Automated Door Entry Using QR Codes

MPCA Mini-Project Report

Team Members:

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CERTIFICATE

This is to certify that Aviral Joshi and Hardik Surana of 4th Semester ‘B’ Section of Computer Science Department have successfully completed the project titled ‘Automated Door Entry using QR Codes’ during the year 2017 as a part of the course Microprocessor and Computer Architecture(MPCA).

Aviral Joshi

Hardik Surana

Signature of Professors:

ACKNOWLEDGEMENT

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In addition, we would also like to thank our friends for their valuable inputs without which this

project would not have seen the light of day. Finally, we would like to thank our parents for the patience and willingness shown during the course of this project.

Abstract:

To create an automated and secure door lock system for access only to required personnel using QR code.

Introduction:

In this project, we will simulate door entry into a secure location, wherein only authorized personnel are permitted entry. This is done through the use of Raspberry Pi with the interface of an android application.

Literature Survery:

The Raspberry Pi is a series of small single-board computers developed in the United Kingdom by the Raspberry Pi Foundation to promote the teaching of basic computer science in schools and in developing countries. The original model became far more popular than anticipated, selling outside of its target market for uses such as robotics. Peripherals (including keyboards, mice and cases) are not included with the Raspberry Pi.

Methodology:

1. User logs in from android application and requests access for entry into a restricted area/content.
2. If they are an authorized user, the server generates and sends a QR code to the app.
3. User scans the QR code at the door.
4. Access is granted if the code is authentic.

Implementation

Features:

An android application is used as an interface to the user who wants access to the restricted location or content.

Raspberry Pi with camera is used for scanning and authentication of QR codes.

Nodejs server generates the QR code on the fly when the user requests access.

Model of restricted location with servo motors to provide entry.

Working:

Every user interacts with the door lock authentication system using an android application as the interface.

On login, the user can request for access through the application, following which a unique QR code is generated on the fly and sent to the user if they have been granted access before hand.

The user then scans the generated the QR code at the door entry. The Raspberry Pi scans the QR code and gets the information regarding its authenticity.

If the user is authentic, then they are given access to the confined location which is automatically opened using servo motors.

Once the user enters the location, the QR code becomes obsolete and cannot be used again.

If a new user wants access or the existing user wants to access again, then a new QR code is generated.

Results and Conclusion:

The working of Raspberry Pi, servo motor, nodejs server and other components was learned. The implementation of android application and interaction with the server was understood.

Future enhancements:

Implementation of DBMS on the server to store details of all users. Storage of access data for analytics purposes. Use of multiple layers of security for stringent norms for access.

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