International Journal of Science and Research (IJSR)
ISSN (Online): 2319-7064
Index Copernicus Value (2015): 78.96 | Impact Factor (2015): 6.391

Automated Hotel Management

Nikhil Jain S N[1], Nikhil M[2], S Hemanth[3], Prof. Ananda M[4]

[1, 2, 3, 4]Department of Electronics & Communication, PESIT BSC, Bangalore, India

Abstract: ***The digital revolution has swept through industries across the globe as companies begin to grasp the potential benefits of automation and connectivity. Internet-related communication is fast becoming the consumer's favored way of accessing goods. In order to replace the existing system of management pertaining to user records, self check in, avoid unpleasant activities needs simple yet effective low cost methodology .Our idea attempts to change the way of traditional management and to assist its improvement. This action avoids the need of a panel to check the operation on regular basis. The system is easy to operate and can improve the experience of guests thereby streamline the management process.***

Keywords: IR sensor, Liquid crystal display (LCD), 4*4 keypad, Arduino, ESP8266A

1. Introduction

The automation of hotel management should be well defined in an enterprise .A system of regulation can function towards the profit which in fact is a main criteria for any organization. A qualitative approach in this direction with respect to the hotel management is their automation .We made use of the essence of IOT to provide a better hospitality service to the consumer. The room doors of the hotel are to be fitted with a controlled locking system which allows user a self check-in on authentication. IR sensors are used to keep a track on the number of people inside the room to avoid unnecessary intrusion. Using ESP8266A, allows us to update the count of people to the cloud and the authorized personnel can track the details. If the count turns zero electrical appliances like bulbs, ac, fan etc are switched off automatically. The regulation on the number of people to reside at any given time and automatic cutoff of supply when nobody resides inside a room definitely operates in benefit to the hotel.

2. Block Diagram

The complete block with interfaces for the automation process is given below.

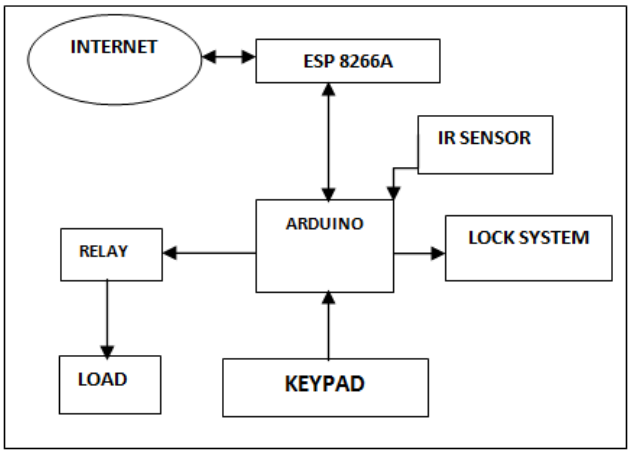


Figure 1: complete block diagram

The above block is an indicator of events taking place to Automate and enhance the user service in a hotel industry.

The key elements in the block are the interfaces to the Microcontroller (Arduino).

The important interfaces are;

i. **ESP 8266A**-To interact with web.
ii. **IR sensor**-To regulate the count of people moving in and out of the room.
iii. **4*4 keypad**-To self check in.
iv. **Lock system**-To provide safe and authorized access (represented as led in implementation).
v. **Relay**-To connect electrical appliances to the microcontroller

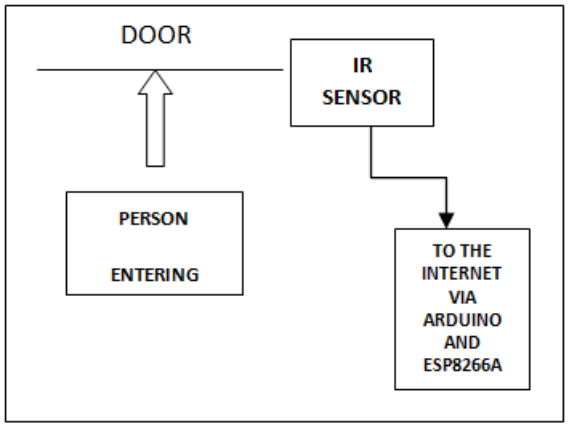
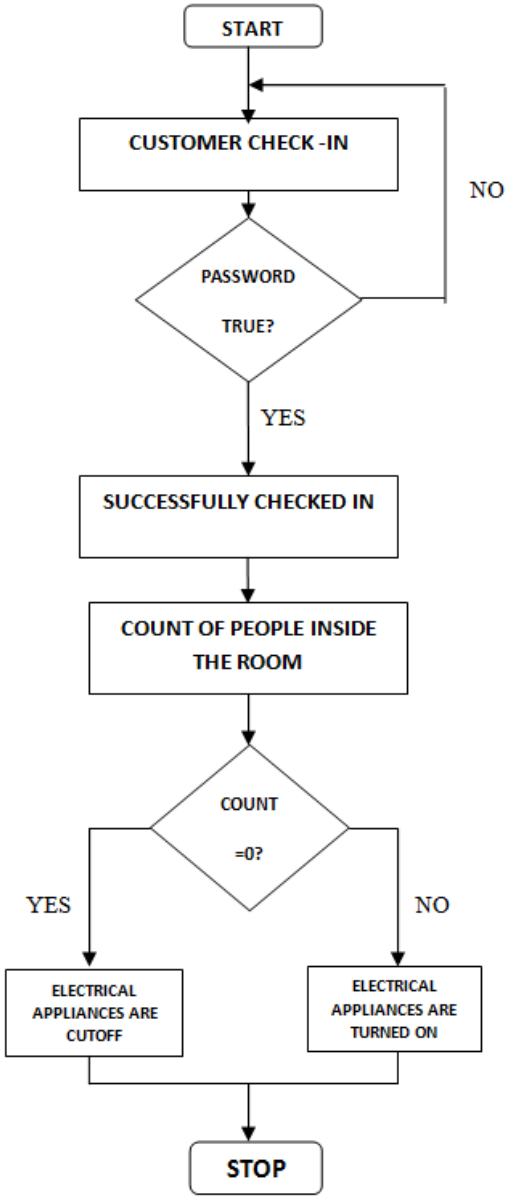


Figure 2: Block explicitly showing the operation of IR sensor

The above block shows the operation of IR sensors that are used to record the status of the room after check in. This is an useful sub system which automatically turns off the Power supply to the appliance in the room, when count is Zero.

3. Flow Chart



4. Implementation

Figure (3.1)

Figure (3.2)

Figure (3.3)

Figure (3.4)

Figure (3.1-3.4) shows the security check and customer login credentials to be given at the time of entry.

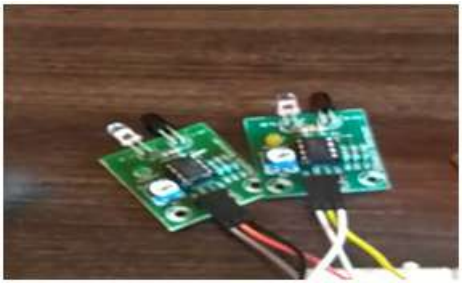


Figure (4)

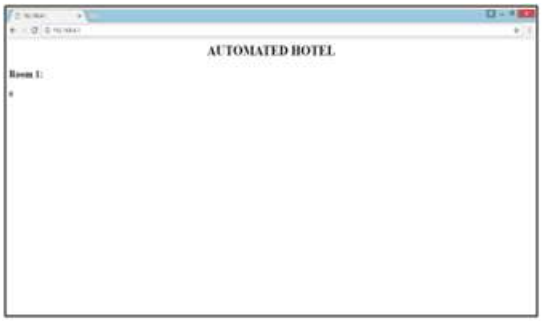


Figure (5.1)

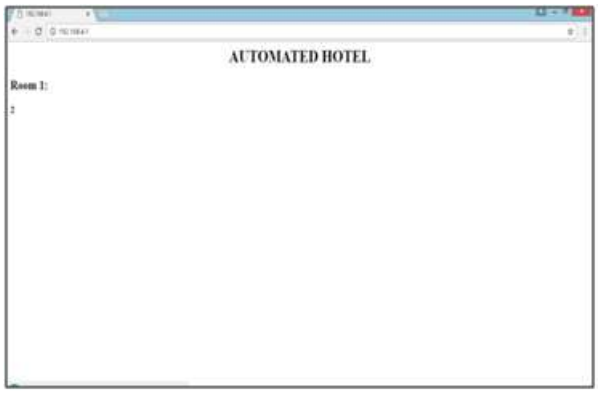


Figure (5.2)

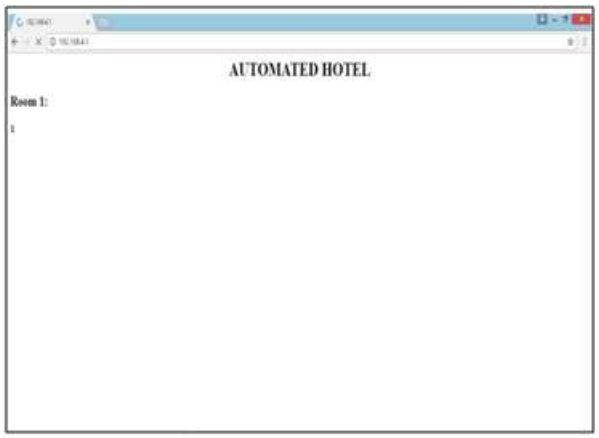


Figure (5.1)

Figure (5.1-5.3) shows the updating count of people inside the room on local web server

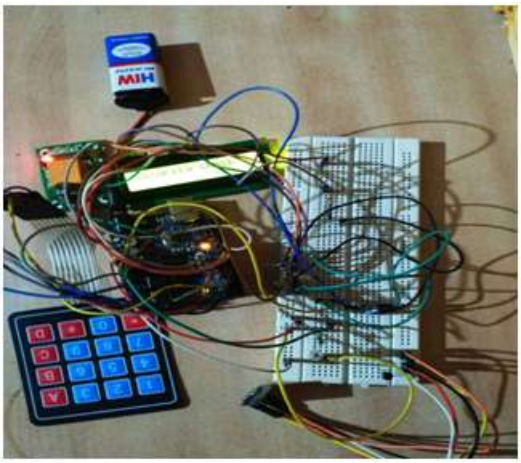


Figure (6)

Figure (6) shows the final interface of' Hotel Automation System'. It consists of Arduino interfaced with display (LCD), keypad, ESP8266A, LDR. The updated value of the number of people inside the room is shown conceptually on a local web server.

The working of the automated hotel management system can be viewed in the following steps:

i. Initially, consider that the customer has booked a room and has received a 4 digit password along with the room number and other credentials.
ii. The user can then check-in to the hotel using the password received at the time of booking.
iii. The door of every room will be installed with a locking system shown in the Figure (1).
iv. The door will be opened only when the password obtained by the user is entered .A correct password ensures successful check in, while the incorrect password gives an error message.
v. The count of people going in and out after check-in is channeled to the internet through the local server hosted by the ESP8266A.
vi. When the room is empty, the electrical appliances such as bulb, fan etc is turned off.
vii. Meanwhile the status of the room can be viewed by the authorized personnel at any time.
viii. Once the user checks out, the password is reset and the same is provided to the next customer.

Advantages

i. Reduction in time consumption for service.
ii. Instructs the users with proper credentials.
iii. Usage of ESP8266A will ensure the updated status of each room to the web.
iv. Increase in reliability and efficiency.
v. Use of password based lock system mitigates intrusion.

5. Conclusion

The operational procedures of a hotel enterprise can be made more users friendly and the carelessness of humans in turning off the appliances when not in use can be effectively tackled.

The status of a particular room can be hosted on web which translates to the transparency in the booking procedure and hospitality.

6. Further Scope

We can make a few futuristic add-ons to the above system by having an automated transportation system for luggage which automatically senses the location of rooms if indicated, using a line follower robot.

Acknowledgement

I would like to express my sincere gratitude to the institute PESIT-BSC for providing me with a conducive environment and the required research facilities that helped me a lot in completing this work. I would like to thank the department of ECE for co-operating with me. I owe my deep sense of gratitude to Mr. Ananda M, Asst. Professor who has been very supportive and helped me in all possible ways to make this successful piece of work.

References

[1] https://circuitdigest.com/microcontroller-projects/automatic-room-light-controller-with-bidirectional-visitor-counter-using-arduino/

[2] http://www.circuitstoday.com/interfacing-hexkeypad-to-arduino/
[3] http://www.circuitstoday.com/interfacing-lcd-to-arduino/
[4] http://www.instructables.com/id/Arduino-door-lock-with-password/
[5] http://allaboutee.com/2014/12/30/esp8266-and-arduino-webserver/

Author Profiles

Nikhil Jain S N

Nikhil M

S Hemanth are students of Electronics and Communication branch PESIT-BSC **(**2014 to 2018)

Prof. Ananda M is Assistant professor at Department of ECE at PESIT South Campus Bangalore and presently pursuing PhD in VTU. He has around 10 years of teaching experience. Areas of interests are VLSI, FPGA and Embedded system.