Bharath
INSTITUTE OF HIGHER EDUCATION AND RESEARCH
(Declared as Deemed - to - be - University under section 3 of UGC Act 1956)
173, Agaram Road, Selaiyur, Chennai-600073

BHARATH INSTITUTE OF SCIENCE & TECHNOLOGY

Department of Computer Science & Engineering

TERM PAPER

SUB CODE: U18PRCS6P1

Name: KARTHIKEYAN K

KAMESH J

Year: III **Semester: VI** **Batch: 2019-2023** **Section: H**

University Register No.	**U19CS467** **U19CS438**

JUNE 2022

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Certified that this is the bonafide record of work done by the above student in the **TERM PAPER (SUB CODE: U18PRCS6P1)** during the month **June 2022.**

Signature of Faculty-In-Charge **Signature of Head of Department**

Submitted for the practical Examination held on .....
at Bharath Institute of Higher Education & Research.

Signature of Internal Examiner **Signature of External Examiner**

ABSTRACT

In today's world, everyone is in hurry; late for jobs, schools, colleges, etc. Some also tend to forget important things which are much needed and are often carried with them. One such thing is bus passes. The soft copy of the pass, even though the person (or) the passenger has it, would not be verified by the checker and the checker tends to give a fine. Also, communers passes and such has to be applied on the major bus centrals such as CMBT. Some passengers find it difficult to go to the major bus centrals, even though the bus centrals are nearby. This project proposes a website, in which a QR code is generated for every bus pass by getting the verification no. as input and helps the passengers to apply any kind of bus passes online. The passenger has to log in by entering a valid ID and a password, being first 3 letters of the passenger's name followed by his/her Date of Birth. To apply for a pass, the user has to click on the pass category he/she tends to apply for. Then, the user must give in the necessary details and documents, which must be verified by the admin. He/ she can do the same procedure for QR code generation. The admin has to verify the user and then generate the required bus pass with a QR code. The admin also has the power to block the pass, when the pass is no longer in use. While travelling, the passengers just have to show the QR code generated during the pass renewal/ generation. The checker/the conductor just has to scan the code using the webcam in his phone and the details of the pass (name of the passenger, age, from & to – if required and validity of the pass) will show up in the mobile phone of the checker/conductor. This will greatly be an advantage for those passengers, who forget their bus pass, time-saving for the bus conductors and checkers, as he/she would just scan and check the information which the QR code gives out. The project is also a big advantage for passengers, who finds it difficult to apply for the pass at major bus stations. The Bus Pass, which is applied online tends to be issued much faster than the pass applied in Bus Centrals. Thus, the project is much beneficial, as it is time-saving, resource-saving and not much energy-consuming, compared to the methods which are used to apply for the pass before.

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1. INTRODUCTION

1.1 Introduction

In today's world, everyone is in hurry; late for jobs, schools, colleges, etc. Some also tend to forget important things which are much needed and are often carried with them. One such thing is bus passes. The soft copy of the pass, even though the person (or) the passenger has it, would not be verified by the checker and the checker tends to give a fine. Also, communers pass and such has to be applied on the major bus centrals such as CMBT. Some passengers find it difficult to go to the major bus centrals, even though the bus centrals are nearby. The project proposed here helps to overcome such hindrances while applying for the pass. The project includes an online application of the pass which one can be benefited from by not spending much time and effort applying. The generation of a QR code is also achieved by applying for the pass online, which can be helpful for both passengers and ticket-checkers. The checker just had to scan the code with his/her webcam and the details of the pass will be shown on the screen of the phone.

1.2 Problem Definition

Nowadays, every part of our day-to-day life has changed online. People have at least one app to make these day-to-day routines or tasks much easier, whether payments, food ordering or travelling. The government has also implied many onstream solutions to make it easy and less time-consuming for the citizens. Onstream solutions not just make those routines/ tasks easy, but also consumes less manpower and resources. Though online solutions have advantages, it equally comes with disadvantages too. Disadvantages may include less security, imitation of others, etc.

The main issue in the government bus website is that the details provided are only applicable for the pass which is to be applied at the bus central. Moreover, it takes days to weeks for the pass to be issued. It is much time consuming and resources consuming compared to the methods done online. The website also doesn't come in handy while the passenger is in urgent need of a pass.

Some passengers may forget their pass in their everyday hustle. Some also tend to forget important things which are much needed and are often carried with them. One such thing is bus passes. The soft copy of the pass, even though the person (or) the passenger has it, would not be verified by the checker and the checker tends to give a fine. This project proposes a website, in which a QR code is generated for every bus pass by getting the verification no. as input and helps the passengers to apply any kind of bus passes online. The passenger has to log in by entering a valid ID and a password, being first 3 letters of the passenger's name followed by his/her Date of Birth. To apply for a pass, the user has to click on the pass category he/she tends to apply for. Then, the user must give in the necessary details and documents, which must be verified by the admin.

The passenger can do the same procedure for QR code generation. The admin has to verify the user and then generate the required bus pass with a QR code. While travelling, the passengers just have to show the QR code generated during the pass renewal/ generation. The checker/the conductor just has to scan the code using the webcam in his phone and the details of the pass (name of the passenger, age, from & to – if required, and validity of the pass) will show up in the mobile phone of the checker/conductor. This will greatly be an advantage for those passengers, who forget their bus pass, time-saving for the bus conductors and checkers, as he/she would just scan and check the information which the QR code gives out.

The project is also a big advantage for passengers, who finds it difficult to apply for the pass at major bus stations. The Bus Pass, which is applied online tends to be issued much faster than the pass applied in Bus Centrals. Thus, the project is much beneficial, as it is time-saving, resource-saving, and not much energy-consuming, compared to the methods which are used to apply for the pass before.

1.3 Objective of the Study

In this proposed project, the key advantage is applying for a pass online. The existing government website provides all the details regarding the bus pass fare and such but does not let the passengers for applying for the pass online. The website sets out the major bus centrals where the pass is issued and gives a detailed overview of the fare collected for the respective pass type.

Even though the government has implied many onstream solutions, some tasks and routines are still left behind. One such thing is applying for a pass-through online. The Tamil Nādu government's official website has all the information regarding how and where the pass is to be applied but it does not provide an online solution for applying for a pass.

It is very simple and time-saving for having to apply for the bus pass and renew one online compared to the previous methods. Previous methods to apply so may include the passenger going to the major Bus Centrals such as CMBT, entering the details and applying for the pass, waiting for a week, and getting their passes. Online solutions may take two days at most to give away the passes.

The majority of people tend to forget their passes which are issued at the Bus Centrals, on their everyday hustle. The Ticket Checker would not validate the soft copy of the tickets (E.g., picture of the ticket) and tends to give out a fine. While applying for the pass online, the pass comes with a QR code, which the passenger can easily save to their phone. The checker would simply scan the code to get the details of the pass.

The project, on the whole benefits, not just the students, but the commoners too. This project helps passengers get a simple on-stream solution for them to apply for the bus pass and verify it. this project also benefits conductors and ticket-checkers, who wouldn't have to check an unclear bus pass.

2. SYSTEM ANALYSIS

2.1 Feasibility Study

This project, Bus Pass Verification Using QR Code- greatly benefits the government by moving one step ahead into Digital World. Since almost everything in this world is converted to digital or online, people still expect some of the daily necessities to be online, or to at least support it on-stream. Some of the people might not find time to go to the bus centrals to get their pass renewed or even to apply for a pass. Even though they get their allocate time to update or to get their pass, they must wait for at least a week to get their pass in hand.

Bus pass verification can also be hectic and stressful if the pass is misplaced. Even though the passenger has a soft copy of the pass it would not be verified. This makes the passengers feel stressed since they did a tiny mistake of misplacement. To avoid such situations, the QR code that is generated both separately and together with the pass which is applied/renewed recently can be scanned and that provides details of the pass.

The system which is proposed above has many advantages over disadvantages. The advantages are listed out, point-wise below:

- Reduces waiting time for the arrival of pass.
- Provides a second solution for the stressful situation faced.
- Reduces effort wasted by the people to apply for the pass.
- Reduces resources wasted.
- Takes less time to get their passes verified.

2.1.1 Financial Feasibility

This project, ‘Bus Pass using QR Code’ is built using .NET Framework. ASP.Net, which runs on Visual Studio, is open-source software, comprising over 20 programming languages. Since there is no upstaging cost, this has a huge benefit in reducing financial costs.

Thus, the project ‘Bus Pass Verification using QR Code’ is clearly is financially feasible.

2.1.2 Resource Feasibility

The QR Code which is to be generated for the given pass details is saved within the servers so that it can be retrieved later on. The details provided are stored in separate databases, which are used to gather up the necessary details, show the pending requests to the admin and so on.

Thus, this project is clearly feasible on the grounds of resources.

2.1.3 Time Feasibility

The main advantage of this project is that it takes two to four days to generate both bus passes and QR Codes, rather than taking a week, which is generally done by using manual methods. This results in the outcome of the project being time-saving.

Thus, this project is much more feasible on the basis of Time Management.

2.2 Existing System

The current system of the Government's official Bus transport website (Metropolitan Transport Corporation Ltd.- Chennai) provides information on when and where to get the bus pass and at which bus stations but does not provide a solution to get the same online. The website also provides just information on bus timings and so, but not an exact or even a distinct solution on-stream.

The bus passes issued at the bus centrals like CMBT is just a simple card made of paper, which can be easily damaged, if not laminated properly. Even though the government charges and laminates the pass, it cannot be saved from wear and tear since the quality might be less. The system followed also takes much time to verify the pass since the pass validity is handwritten.

The current system also results in mental stress for passengers for some amount of time, when the pass is misplaced. If the pass is stolen there might be a high chance of using the pass by a thief of the same gender and age. Thus, the existing system lacks in the following circumstances:

- Pass issued can be misplaced.
- No second solution is available if the pass is misplaced.
- Issued passes can get damaged.
- Time taken to verify is comparatively high.
- Must go to the bus centrals to get/apply for a pass.
- Counterfeit of passengers.
- Pass misplaced might give the passengers mental pressure for a while.

- Payment of fine even though the pass is available but not currently with the passenger.

To overcome the above limitations, this project (Bus pass verification - using QR Code) can be implemented. The features of this project are as follows.

2.3 Proposed System

In the proposed web application, a QR code is introduced, instead of a pass which is printed on a card. The public can have their passes as a hard copy by applying in the bus stations; but the passes which are applied online is generated as a soft copy, with a QR code. With this QR code, the ticket checker can scan the code with his webcam / can use a scanner app to obtain the details of the pass.

The public can also get their QR code for their pass, by simply applying for generation of the pass, submitting a picture of the pass for verification and entering the valid reference number. The user might have to wait for a day at maximum to get his /her pass verified and authenticated by the admin.

Through the proposed project, we can gain the following advantages to help the public.

- Less time consumption for verification of bus passes.
- Less effort is taken to apply for the pass.
- Fewer resources spent on pass generation.
- Waiting time is reduced from weeks to a day.
- The best second solution if the pass is misplaced.

The project plays a major asset for the public, who are always in a bustle. With the QR code in their phones, passengers don't have to be distraught about fines, if they misplaced or drew a blank on their passes. The QR code issued by this project will make the passengers feel relieved to not go through such turbulence.

In this proposed project, the key advantage is applying for a pass online. The existing government website provides all the details regarding the bus pass fare and such but does not let the passengers for applying for the pass online. The website sets out the major bus centrals where the pass is issued and gives a detailed overview of the fare collected for the respective pass type.

The Bus Pass, which is applied online tends to be issued much faster than the pass applied in Bus Centrals. Thus, the project is much beneficial, as it is a time-saving, resource-saving, and not much energy-consuming, compared to the methods which are used to apply for the pass before.

The project not just benefits the public but also benefits the government, by providing an onstream solution for pass renovation and applying. Amongst many other daily routines which are not yet converted to online, this project assists the government to look on a different perspective: one in which a simple yet major routine is made onstream. This project may make the government adopt the intention behind this project and might implement it in the upcoming days.

3. SYSTEM DESIGN

3.1 Hardware and Software Requirements

❖ Hardware Requirements:

- Processor – i3
- Hard disk – 5 GB
- Memory-1 GB RAM

❖ Software Requirements:

Visual Studio 2019 :

Microsoft Visual Studio is an integrated development environment (IDE) from Microsoft. It is used to develop computer programs, as well as websites, web apps, web services and mobile apps. Visual Studio uses Microsoft software development platforms such as Windows API, Windows Forms, Windows Presentation Foundation, Windows Store and Microsoft Silverlight. It can produce both native code and managed code.

Visual Studio includes a code editor supporting IntelliSense (the code completion component) as well as code refactoring. The integrated debugger works both as a source-level debugger and a machine-level debugger. Other built-in tools include a code profiler, designer for building GUI applications, web designer, class designer, and database schema designer. It accepts plug-ins that expand the functionality at almost every level—including adding support for source control systems (like Subversion and Git) and adding new toolsets like editors and visual designers for domain-specific languages or toolsets for other aspects of the software development lifecycle (like the Azure DevOps client: Team Explorer).

Visual Studio supports 36 different programming languages and allows the code editor and debugger to support (to varying degrees) nearly any programming language, provided a language-specific service exists. Built-in languages include C,[6] C++, C++/CLI, Visual Basic .NET, C#, F#,[7] JavaScript, TypeScript, XML, XSLT, HTML, and CSS. Support for

other languages such as Python,[8] Ruby, Node.js, and M among others is available via plug-ins. Java (and J#) were supported in the past.

The most basic edition of Visual Studio, the Community edition, is available free of charge. The slogan for Visual Studio Community edition is "Free, fully-featured IDE for students, open-source and individual developers".

SQL Server :

SQL Server is a relational database management system, or RDBMS, developed and marketed by Microsoft.

Similar to other RDBMS software, SQL Server is built on top of SQL, a standard programming language for interacting with relational databases. SQL Server is tied to Transact-SQL, or T-SQL, the Microsoft's implementation of SQL that adds a set of proprietary programming constructs.

SQL Server works exclusively on the Windows environment for more than 20 years. In 2016, Microsoft made it available on Linux. SQL Server 2017 became generally available in October 2016 that ran on both Windows and Linux.

3.2 Use Case Diagram

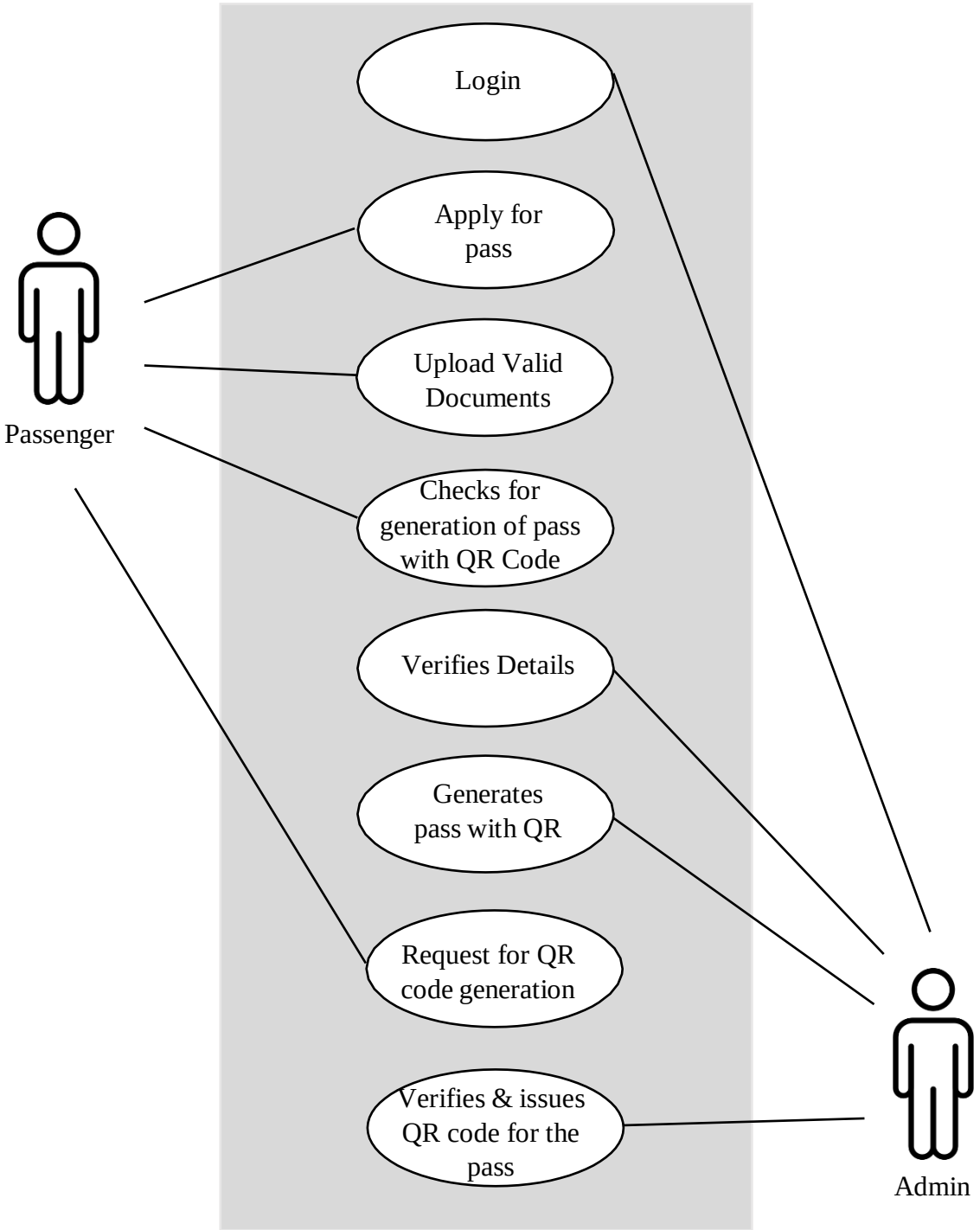

Fig. 3.1 Use Case diagram: Bus Pass verification using QR Code

3.3 Data Flow Diagram

Level - 0:

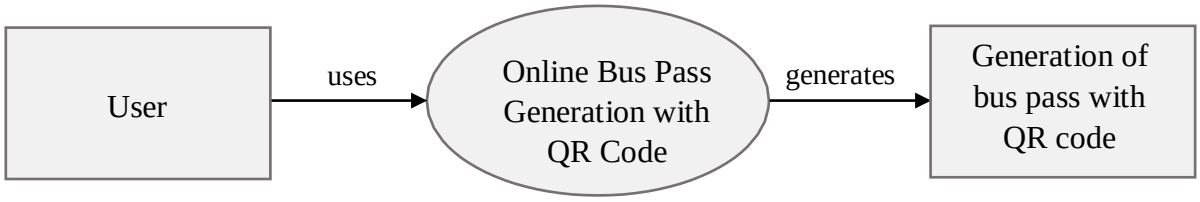

Fig. 3.2 Level-0 Diagram for Bus Pass verification using QR Code

Level – 1:

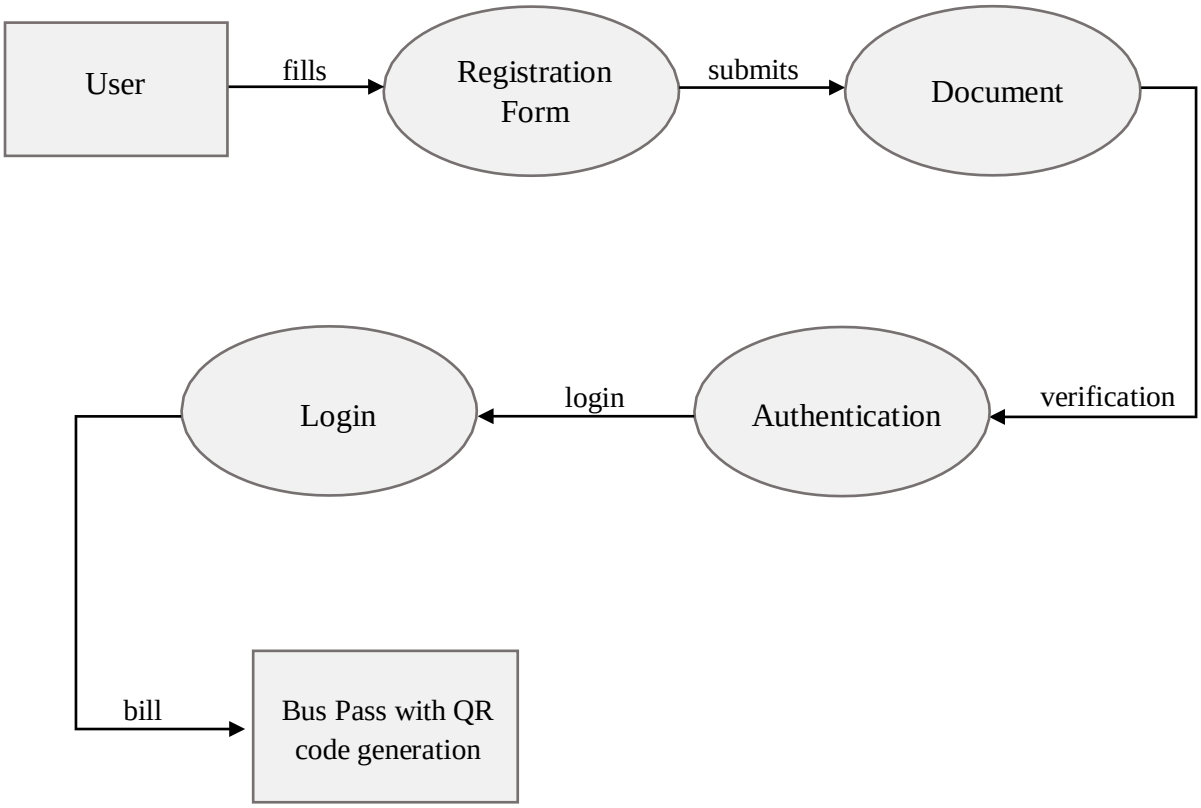

Fig. 3.3 Level-1 Diagram for Bus Pass verification using QR Code

Level – 2:

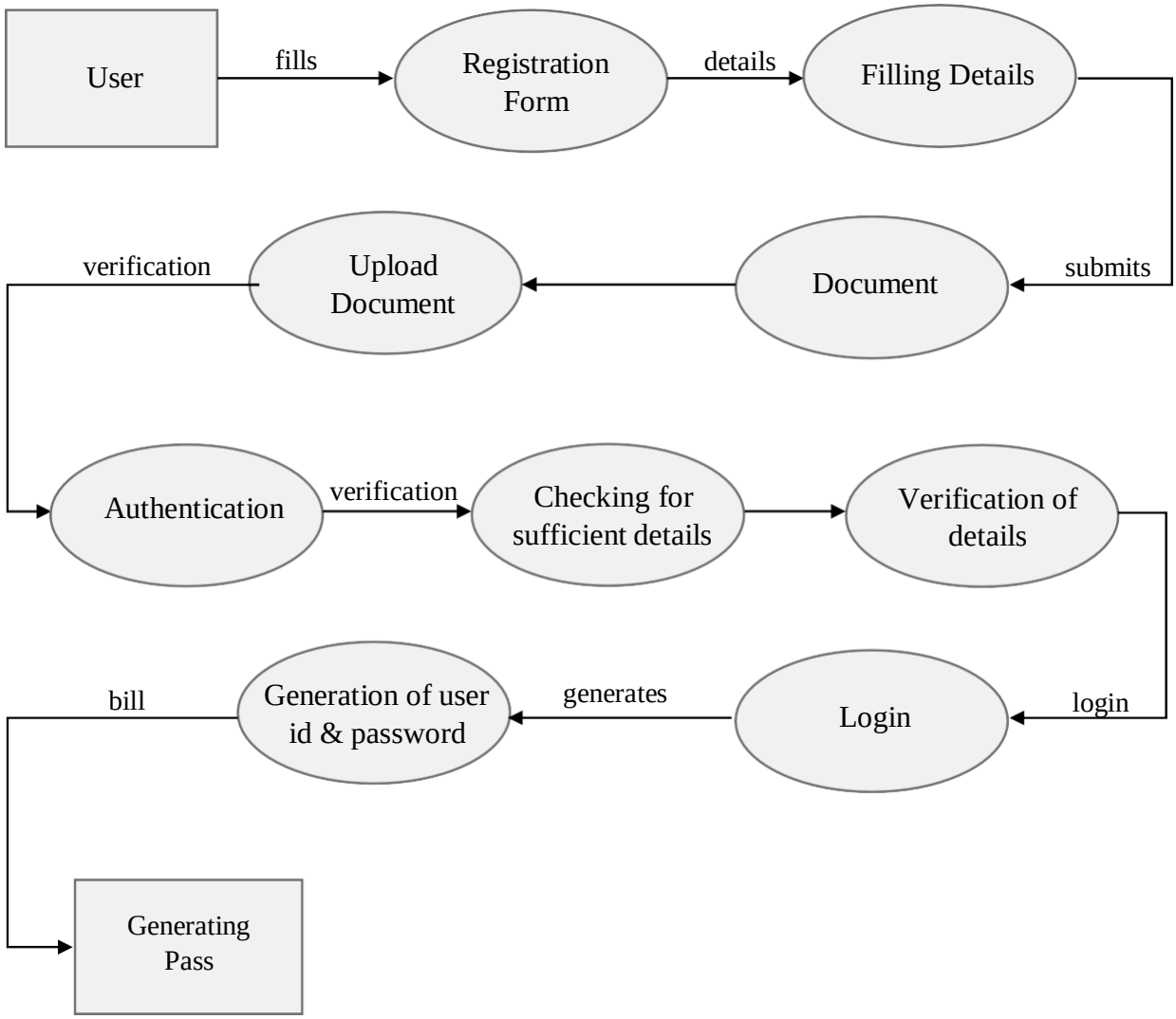

Fig. 3.4 Level-2 Diagram for Bus Pass verification using QR Code

3.4 Database Design

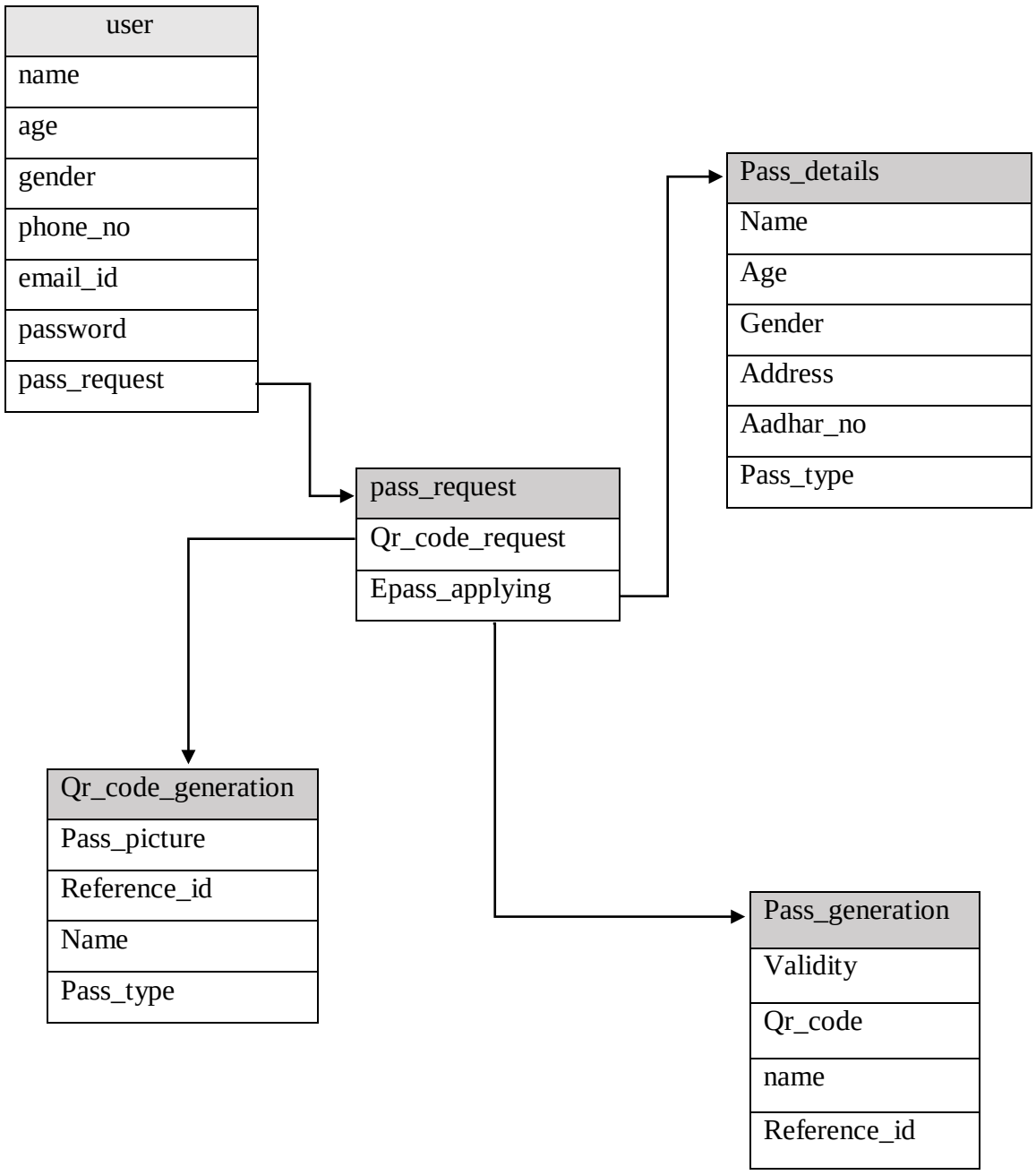

Fig. 3.5. Database Diagram for Bus Pass verification using QR Code

3.4.1 Pass application Database

Table. 3.1. Database Table for Pass Application

S.NO	COLUMN NAME	DATA TYPE	CONSTRAINT
1	Name	int(22)	null
2	Age	int (22)	null
3	Gender	char(50)	null
4	PhoneNo	int (10)	null
5	AadharNo	varchar(200)	null
6	Email	varchar(200)	null

3.4.2 QR Code application Database

Table. 3.2. Database Table for QR Code Application

S.NO	**COLUMN NAME**	**DATA TYPE**	**CONSTRAINT**
1	Name	int(22)	null
2	Age	int (22)	null
3	Gender	char(50)	null
4	PassID	nvarchar(50)	null
5	ValidityFrom	nvarchar(50)	null
6	ValidityTo	nvarchar(50)	null

3.5 Screen Design

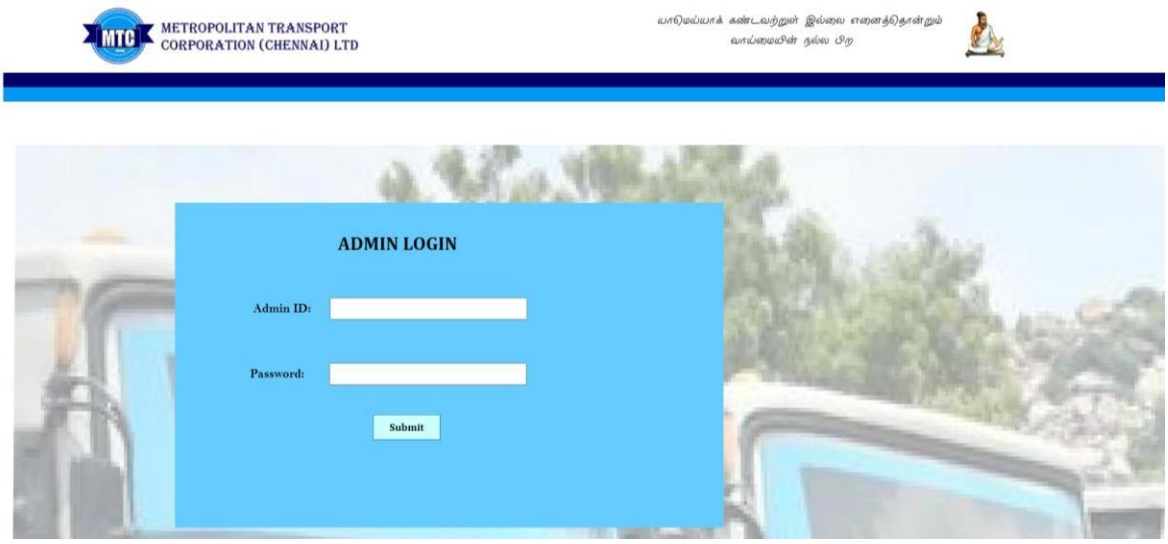

Fig. 3.5.1 Admin Login

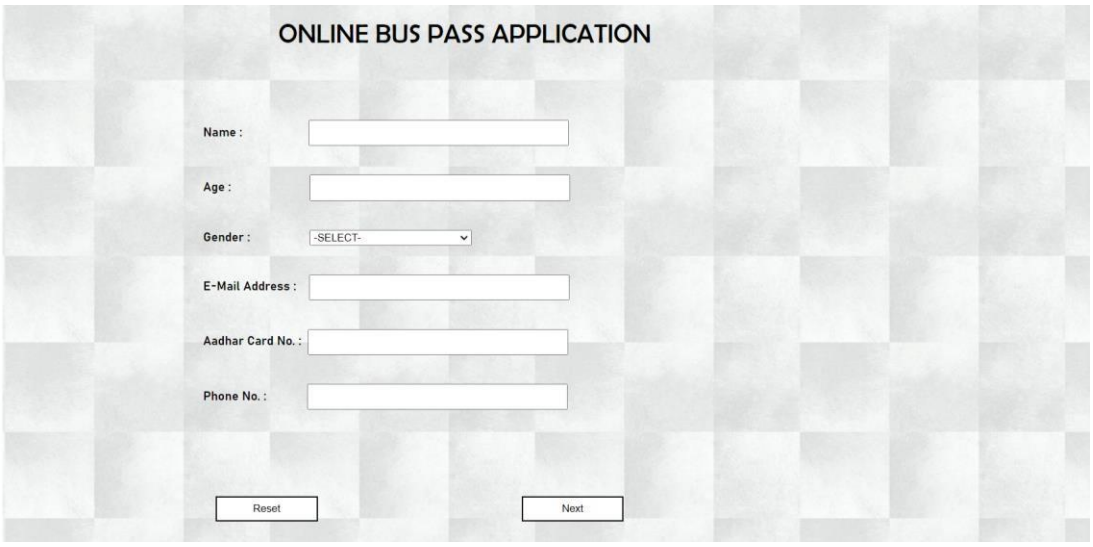

Fig. 3.5.2 Online Pass Application

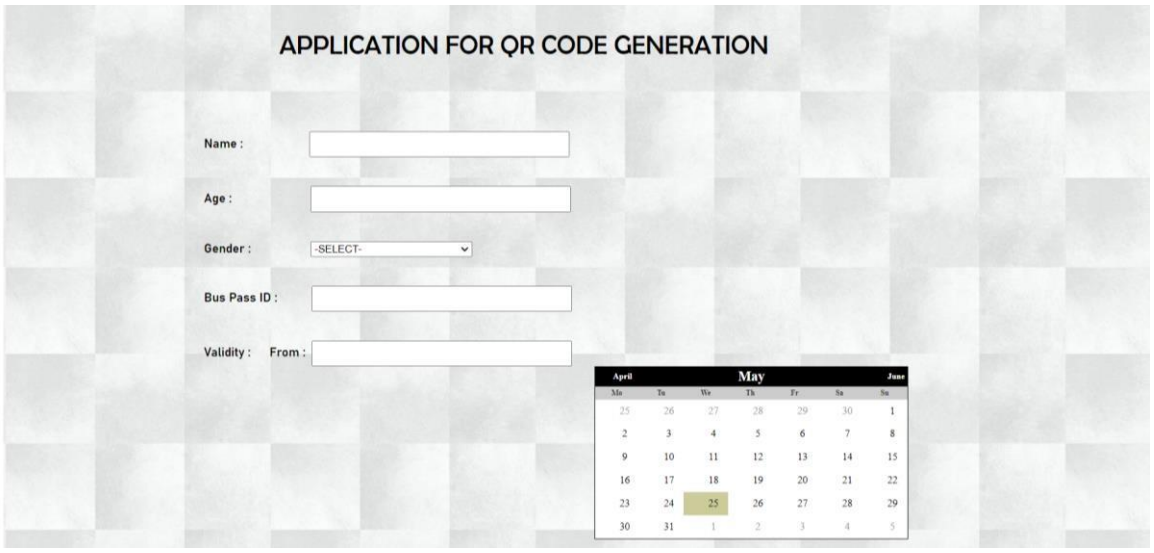

Fig. 3.5.3 QR Code Application

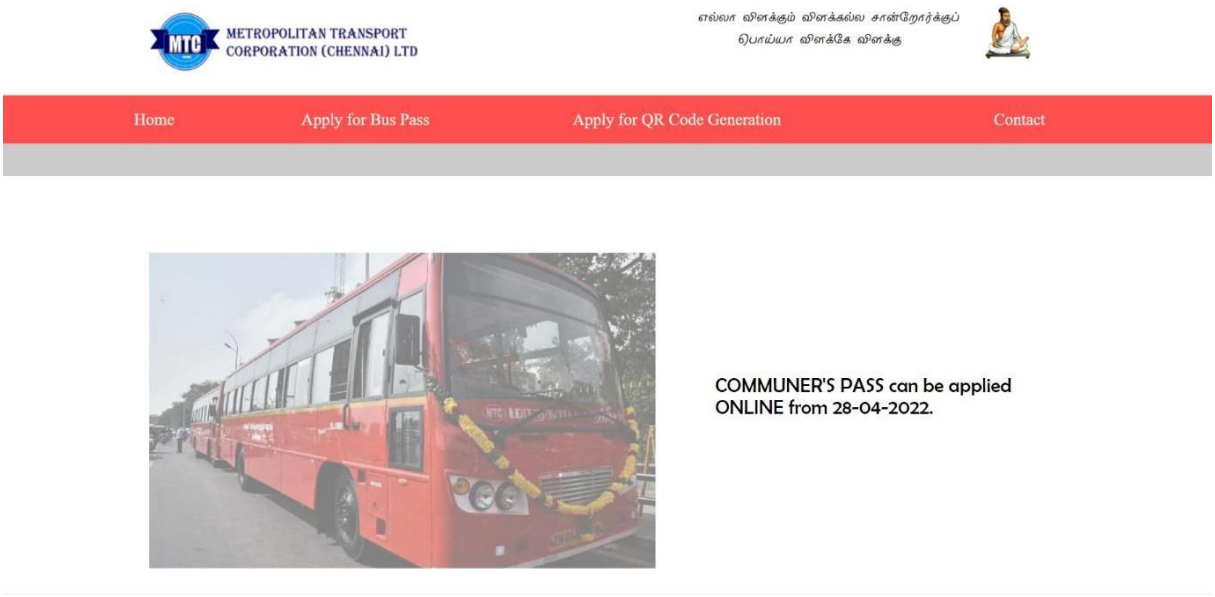

Fig. 3.5.4 Client Home Page

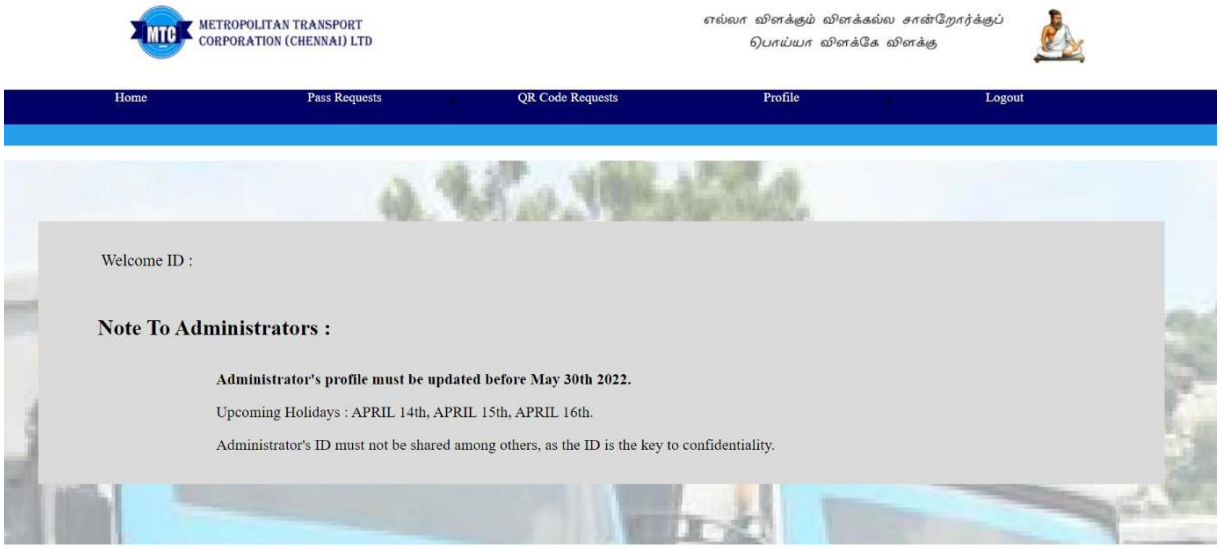

Fig. 3.5.5 Admin Home Page

4. SYSTEM IMPLEMENTATION AND TESTING

4.1 Module Description

When the client enters the web page, he/she finds himself/herself on a home page for the pass application, which has all the notifications of the current activity that may be useful for the client. Selecting the 'Apply For Pass' which is prescribed on the master page directs the client to a form that is to be filled for applying for a Bus Pass. The data entered in the form are stored in a database, that would be retrieved later. If a client chooses to get his QR code, he/she also goes through the same process as a pass application. Selecting 'Apply For QR Code' which is inscribed on the master page, directs the client to a form which is to be filled with necessary details. The data entered by the client is recorded into a separate database and is retrieved by the admin for the generation of the QR code.

For the admin's side, he/she enters the website after a login page, with the admin's login ID and password. On the home page of the admin's website, notifications which are to be given to the admin are displayed. When the admin selects the pass requests menu, he/ she is directed toward a page which contains a database of the pass requests which are not yet authenticated for pass generation. The same goes for the QR Code Request menu. Selecting the QR Code Request menu opens a webpage, which has the pending requests for the QR Code generation. When the admin selects the button 'GENERATE QR CODE' the client gets the QR Code, comprising the details as follows:

- Name
- Age
- Pass ID
- Validity From
- Validity to

The Pass generation is also of the same workflow; when the admin selects the

"GENERATE PASS" button, the bus pass is generated as a pdf containing the following details:

- Name
- Age
- Gender

- Type of pass
- Validity From
- Validity to

The admin also has a ‘Log out ‘menu on his webpage for him/her to log out after finishing the pass and the QR Code generations. The log out page has a description stating the admin has logged out successfully and a link to open the login page if the admin has logged out accidentally in the first place.

List of Modules:

Admin Module :

- Login Module
- Pass Requests
- QR Code requests
- Logout Module

Client-side Module:

- Pass Application Module
- QR Code application Module

4.1.1. Admin-side Modules:

Login Module:

To enter the webpage, the admin has to enter a valid username and password. Without a valid Admin ID/Username, validation occurs and does not prompt the admin to enter into the website.

Pass Requests Module:

Admin can view the data provided by the client for pass application and generate the pass requests after authenticating which are submitted on the client-side.

QR Code Requests Module:

Admin can view the details submitted by the client at the client side for QR Code application and generate the QR Code after authenticating.

Logout Module:

After the generation of QR Codes and Pass Requests, the admin can log out of his webpage.

4.1.2 Client-side Modules

Pass Application Module :

The client enters valid details in the pass application form, which will be saved to the database. The details of the client include name, age, gender, aadhar card number, phone number, and e-mail ID.

QR Code Application Module:

The client enters valid details in the QR Code application form, which will be saved to the database. The details of the client include the Name of the client, Age, Gender, Bus Pass ID, Validity from, and Valid through.

4.2 Testing Methodology

The testing methodology includes the type of testing required and done for the project 'Bus Pass verification using QR Code'. Testing is done to ensure the working of the web application from various points of view, such as the user's view, checking on the conditionals, accessibility, and so on.

4.2.1 Usability testing

Usability testing is a type of testing which is done to make sure whether the web application or the website is easily useable from the end user's point of view.

4.2.2 Stress testing

Stress testing is done to make sure whether the web application can endure a certain amount of stress (i.e. raise in the number of requests, which is above the requests that the application can handle). Stress testing verifies the stability, reliability, robustness and error handling capacity.

4.2.3 Regression Testing

Regression testing is done when a new feature is added to the web application or the code of the web application had undergone certain changes. Regression testing is done to ensure whether the new feature added or the change in code does not affect the existing code or the existing feature of the web application. This is to make sure the web application works fine with the new functionality, bug fixes or any change in the existing feature.

4.2.4 Acceptance Testing

Acceptance testing is a testing methodology which is done to check whether the web application has met the requirements specified in the first place. This type of testing mainly focuses on the evaluation of system compliance with its business requirements and the required criteria verification to deliver to the end-users.

4.3 Test Cases and Results

Table 4.1. Test Cases & Results

TEST ID	TEST SCENARIO	ACTION	INPUT	EXPECTED OUTPUT	ACTUAL OUTPUT	RESULT
01	Login	Provide valid credentials	Username: ADMIN Password: admin123	Redirects to Admin homepage	Redirects to Admin homepage	PASS
02	Adding details to the database	Provide invalid credentials	Name: Age:16	Does not update the database	Does not update the database	PASS
03	Bounding data to Grid view	Bound with different database	Redirect to next page	Error : Data bound value not valid	Error : Data bound value not valid	PASS
04	Saving QR Image to a file	Provide invalid file location	Select GENERATE button	ERROR: File location not found	ERROR: File location not found	PASS
05	Not entering valid details in the application form	Not providing details in Aadhar No. Text Box	Aadhar Number:	Validation: Please enter valid details	Validation: Please enter valid details	PASS

TEST ID	TEST SCENARIO	ACTION	INPUT	EXPECTED OUTPUT	ACTUAL OUTPUT	RESULT
06	Entering e-mail in the wrong format	Providing E-Mail format incorrectly	E-Mail: Sn-fs@	Validation: Please enter a valid E-Mail ID	Validation: Please enter a valid E-Mail ID	PASS
07	Moving to the Next Page	Selecting SUBMIT button	Selecting Submit button	Redirecting to the next page	Redirecting to the next page	PASS
08	Redirecting to Log out page	Selecting Log out the menu in the Home tab	Selecting Log out the menu in the Home tab	Redirects to Log out page	Redirects to Log out page	PASS
09	Giving in wrong data for generation of QR Code	Providing Name instead of Bus Pass ID	Enter Bus Pass ID: Sneha	ERROR: Invalid Data	ERROR: Invalid Data	PASS

5. CONCLUSION AND FUTURE ENHANCEMENT

5.1 Conclusion and Future Enhancement

The project proposed in the documentation has the benefit of applying for a bus pass online and applying for a QR Code for the bus pass which can be scanned by a webcam, which is present in the smartphones of the conductors or the ticket checkers. The QR Code is scanned to get the details of the pass applied and can be used as a substitute for a hard copy or a soft copy of the bus pass.

The project plays a major asset for the public, who are always in a bustle. With the QR code on their phones, passengers don't have to be distraught about fines, if they misplaced or drew a blank on their passes. The QR code issued by this project will make the passengers feel relieved to not go through such turbulence.

In this proposed project, the key advantage is applying for a pass online. The existing government website provides all the details regarding the bus pass fare and such but does not let the passengers for applying for the pass online. The website sets out the major bus centrals where the pass is issued and gives a detailed overview of the fare collected for the respective pass type.

The Bus Pass, which is applied online tends to be issued much faster than the pass applied in Bus Centrals. Thus, the project is much beneficial, as it is a time-saving, resource-saving, and not much energy-consuming, compared to the methods which are used to apply for the pass before.

The project not just benefits the public but also benefits the government, by providing an onstream solution for pass renovation and application. Amongst many other daily routines which are not yet converted online, this project assists the government to look from a different perspective: one in which a simple yet major routine is made onstream. This project may make the government adopt the intention behind this project and might implement it in the upcoming days.

APPENDIX

Appendix A: Superfluous Screen Shots and Sample codes

Screenshots :

Client's side :

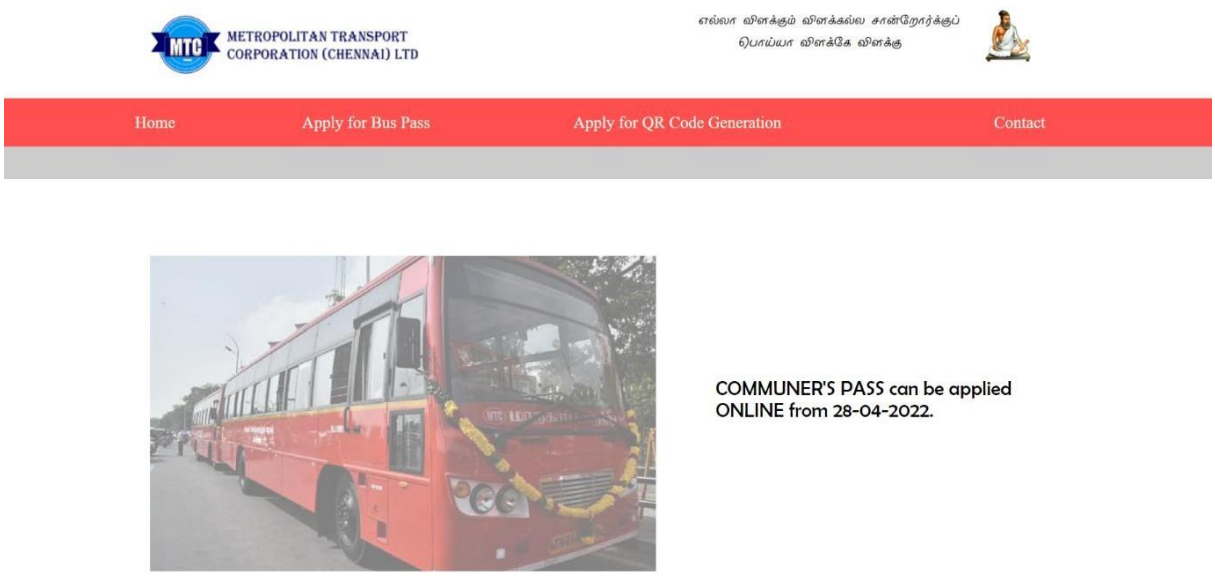

Fig. A.1 Client-side Home Page

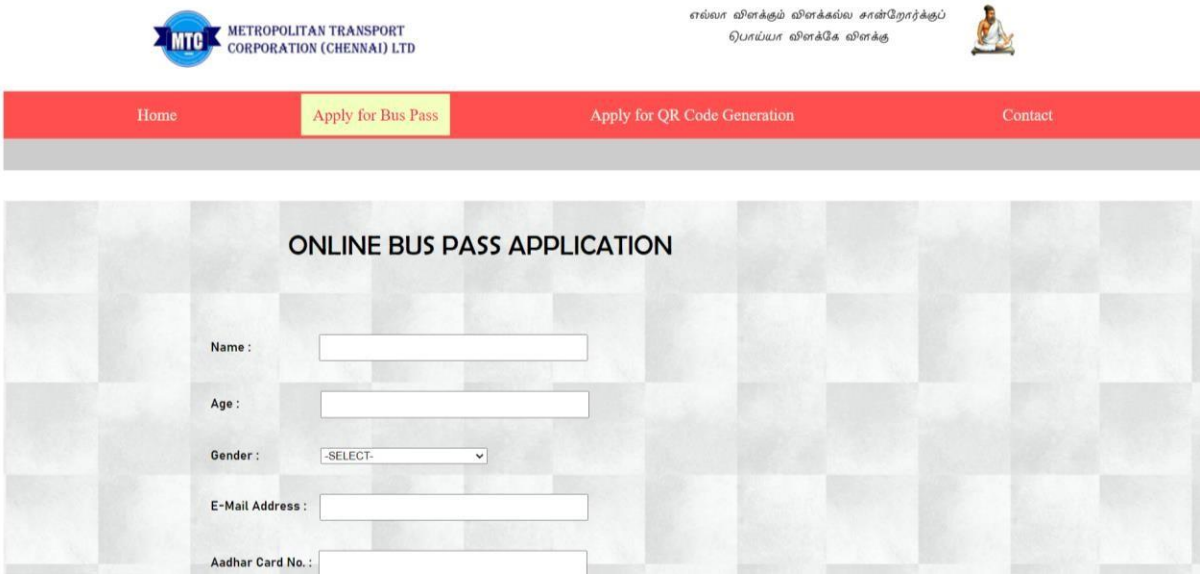

Fig. A.2 Pass Application

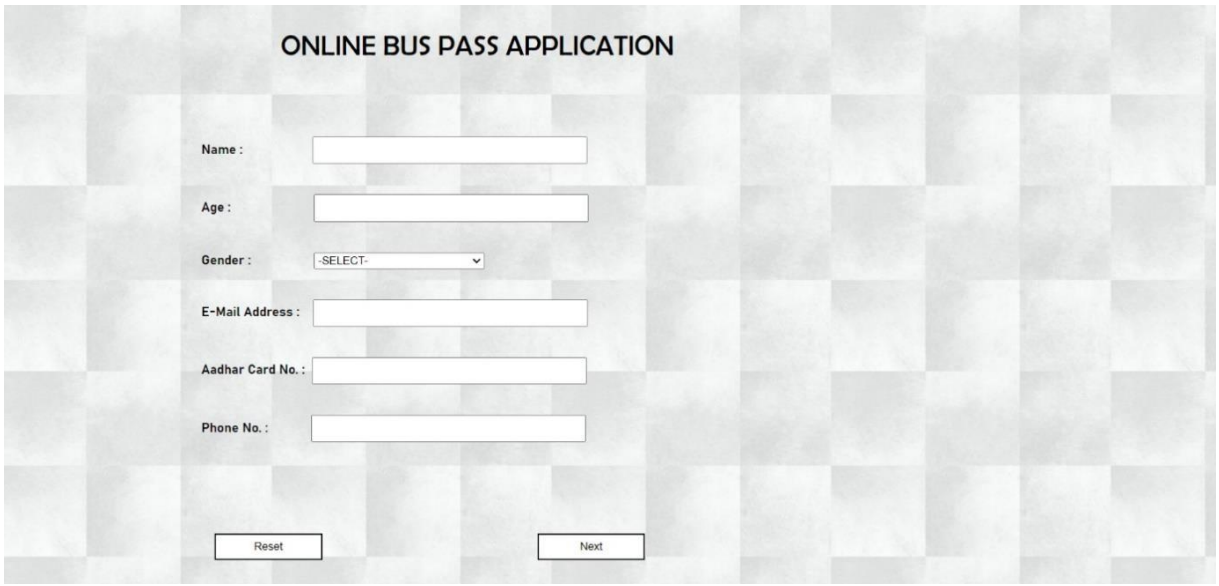

Fig. A.3 Pass Application

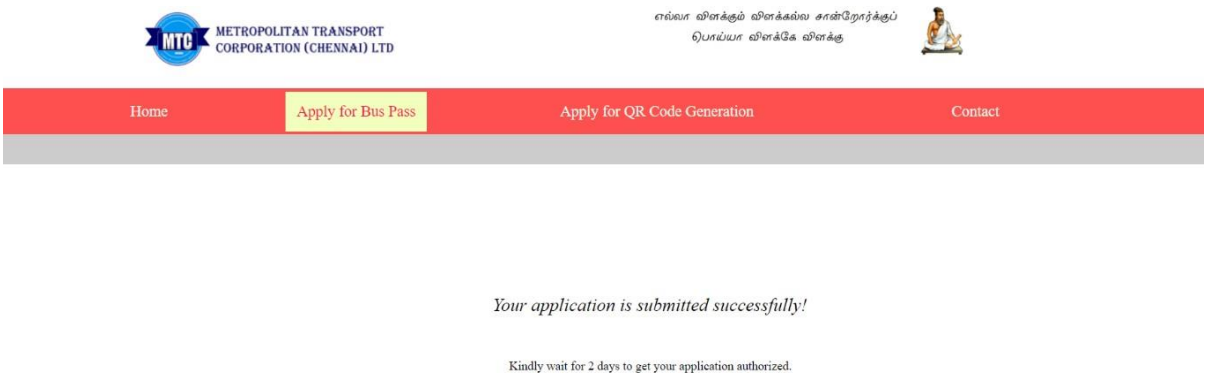

Fig. A.4 Pass Submitted Page

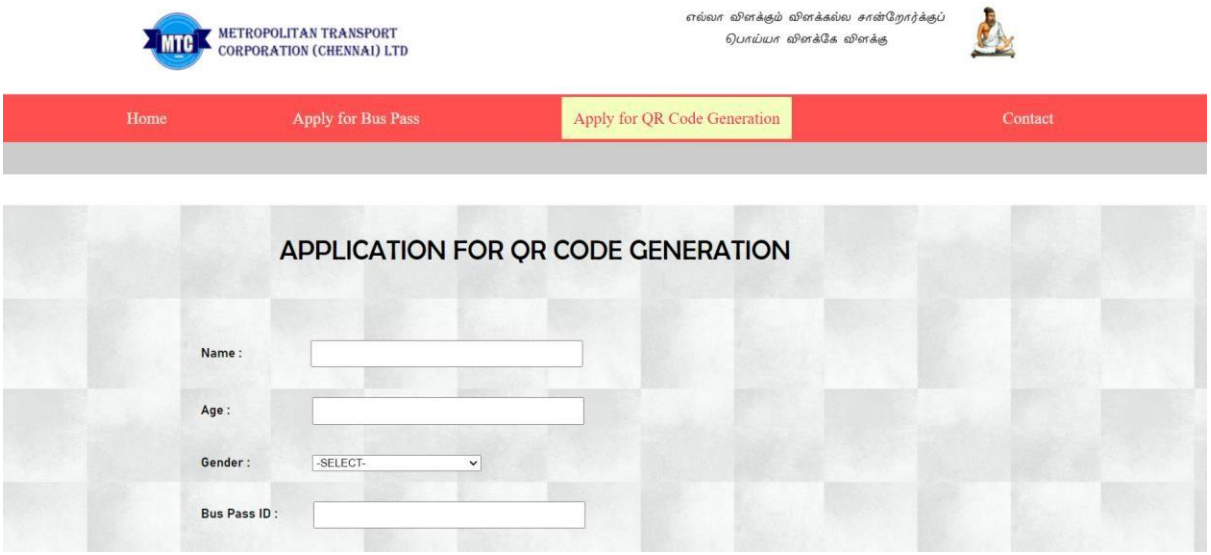

Fig. A.5 QR Code Application Page

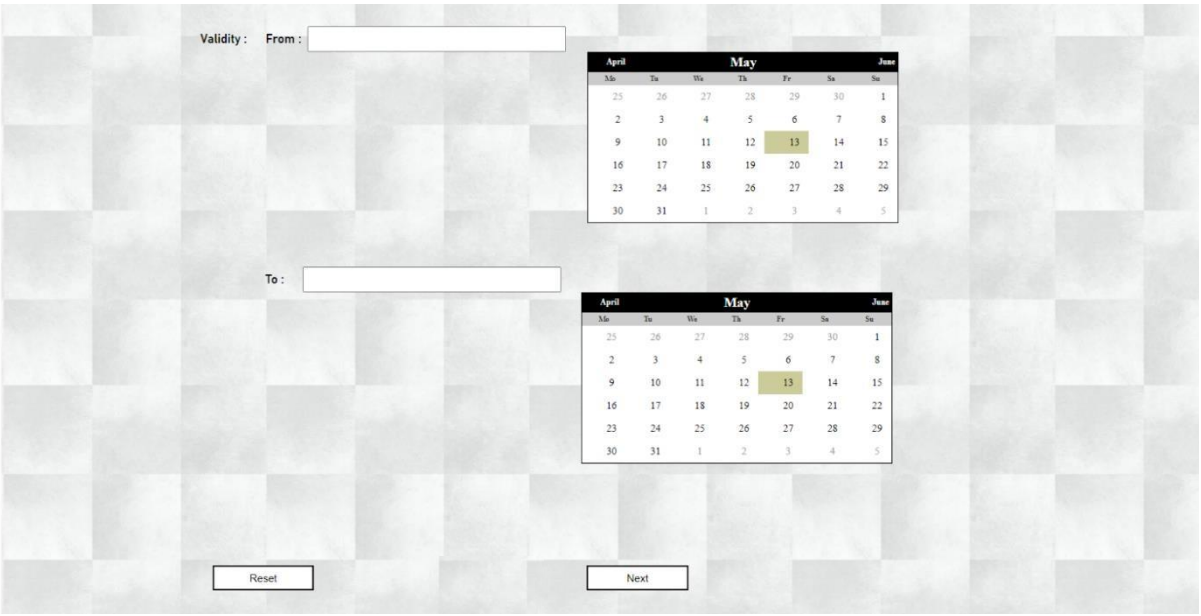

Fig. A.6 QR Code Application Page

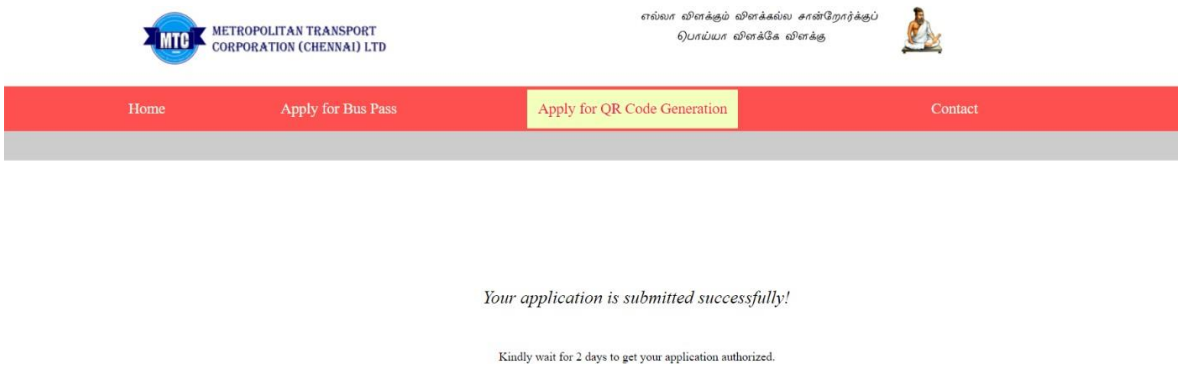

Fig. A.7 QR Code request Submission Page

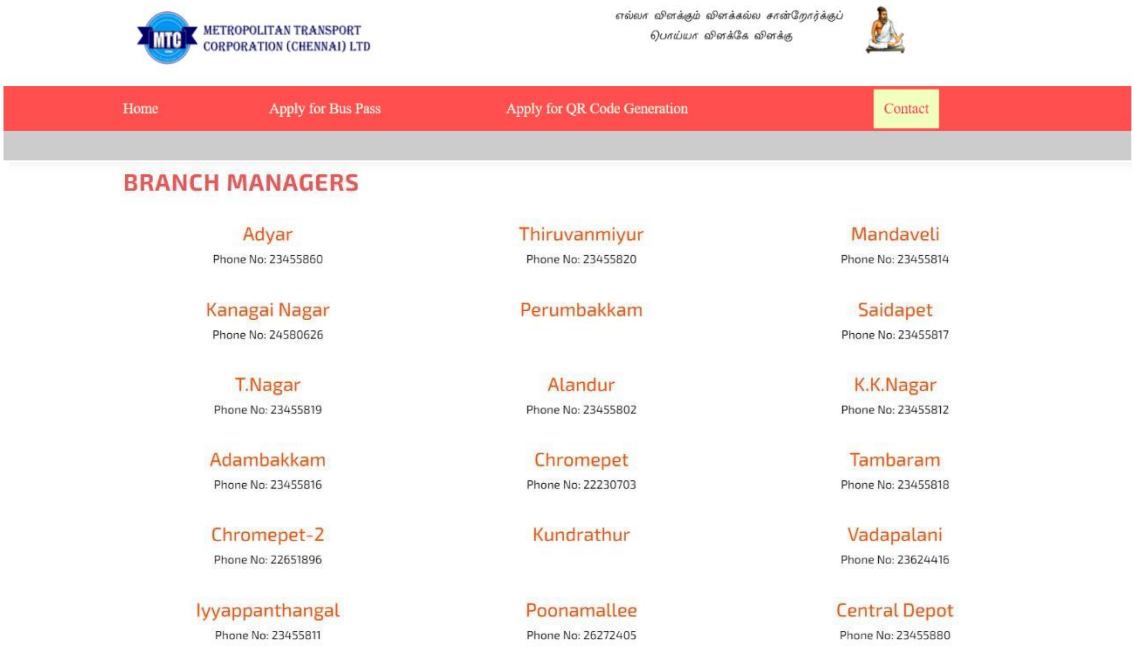

Fig. A.8 Contact Page

Admin's Side:

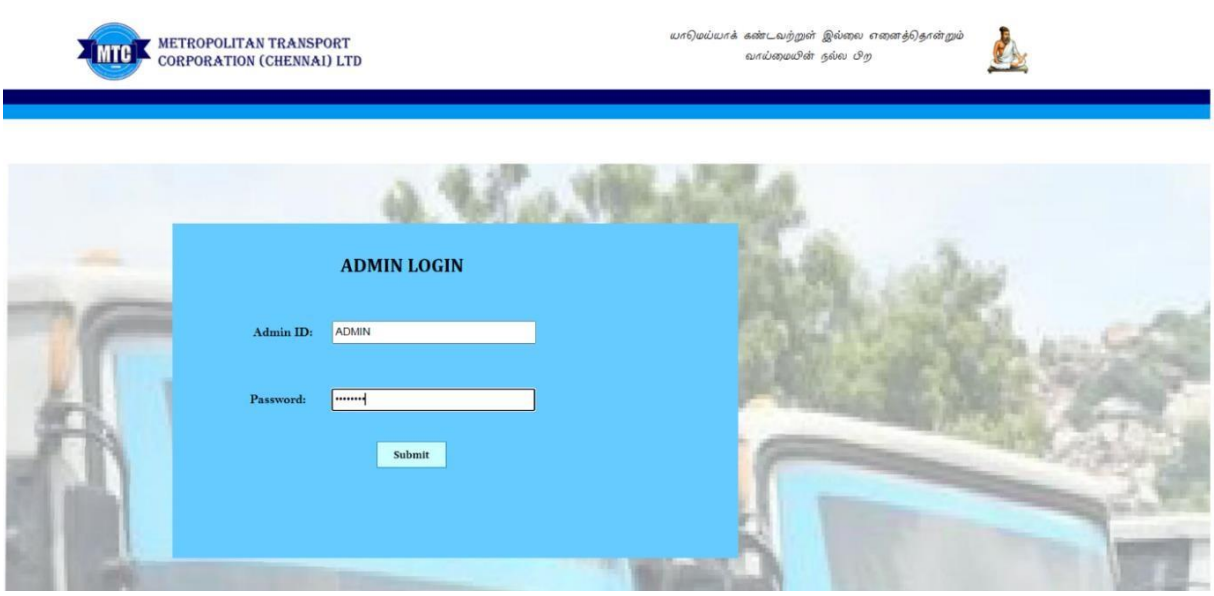

Fig. A.9 Admin Login Page

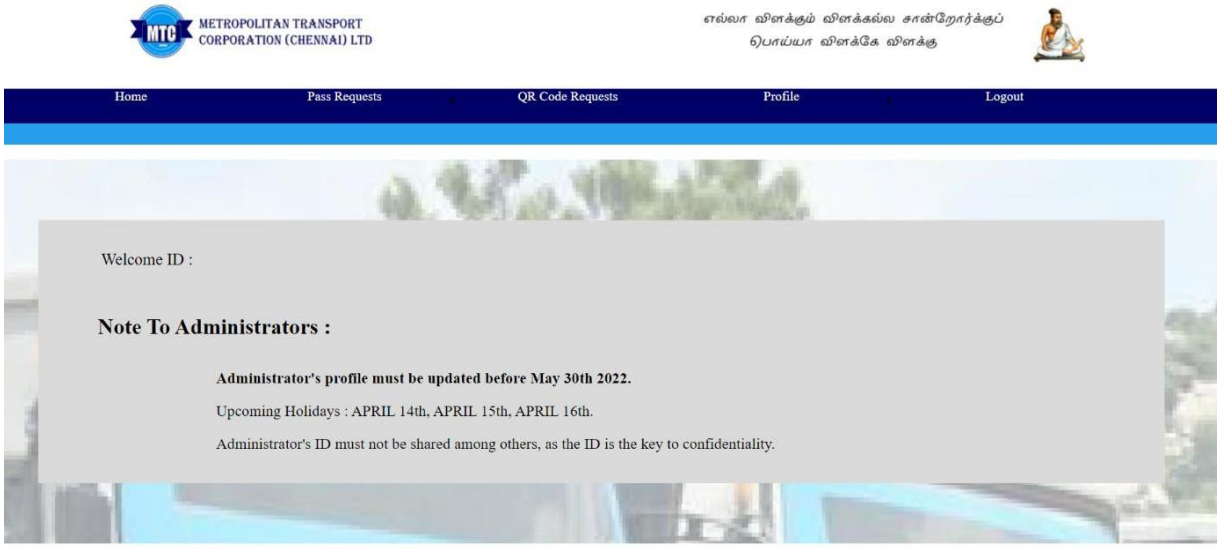

Fig. A.10 Admin Home Page

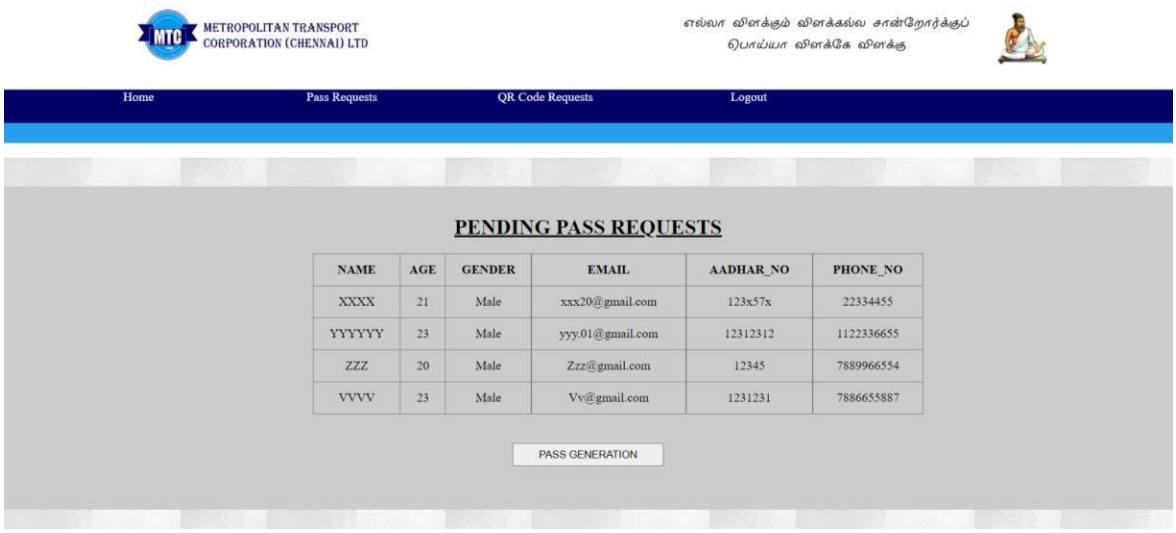

Fig. A.11 Pending Pass Request View Page

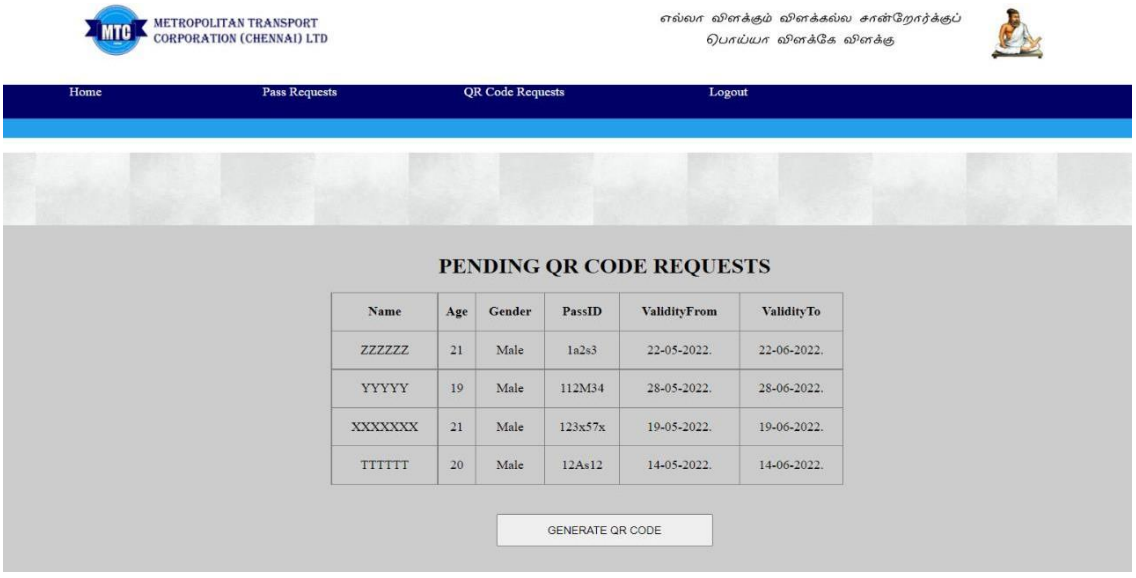

Fig. A.12 Pending QR Code Requests View Page

You have logged out successfully!

Click here to login again.

Fig. A.13 Admin Logout Page

Generate QR Code

Fig. A.14 QR Code Generation Page

Scanning QR Code:

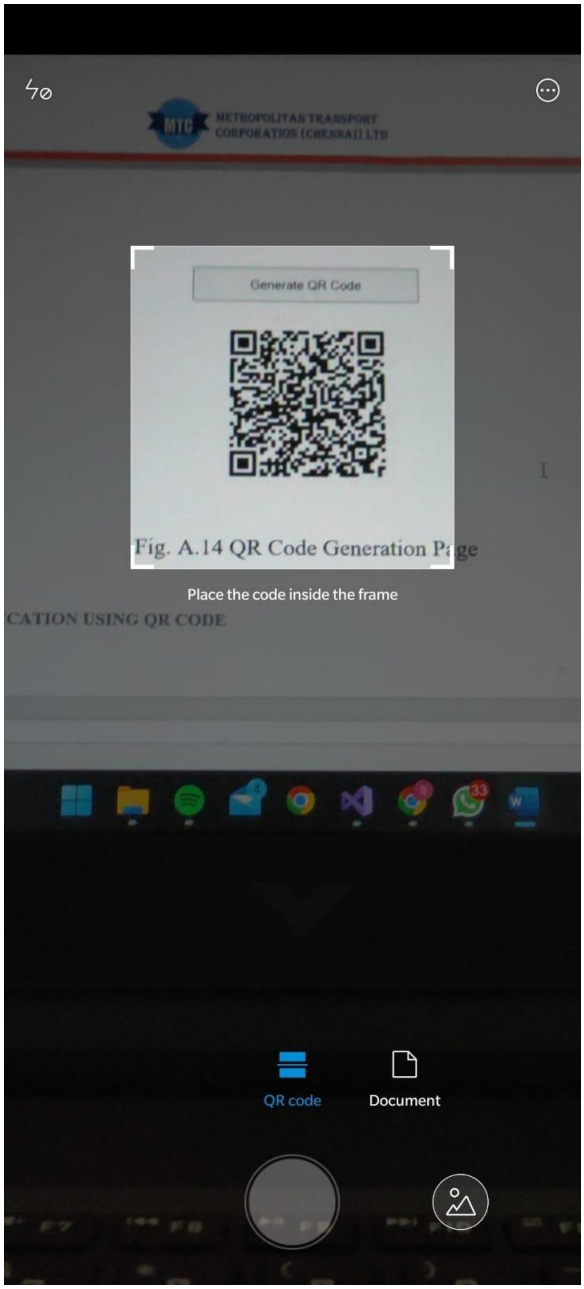

Fig. A.15 QR Code Scanning using Web cam

Displaying QR Code details on Smartphone:

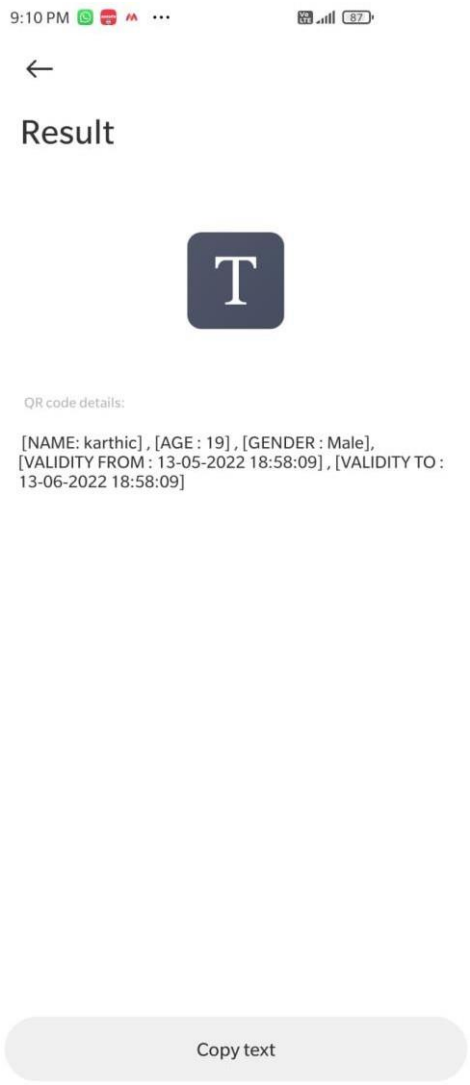

Fig. A.16 Details Displayed After Scanning QR Code

Fig. A.17. Generation of an Online Bus Pass

Sample Code :

QR Code Generation (Retrieving data from database)

.aspx File:

```
<%@ Page Language="C#" AutoEventWireup="true" CodeFile="Default2.aspx.cs"
Inherits="Default2" %>

<!DOCTYPE html>

<html xmlns="http://www.w3.org/1999/xhtml">
<head runat="server">
   <title></title>
</head>
<body>
   <form id="form1" runat="server">
      <div>
         <br />
         <asp:Image ID="Image1" runat="server" Height="128px" ImageUrl="~/mtc-
logo.png" style="margin-left: 511px" Width="531px" />
         <asp:Panel ID="Panel1" runat="server" BackColor="#FF5050">
                
         </asp:Panel>
         <asp:Panel ID="Panel2" runat="server" BackColor="Silver">
              
         </asp:Panel>
<asp:TextBox ID="TextBox1" runat="server" ></asp:TextBox>

<asp:Button ID="btnGenerate" runat="server" Text="Generate QR Code"
OnClick="btnGenerate_Click" Height="38px" style="margin-left: 233px" Width="233px" />

           
         <asp:Label ID="Label1" runat="server"></asp:Label>
          
         <asp:Label ID="Label2" runat="server"></asp:Label>
 <asp:Label ID="Label3" runat="server"></asp:Label>
 <asp:Label ID="Label4" runat="server"></asp:Label>
 <asp:Label ID="Label5" runat="server"></asp:Label>


         <asp:Image ID="imgQRCode" Width="355px" Height="350px" runat="server"
Visible="false" style="margin-left: 159px" />

      </div>
   </form>
</body>
</html>
```

.cs File:

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Web;
using System.Web.UI;
using System.Web.UI.WebControls;
using System.Xml.Linq;
using System.Drawing;
using System.Drawing.Imaging;
using System.IO;
using ZXing;
using System.Data.SqlClient;
using System.Configuration;
using System.Data;

public partial class Default2 : System.Web.UI.Page
{
   string strConnString =
ConfigurationManager.ConnectionStrings["passreqConnectionString"].ConnectionString;
   string str;
   SqlCommand com;
   protected void Page_Load(object sender, EventArgs e)
   {


   }
   protected void btnGenerate_Click(object sender, EventArgs e)
   {


      GenerateCode(Label3.Text);

   }

   private void GenerateCode(string name)
   {

      SqlConnection con = new SqlConnection(strConnString);

      con.Open();
      str = "select * from qrapplytb ";
      com = new SqlCommand(str, con);

      SqlDataReader reader = com.ExecuteReader();

      reader.Read();
```

```
        Label1.Text = reader["Name"].ToString();
        reader.Close();
        con.Close();
        con.Open();
        str = "select * from qrapplytb";
        SqlDataReader reader2 = com.ExecuteReader();
        reader2.Read();
        Label2.Text = reader2["Age"].ToString();
        reader2.Close();
        con.Close();
        con.Open();
        str = "select * from qrapplytb";
        SqlDataReader reader3 = com.ExecuteReader();
        reader3.Read();
        Label3.Text = reader3["PassID"].ToString();
        reader3.Close();
        con.Close();
        con.Open();
        str = "select * from qrapplytb";
        SqlDataReader reader4 = com.ExecuteReader();
        reader4.Read();
        Label4.Text = reader4["ValidityFrom"].ToString();
        reader4.Close();
        con.Close();
        con.Open();
        str = "select * from qrapplytb";
        SqlDataReader reader5 = com.ExecuteReader();
        reader5.Read();
        Label5.Text = reader5["ValidityTo"].ToString();
        reader5.Close();
        con.Close();
        String filename = Label3.Text;
        name = (" [NAME: " + Label1.Text + "] , [AGE : " + Label2.Text+ "] , [PassID : " +
Label3.Text+ "], [VALIDITY FROM : " + Label4.Text+ "] , [VALIDITY TO : " +
Label5.Text + "]");
        var writer = new BarcodeWriter();
        writer.Format = BarcodeFormat.QR_CODE;
        var result = writer.Write(name);
        string path = Server.MapPath("~/images/" + filename + ".jpg");
        var barcodeBitmap = new Bitmap(result);
        using (MemoryStream memory = new MemoryStream())
        {
           using (FileStream fs = new FileStream(path, FileMode.Create,
FileAccess.ReadWrite))
           {
              barcodeBitmap.Save(memory, ImageFormat.Jpeg);
              byte[] bytes = memory.ToArray();
              fs.Write(bytes, 0, bytes.Length);
           }
        }
```

```
        imgQRCode.Visible = true;
        imgQRCode.ImageUrl = "~/images/" + filename + ".jpg";

    }
}
```

Pass Generation (Retrieving data from database)

.aspx File:

```
<%@ Page Language="C#" AutoEventWireup="true" CodeFile="Default3.aspx.cs"
Inherits="Default3" %>

<!DOCTYPE html>

<html xmlns="http://www.w3.org/1999/xhtml">
<head runat="server">
    <title></title>
</head>
<body>
    <form id="form1" runat="server">
        <div>
            <br />
            <asp:Image ID="Image1" runat="server" Height="128px" ImageUrl="~/mtc-
logo.png" style="margin-left: 511px" Width="531px" />
            <br />
            <asp:Panel ID="Panel1" runat="server" BackColor="#FF5050">
                    
            </asp:Panel>
            <asp:Panel ID="Panel2" runat="server" BackColor="Silver">
                  
            </asp:Panel>
<asp:TextBox ID="TextBox1" runat="server" ></asp:TextBox>
<asp:Button ID="btnGenerate" runat="server" Text="Generate Pass"
OnClick="btnGenerate_Click" Height="38px" style="margin-left: 233px" Width="233px" />
            <br />
            <asp:Image ID="imgQRCode" Width="355px" Height="350px" runat="server"
Visible="false" style="margin-left: 455px" />
              <br />

            <asp:Label ID="Label6" runat="server" Text="NAME"></asp:Label>
            <asp:Label ID="Label1" runat="server"></asp:Label>
            <br />
            <asp:Label ID="Label7" runat="server" Text="AGE  "></asp:Label>
            <asp:Label ID="Label2" runat="server"></asp:Label>
            <asp:Label ID="Label8" runat="server" Text="GENDER"></asp:Label>
            <asp:Label ID="Label3" runat="server"></asp:Label>
            <asp:Label ID="Label9" runat="server" Text="VALIDITY FROM"></asp:Label>
            <asp:Label ID="Label4" runat="server"></asp:Label>
```

```
            <asp:Label ID="Label10" runat="server" Text="VALIDITY TO "></asp:Label>
            <asp:Label ID="Label5" runat="server"></asp:Label>
            <br />
            <asp:Panel ID="Panel3" runat="server" BackColor="#FF6666">
</asp:Panel>

        </div>

    </form>
</body>
</html>
```

.cs File:

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Web;
using System.Web.UI;
using System.Web.UI.WebControls;
using System.Drawing;
using System.Drawing.Imaging;
using System.IO;
using ZXing;
using System.Data.SqlClient;
using System.Configuration;
using System.Data;

public partial class Default3 : System.Web.UI.Page
{
    string strConnString =
ConfigurationManager.ConnectionStrings["passreqConnectionString"].ConnectionString;
    string str;
    SqlCommand com;
    protected void Page_Load(object sender, EventArgs e)
    {
    }
    protected void btnGenerate_Click(object sender, EventArgs e)
    {
        GenerateCode(TextBox1.Text);
        DeleteData(TextBox1.Text);
    }

    private void GenerateCode(string name)
    {

        SqlConnection con = new SqlConnection(strConnString);

        con.Open();
```

```
        str = "select * from passrequesttb where AADHAR_NO='" + TextBox1.Text + "'";
        com = new SqlCommand(str, con);
        SqlDataReader reader = com.ExecuteReader();

        reader.Read();
        Label1.Text = reader["NAME"].ToString();
        reader.Close();
        con.Close();
        con.Open();
        str = "select * from passrequesttb";
        SqlDataReader reader2 = com.ExecuteReader();
        reader2.Read();
        Label2.Text = reader2["AGE"].ToString();
        reader2.Close();
        con.Close();
        con.Open();
        str = "select * from passrequesttb";
        SqlDataReader reader3 = com.ExecuteReader();
        reader3.Read();
        Label3.Text = reader3["GENDER"].ToString();
        reader3.Close();
        con.Close();

        DateTime validfrom = DateTime.Now;
        DateTime validto = validfrom.AddMonths(1);
        Label5.Text= validto.ToString();
        Label4.Text= validfrom.ToString();
        name = (" [NAME: " + Label1.Text + "] , [AGE : " + Label2.Text + "] , [GENDER : " +
Label3.Text + "], [VALIDITY FROM : " + validfrom + "] , [VALIDITY TO : " + validto +
"]");
        String filename = Label1.Text;
        var writer = new BarcodeWriter();
        writer.Format = BarcodeFormat.QR_CODE;
        var result = writer.Write(name);
        string path = Server.MapPath("~/images/" + filename + ".jpg");
        var barcodeBitmap = new Bitmap(result);
        using (MemoryStream memory = new MemoryStream())
        {
           using (FileStream fs = new FileStream(path, FileMode.Create,
FileAccess.ReadWrite))
           {
              barcodeBitmap.Save(memory, ImageFormat.Jpeg);
              byte[] bytes = memory.ToArray();
              fs.Write(bytes, 0, bytes.Length);
           }
        }
        imgQRCode.Visible = true;
        imgQRCode.ImageUrl = "~/images/" + filename + ".jpg";
    }
```

```
    private void DeleteData(string name)
    {
        string strConnString =
ConfigurationManager.ConnectionStrings["passreqConnectionString"].ConnectionString;
        SqlConnection con = new SqlConnection(strConnString);
        string str;
        con.Open();
        SqlCommand com = new SqlCommand("delete from passrequesttb where
AADHAR_NO='" + TextBox1.Text + "'", con);
        com.ExecuteNonQuery();
        con.Close();
    }


}
```

Appendix B: References

1. https://www.aspdotnet-suresh.com/2017/04/create-generate-qr-code-in-aspnet-using-csharp-vbnet.html
2. https://www.aspdotnet-suresh.com/2014/07/master-page-with-menu-control-in-aspnet-example.html
3. http://www.ijstmr.com/wp-content/uploads/2018/11/IJSTMR_V3I11_05198.pdf
4. https://fdocuments.in/document/online-bus-pass-management-system.html
5. https://www.scribd.com/document/458294426/ppr-SMART-BUS-PASS-SYSTEM-USING-QR-CODE-docx
6. https://www.c-sharpcorner.com/blogs/display-data-from-database-to-label1
7. https://social.msdn.microsoft.com/Forums/en-US/b4e190b9-70a8-4338-bd37-67f1009446be/how-can-i-select-only-one-row-based-on-id-from-database?forum=aspdotnetwebpages
8. https://www.interviewsansar.com/write-code-retrieve-data-database-c-asp-net/
9. https://stackoverflow.com/questions/1469280/asp-net-datetime-picker
10. https://docs.microsoft.com/en-us/aspnet/web-forms/overview/data-access/accessing-the-database-directly-from-an-aspnet-page/inserting-updating-and-deleting-data-with-the-sqldatasource-vb