Journal of Engineering Sciences
Vol 11, Issue 11, NOV/2020
ISSN NO:0377-9254

QR code based door opening system

Nethrasri.P[1], Dr.A.VenkataRamana[2]

Department of Computer Science Engineering, St. Peter's Engineering College, Kompally, Hyderabad, Telangana

Abstract— **IOT is an innovation which uses internet to control the physical items. Utilizing IOT we can get result which is increasingly exact, speedy and definite. In IOT all database will be stored in computer. This storage is done through internet. Later this database is used accordingly to their requirements and applications. Components can be accessed from far place by using IoT, hence it reduces human work or involvement. This makes investment of system less. Every single diverse convention can be utilized in like manner to individual area in IOT. We all know that India is the second largest populated country in world. India faces a problem in traffic congestion, it needs a solution for this problem. If we design a control system for traffic in proper way this congestion problem would be solved. Thus by utilizing IOT idea this can be tackled.**

QR code is generated in the web page for the respective person. This generated QR code is scanned by the user the entry by using the android app given. The scanned QR code is matched with the data base then door will open's or door will close until correct QR code is scanned.

I. Introduction

An embedded framework can be characterized as a figuring gadget that completes a particular centered activity. Apparatuses, for example, the forced air system, VCD player, DVD player, printer, fax machine, cell phone and so forth are examples of embedded systems. Every one of these apparatuses will have a processor and uncommon equipment to meet the particular prerequisite of the application alongside the embedded programming that is executed by theprocessor for meeting that specific requirement. The embedded software is also called "firm ware". [1] The desktop/laptop computer is a general purpose computer. You can utilize it for an assortment of utilizations, for example, playing amusements, word preparing, bookkeeping, programming improvement, etc. Conversely, the product in the implanted frameworks is constantly fixed recorded underneath: Embedded frameworks complete a quite certain errand, they can't be modified to do distinctive things. Embedded frameworks have extremely restricted assets, especially the memory. For the most part, they don't have auxiliary stockpiling gadgets, for example, the CDROM or the floppy circle. Embedded systems have to work against some deadlines. [2] A specific job has to be completed within a specific time. In some embedded frameworks, called constant frameworks, the due dates are stringent. Missing a due date may cause a fiasco death toll or harm to property. Embedded systems are constrained for power. As many embedded systems operate through a battery, the power consumption has to be very low. [3]

Some embedded frameworks need to work in outrageous natural conditions, for example, exceptionally high temperatures and moistness.

II. System Architecture

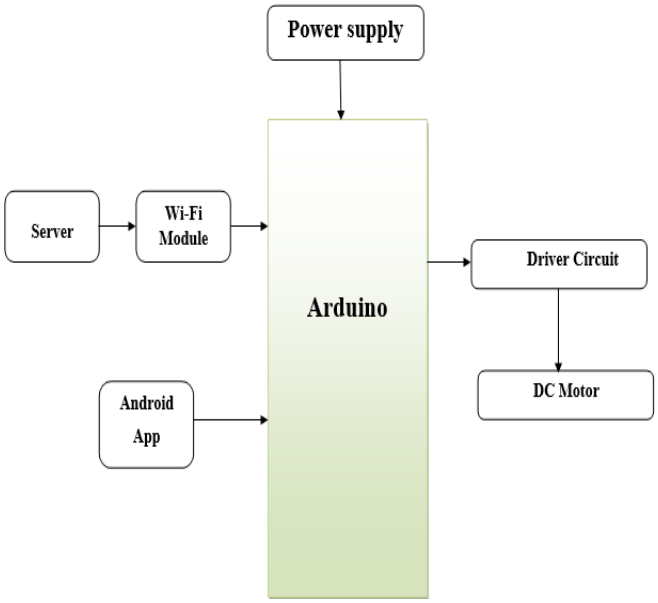

Fig.1. Block Diagram

The above block diagram shows the outlay of the entire paper which has been discussed above the hardware requirements are quite limited & easily available as well as less feasible. A centralized server stores the generated set of predefined bar codes which is unique to every user, bar codes are generated using a website. Main power supply is given to a micro-controller and turns on a Wi-Fi module and is connected to a network reaching out to the server. [4] Once a QR code is scanned using the Android App, specific codes are sent back to server and is compared with the existing codes,

if there's a match then a driver circuit is triggered and a DC motor is run in order to open the door successfully.

III. Hardware Description

A. Arduino UNO:

The Arduino UNO is an ATmega328-based microcontroller board. It uses an ATmega16U2 faster transfer rates and more memory. Arduino can be utilized to create remain solitary intelligent articles or can be associated with programming on your PC. It uses Arduino IDE (Integrated Development Environment) software which allows you to write programs and upload them to your board. A program written with the IDE for Arduino is called a sketch.

Features:

a) Input voltage: 7-12V
b) 14 Digital I/O Pins (6 PWM outputs)
c) 6 Analog Inputs
d) 32k Flash Memory
e) 16 MHz Clock Speed

B. Motor Driver (L293D):

L293D is a typical Motor driver or Motor Driver IC which allows DC motor to drive on either direction. L293D is a 16-pin IC which can control a lot of two DC engines all the while toward any path. It means that you can control two DC motor with a single L293D IC. [5]

Features:

a) Wide Supply-Voltage Range: 4.5 V to 36 V
b) Separate Input-Logic Supply
c) Output Current 1 A Per Channel (600 mA for L293D)
d) Supply voltage range: 3.2V to 4.8V
e) Peak Output Current 2 A Per Channel (1.2 A for L293D).

C. DC Motor:

A DC motor is any of a class of turning electrical machines that changes over direct current electrical vitality into mechanical energy. The most common types depend on the forces produced by the magnetic fields. All types of DC motors have an internal mechanism, which is electromechanical or electronic and is used to periodically change the direction of current flow.

DC motors were the main kind generally utilized, since they could be fueled from existing direct-current lighting power distribution systems. A DC motor's speed can be controlled over a wide range, utilizing either a variable supply voltage or by changing the quality of current in its field windings. Small DC motors are utilized in instruments, toys, and applications. The general motor can work on direct current yet is a lightweight motor utilized for convenient power instruments. Bigger DC engines are utilized in impetus of electric vehicles, elevator and hoists, or in drives for steel rolling mills. The coming of intensity hardware has made replacement of DC engines with AC engines conceivable in numerous applications. [6]

C. Wi-Fi Module:

ESP8266EX (ESP- Espressif Systems Smart platform; EXrevised version) offers a complete and self-contained Wi-Fi networking resolution, it can be used to host the application or to offload wireless networking functions from another application to the processor. ESP8266EX hosts the application picks up directly from an external flash; it has integrated cache to improve the performance of the system in such applications. On the other hand, serving in as a Wi-Fi adapter, remote web access can be added to any micro controller-based design with basic network (SPI/SDIO or I2C/UART interface). it integrates the antenna switch, RF module, power amplifier, low noise receive amplifier, filters, power management modules, and the entire solution, including front-end module, is designed to occupy minimal PCB area. ESP8266EX also integrates an enhanced version of Tensilica's L 106 Diamond series 32-bit processor, with on-chip SRAM, besides the Wi-Fi modem properties. ESP8266EX is often integrated with external sensors and other application specific devices through its GPIOs, so as it can be made to work as an entirely individual system even if required. [7][8]

IV. Software Description

A. Java

Java is a programming language created by Sun Microsystems. It was initially intended for creating programs for set-top boxes and handheld gadgets, however later turned into a mainstream decision for making web applications. The Java syntax is like C++, but is strictly an object-oriented programming language.

B. PHP

PHP represents Hypertext Preprocessor (no, the abbreviation doesn't pursue the name). It's an open source, server-side, scripting language utilized for the advancement of web applications. By scripting language, we mean a program that is script-based (lines of code) composed for the mechanization of assignments.

C. Arduino IDE

Arduino IDE is an exceptional programming software running on your computer that enables you to compose sketches (equivalent word for program in Arduino language) for various Arduino boards. The Arduino programming language depends on an extremely straightforward equipment programming language called processing, which is like the C language.

V. WORKING PROCEDURE

- To run all the modules we need +5v DC power, to get the required voltage we need power supply circuit, so we converting 230v AC mains to **+5V DC**.
- **Arduino** controller is connected to all modules; each module is executed with respective commands given by Arduino.
- Generate a unique bar code for a user using the website.
- Connect the **Wi-Fi** module to the mobile hotspot, so that we can send the values to the server. Here we are using **Orange Tool** server to generate and store the bar codes.
- As soon as we give the power supply, all the modules get activated by the controller.
- **Android App** is initiated and is connected to the same Wi-Fi network, it is used to scan thegenerated QR code.
- **Arduino** microcontroller will receivecorresponding value from android app thru' Wi-Fi module.
- After getting the values controller will send the values to the server and check the validity of the same.
- If the value that we send to our server matches any records present in it, a signal is sent back to the micro controller and motor mechanism is triggered as per the values received by it.

VI. CONCLUSION

Hence, from the above discussion we can conclude that the paper (QR code based door opening system) is absolutely ethical for the application of the users who would like to automate their daily life. It not only helps in making the work easier but also plays a major role in the security / avoidance of theft to the user and helps in leading an easy life.

REFERENCES

[1] Figat, J., & Kasprzak, W. (2015). NAO-mark vs QR-codeRecognition by NAO Robot Vision. In Progress in Automation, Robotics and Measuring Techniques (pp. 55-64). Springer, Cham.

[2] Tu, J. F. (2016). A contactless door lock controlled byportable devices. Engineering Computations: International Journal for Computer-Aided Engineering and Software, 33(6), 1631-164.

[3] Ha, I. (2015). Security and Usability Improvement on a Digital Door Lock System based on Internet of Things. International Journal of Security and Its Applications, 9(8), 45-54.

[4] Banzi, M., & Shiloh, M. (2014). Getting started with Arduino: the open source electronics prototyping platform. Maker Media, Inc.

[5] Instrument, T. (2010). L293D Datasheet. Internet: http://www. alldatasheet. com/datasheet-pdf/pdf/112910/TI/L293D. html,[5 September 2015].

[6] Matsui, N., & Shigyo, M. (1992). Brushless DC motor control without position and speed sensors. IEEE Transactions on Industry Applications, 28(1), 120-127

[7] Thaker, T. (2016, March). ESP8266 based implementation of wireless sensor network with Linux based web-server. In 2016 Symposium on Colossal Data Analysis and Networking (CDAN) (pp. 1-5). IEEE.

[8] Kotiyal, B., & Muzamil, M. (2016). Home automation using arduino WiFi module ESP8266.