Public Transport Smart Payment System

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Abstract:- The usage of cash has been reduced drastically in our country because of the smartphone usage and digitalization. Nowadays it is difficult to find cash in the wallets of people especially small denominations. The inconvenience of carrying cash as well as the convenience of mobile wallets has contributed a lot to it. The proposed system facilitates commuters to go cashless by employing some digital payment methods. In this project, we develop a smart ticket printer in the public transport like buses which enables the commuters to pay transport fare without cash using QR codes and also a smartphone application which provides a platform for payment and also for tracking and maintain the details of their travel history. The traveler scans the code generated by the machine with respect to the details the traveler has shared with the employee, using smartphone application and then the payment process is carried forward. This reduces the usage of cash thus making travelling convenient.

Keywords:- Smart Payment, Raspberry Pi, Qr Code

I. INTRODUCTION

Exchange of commodities was the most popular way of getting products and services during the ancient time. As part of standardization it was replaced by coins made of valuable materials like gold, silver, aluminum etc. by the rulers of ancient civilizations. Later it was transformed into the modern form 'Money' and has been used through centuries after centuries and has been a part of many technological advancements. Different countries use different and their respective currency and that too have various denominations for the ease of usage and maintenance. Money, cash, is the most popular medium of exchange and has played the greatest part in the world's economy. The recent advancements in the technology has popularized the usage of 'Plastic money' and 'Online transactions'. The people nowadays don't need cash in hand in order for a service or a product. They can use their ATM Cards, Internet Banking or their Smart Phones for money exchange and it has become very popular but still in our country India, Public Transportation System especially the buses still use cash as their medium of exchange. The other methods are only available for online bookings of the seat. There are smart card systems in some cities but they too are not so popular as it is not convenient. The current system also creates some trouble if both the traveler and the bus employee doesn't have the right denominations for balancing the amount. It is the most popular problem faced by travelers using the public transportation system. The proposed system solves this dilemma as it introduces cashless payment system for travelers. The users will only need their smartphone to pay the cash for their travelling and also solves the denomination problem thus easing their travelling.

II. PROPOSED SYSTEM

The proposed system has two modules: a ticket machine to be used by the transport employee for generating ticket and QR Code and the other a smartphone application to be used by the traveler for payment.

The machine is made by using the help of a Raspberry Pi, a LED or a LCD display for output purposes and displaying the QR code, a printer for printing the bills, a keypad for inputs. The smartphone application is made for the payment as well as receiving an electronic ticket.

The working is as follows:

➢ The bus conductor enters the details the transportation of the traveler as well as his/her companions in the machine.
➢ Then the payment mode is selected, if the payment mode is online/cashless a specific QR code based on the details entered will be displayed which can lead to the payment portal.
➢ Then traveler opens his application from the smart-phone scans the QR code from the machine using the smart-phone and then is taken to the payment portal and the transaction is proceeded.

➤ If the transaction is successful a ticket in the form of both physical and electronic is received.

The system also has some additional feature. The machine is attached with GPS and hence the Transport Corporation and the users can be provided with the exact location of the specific transport if the details of the bus is known prior. The block diagram of the proposed system is shown below as Fig 1.
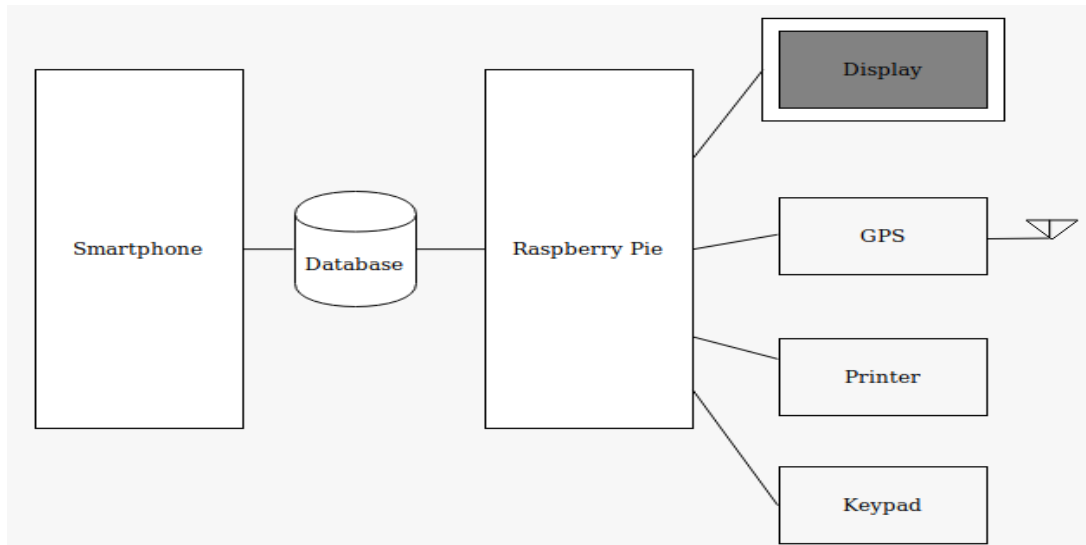

Fig 1:- Block Diagram

III. METHODOLOGY

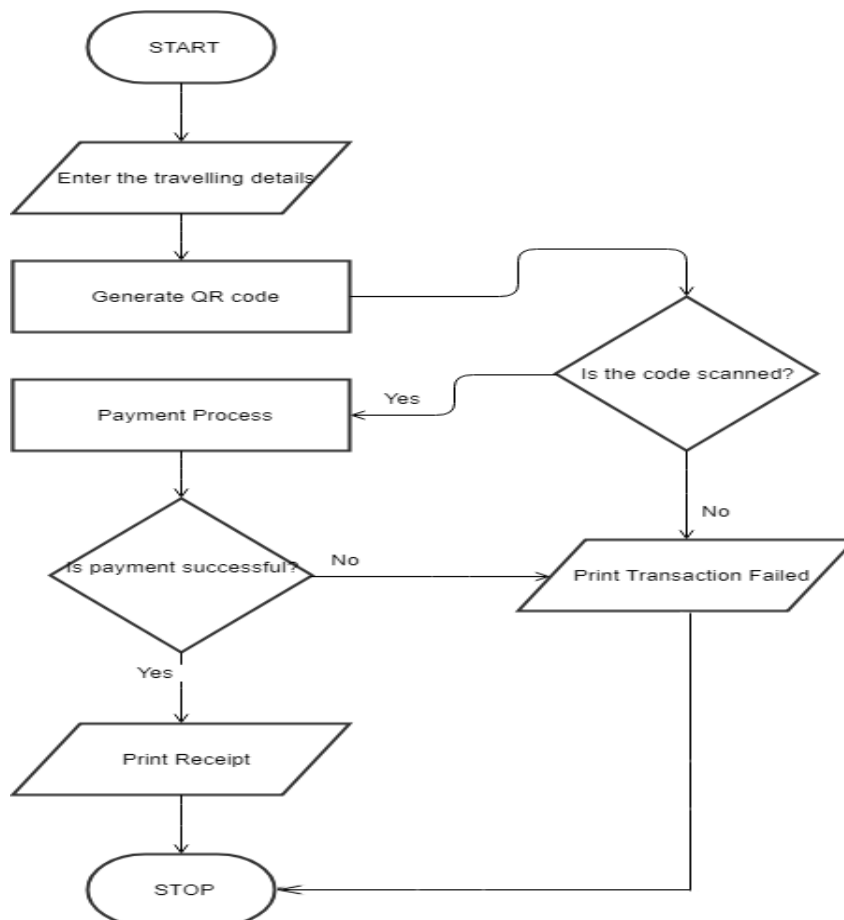The flowchart of the machine is shown in Fig 2.

Fig 2:- Flow Chart of Machine

The employee of the transport enters the details of the traveler's journey. Then the payment portal link as QR code is generated on the machine's display. If the QR Code is not scanned under a certain time, the time out happens and the transaction is failed. If the code is scanned and the payment is successful then the ticket is printed.

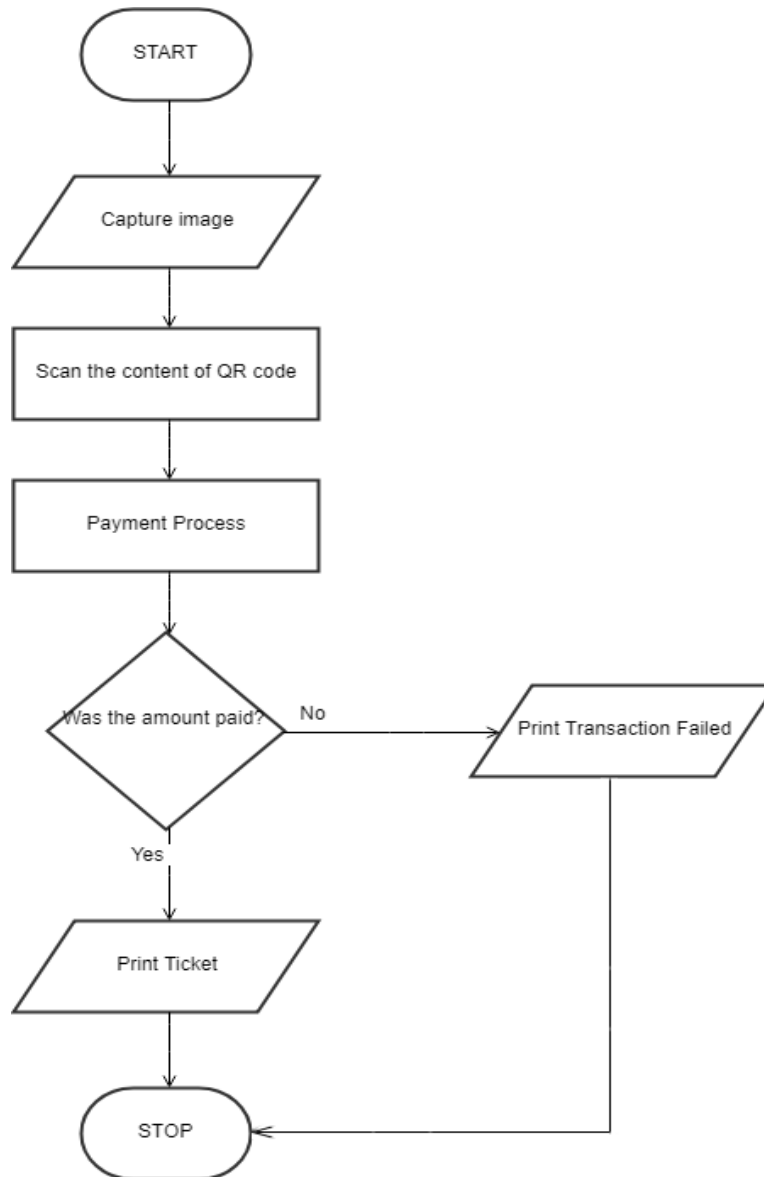The flowchart of the smartphone application is shown in Fig 3.

Fig 3:- Flow Chart of Application

The traveler scans the QR code using the camera of the smartphone through the application. Then the details of the journey are printed. Then is the user presses pay button the transaction is proceeded to the payment portal and the payment process is executed. If the payment is successful the ticket is received else transaction failed is printed.

IV. CONCLUSION

In our proposed system we have discussed another way or method for taking tickets in the public transport system. This method will be convenient for those users who doesn't have smaller or required denominations of cash or the people who prefer smart payment options. People no longer will have to wait for change as payment is done for the exact amount. They also can have the tickets safely in their smartphone application.

V. FUTURE WORK

Introduction of PIR sensor-based system that makes the employee easy to identify the number of passengers travelling in the transport for detecting new passengers will be useful and also Bluetooth based location announcement system to help passengers to know their current location is also eases the travelling experience.

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