# QR CODE SCANNER FOR CASH ON DELIVERY PAYMENT SYSTEM

# USING RASPBERRY PI

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# QR CODE SCANNER FOR CASH ON DELIVERY PAYMENT SYSTEM USING RASPBERRY PI

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**This report submitted in partial fulfillment of the requirements for the Bachelor of Computer Science (Computer Networking)**

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

**FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY**

**UNIVERSITI TEKNIKAL MALAYSIA MELAKA**

**2016**

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I hereby declare that this project report entitled

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is written by me and is my own effort and that no part has been plagiarized

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STUDENT : _____ DATE: 25/8/2016

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I hereby declare that I have read this project report and found

this project report is sufficient in term of the scope and quality for the award of

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SUPERVISOR : _____ DATE: 25/8/2016

(DR. NORHARYATI BINTI HARUM)

# DEDICATION

This report is dedicated to my beloved parents, for without his early inspirations, coaching and enthusiasm none of this would have happened.

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## ACKNOWLEDGEMENT

First and foremost, I would like to thanks the Allah SWT, who has blessed and guided me so that can I able to accomplish this report for Final Year Project as the requirement for the Bachelor of Computer Science at the Faculty of Information and Communication Technology, University Malaysia Melaka.

In this very special occasion, I would like to convey my highest gratitude to my supervisor, Dr Norharyati Harum took time out to hear, guide and gives plenty of chances for me to improve myself. Besides, I am greatly indebted to all lecturers who have patiently guided and answering all my questions during my year of study. I will not able to achieve this level without their patience and guidance.

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A special thanks to both of my beloved parents, Nasharuddin and Rohana for their precious advice and prayer. I would like to express my deepest thanks and love to my beloved sibling, for encouragement and moral support that drives me to finish my study. My sincere thanks are also addressed to all my friends for their support and cooperation.

I perceive this opportunity as a big milestone in my study development. I will strive to use gained skills and knowledge in the best possible way and I will continue to work on the improvement, in order to attain desired career objectives. Thanks you.

# ABSTRACT

This project is about the development of QR code scanner for Cash on Delivery Payment (COD) System using Raspberry Pi. Nowadays, the current payment for online shopping is not secure, where each purchase must make a payment using online payment or bank transaction. This system will reveal the client to cybercrime and fraud. The Cash on Delivery payment system using Raspberry Pi will overcome this problem. Where, the clients only make a payment when the product is received. Using the developed cash on delivery system, client and supplier will receive an electronic receipt once the payment is done. For Delivery Company, the status of product payment will be updated automatically in the database system. In fact, Cash on Delivery payment system is also an alternative to reduce the amount of electricity consumed. To ensure that project objectives are achieved, an analysis is made by using a QR code scanner, as the COD process system.

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# ABSTRAK

Projek ini adalah mengenai Sistem pembayaran tunai semasa penghantaran dengan menggunakan Raspberry Pi. Pada masa kini, bayaran dalam talian untuk membeli tidak selamat, dimana setiap pembayaran mestilah dibuat dahulu dengan menggunakan pembayaran dalam talian atau melalui transaksi bank. Sistem ini akan mendedahkan pelanggan kepada jenayah siber dan penipuan. Oleh itu, dengan adanya sistem pembayaran tunai semasa penghantaran dengan menggunakan Raspberry Pi akan mengatasi masalah ini. Di mana, pelanggan hanya perlu membuat pembayaran tunai semasa barang diterima. Setelah itu, pelanggan dan penjual akan menerima resit elektronik setelah pembayaran dilakukan. Manakala, untuk syarikat penghantaran pula status bayaran produk akan dikemaskini secara automatik dalam sistem pangkalan data. Malahan, sistem pembayaran tunai semasa penghantaran merupakan satu alternatif untuk menggurangkan jumlah tenaga elektrik yang digunakan. Akhir sekali, bagi memastikan objektif projek tercapai, analisa akan dibuat dengan membangunkan peranti mudah alih dengan menggunakan Raspberry Pi pengimbas QR kod sebagai process sistem pembayaran tunai.

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# LIST OF ABBREVIATIONS

| | | |
|---|---|---|
| COD | - | Cash On Delivery Payment System |
| USB | - | Universal Serial Bus |
| QR Code | - | Quick Response Code |

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# CHAPTER I

# INTRODUCTION

## 1.1 Project Background

Nowadays, the current payment for online shopping is not secure, where each purchase must make a payment using online payment or bank transaction. However, this system will reveal the client to cybercrime and fraud because the client must make a payment in advance. In this project, we develop a portable cash on delivery system to support cash on delivery payment using Raspberry Pi as its platform to secure the payment system. Where the client could make a payment once the product is received. Using the developed cash on delivery system, client and seller will receive an electronic receipt once the payment is done. For Delivery Company, the status of product payment will be updated automatically in the database system. In conclusion, developing a cash on delivery payment system, which will benefit in terms of security of online shoppers make secure payments to the buyer. At the same time, it also provides an energy efficient product while using only 5V of energy.

**Problem Statement**

The Project Problem (PP) is summarized in Table 1.1

**Table 1.1: Summary of problem statement**

| PS | Problem Statement |
|---|---|
| PS1 | The client is exposed to cyber fraud when make payment in advance |

## 1.3 Project Question

The Project Questions (PQ) is constructed to identify the problem statement as discussed in the previous section is depicted in Table 2:

**Table 1.1: Summary of problem question**

| PQ | Project Question |
|---|---|
| PQ1 | How to study about the current payment system? |
| PQ2 | How to develop a tool/product? |
| PQ3 | How to ensure the goods guarantee arrives? |

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## 1.4 Objective

Based on the project statement formulated in the previous section, appropriate project objectives (PO) are developed as follows in table 1.2.

**Table 1.3: Summary of project objectives**

| PS | PO | Project Objective |
|---|---|---|
| PS1 | PO1 | To study about the current payment system |
| | PO2 | To develop a device that can secure payment system |
| | PO3 | To provide safe and reliable delivery |

**Project Scope**

The project will be focused on:

i. Recognize the QR code from the image.
ii. Send proof of payment via email.
iii. Focusing cash on delivery payment system using Raspberry Pi.

## 1.6 Project Significance

Cash on delivery payment system is a type of transaction in which will benefit in terms of security of online shoppers make secure payments to the buyer. This system can secure the payment and protect the client from cybercrime and fraud. The client must pay with cash when the product is received. Using the developed cash on delivery system, client and supplier will receive an electronic receipt once the payment is done. For Delivery Company, the status of product payment will be updated automatically in the database system.

## 1.7 Expected Output

The results expected from this project comprise the safety of customers, who want to buy online in social media. Pi camera will detect the barcode on the label of the product. Then, the Pi camera will snap (scan), the details of such purchase price and the amount to be paid will be shown. After the buyer makes the payment, pi camera will click on the QR code label and at the same time customer status already paid. Next, the receipt will be sent via e-mail or SMS.

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## 1.8 Conclusion

At the end of this project, Cash on Delivery payment system can secure the client payment and protect the client from cyber fraud. The next chapter will be focusing about literature review. This will be covering about model approach and related work about barcode scanner.

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# CHAPTER 2

# LITERATURE REVIEW

## 2.1 Introduction

This chapter will discuss about literature review of the related published information with this project. The most important for having this literature review is to make an analysis regarding previous research that has been done. The literature review is a collecting related data, analyze processes, analysis of current problem and make a conclusion based on the situation. The process involves for literature review are planning, reading, researching and analyzing all the resources. A literature review can be done in a simple summarization of the resources, but it usually combination of summary and synthesis, comparison and critique. A summary and synthesis based on the key findings relevant to this project.

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## 2.2 Related Work/Previous Work

***Raspberry Pi***

Raspberry Pi is a minicomputer and the most inspiring minicomputer that available today and it was the first cheap single board computer that easy enough to use for the general purpose (Isaac Asimov, 1956). It comes with the Linux operating system and together with the Python programming language. Python is an interpreted language, which means that the code or script will execute it directly rather than compiling it into a machine code then only the machine can analyze the output of the code. In this project, Raspberry Pi can be used in electronics projects as Cash on delivery payment system because it is perfect for a small and capable little computer.

**Figure 2.1: Raspberry Pi Model B+**

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***Pi Camera***

The Raspberry Pi Camera is a designed for a Raspberry Pi. The camera board has a cable to connect to it, to connect the camera to the Raspberry Pi the camera cable must be inserted in a camera slot next to the HDMI slot in the Raspberry Pi board. The camera is 5 megapixels resolution, which is good for capturing an image. In this project, Pi camera is used to capture the image QR code directly and store pictures in memory.

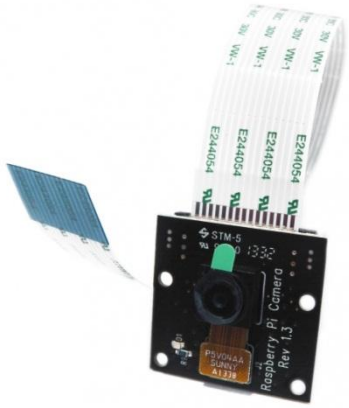


**Figure 2.2: Pi Camera**

## 2.3 Previous Work/Related Work

Based on the **Charles Severance (October 2013)** in his "Computing Conversations Column article wrote why and how Eben Upton formed the Raspberry Pi Foundation" [1]. The main purpose is to create a cheap computer yet tiny as small as card credit size that has a function same like real computer but with less powerful and use low power to operate it. It is to show a young generation what inside the computer and inspired them to programming language, to create any project within the power of this minicomputer. The Raspberry Pi Foundation is a non-profit foundation created by Eben Upton and his friends in 2009. There had designed a BCM 2835 into miniature single-board computer. The raspberry pi concepts are based on the series of Broadcom chips and they do all the software development process where decides on ARM-based Linux system for the raspberry pi platform and yet the BCM 2835 already had all the features such as support for HDMI, standard display, a video and 3D accelerator, a camera processor, digital signal processors and a USB controller. The problem is it needs to show how the Raspberry Pi technology can developing as new tool or product in cash on delivery payment system.

**Chang-Hoan Cho, Jaewon Kang, Hongsik John Cheon (2006)** in their research "Online Shopping Hesitation" [2] this article discusses how to learn and understand which factors influence customer hesitation or delay in online product purchases. This article study about the variety of four groups like consumer characteristic, contextual factors perceived uncertainly factors and medium innovation factors. There are three types of online shopping hesitation such as overall hesitation, shopping cart abandonment and hesitation at the final payment stage. They found that different sets of delay factors are related to different aspects of online shopping hesitation. The factors of behaviors include with suggestions for various delay-reduction devices to help consumers close their online decision hesitation.

Based on **Maria Bekiaris (2012)** in her "Shopping Online" [3] article discusses the advantages of online shopping. Refer to the Australian Communications and Media Authority (ACMA), almost a half percent of adults have purchased goods or services over the Internet in the six months to April 2011. Of the people who are into online shopping, a safe payment method should be chosen to minimize the risk. PayPal and Pay mate is popular in Australia.

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Based on **Krishna Garad (August 2011)** in her "Barcode Scanner in C#" [4] article discuss about until reading those barcode images from C#. This article can check how to study barcode images and scanning those barcode images from our C# application and see how to perform the scanning task in this article step by step. The method in reading barcode from file is very simple method to scan the barcode image which will take the file and path as an argument where barcode image is present and retrieve a string as the data. The problem is it used a C# captured image which using a lot of memory space.

## 2.4 Critical Review of Current Problem and Justification

| Research Title | Purpose | Description | Problems |
|---|---|---|---|
| Why and how Eben Upton formed the Raspberry Pi Foundation.<br><br>Author: Charles Severance | The Raspberry Pi was created to show the younger generation what is inside the computer and to attract them to programming language to create any project within Raspberry Pi power. | The concept based Broadcom chips, same as any standard computer size. The BCM 2835 have all features that can act as a mini- computer. | Do Raspberry Pi technology can be developed as secure payment on delivery. |
| Barcode Scanner in C#<br><br>Author: Krishna Gara | To generate the barcode images and scan those barcode images from our C# application | The method in reading barcode from file and this way can scan the barcode images using C# | C# using a lot of memory space. |
| Online Shopping Hesitation<br><br>Author: Chang-Hoan Cho, Jaewon Kang, Hongsik John Cheon | How to learn and understand which factors influence customer hesitation or delay in online product purchases. | They found that different sets of delay factors are related to different aspects of online shopping hesitation | Don't have any application to make payment online secure. |

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