, and transfer back the result to an arbitrary.

The ALU can perform arithmetic and logical operations over the inputs from the register are between the register and a constant. Single register operations like taking a complement can also be executed in ALU. We can see that AVR dose not have any register like accumulator as in 8051 family of microcontrollers.

The operations can performed between any of the registers and can be stored in either of them.

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AVR follows Harvard format in which the processor equipped withseparate memories and buses for program and the data information.

10. FUTURE SCOPE:-

Now a day's technology is blooming day by day and the demand of the user also increasing accordingly. This affects the response and time of the user so this home automation is an efficient system which change the area of function of usage. The project which is to be implemented is a home automation using easy IOT Web server and Wi-Fiand has very good future development. The web server are installed on the PC and home appliances can be operated by the device which has web server installed. Web server can also be install on cloud to easily access through our PC or tablets using Wi-Fi or internet. To visit the cloud server IPs need to auctioned on browsers.

The port of the Microcontroller RD is used as input and port RD (1-7) and port RB used as output.

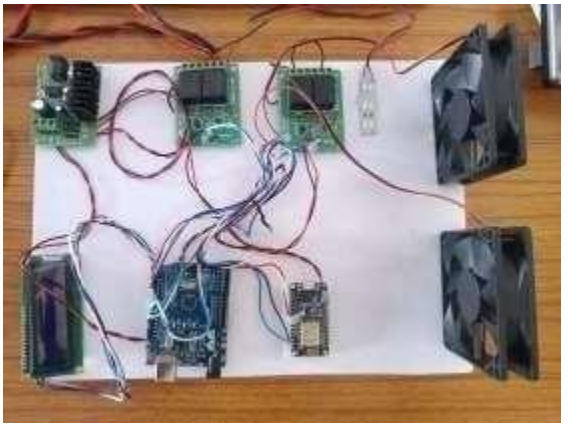
Input pin is connected with a decoder TSOP 1738.The three output terminals are connected with the base terminal of the 3 transistors which are help to ON the transistors By biasing the gate terminal. Three relay connected with the transistor collector terminal which are helps to connect or disconnect the loads or parts of the circuit. Enabling the ADC is needed for use in the control functions of the device. Using the ADC is also made simpler by using BASCOMAVR. Enabling ADC on MCU is achieved by ticking the ADC ENABLED selection is BASCOMAVR, and then selects the use 8 bit option and then selects the voltage reference as the voltage across the AREF pin. BASCOMAVR also gives an option for the ADC speed, and in this case it was chosen to be the fastest available, that being 1000.000 KHZ.

The perfect paper should be glossy, thin and chip. This kind of stuff that looks lustrous and shiny when new, but so cheap it quickly turns into pulp when wet.

Almost any glossy magazine paper willwork. I like thin paper over think one, and prefer recycled paper over new paper.

11. CONCLUSION:-

In proposed model the accuracy of Implementations meets the expectation. This home automation system works according to user needs and demands and also the modes of function works as desired during the implementation. User need to give respective commands through his/her smart phone and the system works according to assigned algorithm. This project is flexible and user friendly and easy to use. So it can be said that this system has higher accuracy with great efficiency.



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