

HTTPS BASED ACCESS PRIVILEGES CONTROL SYSTEM USING DJANGO WEB FRAMEWORKS

PROJECT “ALCATRAZ”

*Report submitted to SASTRA Deemed to be University
as per the requirement of the Course*

CSE302: COMPUTER NETWORKS

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February 2023



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SCHOOL OF COMPUTING
TIRUMALAIAMUDRAM, THANJAVUR – 613401.



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BONAFIDE CERTIFICATE

This is to certify that the report titled “**HTTPS Based Access Privileges Control System**” submitted as a requirement for the Course, **CSE302 – COMPUTER NETWORKS** for B.Tech. is a Bonafide Record of the work done by **Shri. Vishal Kirthic N [Reg. No: 124157074]** during the Academic Year 2022-2023, in the School of Computing.

Project Based Work *Viva-Voce* held on _____

Examiner 1

Examiner 2

ACKNOWLEDGEMENTS

**“ எந்நன்றி கொன்றார்க்கும் உய்வுண்டாம் உய்வில்லை
செய்ந்நன்றி கொன்ற மகற்கு ”**

- குறள் 110

Project ‘Alcatraz’ has been a wonderful journey for providing me with a lot of new ideas and areas of interest that I would like to venture in the upcoming days. So, it gives me immense pleasure in showing my thanks to all of those from the bottom of my heart who have been my pillars of support for making this project become a reality.

First and foremost, my heartfelt gratitude to **Dr. S. Vaidhyasubramaniam**, the **Honorable Vice-Chancellor** of Shanmuga Arts, Science, Technology and Research Academy [SASTRA] for providing us with the opportunity and infrastructure to meticulously plan and execute the project to its utmost perfection and making it a part of our discipline. It provided us with abundance and knowledge and experience on the field of undertaking.

I would also like to extend my vote of thanks to our Principal Project Coordinators, **Dr. A. Uma Makeswari**, **Dean**, SoC and **Dr. VS. Shankar Sriram**, **Associate Dean**, SoC for motivating us to push our limits and making us learn a lot of things in the networking domain with passion and perfection.

Also, I am forever thankful to our Guiding light **Dr. R. Kavitha**, **CSE/SoC**, for providing us with insights, comments and suggestions that have been instrumental in the development of the project. Ontime submission of this project would not have been possible without her continuous help and support she gave us throughout the course of the project.

Lastly, but certainly not the least, Project ‘Alcatraz’ would not have been possible without the support of my incredibly supportive and helpful Friends and Family to whom I’m forever indebted to. So, I would also like to thank them all for being by my side and providing mental strength, support and well wishes for the monumental success of this project.

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ABBREVIATIONS

- **TCP** – Transmission Control Protocol
- **IP** – Internet Protocol
- **HTTP** – Hypertext Transfer Protocol
- **TLS** – Transport Layer Security
- **SSL** – Secured Socket Layer
- **WSGI** – Web Server Gateway Interface
- **HTML** – Hypertext Markup Language
- **CSS** – Cascading Style Sheets

ABSTRACT

Everyone of us, atleast once in our lifetime, would have used (or) come across Live Train Running Status Applications in both Mobile Devices while travelling from one place to other, so that either we could have a sound sleep or do any scheduled tasks while our Phone reminds us of our destination well early in time so that we could prepare ourselves to get down in our destination, especially when the stopping time in that destination is going to be less.

However, there might be sensitive times where there might be Privileged People [like Foreign Delegates, Chief-Office Bearers of the Country/State, etc...] who might wish to travel via Indian Railways; in such a scenario it is of utmost priority that the trains they are travelling must be not allowed for the Public to Live-Track as that can put their lives at significant risk.

So, to combat it in a comprehensive way, this Project aims to Simulate a HTTPS Based Access Privileges Control System that only allows the admin [The Members of the Main Control Room] to view the Live Status of the Train in which the VIP is travelling while the Common Public is denied the access to view them. This is achieved by using Simple HTML, CSS and Django-based Client-Server Communication.

KEYWORDS:

Hypertext Markup Language [HTML], Cascading Style Sheets [CSS], Client-Server Interface in Django Web Framework, Hypertext Transfer Protocol over the Secured Socket Layer [HTTPS]

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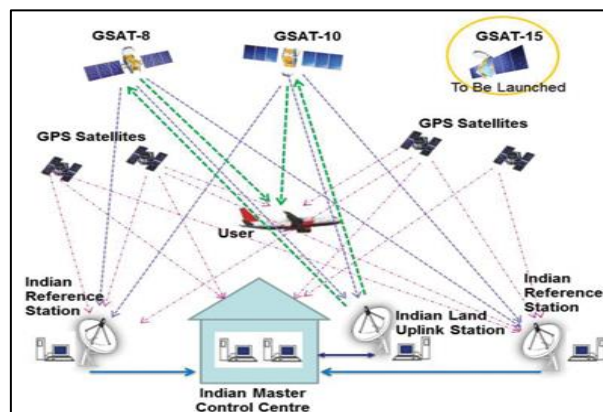
INTRODUCTION

With cool looking User Interfaces and seemingly sophisticated Software Implementations, tracking Trains in Real Time is just a few clicks away provided that you have an active Internet Connection. But, how many of us have wondered as to how are these Trains tracked that too in Real Time provided there are 100s of Trains travelling everyday all across India? So, this is how it works:

We need to first know how GPS's work. The train is installed with a GPS Transmitter Device whereas the Control Room is installed with a Gigantic GPS Satellite Receiver Dish, just like the one below:



Also, there are a number of Geostationary GPS Satellites revolving around the globe. However, to accurately locate a fast-moving Train with almost 99.7% Precision, we need the help of 4 such satellites that get the exact Latitude and Longitude of the Train which the software interprets and gives us the exact current location of the train. This is a miniature model of that process:



Unfortunately, I can only find a picture with an aeroplane:(this is the same working model for every transport available across the globe.

Once the location is identified, the Control Room updates the Time of Arrival of the Train in their application and that's what we see in our App. However, when someone is actually travelling in the train and wishes to know the location, they can achieve even accurate locations by using the GPS Receiver Chip installed in their phone to obtain the Signals from the Satellite and the application installed in their phone is calibrated to interpret those signals to help you find the location.

ADVANTAGES OF LIVE TRACKING:

- i) When someone has to get down from a Train very early in the Morning and they are sleeping; this application will let out an alarm the moment when the train approaches the person's destination. In this way, he/she gets ample time to sort his luggage out and get down in time especially in cases when the wait time in that particular station is less.
- ii) During the time of Distress or SoS, intimating the Railway Police or your family helps to get you support at a very rapid pace when they have the exact location of you in the train. Moreover, since this application works even when someone is not on the train; so, Relief Management in general can get to you way faster than in cases when the location cannot be identified.

DISADVANTAGES OF LIVE-TRACKING:

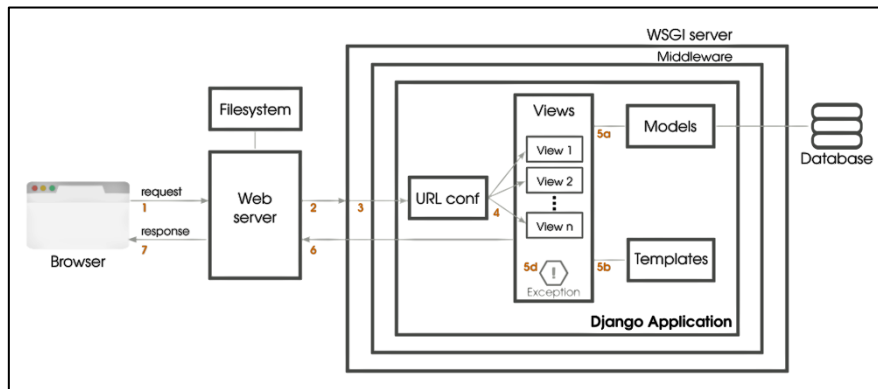
- i) Sometimes, GPS Services are not exactly accurate. During the times of heavy thunderstorms or gales, the communication between the Transmitter and the receiver might be obstructed, giving us inaccurate details. In that case, one must have to rely on the Predicted Time of Arrival to a particular station and the current time to predict the current position of his train.
- ii) People with Propaganda and malicious intent may take the law in their own hands and may make illegal and improper use of this technological service for Hijacking or even extreme measures. Even though modern-day Defence and Security systems in India are highly advanced, service providers must ensure such things do not happen especially when people of significant importance are travelling via Indian Railways.

FEATURES IMPLEMENTED

Since we do not have GPS Receivers that are capable of obtaining Live Train Locations or have access to the actual Servers that store and manipulate these Information, we are going to use the available Predicted Arrival and Departure of trains from the **indianrailinfo** site.

The Entire Project is hosted in the **Django Web Framework**. So, one has to follow the following Steps in order to create a Django Project:

- i) Creation of Virtual Environment
- ii) Activating the Virtual Environment and Installing Django inside it
- iii) Creation of a Django Project with an appropriate name
- iv) Setting up the Project by creating Applications and Extensions to run the Server in HTTP-TLS [HTTPS]
- v) Making changes in the settings.py file in order to accommodate the Extensions, Applications and the Templates used to run the website.



The Logo of the Project has been created in **canva.com** webpage and is used as a static object inside Django. So, the path of the Static Folder should also be accordingly specified in the settings.py file.

The Login Credentials of the Administrator has to be encrypted so that it is not susceptible to any eavesdropping in the network. For that, we use the **RSA Encryption Algorithm** that generates random Keys every time the Admin Signs in for authorising his Login Credentials.

Last, but not the least, in order to achieve TLS in our HTTP Webpage, we provide SSL Tunnelling to our Port [8000 in our case] using the **mkcert tool** that generates a local certificate and a key to authorise it. We then run the Django-server along with the SSL Certificates on WSGI using the built-in Python Module '**werkzeug**' that helps us in authenticating our Certificates and run the Webpages in HTTPS mode. The above picture is an overview of the Django Framework.

RELEVANT WORK

CREATING THE DJANGO INTERFACE

The following snapshot gives you an overview of creating a Django Interface:

```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.19044.1889]
(c) Microsoft Corporation. All rights reserved.

D:\>py -m venv CNProject

D:\>cd CNProject

D:\CNProject>Scripts\activate.bat

(CNProject) D:\CNProject>pip install Django
Collecting Django
  Downloading Django-4.1.4-py3-none-any.whl (8.1 MB)
----- 8.1/8.1 MB 365.4 kB/s eta 0:00:00
Collecting asgiref<4,>=3.5.2
  Using cached asgiref-3.5.2-py3-none-any.whl (22 kB)
Collecting tzdata
  Downloading tzdata-2022.7-py2.py3-none-any.whl (340 kB)
----- 340.1/340.1 kB 267.1 kB/s eta 0:00:00
Collecting sqlparse>=0.2.2
  Using cached sqlparse-0.4.3-py3-none-any.whl (42 kB)
Installing collected packages: tzdata, sqlparse, asgiref, Django
Successfully installed Django-4.1.4 asgiref-3.5.2 sqlparse-0.4.3 tzdata-2022.7

[notice] A new release of pip available: 22.2.2 -> 22.3.1
[notice] To update, run: python.exe -m pip install --upgrade pip
```

CREATING PROJECTS AND RELATED APPLICATIONS

The following snapshot gives you an overview on how to create a Project and werkzeug Applications for the Webpages to be run in HTTPS Mode:

```
C:\Windows\System32\cmd.exe

(CNProject) D:\CNProject>django-admin startproject Alcatraz

(CNProject) D:\CNProject>cd Alcatraz

(CNProject) D:\CNProject\Alcatraz>py manage.py startapp Applications

(CNProject) D:\CNProject\Alcatraz>pip install django-extensions Werkzeug
Collecting django-extensions
  Using cached django_extensions-3.2.1-py3-none-any.whl (229 kB)
Collecting Werkzeug
  Using cached Werkzeug-2.2.2-py3-none-any.whl (232 kB)
Requirement already satisfied: Django>=3.2 in d:\cnproject\lib\site-packages (from
Collecting MarkupSafe>=2.1.1
  Using cached MarkupSafe-2.1.1-cp310-cp310-win_amd64.whl (17 kB)
Requirement already satisfied: tzdata in d:\cnproject\lib\site-packages (from Djang
Requirement already satisfied: sqlparse>=0.2.2 in d:\cnproject\lib\site-packages (f
0.4.3)
Requirement already satisfied: asgiref<4,>=3.5.2 in d:\cnproject\lib\site-packages
(3.5.2)
Installing collected packages: MarkupSafe, Werkzeug, django-extensions
Successfully installed MarkupSafe-2.1.1 Werkzeug-2.2.2 django-extensions-3.2.1
```

INSTALLING MKCERT

The following Snapshot shows how to install mkcert in your computer:

```
(CNProject) D:\CNProject\Alcatraz>choco install mkcert
Chocolatey v1.2.0
Chocolatey detected you are not running from an elevated command shell
(cmd/powershell).

You may experience errors - many functions/packages
require admin rights. Only advanced users should run choco w/out an
elevated shell. When you open the command shell, you should ensure
that you do so with "Run as Administrator" selected. If you are
attempting to use Chocolatey in a non-administrator setting, you
must select a different location other than the default install
location. See
https://docs.chocolatey.org/en-us/choco/setup#non-administrative-install
for details.

Do you want to continue?([Y]es/[N]o): Y

Installing the following packages:
mkcert
By installing, you accept licenses for the packages.
mkcert v1.4.4 already installed.
Use --force to reinstall, specify a version to install, or try upgrade.

Chocolatey installed 0/1 packages.
See the log for details (C:\ProgramData\chocolatey\logs\chocolatey.log).

Warnings:
- mkcert - mkcert v1.4.4 already installed.
```

CREATING SSL CERTIFICATE AND ITS AUTHORISATION KEY

The following snapshot shows how to create and authorise our local SSL Certificate for our program to run in SSL Mode:

```
(CNProject) D:\CNProject\Alcatraz>mkcert -cert-file cert.pem -key-file key.pem localhost 127.0.0.1

Created a new certificate valid for the following names
- "localhost"
- "127.0.0.1"

The certificate is at "cert.pem" and the key at "key.pem"

It will expire on 8 March 2025
```

RUNNING THE DJANGO SERVER IN HTTPS MODE:

The following snapshot shows how to run the Server in HTTPS Mode:

```
(Alcatraz) D:\5th Semester Files\PBA_CN_Project_Alcatraz\Alcatraz\FinalCut>py manage.py
runserver_plus --cert-file cert.pem --key-file key.pem
WARNING: This is a development server. Do not use it in a production deployment. Use a
production WSGI server instead.
* Running on https://127.0.0.1:8000
Press CTRL+C to quit
* Restarting with stat
Performing system checks...

System check identified no issues (0 silenced).

Django version 4.1.3, using settings 'FinalCut.settings'
Development server is running at https://[127.0.0.1]:8000/
Using the Werkzeug debugger (http://werkzeug.pocoo.org/)
Quit the server with CTRL-BREAK.
* Debugger is active!
* Debugger PIN: 138-703-893
```

SOURCE CODE

#1 – HOMEPAGE [*Alcatraz.html*]

```
<html>
{ % load static % }
<head> <title> View Live Running Status of Trains only on Alcatraz! </title>
<style>

body { overflow: hidden; }
h1 { padding: 10px; }

a {
color: black;
text-decoration: none;}

p2 {
font-size: 13pt;
font-family: "Ubuntu Medium", monospace;
margin-top: 10px;
margin-right: 12px;
position: absolute;
bottom: 13; }

button {
font-family: "Quicksand", monospace;
font-weight: bold;
font-size: 28px; }

</style> </head>
<body> <h1 id="Header"> <Center> <IMG Src = "{ % static 'Logo.jpg' % }"
Height = "185", Width = "223"> <Center> </h1>
<p1> <center> <form>
<button type="submit"> <a href='trains' target="_blank"> Public </a> </button>
&emsp; &emsp; &emsp; <button type="submit"> <a href='adminlogin'
target="_blank"> Admin </a> </button> </form>
</center> </p1>
<p2> <marquee behaviour="scroll" width="100%" height="25px"
scrollamount=8>
Submitted for Evaluation for "Project Based Assessment" on the Course
[Computer Networks - CSE302] for the Academic Year 2022-2023 by <b>
Vishal Kirthic N [Reg. No: 124157074] </b> - 3rd Year CSE [Cyber Security &
Blockchain Technology]. </marquee> </p2> </body> </html>
```

#2 – ADMINISTRATOR LOGIN [*AdminLogin.html*]

```
<html>
<head> <title> Admin Login </title> <style>

h1 {
padding: 15px;
font-family: "Formula1 Display", monospace;
font-weight: normal;
font-size: 32;
text-align: center;
}

p1 {
font-family: "Ubuntu", monospace;
font-size: 28; }

p2 {
font-family: "Quicksand", monospace;
font-weight: bold;
font-size: 24px;
text-align: center; }

</style> </head> <body>

<h1> Administrator Login </h1>

<p1> <center>
{ % if Flag == 1 % }
Invalid Username/Password. Please Give Again.
{ % else % }
Please Enter your Login Credentials.
{ % endif % }
</center> </p1> <br> <br>

<p2>
{ % if Flag == 1 % }
    <form action = "">
{ % else % }
    <form action = "trains">
{ % endif % }
Username: <input type='text' name = 'UN' id='UN' style="font-size:16pt;"> <br>
<br>
```

```
Password: <input type='password' name = 'PW' id='PW' style="font-size:16pt;">
<br> <br>
<input type='submit' value='Login' style="font-size:16pt; font-weight:bold;">
</form> </p2> </body> </html>
```

#3 – DISPLAYING LIST OF TRAINS [*Trains.html*]

```
<html> <title> Alcatraz - Search Trains </title>
{ % load static % }
<head> <style>
```

```
h1 { padding: 10px; }
```

```
p1 {
color: #000000;
font-family: "Quicksand", monospace;
font-size: 24px;
font-weight: bold; }
```

```
button {
    font-size: 18pt;
    font-family: "Quicksand", monospace;
    font-weight: bold;
    margin-top: 10px;
    margin-right: 12px;
    position: absolute;
    top: 13;
    right: 35; }
```

```
table, th, td {
border: 1px solid; }
```

```
table {
width: 100%; }
```

```
th, td{
```

```

color: #1F2022;
padding: 7px;
text-align: center;
font-family: "Segoe UI Semibold", monospace;
font-size: 17px; }

```

```

th { background-color: #D3D3D3; }
tr:hover { background-color: #D3D3D3;}

```

```

</style> <script language="javascript" type="text/javascript">

```

```

function windowClose() {
window.close(); }
</script> </head>

```

```

<body> <center>

```

```

<h1 id="Header"> <IMG Src = "{% static 'Logo.jpg' %}" Height = "185", Width
= "223"> </h1>

```

```

<form> <button type='button' onclick='self.close()>
{% if Type == 'Public' %}

```

```

    Home

```

```

{% else %}

```

```

    Logout

```

```

{% endif %}

```

```

</button> </form>

```

```

<p1> Please Click on the Train Number to Obtain the Live Running Details of
the Train. </p1>

```

```

<br> <br> <p2>

```

```

<TABLE>

```

```

<TH> Train Number </TH> <TH> Name of the Train </TH> <TH> Source
</TH> <TH> Destination </TH> <TH> Departure Time </TH> <TH> Arrival
Time </TH> <TH> Runs on Days </TH>

```

```

<TR> <TD> <a href = "16183" target="_blank"> 16183 </a> </TD> <TD>
Uzhavan Express </TD> <TD> MS - Chennai Egmore </TD> <TD> TJ -

```


Thanjavur </TD> <TD> 23:30 </TD> <TD> 07:15 </TD> <TD> Sun Mon Tue
Wed Thu Fri Sat </TD> </TR>

<TR> <TD> 16184 </TD> <TD>
Uzhavan Express </TD> <TD> TJ - Thanjavur </TD> <TD> MS - Chennai
Egmore </TD> <TD> 20:45 </TD> <TD> 04:55 </TD> <TD> Sun Mon Tue
Wed Thu Fri Sat </TD> </TR>

<TR> <TD> 20607 </TD> <TD>
Vande Bharat Express </TD> <TD> MAS - MGR Chennai Central </TD> <TD>
MYS - Mysuru Junction </TD> <TD> 05:50 </TD> <TD> 12:20 </TD> <TD>
Sun Mon Tue Thu Fri Sat </TD> </TR>

<TR> <TD> 20608 </TD> <TD>
Vande Bharat Express </TD> <TD> MYS - Mysuru Junction </TD> <TD> MAS
- MGR Chennai Central </TD> <TD> 13:05 </TD> <TD> 19:30 </TD> <TD>
Sun Mon Tue Thu Fri Sat </TD> </TR>

<TR> <TD> 12631 </TD> <TD>
Nellai SF Express </TD> <TD> MS - Chennai Egmore </TD> <TD> TEN -
Tirunelveli </TD> <TD> 20:10 </TD> <TD> 08:00 </TD> <TD> Sun Mon Tue
Wed Thu Fri Sat </TD> </TR>

<TR> <TD> 12632 </TD> <TD>
Nellai SF Express </TD> <TD> TEN - Tirunelveli </TD> <TD> MS - Chennai
Egmore </TD> <TD> 19:25 </TD> <TD> 07:10 </TD> <TD> Sun Mon Tue
Wed Thu Fri Sat </TD> </TR>

<TR> <TD> 12511 </TD> <TD> Rapti
Sagar Express </TD> <TD> MAS - MGR Chennai Central </TD> <TD> CBE -
Coimbatore Junction </TD> <TD> 23:20 </TD> <TD> 07:35 </TD> <TD> Wed
</TD> </TR>

<TR> <TD> 12512 </TD> <TD> Rapti
Sagar Express </TD> <TD> CBE - Coimbatore Junction </TD> <TD> MAS -
MGR Chennai Central </TD> <TD> 15:20 </TD> <TD> 23:05 </TD> <TD>
Sun Tue Wed </TD> </TR> </TABLE> </p2> </center> </body> </html>

#4 – WEBPAGE SHOWING TRAIN RUNNING STATUS OF 16183

UZHAVAN EXPRESS [*Uzhavan1.html*]

```
<html>
<head> <Title> 16183 Uzhavan Express - View Live Train Running Status
</Title> <style>

h1 {
text-align: center;
color: #000000;
font-family: "Microsoft Sans Serif", monospace;
font-size: 45px; }

h2 {
text-align: center;
font-family: "Ubuntu", monospace;
font-size: 19px; }

table, td, th {
border: 1px solid; }

table {
width: 88%; }

th, td {
color: #1F2022;
padding: 7px;
text-align: center;
font-family: "Segoe UI Semibold", monospace;
font-size: 15px; }

th { background-color: #D3D3D3; }

</style> </head> <body>

<h1> Uzhavan Express </h1>
<h2> Train Number: 16183
<br> From: MS [Chennai Egmore] &emsp; To: TJ [Thanjavur]
<br> Travel Time: 7hrs 55mins &emsp; Distance: 351km &emsp; Avg Speed:
50km/hr
<br> Coaches: SLR UR UR S12 S11 S10 S9 S8 S7 S6 S5 S4 S3 S2 S1 B3 B2 B1
A2 A1 UR SLR Engine </h2>
```

```

<center> <Table> <tr> <th> # </th> <th> Code </th> <th> Station Name </th>
<th> Arrival Time </th> <th> Deaprture Time </th> <th> Halt Time </th> <th>
PF# </th> <th> Day </th> <th> KM </th> <th> Zone </th> </tr>

<tr> <td> 1 </td> <td> MS </td> <td> Chennai Egmore </td> <td> Starts </td>
<td> 22:55 </td> <td> - </td> <td> 5 </td> <td> 1 </td> <td> 0.0 </td> <td> SR
</td> </tr>
<tr> <td> 2 </td> <td> TBM </td> <td> Tambaram </td> <td> 23:28 </td> <td>
23:30 </td> <td> 2m </td> <td> - </td> <td> 1 </td> <td> 24.5 </td> <td> SR
</td> </tr>
<tr> <td> 3 </td> <td> CGL </td> <td> Chengalpattu Junction </td> <td> 23:57
</td> <td> 23:59 </td> <td> 2m </td> <td> 6 </td> <td> 1 </td> <td> 55.5 </td>
<td> SR </td> </tr>
<tr> <td> 4 </td> <td> VM </td> <td> Villupuram Junction </td> <td> 01:25
</td> <td> 01:30 </td> <td> 5m </td> <td> 2 </td> <td> 2 </td> <td> 158.5
</td> <td> SR </td> </tr>
<tr> <td> 5 </td> <td> CDM </td> <td> Chidambaram </td> <td> 03:33 </td>
<td> 03:35 </td> <td> 2m </td> <td> 1 </td> <td> 2 </td> <td> 243.8 </td> <td>
SR </td> </tr>
<tr> <td> 6 </td> <td> MV </td> <td> Mayiladuthurai Junction </td> <td> 04:13
</td> <td> 04:15 </td> <td> 2m </td> <td> 1 </td> <td> 2 </td> <td> 280.8
</td> <td> SR </td> </tr>
<tr> <td> 7 </td> <td> KTM </td> <td> Kuttralam </td> <td> 04:27 </td> <td>
04:28 </td> <td> 1m </td> <td> 1 </td> <td> 2 </td> <td> 289.4 </td> <td> SR
</td> </tr>
<tr> <td> 8 </td> <td> ADT </td> <td> Aduturai </td> <td> 04:40 </td> <td>
04:41 </td> <td> 1m </td> <td> 1 </td> <td> 2 </td> <td> 300.6 </td> <td> SR
</td> </tr>
<tr> <td> 9 </td> <td> KMU </td> <td> Kumbakonam </td> <td> 04:53 </td>
<td> 04:55 </td> <td> 2m </td> <td> 1 </td> <td> 2 </td> <td> 312.0 </td> <td>
SR </td> </tr>
<tr> <td> 10 </td> <td> PML </td> <td> Papanasam </td> <td> 05:09 </td>
<td> 05:10 </td> <td> 1m </td> <td> 1 </td> <td> 2 </td> <td> 326.4 </td> <td>
SR </td> </tr>
<tr> <td> 11 </td> <td> TJ </td> <td> Thanjavur Junction </td> <td> 06:00
</td> <td> Ends </td> <td> - </td> <td> 3 </td> <td> 2 </td> <td> 351.4 </td>
<td> SR </td> </tr> </table> </center> </body> </html>

```

#5 – WEBPAGE SHOWING TRAIN RUNNING STATUS OF 16184

UZHAVAN EXPRESS [*Uzhavan2.html*]

```

<html>
<head> <Title> 16184 Uzhavan Express - View Live Train Running Status
</Title> <style>

h1 {
text-align: center;
color: #000000;
font-family: "Microsoft Sans Serif", monospace;
font-size: 45px; }

h2 {
text-align: center;
font-family: "Ubuntu", monospace;
font-size: 19px; }

table, td, th {
border: 1px solid; }

table {
width: 88%; }

th, td {
color: #1F2022;
padding: 7px;
text-align: center;
font-family: "Segoe UI Semibold", monospace;
font-size: 15px; }

th { background-color: #D3D3D3; }

</style> </head> <body>

<h1> Uzhavan Express </h1>
<h2> Train Number: 16184
<br> From: TJ [Thanjavur] &emsp; To: MS [Chennai Egmore]
<br> Travel Time: 6hrs 30mins &emsp; Distance: 351km &emsp; Avg Speed:
54km/hr
<br> Coaches: Engine SLR U1 H1 A1 A2 B1 B2 B3 S1 S2 S3 S4 S5 S6 S7 S8
S9 S10 S11 S12 UR UR SLR </h2>

<center> <Table> <tr> <th> # </th> <th> Code </th> <th> Station Name </th>
<th> Arrival Time </th> <th> Deaprture Time </th> <th> Halt Time </th> <th>
PF# </th> <th> Day </th> <th> KM </th> <th> Zone </th> </tr>

```

1	TJ	Thanjavur Junction	Starts	21:55	-	1	1	0.0	SR
2	PML	Papanasam	22:16	22:17	1m	1	1	25.0	SR
3	KMU	Kumbakonam	22:28	22:30	2m	1	1	39.3	SR
4	ADT	Aduturai	22:42	22:43	1m	1	1	50.8	SR
5	KTM	Kuttralam	22:55	22:56	1m	1	1	61.9	SR
6	MV	Mayiladuthurai Junction	23:08	23:10	2m	1	1	70.6	SR
7	VDL	Vaithisvaran Koil	23:25	23:26	1m	1	1	84.6	SR
8	SY	Sirkazhi	23:34	23:35	1m	1	1	90.6	SR
9	CDM	Chidambaram	23:50	23:52	2m	1	1	107.6	SR
10	VM	Villupuram Junction	01:35	01:40	5m	4	2	192.9	SR
11	CGL	Chengalpattu Junction	02:58	03:00	2m	-	2	295.8	SR
12	TBM	Tambaram	03:28	03:30	2m	5	2	326.9	SR
13	MBM	Mambalam	03:48	03:50	2m	3	2	344.5	SR
14	MS	Chennai Egmore	04:25	Ends	-	5	2	351.4	SR

#6 – WEBPAGE SHOWING TRAIN RUNNING STATUS OF 20607

VANDE BHARAT EXPRESS [VBE1.html]

```
<html>
<head> <Title> 20607 Vande Bharat Express - View Live Train Running Status
</Title> <style>

h1 {
text-align: center;
color: #000000;
font-family: "Microsoft Sans Serif", monospace;
font-size: 45px; }

h2 {
text-align: center;
font-family: "Ubuntu", monospace;
font-size: 19px; }

table, td, th {
border: 1px solid; }

table {
width: 88%; }

th, td {
color: #1F2022;
padding: 7px;
text-align: center;
font-family: "Segoe UI Semibold", monospace;
font-size: 15px; }

th { background-color: #D3D3D3; }

</style> </head> <body>

<h1> Vande Bharat Express </h1>
<h2> Train Number: 20607
<br> From: MAS [MGR Chennai Central] &emsp; To: MYS [Mysuru]
<br> Travel Time: 6hrs 30mins &emsp; Distance: 497km &emsp; Avg Speed:
76km/hr
<br> Coaches: C1 C2 C3 C4 C5 C6 C7 E1 E2 C8 C9 C10 C11 C12 C13 C14
Engine </h2>
```

```

<center> <Table> <tr> <th> # </th> <th> Code </th> <th> Station Name </th>
<th> Arrival Time </th> <th> Deaprture Time </th> <th> Halt Time </th> <th>
PF# </th> <th> Day </th> <th> KM </th> <th> Zone </th> </tr>

<tr> <td> 1 </td> <td> MAS </td> <td> MGR Chennai Central </td> <td> Starts
</td> <td> 05:50 </td> <td> - </td> <td> 10 </td> <td> 1 </td> <td> 0.0 </td>
<td> SR </td> </tr>
<tr> <td> 2 </td> <td> KPD </td> <td> Katpadi Junction </td> <td> 07:21 </td>
<td> 07:25 </td> <td> 4m </td> <td> 1 </td> <td> 1 </td> <td> 129.6 </td> <td>
SR </td> </tr>
<tr> <td> 3 </td> <td> SBC </td> <td> KSR Bengaluru City Juncion </td> <td>
10:15 </td> <td> 10:20 </td> <td> 5m </td> <td> 7 </td> <td> 1 </td> <td>
359.0 </td> <td> SWR </td> </tr>
<tr> <td> 4 </td> <td> MYS </td> <td> Mysuru Junction </td> <td> 12:20 </td>
<td> Ends </td> <td> - </td> <td> 1 </td> <td> 1 </td> <td> 496.6 </td> <td>
SWR </td> </tr> </table> </center> </body> </html>

```

#7 – WEBPAGE SHOWING TRAIN RUNNING STATUS OF 20608 **VANDE BHARAT EXPRESS [VBE2.html]**

```

<html>
<head> <Title> 20607 Vande Bharat Express - View Live Train Running Status
</Title> <style>

h1 {
text-align: center;
color: #000000;
font-family: "Microsoft Sans Serif", monospace;
font-size: 45px; }

h2 {
text-align: center;
font-family: "Ubuntu", monospace;
font-size: 19px; }

table, td, th {
border: 1px solid; }

table {

```

```
width: 88%; }
th, td {
color: #1F2022;
padding: 7px;
text-align: center;
font-family: "Segoe UI Semibold", monospace;
font-size: 15px; }
```

```
th { background-color: #D3D3D3; }
```

```
</style> </head> <body>
```

```
<h1> Vande Bharat Express </h1>
```

```
<h2> Train Number: 20608
```

```
<br> From: MYS [Mysuru] &emsp; To: MAS [MGR Chennai Central]
```

```
<br> Travel Time: 6hrs 25mins &emsp; Distance: 497km &emsp; Avg Speed:
77km/hr
```

```
<br> Coaches: Engine C14 C13 C12 C11 C10 C9 C8 E2 E1 C7 C6 C5 C4 C3 C2
C1 </h2>
```

```
<center> <Table> <tr> <th> # </th> <th> Code </th> <th> Station Name </th>
<th> Arrival Time </th> <th> Deaprture Time </th> <th> Halt Time </th> <th>
PF# </th> <th> Day </th> <th> KM </th> <th> Zone </th> </tr>
```

```
<tr> <td> 1 </td> <td> MYS </td> <td> Mysuru Junction </td> <td> Starts </td>
<td> 13:05 </td> <td> - </td> <td> 1 </td> <td> 1 </td> <td> 0.0 </td> <td>
SWR </td> </tr>
```

```
<tr> <td> 2 </td> <td> SBC </td> <td> KSR Bengaluru City Juncion </td> <td>
14:50 </td> <td> 14:55 </td> <td> 5m </td> <td> 7 </td> <td> 1 </td> <td>
137.6 </td> <td> SWR </td> </tr>
```

```
<tr> <td> 3 </td> <td> KPD </td> <td> Katpadi Junction </td> <td> 17:36 </td>
<td> 17:40 </td> <td> 4m </td> <td> 2 </td> <td> 1 </td> <td> 367.0 </td> <td>
SR </td> </tr>
```

```
<tr> <td> 4 </td> <td> MAS </td> <td> MGR Chennai Central </td> <td> 19:30
</td> <td> Ends </td> <td> - </td> <td> 9 </td> <td> 1 </td> <td> 496.6 </td>
<td> SR </td> </tr> </table> </center> </body> </html>
```

#8 – WEBPAGE SHOWING TRAIN RUNNING STATUS OF 12631

NELLAI SUPERFAST EXPRESS [*Nellai1.html*]

```
<html>
```



```
<head> <Title> 12631 Nellai Superfast Express - View Live Train Running
Status </Title> <style>
```

```
h1 {
text-align: center;
color: #000000;
font-family: "Microsoft Sans Serif", monospace;
font-size: 45px; }
```

```
h2 {
text-align: center;
font-family: "Ubuntu", monospace;
font-size: 19px; }
```

```
table, td, th {
border: 1px solid; }
```

```
table {
width: 88%; }
```

```
th, td {
color: #1F2022;
padding: 7px;
text-align: center;
font-family: "Segoe UI Semibold", monospace;
font-size: 15px; }
```

```
th { background-color: #D3D3D3; }
```

```
</style> </head> <body>
```

```
<h1> Nellai SF Express </h1>
```

```
<h2> Train Number: 12631
```

```
<br> From: MS [Chennai Egmore] &emsp; To: TEN [Tirunelveli]
```

```
<br> Travel Time: 10hrs 50mins &emsp; Distance 650km &emsp; Avg Speed:
60km/hr
```

```
<br> Coaches: SLR UR S9 S8 S7 S6 S5 S4 S3 S2 S1 B6 B5 B4 B3 B2 B1 A2
A1 UR EOG Engine </h2>
```

```
<center> <Table> <tr> <th> # </th> <th> Code </th> <th> Station Name </th>
<th> Arrival Time </th> <th> Deaprture Time </th> <th> Halt Time </th> <th>
PF# </th> <th> Day </th> <th> KM </th> <th> Zone </th> </tr>
```

1	MS	Chennai Egmore	Starts	19:50	-	7	1	0.0	SR
2	TBM	Tambaram	20:18	20:20	2m	8	1	24.5	SR
3	CGL	Chengalpattu Junction	20:48	20:50	2m	6	1	55.5	SR
4	MLMR	Melmaruvathur	21:18	21:20	2m	3	1	91.1	SR
5	TMV	Tindivanam	21:43	21:45	2m	1	1	121.2	SR
6	VM	Villupuram Junction	22:28	22:30	2m	5	1	158.5	SR
7	VRI	Vriddhachalam Junction	23:10	23:12	2m	3	1	213.2	SR
8	TPJ	Tiruchirappalli Junction	01:10	01:15	5m	4	2	336.6	SR
9	DG	Dindigul Junction	02:32	02:35	3m	4	2	430.9	SR
10	MDU	Madurai Junction	03:30	03:35	5m	1	2	493.2	SR
11	VPT	Virudunagar Junction	04:13	04:15	2m	2	2	536.6	SR
12	SRT	Satur	04:36	04:38	2m	1	2	563.5	SR
13	CVP	Kovilpatti Junction	04:58	05:00	2m	1	2	536.6	SR
14	TEN	Tirunelveli Junction	06:40	Ends	-	1	2	650.3	SR

#9 – WEBPAGE SHOWING TRAIN RUNNING STATUS OF 12632
NELLAI SUPERFAST EXPRESS [*Nellai2.html*]

```
<html>
<head> <Title> 12632 Nellai Superfast Express - View Live Train Running
Status </Title> <style>

h1 {
text-align: center;
color: #000000;
font-family: "Microsoft Sans Serif", monospace;
font-size: 45px; }

h2 {
text-align: center;
font-family: "Ubuntu", monospace;
font-size: 19px; }

table, td, th {
border: 1px solid; }

table {
width: 88%; }

th, td {
color: #1F2022;
padding: 7px;
text-align: center;
font-family: "Segoe UI Semibold", monospace;
font-size: 15px; }

th { background-color: #D3D3D3; }

</style> </head> <body>

<h1> Nellai SF Express </h1>
<h2> Train Number: 12632
<br> From: TEN [Tirunelveli] &emsp; To: MS [Chennai Egmore]
<br> Travel Time: 10hrs 40mins &emsp; Distance 650km &emsp; Avg Speed:
61km/hr
<br> Coaches: Engine EOG UR UR A1 A2 B1 B2 B3 B4 B5 B6 S1 S2 S3 S4 S5
S6 S7 S8 S9 UR SLR </h2>
```

<center> <Table> <tr> <th> # </th> <th> Code </th> <th> Station Name </th>
<th> Arrival Time </th> <th> Deaprture Time </th> <th> Halt Time </th> <th>
PF# </th> <th> Day </th> <th> KM </th> <th> Zone </th> </tr>

<tr> <td> 1 </td> <td> TEN </td> <td> Tirunelveli Junction </td> <td> Starts
</td> <td> 19:55 </td> <td> - </td> <td> 1 </td> <td> 1 </td> <td> 0.0 </td>
<td> SR </td> </tr>

<tr> <td> 2 </td> <td> CVP </td> <td> Kovilpatti Junction </td> <td> 20:43
</td> <td> 20:45 </td> <td> 2m </td> <td> 1 </td> <td> 1 </td> <td> 65.2 </td>
<td> SR </td> </tr>

<tr> <td> 3 </td> <td> SRT </td> <td> Satur </td> <td> 21:03 </td> <td> 21:05
</td> <td> 2m </td> <td> 1 </td> <td> 1 </td> <td> 86.8 </td> <td> SR </td>
</tr>

<tr> <td> 4 </td> <td> VPT </td> <td> Virudunagar Junction </td> <td> 21:23
</td> <td> 21:25 </td> <td> 2m </td> <td> 2 </td> <td> 1 </td> <td> 113.7
</td> <td> SR </td> </tr>

<tr> <td> 5 </td> <td> MDU </td> <td> Madurai Junction </td> <td> 22:20
</td> <td> 22:25 </td> <td> 5m </td> <td> 1 </td> <td> 1 </td> <td> 157.1
</td> <td> SR </td> </tr>

<tr> <td> 6 </td> <td> SDN </td> <td> Sholavandan </td> <td> 22:44 </td>
<td> 22:45 </td> <td> 1m </td> <td> 2 </td> <td> 1 </td> <td> 178.3 </td> <td>
SR </td> </tr>

<tr> <td> 7 </td> <td> DG </td> <td> Dindigul Junction </td> <td> 23:22 </td>
<td> 23:25 </td> <td> 3m </td> <td> 3 </td> <td> 1 </td> <td> 219.4 </td> <td>
SR </td> </tr>

<tr> <td> 8 </td> <td> TPJ </td> <td> Tiruchirappalli Junction </td> <td> 00:55
</td> <td> 01:00 </td> <td> 5m </td> <td> 3 </td> <td> 2 </td> <td> 313.8
</td> <td> SR </td> </tr>

<tr> <td> 9 </td> <td> VRI </td> <td> Vriddhachalam Junction </td> <td> 02:28
</td> <td> 02:30 </td> <td> 2m </td> <td> 3 </td> <td> 2 </td> <td> 437.1
</td> <td> SR </td> </tr>

<tr> <td> 10 </td> <td> VM </td> <td> Villupuram Junction </td> <td> 03:25
</td> <td> 03:30 </td> <td> 5m </td> <td> 1 </td> <td> 2 </td> <td> 491.8
</td> <td> SR </td> </tr>

<tr> <td> 11 </td> <td> TMV </td> <td> Tindivanam </td> <td> 04:00 </td>
<td> 04:02 </td> <td> 2m </td> <td> 2 </td> <td> 2 </td> <td> 529.1 </td> <td>
SR </td> </tr>

<tr> <td> 12 </td> <td> MLMR </td> <td> Melmaruvathur </td> <td> 04:23
</td> <td> 04:25 </td> <td> 2m </td> <td> 2 </td> <td> 2 </td> <td> 559.3
</td> <td> SR </td> </tr>

<tr> <td> 13 </td> <td> CGL </td> <td> Chengalpattu Junction </td> <td> 04:53
</td> <td> 04:55 </td> <td> 2m </td> <td> 2 </td> <td> 2 </td> <td> 594.8
</td> <td> SR </td> </tr>

```

<tr> <td> 14 </td> <td> TBM </td> <td> Tambaram </td> <td> 05:23 </td>
<td> 05:25 </td> <td> 2m </td> <td> 6 </td> <td> 2 </td> <td> 625.8 </td> <td>
SR </td> </tr>
<tr> <td> 15 </td> <td> MBM </td> <td> Mambalam </td> <td> 05:43 </td>
<td> 05:45 </td> <td> 2m </td> <td> 3 </td> <td> 2 </td> <td> 643.5 </td> <td>
SR </td> </tr>
<tr> <td> 16 </td> <td> MS </td> <td> Chennai Egmore </td> <td> 06:35 </td>
<td> Ends </td> <td> - </td> <td> 6 </td> <td> 2 </td> <td> 650.3 </td> <td>
SR </td> </tr> </table> </center> </body> </html>

```

#10 – WEBPAGE SHOWING TRAIN RUNNING STATUS OF 12511 **RAPTI SAGAR EXPRESS** [*RSE1.html*]

```

<html>
<head> <Title> 12511 Rapti Sagar Express - View Live Train Running Status
</Title> <style>

h1 {
text-align: center;
color: #000000;
font-family: "Microsoft Sans Serif", monospace;
font-size: 45px; }

h2 {
text-align: center;
font-family: "Ubuntu", monospace;
font-size: 19px; }

table, td, th {
border: 1px solid; }

table {
width: 88%; }

th, td {
color: #1F2022;
padding: 7px;
text-align: center;
font-family: "Segoe UI Semibold", monospace;
font-size: 15px; }

```

th { background-color: #D3D3D3; }

</style> </head> <body>

<h1> Rapti Sagar Express </h1>

<h2> Train Number: 12511

 From: MAS [MGR Chennai Central]   To: CBE [Coimbatore]

 [MAS not the Origin. Original Train Route from GKP [Gorakhpur Jn] to KCVL [Kochuveli].]

 Travel Time: 7hrs 32mins   Distance: 495km   Avg Speed: 60km/hr

 Coaches: Engine SLR GS GS SE1 S5 S4 S3 S3 S1 Pantry M1 B1 B2 B3 B4 B5 B6 B7 A2 A1 H1 EOG </h2>

<center> <Table> <tr> <th> # </th> <th> Code </th> <th> Station Name </th>
<th> Arrival Time </th> <th> Deaprture Time </th> <th> Halt Time </th> <th>
PF# </th> <th> Day </th> <th> KM </th> <th> Zone </th> </tr>

<tr> <td> 1 </td> <td> MAS </td> <td> MGR Chennai Central </td> <td> 22:50
</td> <td> 23:15 </td> <td> 25m </td> <td> 11 </td> <td> 1 </td> <td> 0.0
</td> <td> SR </td> </tr>

<tr> <td> 2 </td> <td> KPD </td> <td> Katpadi Junction </td> <td> 01:05 </td>
<td> 01:10 </td> <td> 5m </td> <td> 1 </td> <td> 2 </td> <td> 129.5 </td> <td>
SR </td> </tr>

<tr> <td> 3 </td> <td> JTJ </td> <td> Jolarpettai Junction </td> <td> 02:23
</td> <td> 02:25 </td> <td> 2m </td> <td> 3 </td> <td> 2 </td> <td> 214.0
</td> <td> SR </td> </tr>

<tr> <td> 4 </td> <td> SA </td> <td> Salem Junction </td> <td> 03:52 </td>
<td> 03:55 </td> <td> 3m </td> <td> - </td> <td> 2 </td> <td> 334.5 </td> <td>
SR </td> </tr>

<tr> <td> 5 </td> <td> ED </td> <td> Erode Junction </td> <td> 04:55 </td>
<td> 05:00 </td> <td> 5m </td> <td> 1 </td> <td> 2 </td> <td> 394.2 </td> <td>
SR </td> </tr>

<tr> <td> 6 </td> <td> TUP </td> <td> Tiruppur Junction </td> <td> 05:43 </td>
<td> 05:45 </td> <td> 2m </td> <td> 1 </td> <td> 2 </td> <td> 444.4 </td> <td>
SR </td> </tr>

<tr> <td> 7 </td> <td> CBE </td> <td> Coimabatore Junction </td> <td> 06:47
</td> <td> 06:50 </td> <td> 3m </td> <td> 1 </td> <td> 2 </td> <td> 494.9
</td> <td> SR </td> </tr> </table> </center> </body> </html>

#11 – WEBPAGE SHOWING TRAIN RUNNING STATUS OF 12512

RAPTI SAGAR EXPRESS [RSE2.html]

```

<html>
<head> <Title> 12512 Rapti Sagar Express - View Live Train Running Status
</Title> <style>

h1 {
text-align: center;
color: #000000;
font-family: "Microsoft Sans Serif", monospace;
font-size: 45px; }

h2 {
text-align: center;
font-family: "Ubuntu", monospace;
font-size: 19px; }

table, td, th {
border: 1px solid; }

table {
width: 88%; }

th, td {
color: #1F2022;
padding: 7px;
text-align: center;
font-family: "Segoe UI Semibold", monospace;
font-size: 15px; }

th { background-color: #D3D3D3; }

</style> </head> <body>

<h1> Rapti Sagar Express </h1>
<h2> Train Number: 12512
<br> From: CBE [Coimbatore] &emsp; To: MAS [MGR Chennai Central]
<br> [ MAS not the Origin. Original Train Route from KCVL [Kochuveli] to
GKP [Gorakhpur Jn]. ]
<br> Travel Time: 7hrs 45mins &emsp; Distance: 495km &emsp; Avg Speed:
60km/hr
<br> Coaches: Engine EOG H1 A1 A2 B1 B2 B3 B4 B5 B6 B7 M1 Pantry S1
S2 S3 S4 S5 SE1 GS GS SLR </h2>

```

```
<center> <Table> <tr> <th> # </th> <th> Code </th> <th> Station Name </th>
<th> Arrival Time </th> <th> Deaprture Time </th> <th> Halt Time </th> <th>
PF# </th> <th> Day </th> <th> KM </th> <th> Zone </th> </tr>
```

```
<tr> <td> 1 </td> <td> CBE </td> <td> Coimabatore Junction </td> <td> 15:22
</td> <td> 15:25 </td> <td> 3m </td> <td> 4 </td> <td> 1 </td> <td> 0.0 </td>
<td> SR </td> </tr>
```

```
<tr> <td> 2 </td> <td> TUP </td> <td> Tiruppur Junction </td> <td> 16:08 </td>
<td> 16:10 </td> <td> 2m </td> <td> 2 </td> <td> 1 </td> <td> 50.5 </td> <td>
SR </td> </tr>
```

```
<tr> <td> 3 </td> <td> ED </td> <td> Erode Junction </td> <td> 17:00 </td>
<td> 17:05 </td> <td> 5m </td> <td> 1 </td> <td> 1 </td> <td> 100.8 </td> <td>
SR </td> </tr>
```

```
<tr> <td> 4 </td> <td> SA </td> <td> Salem Junction </td> <td> 18:02 </td>
<td> 18:05 </td> <td> 3m </td> <td> 3 </td> <td> 1 </td> <td> 160.5 </td> <td>
SR </td> </tr>
```

```
<tr> <td> 5 </td> <td> JTJ </td> <td> Jolarpettai Junction </td> <td> 19:43
</td> <td> 19:45 </td> <td> 2m </td> <td> 3 </td> <td> 2 </td> <td> 281.0
</td> <td> SR </td> </tr>
```

```
<tr> <td> 6 </td> <td> KPD </td> <td> Katpadi Junction </td> <td> 20:40 </td>
<td> 20:45 </td> <td> 5m </td> <td> 2 </td> <td> 1 </td> <td> 365.4 </td> <td>
SR </td> </tr>
```

```
<tr> <td> 7 </td> <td> MAS </td> <td> MGR Chennai Central </td> <td> 23:10
</td> <td> 23:35 </td> <td> 25m </td> <td> 7 </td> <td> 1 </td> <td> 495.0
</td> <td> SR </td> </tr>
```

```
</table> </center> </body> </html>
```

#12 – ACCESS FORBIDDEN PAGE [DispError.html]

```
<html>
{ % load static % }
<head> <title> Error 404:( </title>
<style>
```

```
body { overflow: hidden; }
h1 { padding: 10px; }
```

```
p1 {
font-family: "Ubuntu", monospace;
font-size: 52px;
```



```
font-weight: bold; }
```

```
p2 {  
font-family: "Quicksand", monospace;  
font-size: 20px; }
```

```
</style> </head> <body> <Center>  
<h1> <IMG Src = "{% static 'Logo.jpg' %}" Height = "185", Width = "223">  
</h1>  
<p1> Sorry for the Inconvenience. </p1> <br> <br>  
<p2> For Security Reasons, this page has been temporarily blocked for Public  
View. <br>  
Feel free to browse through our other Web Pages! </p2> </center> </body>
```

#13 – CONFIGURING SETTINGS IN DJANGO [*settings.py*]

```
from pathlib import Path
```

```
# Build paths inside the project like this: BASE_DIR / 'subdir'.  
BASE_DIR = Path(__file__).resolve().parent.parent
```

```
# Quick-start development settings - unsuitable for production  
# See https://docs.djangoproject.com/en/4.1/howto/deployment/checklist/
```

```
# SECURITY WARNING: keep the secret key used in production secret!  
SECRET_KEY = 'django-insecure-  
00_zke6x=y=1eaq0))c9f8k56ha)lx$r6t1cgh$$@0up@rfn2_'
```

```
# SECURITY WARNING: don't run with debug turned on in production!  
DEBUG = True
```

```
ALLOWED_HOSTS = []
```

```
# Application definition
```

```
INSTALLED_APPS = [  
    'django.contrib.admin',  
    'django.contrib.auth',  
    'django.contrib.contenttypes',
```

```

'django.contrib.sessions',
'django.contrib.messages',
'django.contrib.staticfiles',
'Applications',
'django_extensions',
]

MIDDLEWARE = [
'django.middleware.security.SecurityMiddleware',
'django.contrib.sessions.middleware.SessionMiddleware',
'django.middleware.common.CommonMiddleware',
'django.middleware.csrf.CsrfViewMiddleware',
'django.contrib.auth.middleware.AuthenticationMiddleware',
'django.contrib.messages.middleware.MessageMiddleware',
'django.middleware.clickjacking.XFrameOptionsMiddleware',
]

ROOT_URLCONF = 'FinalCut.urls'

TEMPLATES = [
{
    'BACKEND': 'django.template.backends.django.DjangoTemplates',
    'DIRS': ['D:/5th Semester
Files/PBA_CN_Project_Alcatraz/Alcatraz/FinalCut/Templates'],
    'APP_DIRS': True,
    'OPTIONS': {
        'context_processors': [
            'django.template.context_processors.debug',
            'django.template.context_processors.request',
            'django.contrib.auth.context_processors.auth',
            'django.contrib.messages.context_processors.messages',
        ],
    },
},
]

WSGI_APPLICATION = 'FinalCut.wsgi.application'

# Database
# https://docs.djangoproject.com/en/4.1/ref/settings/#databases

DATABASES = {
    'default': {

```

```

        'ENGINE': 'django.db.backends.sqlite3',
        'NAME': BASE_DIR / 'db.sqlite3',
    }
}

# Password validation
# https://docs.djangoproject.com/en/4.1/ref/settings/#auth-password-validators

AUTH_PASSWORD_VALIDATORS = [
    {
        'NAME':
'django.contrib.auth.password_validation.UserAttributeSimilarityValidator',
    },
    {
        'NAME':
'django.contrib.auth.password_validation.MinimumLengthValidator',
    },
    {
        'NAME':
'django.contrib.auth.password_validation.CommonPasswordValidator',
    },
    {
        'NAME':
'django.contrib.auth.password_validation.NumericPasswordValidator',
    },
]

# Internationalization
# https://docs.djangoproject.com/en/4.1/topics/i18n/

LANGUAGE_CODE = 'en-us'

TIME_ZONE = 'UTC'

USE_I18N = True

USE_TZ = True

SECURE_SSL_REDIRECT = True

# Static files (CSS, JavaScript, Images)

```

```
# https://docs.djangoproject.com/en/4.1/howto/static-files/

STATIC_URL = 'static/'
STATICFILES_DIRS = [ 'D:/5th Semester
Files/PBA_CN_Project_Alcatraz/Alcatraz/FinalCut/Static', ]

# Default primary key field type
# https://docs.djangoproject.com/en/4.1/ref/settings/#default-auto-field

DEFAULT_AUTO_FIELD = 'django.db.models.BigAutoField'
```

#14 – CREATING URLS FOR THE WEBPAGES IN DJANGO [*urls.py*]

```
"""FinalCut URL Configuration
```

The `urlpatterns` list routes URLs to views. For more information please see:
<https://docs.djangoproject.com/en/4.1/topics/http/urls/>

Examples:

Function views

1. Add an import: from my_app import views
2. Add a URL to urlpatterns: path("", views.home, name='home')

Class-based views

1. Add an import: from other_app.views import Home
2. Add a URL to urlpatterns: path("", Home.as_view(), name='home')

Including another URLconf

1. Import the include() function: from django.urls import include, path
2. Add a URL to urlpatterns: path('blog/', include('blog.urls'))

```
"""
```

```
from django.contrib import admin
from django.urls import path
from Applications import views
```

```
urlpatterns = [
    path('admin/', admin.site.urls),
    path("", views.Home, name='Home'),
    path('trains/', views.Trains, name='Trains'),
    path('adminlogin/', views.Login, name='Login'),
    path('adminlogin/trains/', views.AdminTrains, name='AdminTrains'),
    path('trains/16183/', views.Uzhavan1, name='Uzhavan1'),
    path('trains/16184/', views.Uzhavan2, name='Uzhavan2'),
    path('trains/20607/', views.AccessRestrict, name='VBE1'),
```

```

path('trains/20608/',views.AccessRestrict, name='VBE2'),
path('trains/12631/',views.Nellai1, name='Nellai1'),
path('trains/12632/',views.Nellai2, name='Nellai2'),
path('trains/12511/',views.RSE1, name='Rapti1'),
path('trains/12512/',views.RSE2, name='Rapti2'),
path('adminlogin/trains/16183/',views.Uzhavan1, name='Uzhavan1'),
path('adminlogin/trains/16184/',views.Uzhavan2, name='Uzhavan2'),
path('adminlogin/trains/20607/',views.Vande1, name='VBE1'),
path('adminlogin/trains/20608/',views.Vande2, name='VBE2'),
path('adminlogin/trains/12631/',views.Nellai1, name='Nellai1'),
path('adminlogin/trains/12632/',views.Nellai2, name='Nellai2'),
path('adminlogin/trains/12511/',views.RSE1, name='Rapti1'),
path('adminlogin/trains/12512/',views.RSE2, name='Rapti2'),
]

```

#14 – WRITING DEFINITIONS FOR THE URLs [*views.py*]

```

from django.shortcuts import render
from Applications import RSA

# Create your views here.
def Home(request):
    return render(request,'Alcatraz.html')

def Trains(request):
    User = { "Type":"Public" }
    return render(request,'Trains.html', User)

def AdminTrains(request):
    InputUN = request.GET["UN"]
    InputPW = request.GET["PW"]
    Res = RSA.Login_Check(InputUN, InputPW)
    if Res==0:
        ErrorCount = 1
        ErrorCheck = {"Flag":ErrorCount}
        return render(request,"AdminLogin.html",ErrorCheck)
    else:
        User = { "Type":"Admin" }
        return render(request,"Trains.html", User)

ErrorCount = 0
def Login(request):

```

```

global ErrorCount
ErrorCheck = {"Flag":ErrorCount}
return render(request,'AdminLogin.html',ErrorCheck)

def Uzhavan1(request):
    return render(request,'Uzhavan1.html')
def Uzhavan2(request):
    return render(request,'Uzhavan2.html')

def Vande1(request):
    return render(request,'VBE1.html')
def Vande2(request):
    return render(request,'VBE2.html')

def Nellai1(request):
    return render(request,'Nellai1.html')
def Nellai2(request):
    return render(request,'Nellai2.html')

def RSE1(request):
    return render(request,'RSE1.html')
def RSE2(request):
    return render(request,'RSE2.html')

def AccessRestrict(request):
    return render(request,'DispError.html')

```

#15 – AUTHORIZATION PROGRAM FOR ADMIN USING RSA CRYPTOSYTEM [RSA.py]

```

from random import randint
from math import gcd

def ChkPrime(Num):
    Factors = 0
    for I in range(1,Num):
        if Num%I==0:
            Factors += 1
    if Factors==1: return 1
    else: return 0

def Generate_P():

```

```

while True:
    Num = randint(1000,9999)
    if ChkPrime(Num) != 1:
        continue
    else: break
return Num

def Generate_Q():
    while True:
        Num = randint(1000,9999)
        if Num==P: continue
        if ChkPrime(Num) != 1:
            continue
        else: break
    return Num

def RelativelyPrime(Num):
    Res = 2
    while True:
        if gcd(Res,Num)==1: break
        else:
            Res += 1; continue
    return Res

def encrypt (Message,Key):
    global N; Plaintext = []
    for I in range(len(Message)):
        Plaintext.append(ord(Message[I]))
    Ciphertext = []
    for I in range(len(Plaintext)):
        Ciphertext.append((Plaintext[I]**Key)%N)
    return Ciphertext

```

```

P = Generate_P()
Q = Generate_Q()
N = P*Q
Phi_N = (P-1)*(Q-1)
publicKey =
RelativelyPrime(Phi_N)

Username = encrypt("admin",
publicKey)

```

```

Password = encrypt("password",
publicKey)

def Login_Check(UN, PW):
    UN = encrypt(UN, publicKey)
    PW = encrypt(PW, publicKey)
    if UN == Username:
        if PW == Password:
            return 1
        else: return 0
    else: return 0

```

PROJECT SNAPSHOTS

- 1) Starting the Django Server over TLS using the Local SSL Certificate and Key generated using mkcert Tool:

```
C:\Windows\System32\cmd.exe - py manage.py runserver_plus --cert-file cert.pem --key-file key.pem
Microsoft Windows [Version 10.0.19044.1889]
(c) Microsoft Corporation. All rights reserved.

D:\5th Semester Files\PBA_CN_Project_Alcatraz\Alcatraz>Scripts\activate.bat

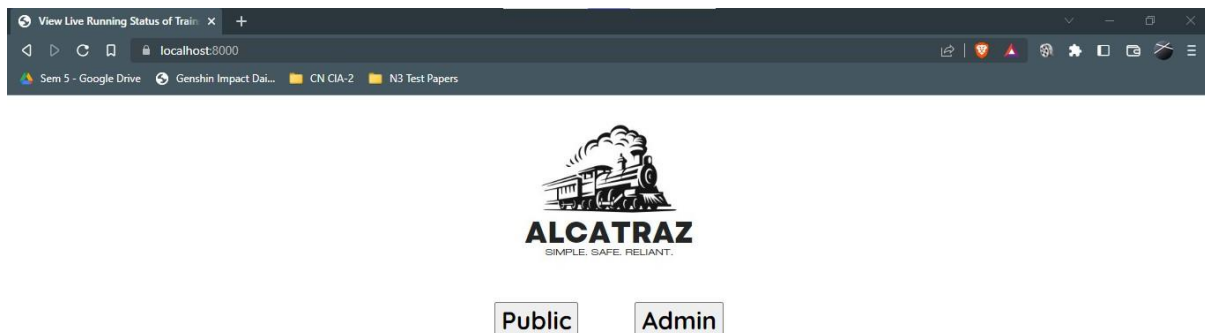
(Alcatraz) D:\5th Semester Files\PBA_CN_Project_Alcatraz\Alcatraz>cd FinalCut

(Alcatraz) D:\5th Semester Files\PBA_CN_Project_Alcatraz\Alcatraz\FinalCut>py manage.py runserver_plus --cert-file cert.
pem --key-file key.pem
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on https://127.0.0.1:8000
Press CTRL+C to quit
* Restarting with stat
Performing system checks...

System check identified no issues (0 silenced).

Django version 4.1.3, using settings 'FinalCut.settings'
Development server is running at https://[127.0.0.1]:8000/
Using the Werkzeug debugger (http://werkzeug.pocoo.org/)
Quit the server with CTRL-BREAK.
* Debugger is active!
* Debugger PIN: 138-703-893
```

- 2) The Homepage of Alcatraz:




3) List of Trains webpage in both 'Public' and 'Admin' Mode:

View Live Running Status of Trains on | Alcatraz - Search Trains

localhost:8000/trains/

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Home



Please Click on the Train Number to Obtain the Live Running Details of the Train.

Train Number	Name of the Train	Source	Destination	Departure Time	Arrival Time	Runs on Days
16183	Uzhavan Express	MS - Chennai Egmore	TJ - Thanjavur	23:30	07:15	Sun Mon Tue Wed Thu Fri Sat
16184	Uzhavan Express	TJ - Thanjavur	MS - Chennai Egmore	20:45	04:55	Sun Mon Tue Wed Thu Fri Sat
20607	Vande Bharat Express	MAS - MGR Chennai Central	MYS - Mysuru Junction	05:50	12:20	Sun Mon Tue Thu Fri Sat
20608	Vande Bharat Express	MYS - Mysuru Junction	MAS - MGR Chennai Central	13:05	19:30	Sun Mon Tue Thu Fri Sat
12631	Nellai SF Express	MS - Chennai Egmore	TEN - Tirunelveli	20:10	08:00	Sun Mon Tue Wed Thu Fri Sat
12632	Nellai SF Express	TEN - Tirunelveli	MS - Chennai Egmore	19:25	07:10	Sun Mon Tue Wed Thu Fri Sat
12511	Rapti Sagar Express	MAS - MGR Chennai Central	CBE - Coimbatore Junction	23:20	07:35	Wed
12512	Rapti Sagar Express	CBE - Coimbatore Junction	MAS - MGR Chennai Central	15:20	23:05	Sun Tue Wed

4) Viewing 16183 – Uzhavan Express:

View Live Running Status of Trains on | Alcatraz - Search Trains | 16183 Uzhavan Express - View Liv

localhost:8000/trains/16183/

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Uzhavan Express

Train Number: 16183
 From: MS [Chennai Egmore] To: TJ [Thanjavur]
 Travel Time: 7hrs 55mins Distance: 351km Avg Speed: 50km/hr
 Coaches: SLR UR UR S12 S11 S10 S9 S8 S7 S6 S5 S4 S3 S2 S1 B3 B2 B1 A2 A1 UR SLR Engine

#	Code	Station Name	Arrival Time	Deaprture Time	Halt Time	PF#	Day	KM	Zone
1	MS	Chennai Egmore	Starts	22:55	-	5	1	0.0	SR
2	TBM	Tambaram	23:28	23:30	2m	-	1	24.5	SR
3	CGL	Chengalpattu Junction	23:57	23:59	2m	6	1	55.5	SR
4	VM	Villupuram Junction	01:25	01:30	5m	2	2	158.5	SR
5	CDM	Chidambaram	03:33	03:35	2m	1	2	243.8	SR
6	MV	Mayiladuthurai Junction	04:13	04:15	2m	1	2	280.8	SR
7	KTM	Kuttralam	04:27	04:28	1m	1	2	289.4	SR
8	ADT	Aduturai	04:40	04:41	1m	1	2	300.6	SR
9	KMU	Kumbakonam	04:53	04:55	2m	1	2	312.0	SR
10	PML	Papanasam	05:09	05:10	1m	1	2	326.4	SR
11	TJ	Thanjavur Junction	06:00	Ends	-	3	2	351.4	SR

5) Viewing 16184 – Uzhavan Express:

View Live Running Status of Trains on | Alcatraz - Search Trains | 16184 Uzhavan Express - View Live

localhost:8000/trains/16184/

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Uzhavan Express

Train Number: 16184
 From: TJ [Thanjavur] To: MS [Chennai Egmore]
 Travel Time: 6hrs 30mins Distance: 351km Avg Speed: 54km/hr
 Coaches: Engine SLR U1 H1 A1 A2 B1 B2 B3 S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11 S12 UR UR SLR

#	Code	Station Name	Arrival Time	Deaprture Time	Halt Time	PF#	Day	KM	Zone
1	TJ	Thanjavur Junction	Starts	21:55	-	1	1	0.0	SR
2	PML	Papanasam	22:16	22:17	1m	1	1	25.0	SR
3	KMU	Kumbakonam	22:28	22:30	2m	1	1	39.3	SR
4	ADT	Aduturai	22:42	22:43	1m	1	1	50.8	SR
5	KTM	Kuttralam	22:55	22:56	1m	1	1	61.9	SR
6	MV	Mayiladuthurai Junction	23:08	23:10	2m	1	1	70.6	SR
7	VDL	Vaithisvaran Koil	23:25	23:26	1m	1	1	84.6	SR
8	SY	Sirkazhi	23:34	23:35	1m	1	1	90.6	SR
9	CDM	Chidambaram	23:50	23:52	2m	1	1	107.6	SR
10	VM	Villupuram Junction	01:35	01:40	5m	4	2	192.9	SR
11	CGL	Chengalpattu Junction	02:58	03:00	2m	-	2	295.8	SR

6) Viewing 20607 – Vande Bharat Express in Public Mode:



Sorry for the Inconvenience.

For Security Reasons, this page has been temporarily blocked for Public View.
 Feel free to browse through our other Web Pages!

7) Viewing 12631 – Nellai Express:

View Live Running Status of Trains on | Alcatraz - Search Trains | 12631 Nellai Superfast Express - V x +

localhost:8000/trains/12631/

Sem 5 - Google Drive | Genshin Impact Dai... | CN CIA-2 | N3 Test Papers

Nellai SF Express

Train Number: 12631
 From: MS [Chennai Egmore] To: TEN [Tirunelveli]
 Travel Time: 10hrs 50mins Distance 650km Avg Speed: 60km/hr
 Coaches: SLR UR S9 S8 S7 S6 S5 S4 S3 S2 S1 B6 B5 B4 B3 B2 B1 A2 A1 UR EOG Engine

#	Code	Station Name	Arrival Time	Deaprture Time	Halt Time	PF#	Day	KM	Zone
1	MS	Chennai Egmore	Starts	19:50	-	7	1	0.0	SR
2	TBM	Tambaram	20:18	20:20	2m	8	1	24.5	SR
3	CGL	Chengalpattu Junction	20:48	20:50	2m	6	1	55.5	SR
4	MLMR	Melmaruvathur	21:18	21:20	2m	3	1	91.1	SR
5	TMV	Tindivanam	21:43	21:45	2m	1	1	121.2	SR
6	VM	Villupuram Junction	22:28	22:30	2m	5	1	158.5	SR
7	VRI	Vriddhachalam Junction	23:10	23:12	2m	3	1	213.2	SR
8	TPJ	Tiruchirappalli Junction	01:10	01:15	5m	4	2	336.6	SR
9	DG	Dindigul Junction	02:32	02:35	3m	4	2	430.9	SR
10	MDU	Madurai Junction	03:30	03:35	5m	1	2	493.2	SR
11	VPT	Virudunagar Junction	04:13	04:15	2m	2	2	536.6	SR

8) Viewing 12632 – Nellai Express:

View Live Running Status of Trains on | Alcatraz - Search Trains | 12632 Nellai Superfast Express - V x +

localhost:8000/trains/12632/

Sem 5 - Google Drive | Genshin Impact Dai... | CN CIA-2 | N3 Test Papers

Nellai SF Express

Train Number: 12632
 From: TEN [Tirunelveli] To: MS [Chennai Egmore]
 Travel Time: 10hrs 40mins Distance 650km Avg Speed: 61km/hr
 Coaches: Engine EOG UR UR A1 A2 B1 B2 B3 B4 B5 B6 S1 S2 S3 S4 S5 S6 S7 S8 S9 UR SLR

#	Code	Station Name	Arrival Time	Deaprture Time	Halt Time	PF#	Day	KM	Zone
1	TEN	Tirunelveli Junction	Starts	19:55	-	1	1	0.0	SR
2	CVP	Kovilpatti Junction	20:43	20:45	2m	1	1	65.2	SR
3	SRT	Satur	21:03	21:05	2m	1	1	86.8	SR
4	VPT	Virudunagar Junction	21:23	21:25	2m	2	1	113.7	SR
5	MDU	Madurai Junction	22:20	22:25	5m	1	1	157.1	SR
6	SDN	Sholavandan	22:44	22:45	1m	2	1	178.3	SR
7	DG	Dindigul Junction	23:22	23:25	3m	3	1	219.4	SR
8	TPJ	Tiruchirappalli Junction	00:55	01:00	5m	3	2	313.8	SR
9	VRI	Vriddhachalam Junction	02:28	02:30	2m	3	2	437.1	SR
10	VM	Villupuram Junction	03:25	03:30	5m	1	2	491.8	SR
11	TMV	Tindivanam	04:00	04:02	2m	2	2	529.1	SR

9) Viewing 12511 – Rapti Sagar Express:

View Live Running Status of Trains on | Alcatraz - Search Trains | 12511 Rapti Sagar Express - View | x +

localhost:8000/trains/12511/

Sem 5 - Google Drive | Genshin Impact Dai... | CN CIA-2 | N3 Test Papers

Rapti Sagar Express

Train Number: 12511
 From: MAS [MGR Chennai Central] To: CBE [Coimbatore]
 [MAS not the Origin. Original Train Route from GKP [Gorakhpur Jn] to KCVL [Kochuveli].]
 Travel Time: 7hrs 32mins Distance: 495km Avg Speed: 60km/hr
 Coaches: Engine SLR GS GS SE1 S5 S4 S3 S1 Pantry M1 B1 B2 B3 B4 B5 B6 B7 A2 A1 H1 EOG

#	Code	Station Name	Arrival Time	Deaprture Time	Halt Time	PF#	Day	KM	Zone
1	MAS	MGR Chennai Central	22:50	23:15	25m	11	1	0.0	SR
2	KPD	Katpadi Junction	01:05	01:10	5m	1	2	129.5	SR
3	JTJ	Jolarpettai Junction	02:23	02:25	2m	3	2	214.0	SR
4	SA	Salem Junction	03:52	03:55	3m	-	2	334.5	SR
5	ED	Erode Junction	04:55	05:00	5m	1	2	394.2	SR
6	TUP	Tiruppur Junction	05:43	05:45	2m	1	2	444.4	SR
7	CBE	Coimbatore Junction	06:47	06:50	3m	1	2	494.9	SR

10) Viewing 12512 – Rapti Sagar Express:

View Live Running Status of Trains on | Alcatraz - Search Trains | 12512 Rapti Sagar Express - View | x +

localhost:8000/trains/12512/

Sem 5 - Google Drive | Genshin Impact Dai... | CN CIA-2 | N3 Test Papers

Rapti Sagar Express

Train Number: 12512
 From: CBE [Coimbatore] To: MAS [MGR Chennai Central]
 [MAS not the Origin. Original Train Route from KCVL [Kochuveli] to GKP [Gorakhpur Jn].]
 Travel Time: 7hrs 45mins Distance: 495km Avg Speed: 60km/hr
 Coaches: Engine EOG H1 A1 A2 B1 B2 B3 B4 B5 B6 B7 M1 Pantry S1 S2 S3 S4 S5 SE1 GS GS SLR

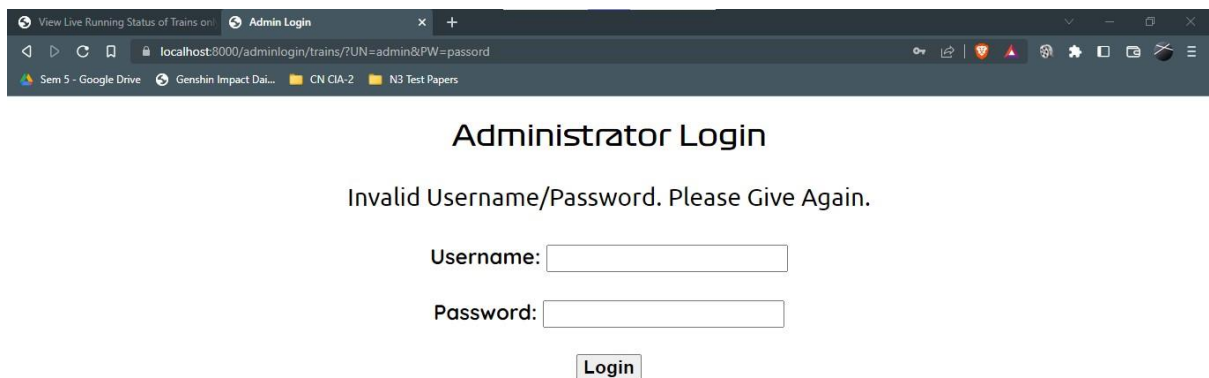
#	Code	Station Name	Arrival Time	Deaprture Time	Halt Time	PF#	Day	KM	Zone
1	CBE	Coimbatore Junction	15:22	15:25	3m	4	1	0.0	SR
2	TUP	Tiruppur Junction	16:08	16:10	2m	2	1	50.5	SR
3	ED	Erode Junction	17:00	17:05	5m	1	1	100.8	SR
4	SA	Salem Junction	18:02	18:05	3m	3	1	160.5	SR
5	JTJ	Jolarpettai Junction	19:43	19:45	2m	3	2	281.0	SR
6	KPD	Katpadi Junction	20:40	20:45	5m	2	1	365.4	SR
7	MAS	MGR Chennai Central	23:10	23:35	25m	7	1	495.0	SR

11) Login Page – Administrator Mode:



The screenshot shows a web browser window with the title "Admin Login". The address bar displays "localhost:8000/adminlogin/". The page content includes the heading "Administrator Login", the instruction "Please Enter your Login Credentials.", and two input fields labeled "Username:" and "Password:". Each input field has a key icon on the right side. Below the password field is a "Login" button.

12) Login Page – When Invalid Details are Entered:



The screenshot shows the same "Administrator Login" page, but with an error message "Invalid Username/Password. Please Give Again." displayed above the input fields. The "Username:" and "Password:" input fields are now empty. The "Login" button remains below the fields.

13) Vande Bharat Express 20607 – Administrator Mode:

Vande Bharat Express									
Train Number: 20607 From: MAS [MGR Chennai Central] To: MYS [Mysuru] Travel Time: 6hrs 30mins Distance: 497km Avg Speed: 76km/hr Coaches: C1 C2 C3 C4 C5 C6 C7 E1 E2 C8 C9 C10 C11 C12 C13 C14 Engine									
#	Code	Station Name	Arrival Time	Deaprture Time	Halt Time	PF#	Day	KM	Zone
1	MAS	MGR Chennai Central	Starts	05:50	-	10	1	0.0	SR
2	KPD	Katpadi Junction	07:21	07:25	4m	1	1	129.6	SR
3	SBC	KSR Bengaluru City Juncion	10:15	10:20	5m	7	1	359.0	SWR
4	MYS	Mysuru Junction	12:20	Ends	-	1	1	496.6	SWR

14) Vande Bharat Express 20608 – Administrator Mode:

Vande Bharat Express									
Train Number: 20608 From: MYS [Mysuru] To: MAS [MGR Chennai Central] Travel Time: 6hrs 25mins Distance: 497km Avg Speed: 77km/hr Coaches: Engine C14 C13 C12 C11 C10 C9 C8 E2 E1 C7 C6 C5 C4 C3 C2 C1									
#	Code	Station Name	Arrival Time	Deaprture Time	Halt Time	PF#	Day	KM	Zone
1	MYS	Mysuru Junction	Starts	13:05	-	1	1	0.0	SWR
2	SBC	KSR Bengaluru City Juncion	14:50	14:55	5m	7	1	137.6	SWR
3	KPD	Katpadi Junction	17:36	17:40	4m	2	1	367.0	SR
4	MAS	MGR Chennai Central	19:30	Ends	-	9	1	496.6	SR

CONCLUSION AND FUTURE UPGRADES

- The Tables that have been displayed in the project have been made entirely just using the <table> command. However, Django has advanced and more easy-to-implement “Models” function which can handle Databases of any kind. Using the **migrations** folder and functions like **makemigrations** and **migrate**, one can implement Models in their program.
- The Certificate that has been Generated for the sake of establishing TLS over Port 8000 and the key for authorisation are **all local to my system**. So, in order to generate a globally authenticated SSL Certificate, one may use tools like **Stunnel** and **Certbot** to create and store **more enhanced and Trusted** SSL Certificates recognized at a global level.
- One can also replace Django Web Server for any other Hosting Servers like **Nginx, Apache**, etc... and can have their website publicly available in the World Wide Web. Moreover, by implementing that one can also explore various other options of Analysis by running tools like **Wireshark** for analysing the type of packets going from the Server when in Admin Mode and in Public Mode.
- The Code can be made to look even more professional and refined by implementing **JS and APIs** for real-time displaying of Statuses by having an Active GPRS Service near the Server that constantly retrieves the data from the GPS installed with the Train concerned thereby giving even more accurate details. This thus allows the programmer to add an additional feature like **Display Live Running Status** using their **GPS Installed in their Smartphones** instead of relying on the server and the application to be updated for the User to view the Running status.

REFERENCES

These are some Reference Books I used from our College Library:

- i) James F Kurose, Keith W Ross:
Computer Networking – A Top-Down Approach
- ii) William Stallings – **Data and Computer Communications**
- iii) Behrouz A Forouzan and Firouz Mosharaff:
Computer Networks – A Top-Down Approach

With useful Information resourced from the following Websites of Interest:

- i) <https://www.ietf.org/standards/rfcs/>
- ii) <https://stackoverflow.com/>
- iii) <https://www.researchgate.net/>
- iv) <https://www.tutorialspoint.com/index.htm>
- v) <https://www.geeksforgeeks.org/>
- vi) <https://www.javatpoint.com/>
- vii) <https://www.sciencedirect.com/>
- viii) <https://www.altexsoft.com/blog/railway-reservation-system/>
- ix) <https://github.com/>
- x) <https://indiarailinfo.com/>
- xi) <https://timonweb.com/django/https-django-development-server-ssl-certificate/>