

## TOLL PLAZA PAYMENT USING QR CODE

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**Abstract** With the increase in technological developments, smart phone, tablet and iPods have been widely used by all users. Starting from user needs is almost complete with a small object with millions of benefit. With this trend, many people use their smart phone to do electronic transactions. One of the electronic transactions is toll plaza payment. This application emerges as a solution to the manual toll collection method employed at toll plaza. Time and efficiency are major factors of present situation. In order to overcome the major issues of vehicle congestion and time consumption, the QR scanner is used. Here the user uses the QR code as the gate pass. The administrator verifies the QR code with the help of QR scanner. It reduces the fuel utilization by reducing the waiting time. This application makes toll plaza payment more convenient for the public use.

**Key Words:** toll, QR code, payment, android

### 1. INTRODUCTION

The main idea behind implementing toll plaza payment is to automate the toll payment process thereby reducing the long queues at toll plaza using QR code generated by application. This system is used by vehicle owners and system administrators. Toll plaza application is a mobile application which is used to improve efficiency from manual method and reduce the time for waiting in toll plaza .QR code(QUICK RESPONSE CODE) is used to scan the embedded information.

The main objective of this application is,

- To provide an effective less waiting time for traffic in Congested cities.
- To Controls traffic to a maximum extent.
- To reduce the time consumption.
- To verify the payment of toll plaza using QR code.

Android is an operating system which is based on the Linux kernel. It is also called as Android Open Source Project (ASOP), led by Google. Android is used for mobile devices, such as Smartphone and tablet computers. The Android application makes life more comfortable and advanced for the users. These applications are more comfortable and advanced for the users. The hardware supports android software is based on ARM architecture

platform. The android has got millions of apps available that can help you managing your life one or other way and it is available low cost in market at the reasons android is very popular. Android is a powerful, open source, Linux-based operating system. It provides a rich development environment for building the applications. Android supports audio, video formats like JPEG, PNG, GIFBP, MP3, MP4, MIDI, AMR, AMR-WB, MPEG-4 etc

### SDK

A development kit has been put at disposal of everybody. Accordingly, any developer can create their own applications, or change the android platform.

### Widgets

With android, it is possible to use widgets which are small tools that can most often get information. These widgets are directly visible on the main window.

### Android Market

This is an online software store to buy applications. Developers who created applications can add them into the store, and these applications can be downloaded by users, they can be both free and paid.

### Multitasking

Android allows multitasking in the sense that multiple applications can run simultaneously. With Task Manager it is possible view all running tasks and to switch from one to another easily.

### ANDROID EMULATOR

You can launch an application on the emulator when you run your project or you can drag an APK file on to the Emulator to install it. As with a hardware device, after you install an app on a virtual device, it remains until you uninstall or replace it.

### APP MANIFEST

Every application must have AndroidManifest.xml files in its root directory. The manifest file provides essential information about your app to the Android system, which the system must have before it can run any of the app's code.

## APPLICATION FRAMEWORK

Developers are free to take advantage of the device hardware, access location information, run background services, set alarms, add notifications to the status bar, and much more. An Activity manager manages lifecycle of applications and provides common navigation backtracks. Content providers enable applications to access data from other applications such as contacts or to share their own data files. A Notification manager that enables all applications to display custom alerts the status bar.



Fig 1: ANDROID FRAMEWORK

## JAVA

Java technology is both a programming language and a platform. Java programming is simple, Architecture neutral, object oriented ,portable, distributed, High performance, Interpreted, Robust, Dynamic and Secure. The Java programming language is unusual in that a program is both compiled and interpreted.



Fig 2: APPLICATION ARCHITECTURE

## 2. PROPOSED METHOD

It is very challenging to handle a vehicular flow by a manual system of revenue collection. An automated electronic application which makes easy for user by the help of Android and QR code as media access automatically without manual service. User register to get own login id and password and using the login id and password the user can enter in to the application. The current location i.e. the source address will be automatically generated by map using GPS locator and the destination address will be selected by the user. Then the vehicle registration can also be done in the add vehicle page .the user can add as many number of vehicles desires. In details page the vehicle detail, duration for the travel, number of tollgates present in that route, amount to be paid will be displayed. The payment can be done in the payment session by the use through online. The QR code will be generated after the user pays so that it is used as gate pass for user to cross the tollgates. QR code is designed to speed up services for users in toll plaza. Administrator will scan the users QR code and it will generate information of payment details. The most crucial stage in achieving a new successful system is that it will work efficiently and effectively.

There are several activities involved while implementing a new project.

- End user Training
- End user Education
- Training on the App

## Modules

This project is entitled "Toll Plaza Payment Using QR Code" using Java as Front end and SQL Server as back end.

- Application creation
- Payment Session
- QR code generation
- Toll Plaza Verification

## Module Description

### Application creation

- User can sign up by registering the personal information and login by using the registered username and password.
- User enters the vehicle oriented information such as vehicle number, license number, vehicle type etc.
- Depending upon the source and destination which user can select manually from the map the payment, distance, duration of travel ,path will be displayed and number of toll gates present in that route.



Fig 3: SELECTON OF PATH

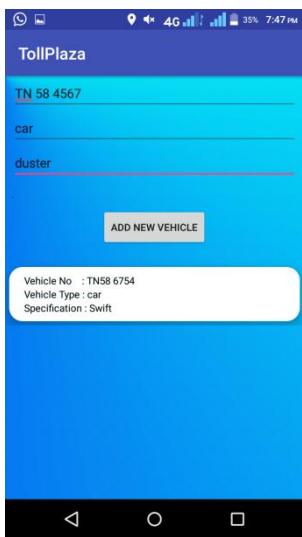


Fig4: VEHICLE REGISTRATION PAGE



Fig 5: DETAILS OF SELECTED PATH

### Payment Session

- In this module, amount calculated for the source to destination.
- Amount can be paid by any bank through online process.
- If the vehicle belongs to the authorized person/group, it automatically the toll gate and a predetermined amount is automatically deducted from its account.

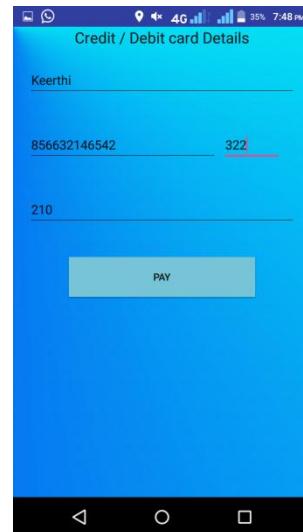


Fig 6: PAYMENT SESSION

### QR code generation

- In this module, after the confirmation of payment the QR code process is taken.
- The vehicle information are given by user are validated and generate the QR code for toll gate process.
- Through the QR code, the toll staff can easily scan the information in QR code and check the payment mode is done.



Fig 7: QR CODE GENERATION

#### Toll Plaza Verification (App QR Reader)

- Toll plaza is in offline, user reaches the toll plaza, and the staff gets the QR Code.
- Then verify the information's and check the payment information.
- After the confirmation, they permit the vehicle to move, it taken less amount of time and reduce the traffic in toll plaza.

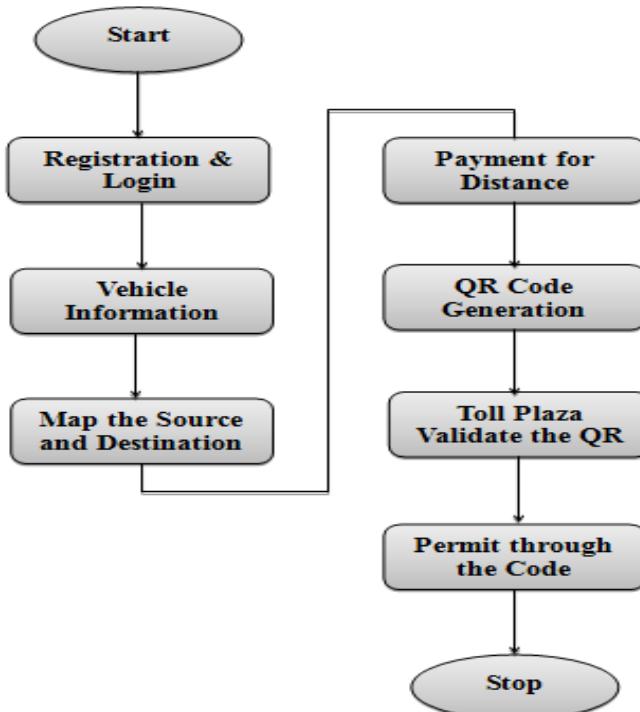


Fig 8: FLOW DIAGRAM

### 3. CONCLUSIONS

In this application "Toll plaza payment using QR code" the QR code is generated by admin for every user based upon their details and this QR code is used as gate pass for the user. All the details will be retrieved easily without any delay while crossing toll gates. The result of the proposed method has a simplification procedure followed by users to pay toll at this application and retrieve the QR code for the acknowledgement of payment. The admin will verify QR code using QR scanner and retrieve all the details. Here the GPS is also connected so that user can select the location easily.

In future enhancement the vehicle tracking will be displayed and the number of toll gates in the roads.

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