IMPLEMENTATION OF LIBRARY MANAGEMENT SYSTEM

A MINI PROJECT REPORT

<u>Submitted By:</u>

NEGADHARSHINI.B	**(610919106028)**
ARCHANA.S	**(610919106003)**
THAMBIDURAI.P	**(610919106051)**
MAHALAKSHMI.R	**(610919106308)**

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BACHELOR OF ENGINEERING

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ANNA UNIVERSITY :: CHENNAI – 600 025
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Project Report

INTRODUCTION

1.1 PROJECT OVERVIEW

SMART SOLUTIONS FOR RAILWAYS is to manage Indian Railways is the largest railway network in Asia and additionally world's second largest network operated underneath a single management. Due to its large size it is difficult to monitor the cracks in tracks manually. This paper deals with this problem and detects cracks in tracks with the help of ultrasonic sensor attached to moving assembly with help of stepper motor.

Ultrasonic sensor allows the device to moves back and forth across the track and if there is any fault, it gives information to the cloud server through which railway department is informed on time about cracks and many lives can be saved. This is the application of IoT, due to this it is cost effective system. This effective methodology of continuous observation and assessment of rail tracks might facilitate to stop accidents. This methodology endlessly monitors the rail stress, evaluate the results and provide the rail break alerts such as potential buckling conditions, bending of rails and wheel impact load detection to the concerned authorities.

1.2PURPOSE

Internet is basically system of interconnected computers through network. But now its use is changing with changing world and it is not just confined to emails or web browsing. Today’s internet also deals with embedded sensors and has led to development of smart homes, smart rural area, e-health care’s etc. and this introduced the concept of IoT . Internet of Things refers to interconnection or communication between two or more devices without humantohuman and humanto-computer interaction. Connected devices are equipped with sensors or actuators perceive their surroundings. IOT has four major components which include sensing the device, accessing the device, processing the information of the device, and provides application and services. In addition to this it also provides security and privacy of data . Automation has affected every aspect of our daily lives. More improvements are being introduced in almost all fields to reduce human effort and save time. Thinking of the same is trying to introduce automation in the field of track testing. Railroad track is an integral part of any company's asset base, since it provides them with the necessary business functionality. Problems that occur due to problems in railroads need to be overcome. The latest method used by the Indian railroad is the tracking of the train track which requires a lot of manpower and is time-consuming

LITERATURE SURVEY

2.1 EXISTING SYSTEM

In the Existing train tracks are manually researched. LED (Light Emitting Diode) and LDR (Light Dependent Resister) sensors cannot be implemented on the block of the tracks]. The input image processing is a clamorous system with high cost and does not give the exact result. The Automated Visual Test Method is a complicated method as the video color inspection is implemented to examine the cracks in rail track which does not give accurate result in bad weather. This traditional system delays transfer of information. Srivastava et al., (2017) proposed a moving gadget to detect the cracks with the help of an array of IR sensors to identify the actual position of the cracks as well as notify to nearest railway station

. Mishra et al., (2019) developed a system to track the cracks with the help of

Arduino mega power using solar energy and laser. A GSM along with a GPS module was implemented to get the actual location of the faulty tracks to inform the authorities using SMS via a link to find actual location on Google Maps. Rizvi Aliza Raza presented a prototype in that is capable of capturing photos of the track and compare it with the old database and sends a message to the authorities regarding the crack detected. The detailed analysis of traditional railway track fault detection techniques is explained in table

2.2 REFERENCES

1. D. Hesse, “Rail Inspection Using Ultrasonic Surface Waves” Thesis, Imperial College of London, 2007.
2. Md. Reya Shad Azim1 , Khizir Mahmud2 and C. K. Das. Automatic railway track switching system, International Journal of Advanced Technology, Volume 54, 2014.
3. S. Somalraju, V. Murali, G. saha and V. Vaidehi, “Title-robust railway crack detection scheme using LED (Light Emitting Diode) - LDR (Light Dependent Resistor) assembly IEEE 2012.
4. S. Srivastava, R. P. Chourasia, P. Sharma, S. I. Abbas, N. K. Singh, “Railway

   Track Crack detection vehicle”, IARJSET, Vol. 4, pp. 145-148, Issued in 2, Feb 2017.
5. U. Mishra, V. Gupta, S. M. Ahzam and S. M. Tripathi, “Google Map Based

   Railway Track Fault Detection Over the Internet”, International Journal of Applied Engineering Research, Vol. 14, pp. 20-23, Number 2, 2019.
6. R. A. Raza, K. P. Rauf, A. Shafeeq, “Crack detection in Railway track using Image processing”, IJARIIT, Vol. 3, pp. 489-496, Issue 4, 2017.
7. N. Bhargav, A. Gupta, M. Khirwar, S. Yadav, and V. Sahu, “Automatic Fault

   Detection of Railway Track System Based on PLC (ADOR TAST)”, International Journal of Recent Research Aspects, Vol. 3, pp. 91-94, 2016

2.3 PROBLEM STATEMENT DEFINITION

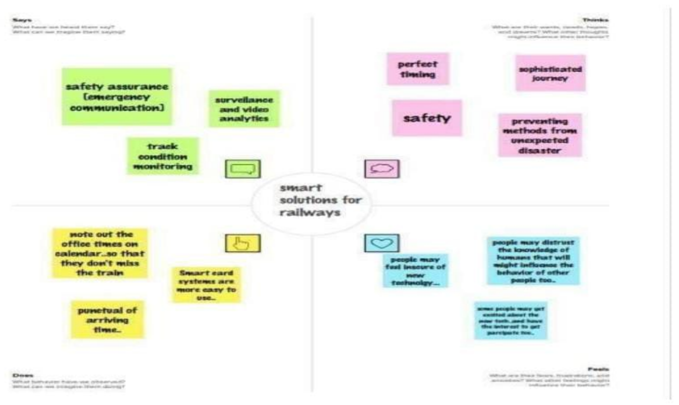
Among the various modes of transport, railways is one of the biggest modes of transport in the world. Though there are competitive threats from airlines, luxury buses, public transports, and personalized transports the problem statement is to answer the question “What are the problems faced by the passengers while travelling by train at station and on board”

IDEATION AND PROPOSED SOLUTION

EMPATHY MAP CANVAS

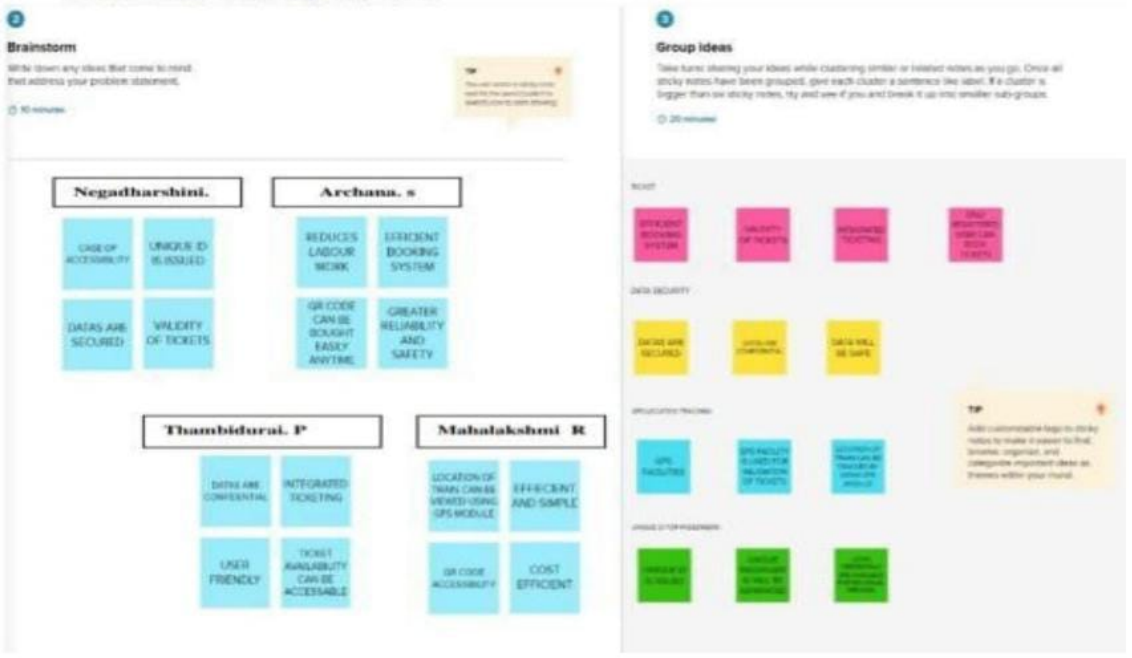
IDEATION AND PROPOSED SOLUTON

3.1 EMPATHY MAP CANVAS


Says
safety assurance (emergency communication)
survellance and video analytics
track condition monitoring
Thinks
perfect timing
sophisticated journey
safety
preventing methods from unexpected disaster
smart solutions for railways
note out the office times on calendar..so that they don't miss the train
Smart card systems are more easy to use..
punctual of arriving time..
people may feel insecure of new technolgy...
people may distrust the knowledge of humans that will might influence the behavior of other people too..
Does
Feels

Step-2: Brainstorm, Idea Listing and Grouping

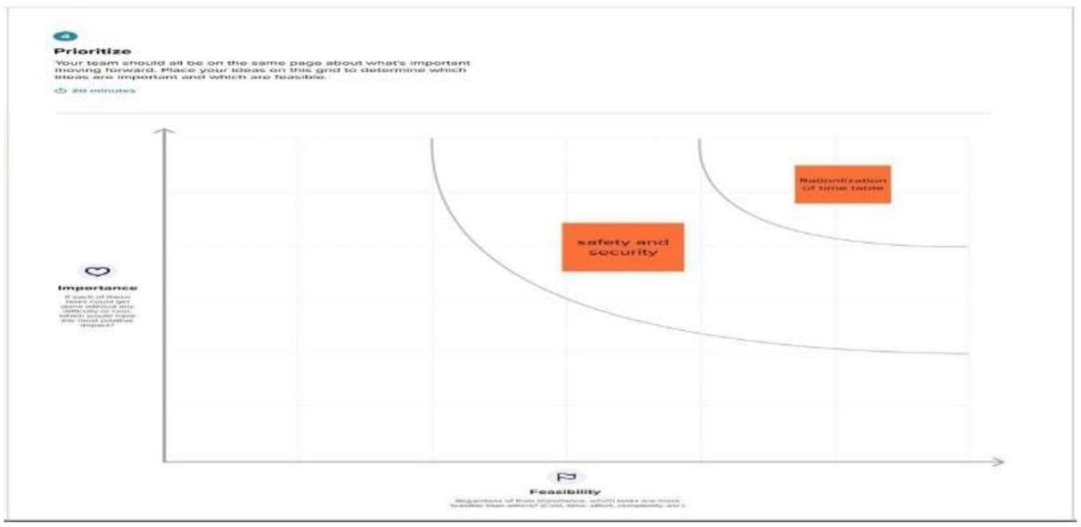
No index entries found.



Write down any ideas that come to mind that address your problem statement.

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you and break it up into smaller sub-groups.

Add customizable tags to sticky notes to make it easier to find, browse, organize, and categorize important ideas as themes within your mural.



Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

If each of these tasks could get done without any difficulty or cost, which would have the most positive impact?

Regardless of their importance, which tasks are more feasible than others? (Cost, time, effort, complexity, etc.)

3.3 PROPOSED SOLUTION

S.NO	PARAMETERS	DESCRIPTIONS
1	Problem Statement (Problem to be solved)	In order to satisfy the passengers, the Railways provides various services to its passengers But, the passengers can face some problems.
2	Idea / Solution description	The idea is to minimize the ticket booking problems among the passengers by providing Online mode of booking rather than papers. . In queues in front of the ticket counters in railway stations have been drastically increased over the time.
3	Novelty / Uniqueness	Online mode of booking is most common and so ease of access to everyone that makes more efficient uniqueness of utilizing the technique. People can book their ticket through online and they get a QR code through SMS

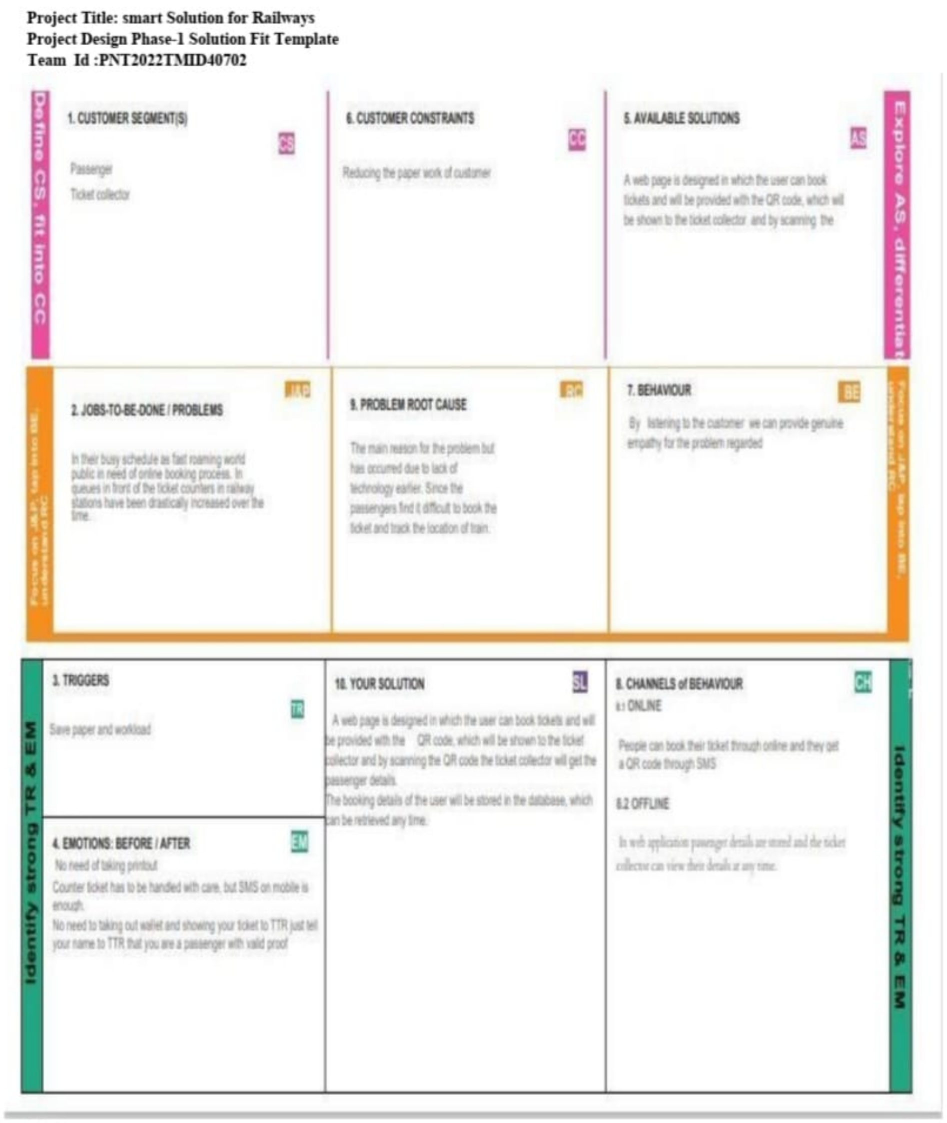
4	Social Impact / Customer Satisfaction	Customers for sure they get satisfied as they are in the fast roaming world this technique makes more easier for travelling passengers. A web page is designed in which the user can book tickets and will be provided with the QR code, which will be shown to the ticket collector and by scanning the QR code the ticket collector will get the passenger details
5	Business Model (Revenue Model)	A web page is designed in which the user can book tickets and will be provided with the QR code, which will be shown to the ticket collector and by scanning the QR code the ticket collector will get the passenger details. The booking details of the user will be stored in the database, which can be retrieved any time
6	Scalability of the Solution	The scalability of this solution is most feasible among the passengers who are willing to travel. No need of taking printout Counter ticket has to be handled with care, but SMS on mobile is enough. No need to taking out wallet and showing your ticket to TTR just tell your name to TTR that you are a passenger with valid proof

3.4 PROBLEM SOLUTION FIT

Project Title: smart Solution for Railways

Project Design Phase-1 Solution Fit Template

Team Id :PNT2022TMID40702



Project Title: smart Solution for Railways
Project Design Phase-1 Solution Fit Template
Team Id :PNT2022TMID40702

1. CUSTOMER SEGMENT(S) CS

Passenger

Ticket collector

6. CUSTOMER CONSTRAINTS CC

Reducing the paper work of customer

5. AVAILABLE SOLUTIONS AS

A web page is designed in which the user can book tickets and will be provided with the QR code, which will be shown to the ticket collector and by scanning the

2. JOBS-TO-BE-DONE / PROBLEMS J&P

In their busy schedule as fast roaming world public in need of online booking process. In queues in front of the ticket counters in railway stations have been drastically increased over the time.

9. PROBLEM ROOT CAUSE RC

The main reason for the problem but has occured due to lack of technology earlier. Since the passengers find it difficult to book the ticket and track the location of train.

7. BEHAVIOUR BE

By listening to the customer we can provide genuine empathy for the problem regarded

3. TRIGGERS TR

Save paper and workload

4. EMOTIONS: BEFORE / AFTER EM

No need of taking printout

Counter ticket has to be handled with care, but SMS on mobile is enough.

No need to taking out wallet and showing your ticket to TTR just tel your name to TTR that you are a passenger with valid proof

10. YOUR SOLUTION SL

A web page is designed in which the user can book tickets and will be provided with the QR code, which will be shown to the ticket collector and by scanning the QR code the ticket collector will get the passenger details.

The booking details of the user will be stored in the database, which can be retrieved any time.

8. CHANNELS of BEHAVIOUR CH

8.1 ONLINE

People can book their ticket through online and they get a QR code through SMS

8.2 OFFLINE

In web application passenger details are stored and the ticket collector can view their details at any time.

REQUIREMENT ANALYSIS

4.1.FUNCTIONAL REQUIREMENTS

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Unique accounts	1. Every online booking needs to be associated with an account 2. One account cannot be associated with multiple users
FR-2	Booking options	Search results should enable users to find the most recent and relevant booking options
FR-3	Mandatory fields	System should only allow users to move to payment only when mandatory fields such as date, time, location has been mentioned
FR-4	Synchronization	System should consider timezone synchronisation when accepting bookings from different timezones

FR-5	Authentication	Booking confirmation should be sent to user to the specified contact details

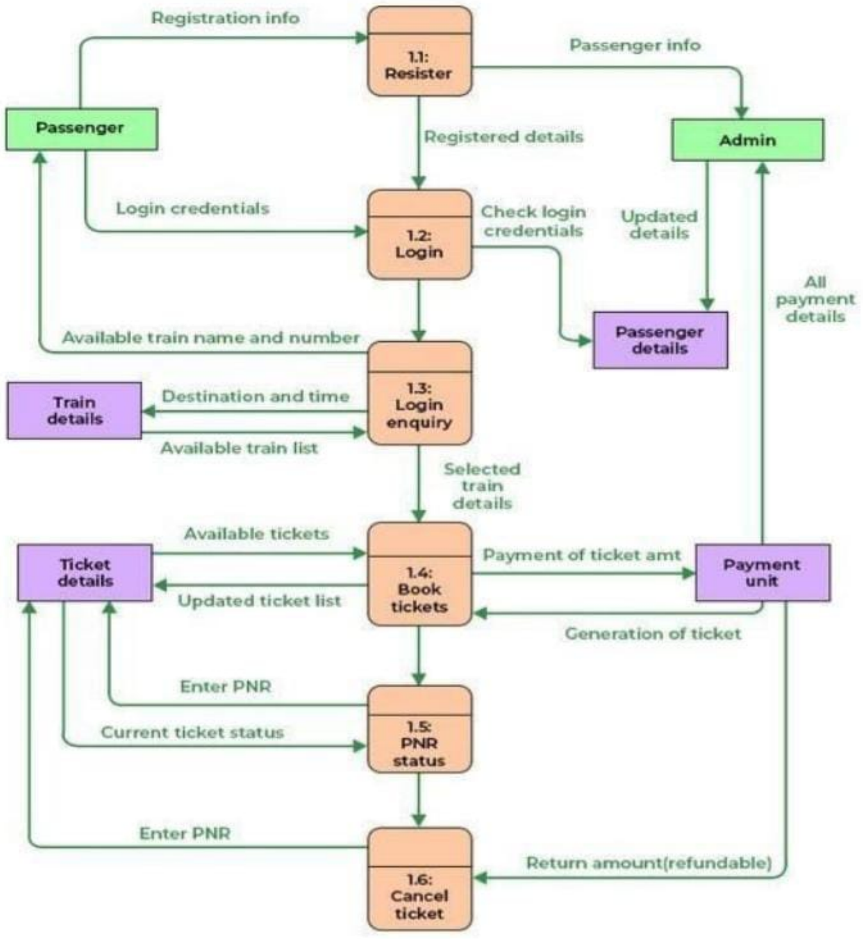
4.2.NON-FUNCTIONAL REQUIREMENTS

FR No.	**Non-Functional Requirement**	**Description**
NFR-1	**Usability**	Search results should populate within acceptable time limits
NFR-2	**Security**	System should visually confirm as well as send booking confirmation to the user's contact
NFR-3	**Reliability**	System should accept payments via different payment methods, like PayPal, wallets, cards, vouchers, etc
NFR-4	**Performance**	Search results should populate within acceptable time limits
NFR-5	**Availability**	User should be helped appropriately to fill in the mandatory fields, incase of invalid input

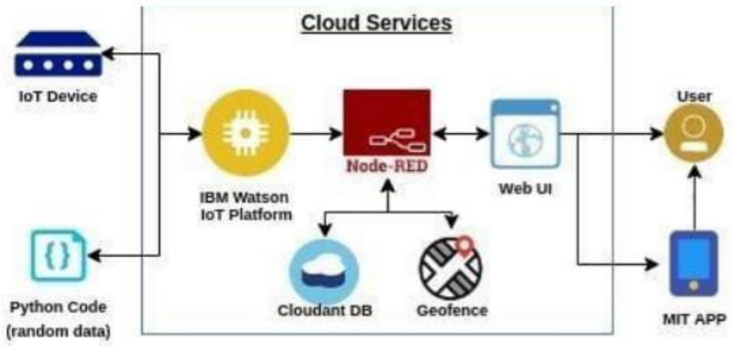
NFR-6	**Scalability**	Use of captcha and encryption to avoid bots from booking tickets

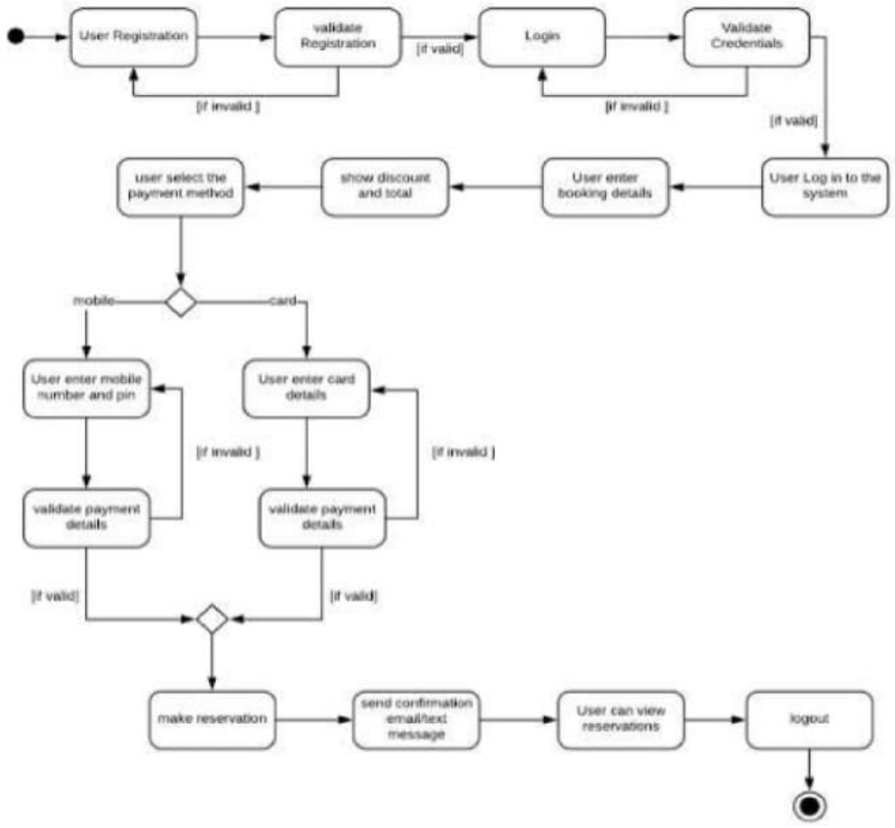
PROJECT DESIGN

5.1 DATA FLOW DIAGRAMS



5.2SOLUTION & TECHNICAL ARCHITECTURE





5.3 USER STORIES

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user, Web user)	Registration	USN-1	As a user, I can register through the form by Filling in my details	I can register and create my account / dashboard	High	Sprint-1
		USN-2	As a user, I can register through phone numbers, Gmail, Facebook or other social sites	I can register & create my dashboard with Facebook login or other social sites	High	Sprint-2
	Conformation	USN-3	As a user, I will receive confirmation through email or OTP once registration is successful	I can receive confirmation email & click confirm.	High	Sprint-1
	Authentication/Login	USN-4	As a user, I can login via login id and password or through OTP received on register phone number	I can login and access my account/dashboard	High	Sprint-1
	Display Train details	USN-5	As a user, I can enter the start and destination to get the list of trains available connecting the above	I can view the train details (name & number), corresponding routes it passes through based on the start and destination	High	Sprint-1

				entered.		
	Booking	USN-6	As a use, I can provide the basic details such as a name, age, gender etc…	I will view, modify or confirm the details enter.	High	Sprint-1
		USN-7	As a user, I can choose the class, seat/berth. If a preferred seat/berth isn't available I can be allocated based on the availability.	I will view, modify or confirm the seat/class berth selected	High	Sprint-1
	Payment	USN-8	As a user, I can choose to pay through credit Card/debit card/UPI.	I can view the payment Options available and select my desirable choice To proceed with the payment	High	Sprint-1

		USN-9	As a user, I will be redirected to the selected Payment gateway and upon successful	I can pay through the payment portal and confirm the booking if any changes need to	High	Sprint-1

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release

			completion of payment I'll be redirected to the booking website.	be done I can move back to the initial payment page		
	Ticket generation	USN-10	As a user, I can download the generated e-ticket for my journey along with the QR code which is used for authentication during my journey.	I can show the generated QR code so that authentication can be done quickly.	High	Sprint-1
	Ticket status	USN-11	As a user, I can see the status of my ticket Whether it's confirmed/waiting/RAC.	I can confidentially get the Information and arrange alternate transport if the ticket isn't Confirmed	High	Sprint-1
	Remainders notification	USN-12	As a user, I get remainders about my journey A day before my actual journey.	I can make sure that I don't miss the journey because of the constant notifications.	Medium	Sprint-2
		USN-13	As a user, I can track the train using GPS and can get information such as ETA, Current stop and delay.	I can track the train and get to know about the delays pian accordingly	Medium	Sprint-2
	Ticket cancellation	USN-14	As a user, I can cancel my tickets if there's any Change of plan	I can cancel the ticket and get a refund based on how close the date is to the journey.	High	Sprint-1
	Raise queries	USN-15	As a user, I can raise queries through the query box or via mail.	I can view my pervious queries.	Low	Sprint-2

Customer care Executive	Answer the queries	USN-16	As a user, I will answer the questions/doubts Raised by the customers.	I can view the queries and make it once resolved	Medium	Sprint-2
Administrator	Feed details	USN-17	As a user, I will feed information about the	I can view and ensure the corrections of the information fed.	High	Sprint-1
			trains delays and add extra seats if a new compartment is added.			

PROJECT PLANNING AND SCHEDULING

6.1. SPRINT PLANNING& ESTIMATION

Sprint	**Functional Requirement (Epic)**	**User Story Number**	**User Story / Task**	**Story Points**	**Priority**	**Team Members**
Sprint-1	Registration	USN-1	As a user, I can register through the form by Filling in my details	2	High	Negadharshini

Sprint-1		USN-2	As a user, I can register through phone numbers, Gmail, Facebook or other social sites	1	High	Archana
Sprint-1	Conformation	USN-3	As a user, I will receive confirmation through email or OTP once registration is successful	2	Low	Thambidurai
Sprint-1	login	USN-4	As a user, I can login via login id and password or through OTP received on register phone number	2	Medium	Mahalakshmi
Sprint-1	Display Train details	USN-5	As a user, I can enter the start and destination to get the list of trains available connecting the above	1	High	Thambidurai
Sprint-2	Booking	USN-6	As a use, I can provide the basic details such as a name, age, gender etc…	2	High	Negadharshini

Sprint-2		USN-7	As a user, I can choose the class, seat/berth. If a preferred seat/berth isn't available I can be allocated based on the availability	1	Low	Archana
Sprint-2	Payment	USN-8	As a user, I can choose to pay through credit Card/debit card/UPI.	1	High	Negadharshi

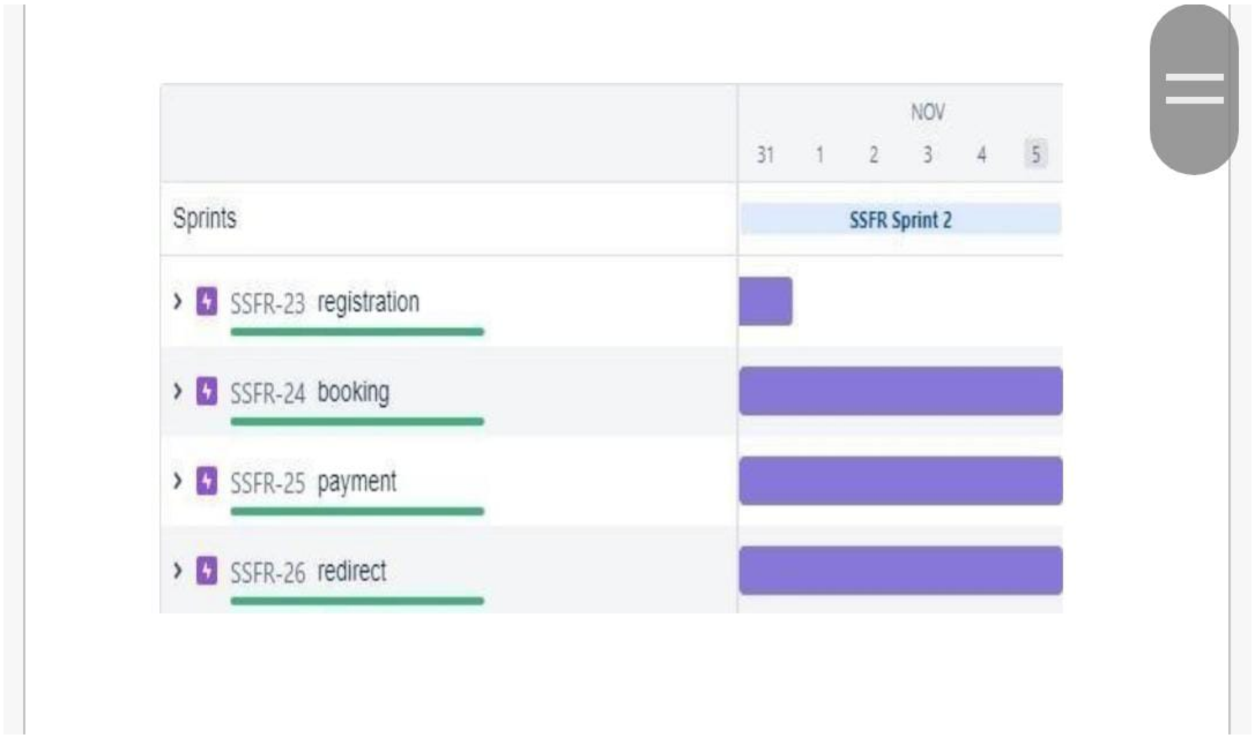
Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-2		USN-9	As a user, I will be redirected to the selected	2	High	Thambidurai
Sprint-3	Ticket generation	USN-10	As a user, I can download the generated e- ticket for my journey along with the QR code which is used for authentication during my journey.	1	High	Negadharshini
Sprint-3	Ticket status	USN-11	As a user, I can see the status of my ticket	2	High	Thambidurai
			Whether it's confirmed/waiting/RAC.			
Sprint-3	Remainders notification	USN-12	As a user, I get remainders about my journey A day before my actual journey.	1	High	Archana
Sprint-3	Ticket cancellation	USN-13	As a user, I can track the train using GPS and can get information such as ETA, Current stop and delay	2	High	Mahalakshmi
Sprint-4		USN-14	As a user, I can cancel my tickets if there's any Change of plan	1	High	Thambidurai
Sprint-4	Raise queries	USN-15	As a user, I can raise queries through the query box or via mail.	2	Medium	Archana
Sprint-4	Answer the queries	USN-16	As a user, I will answer the questions/doubts Raised by the customers.	2	High	Negadharshini

Sprint-4	Feed details	USN-17	As a user, I will feed information about the trains delays and add extra seats if a new compartment is added.	1	High	Mahalakshmi

6.2. SPRINT DELIVERY SCHEDULE

Sprint	**Total Story Points**	**Duration**	**Sprint Start Date**	**Sprint End Date (Planned)**	**Story Points Completed (as on Planned End Date)**	**Sprint Release Date (Actual)**
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	5 Nov 2022
Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	12 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	19 Nov2022

6.3. REPORTS FROM JIRA

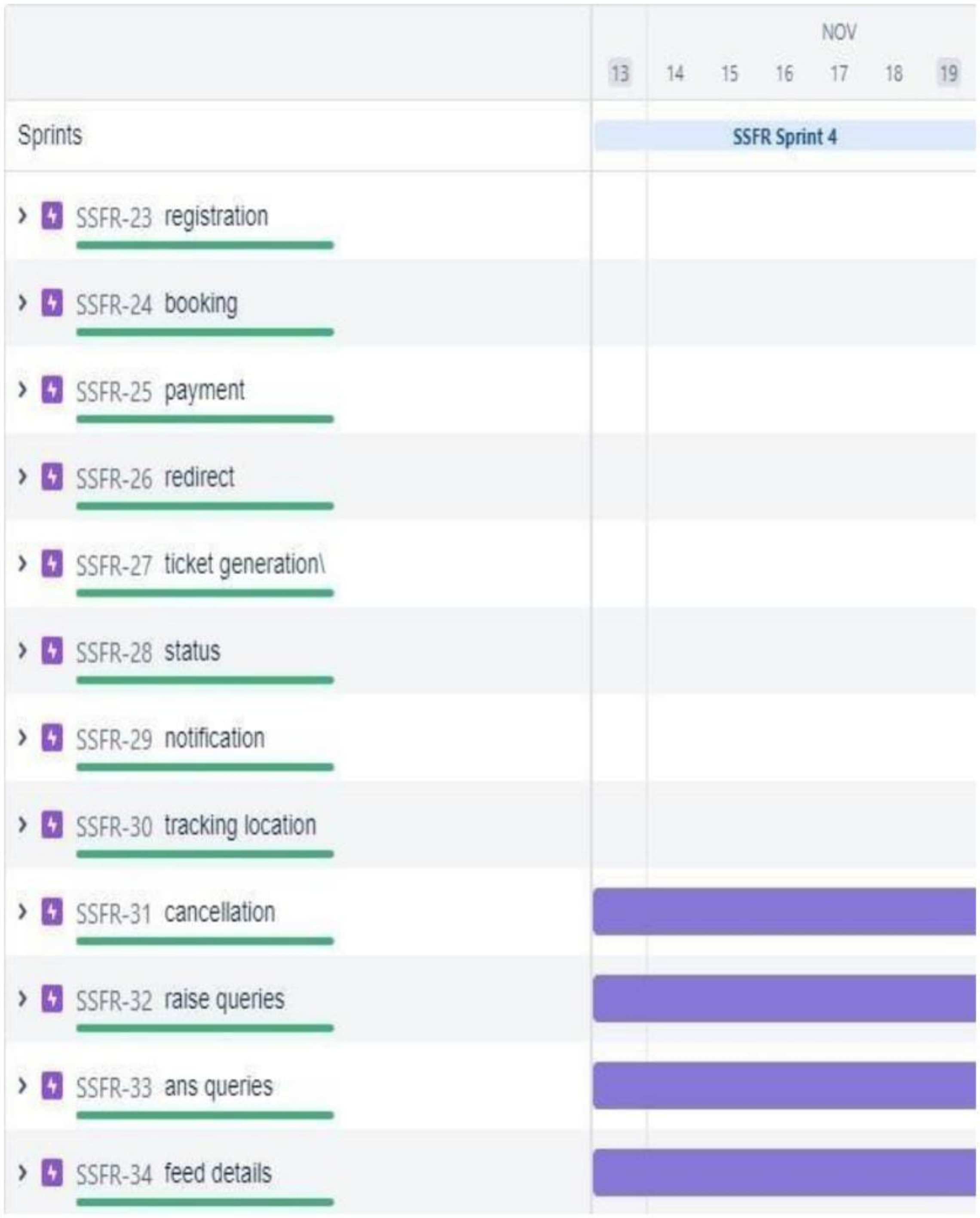


SSFR-23 registration

SSFR-24 booking

SSFR-25 payment

SSFR-26 redirect



SSFR-23 registration
SSFR-24 booking
SSFR-25 payment
SSFR-26 redirect
SSFR-27 ticket generation\
SSFR-28 status
SSFR-29 notification
SSFR-30 tracking location
SSFR-31 cancellation
SSFR-32 raise queries
SSFR-33 ans queries
SSFR-34 feed details

CODING AND SOLUTION

7.1. FEATURE 1 ○

1. IOT device
2. IBM Watson platform
3. Node red
4. Cloudant DB
5. Web UI
6. Geofence MIT App
7. Python code

7.2. FEATURE 2

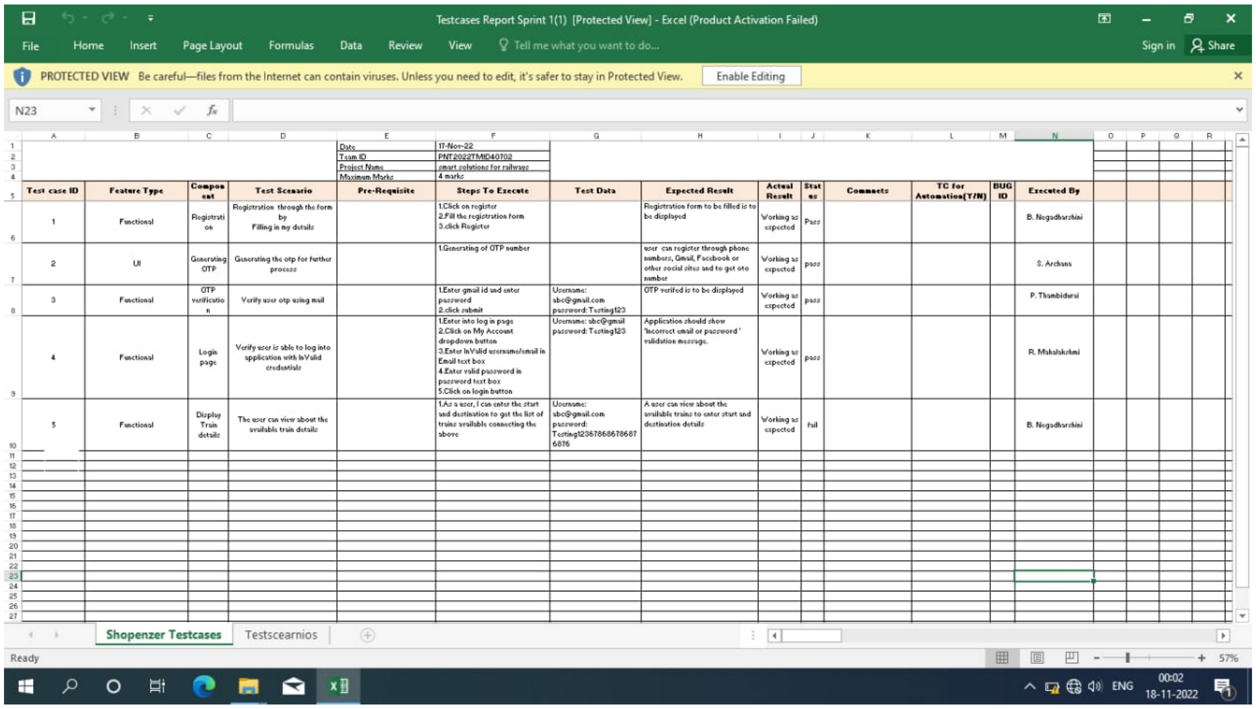
1. Registration
2. Login
3. Verification
4. Ticket Booking
5. Payment
6. Ticket Cancellation
7. Adding Querie

```
labl_0 = Label(base, text="Registration
form",width=20,font=("bold",
20))
labl_0.place(x=
90,y=53)    lb1=
Label(base,
text="Enter
Name",
width=10,
font=("arial",1
2))
lb1.place(x=20, y=120)   en1= Entry(base)
en1.place(x=200, y=120)

lb3= Label(base, text="Enter Email",
width=10, font=("arial",12))
lb3.place(x=19, y=160)   en3= Entry(base)
en3.place(x=200, y=160)

lb4= Label(base, text="Contact Number",
width=13,font=("arial",12))    lb4.place(x=19,
y=200)   en4= Entry(base)     en4.place(x=200,
y=200)

lb5= Label(base, text="Select Gender", width=15,
font=("arial",12))    lb5.place(x=5, y=240)
var = IntVar()

Radiobutton(base, text="Male",
padx=5,variable=var, value=1).place(x=180, y=240)

Radiobutton(base, text="Female", padx
=10,variable=var, value=2).place(x=240,y=240)
```

```
Radiobutton(base, text="others", padx=15,
variable=var, value=3).place(x=310,y=240)

list_of_cntry = ("United States", "India",
"Nepal", "Germany")    cv = StringVar()
drplist= OptionMenu(base, cv, *list_of_cntry)
drplist.config(width=15)    cv.set("United
States")    lb2= Label(base, text="Select
Country",    width=13,font=("arial",12))
lb2.place(x=14,y=280)    drplist.place(x=200,
y=275)

lb6= Label(base, text="Enter Password",
width=13,font=("arial",12))   lb6.place(x=19,
y=320)   en6= Entry(base, show='*')
en6.place(x=200, y=320)

lb7= Label(base,
text="Re-Enter
Password",
width=15,font=("arial",
12))   lb7.place(x=21,
y=360)   en7
=Entry(base, show='*')
en7.place(x=200, y=360)

Button(base, text="Register",
width=10).place(x=200,y=400)
base.mainloop()     def generateOTP() :
    # Declare a digits variable
# which stores all digits     digits
= "0123456789"
    OTP = ""

   # length of
password can be
changed    # by
changing value in
range     for i in
range(4) :
        OTP += digits[math.floor(random.random() *
10)]

    return OTP

# Driver code if __name__ == "__main__"
:
    print("OTP of 4 digits:", generateOTP())

digits="01234
56789"
OTP=""  for i
in range(6):

OTP+=digits[math.floor(random
.random()*10)] otp = OTP + " is
your OTP" msg= otp s =
smtplib.SMTP('smtp.gmail.com',
587)
s.starttls()
s.login("Your Gmail Account", "You app
password") emailid
= input("Enter your email: ")
s.sendmail('&&&&&&&&&&&',emailid,msg
) a = input("Enter Your
OTP >>: ") if a == OTP:
print("Verified") else:
   print("Please Check your OTP again") roo
```

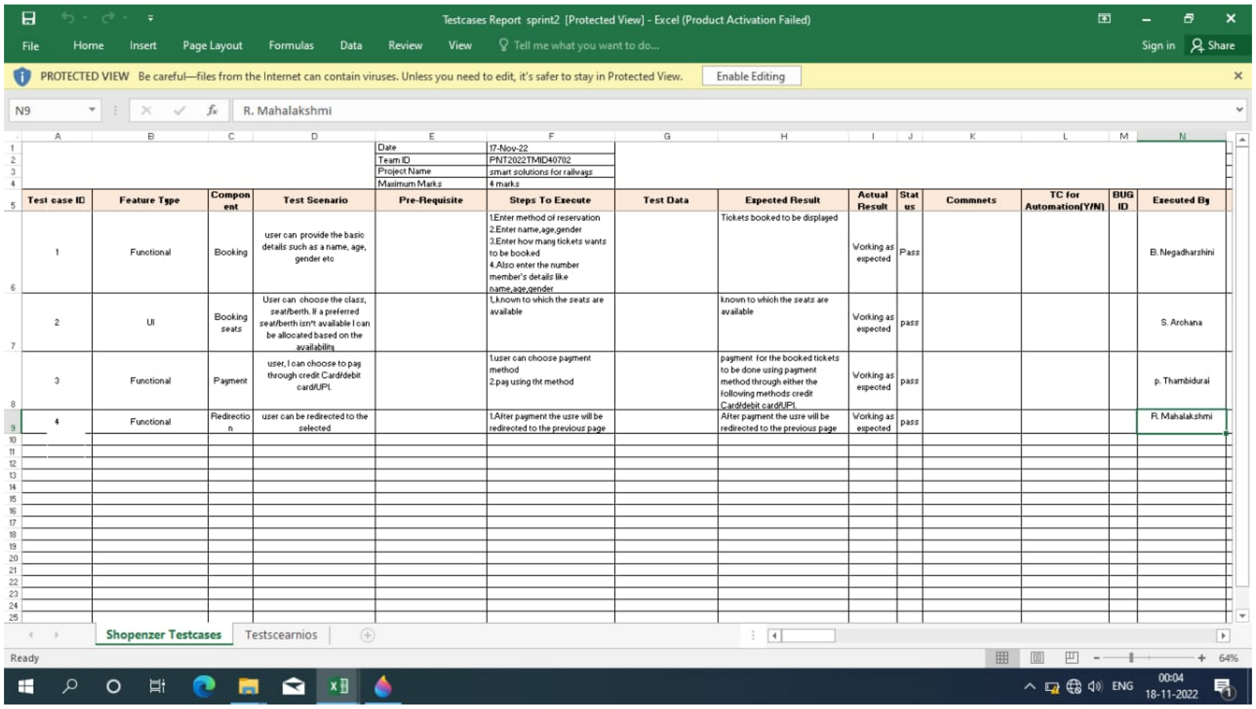
TESTIN

8.1.TEST CASES


Testcases Report Sprint 1(1) [Protected View] - Excel (Product Activation Failed)
File
Home
Insert
Page Layout
Formulas
Data
Review
View
Tell me what you want to do...
Sign in
Share
PROTECTED VIEW Be careful—files from the Internet can contain viruses. Unless you need to edit, it's safer to stay in Protected View.
Enable Editing
N23
Shopenzer Testcases
Testscearnios
Ready
57%
ENG
00:02
18-11-2022

Date	17-Nov-22
Team ID	PNT2022TMID40702
Project Name	smart solutions for railways
Maximum Marks	4 marks

Test case ID	Feature Type	Component	Test Scenario	Pre-Requisite	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Commnets	TC for Automation(Y/N)	BUG ID	Executed By
1	Functional	Registration	Registration through the form by Filling in my details		1.Click on register 2.Fill the registration form 3.click Register		Registration form to be filled is to be displayed	Working as expected	Pass				B. Nagadharshini
2	UI	Generating OTP	Generating the otp for further process		1.Generating of OTP number		user can register through phone numbers, Gmail, Facebook or other social sites and to get oto number	Working as expected	pass				S. Archana
3	Functional	OTP verification	Verify user otp using mail		1.Enter gmail id and enter password 2.click submit	Username: abc@gmail.com password: Testing123	OTP verifed is to be displayed	Working as expected	pass				P. Thambidurai
4	Functional	Login page	Verify user is able to log into application with InValid credentials		1.Enter into log in page 2.Click on My Account dropdown button 3.Enter InValid username/email in Email text box 4.Enter valid password in password text box 5.Click on login button	Username: abc@gmail password: Testing123	Application should show 'Incorrect email or password ' validation message.	Working as expected	pass				R. Mahalakshmi
5	Functional	Display Train details	The user can view about the available train details		1.As a user, I can enter the start and destination to get the list of trains available connecting the above	Username: abc@gmail.com password: Testing123678686786876876	A user can view about the available trains to enter start and destination details	Working as expected	fail				B. Nagadharshini



Testcases Report sprint2 [Protected View] - Excel (Product Activation Failed)

PROTECTED VIEW Be careful—files from the Internet can contain viruses. Unless you need to edit, it's safer to stay in Protected View. Enable Editing

N9 | R. Mahalakshmi

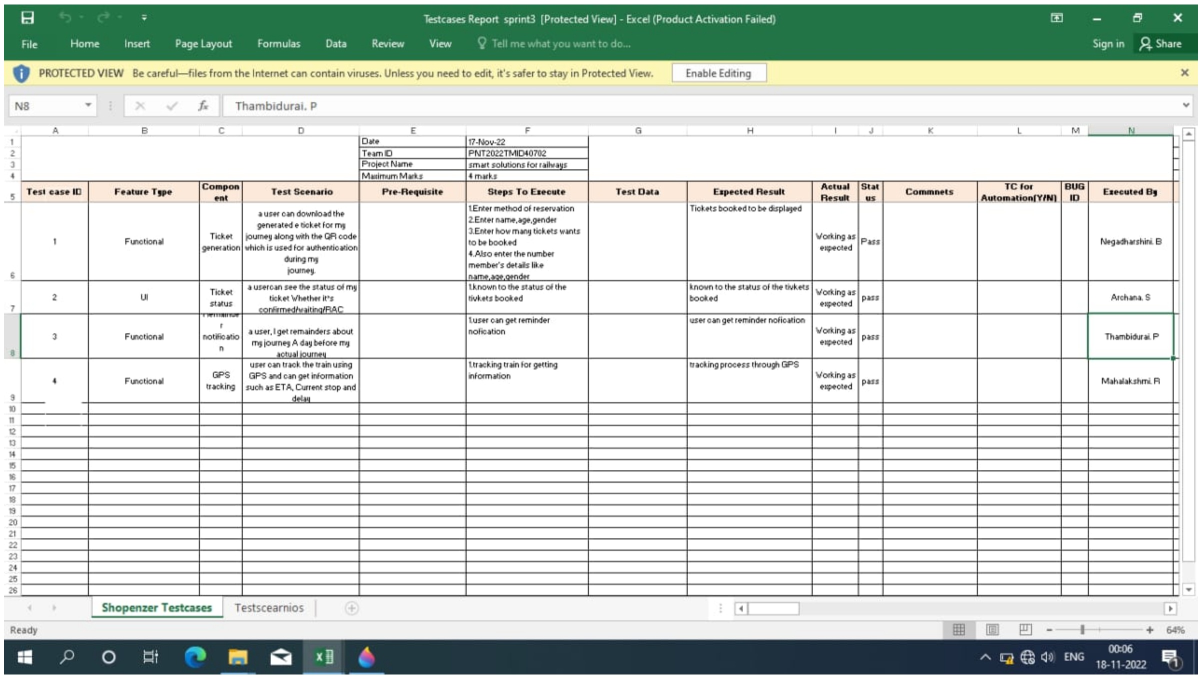
Date	17-Nov-22
Team ID	PNT2022TMID40702
Project Name	smart solutions for railways
Maximum Marks	4 marks

Test case ID	Feature Type	Component	Test Scenario	Pre-Requisite	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Commnets	TC for Automation(Y/N)	BUG ID	Executed By
1	Functional	Booking	user can provide the basic details such as a name, age, gender etc		1.Enter method of reservation 2.Enter name,age,gender 3.Enter how many tickets wants to be booked 4.Also enter the number member's details like name,age,gender		Tickets booked to be displayed	Working as expected	Pass				B. Negadharshini
2	UI	Booking seats	User can choose the class, seat/berth. If a preferred seat/berth isn't available I can be allocated based on the availability		1,known to which the seats are available		known to which the seats are available	Working as expected	pass				S. Archana
3	Functional	Payment	user, I can choose to pay through credit Card/debit card/UPI.		1.user can choose payment method 2.pay using tht method		payment for the booked tickets to be done using payment method through either the following methods credit Card/debit card/UPI.	Working as expected	pass				p. Thambidurai
4	Functional	Redirection	user can be redirected to the selected		1.After payment the usre will be redirected to the previous page		After payment the usre will be redirected to the previous page	Working as expected	pass				R. Mahalakshmi

Shopenzer Testcases | Testscearnios

Ready

00:04 18-11-2022



Testcases Report sprint3 [Protected View] - Excel (Product Activation Failed)

PROTECTED VIEW Be careful—files from the Internet can contain viruses. Unless you need to edit, it's safer to stay in Protected View. Enable Editing

N8 | Thambidurai. P

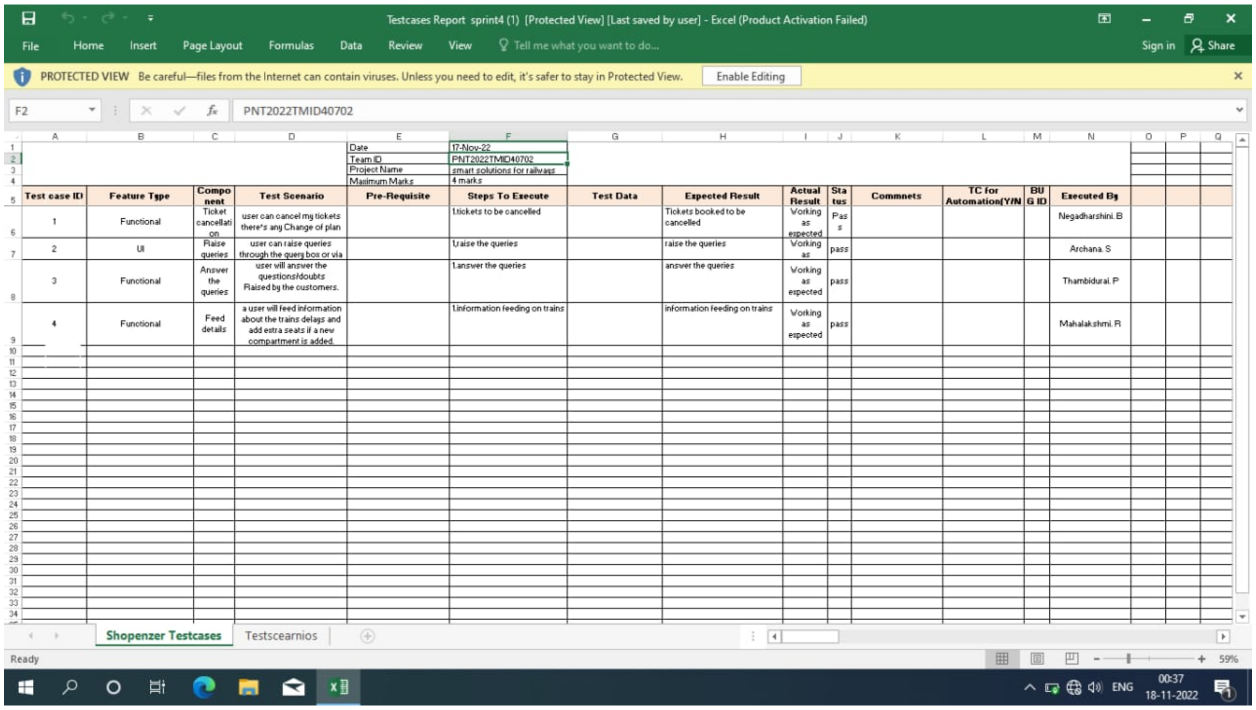
Date	17-Nov-22
Team ID	PNT2022TMID40702
Project Name	smart solutions for railways
Maximum Marks	4 marks

Test case ID	Feature Type	Component	Test Scenario	Pre-Requisite	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Commnets	TC for Automation(Y/N)	BUG ID	Executed By
1	Functional	Ticket generation	a user can download the generated e ticket for my journey along with the QR code which is used for authentication during my journey.		1.Enter method of reservation 2.Enter name,age,gender 3.Enter how many tickets wants to be booked 4.Also enter the number member's details like name,age,gender		Tickets booked to be displayed	Working as expected	Pass				Negadharshini. B
2	UI	Ticket status	a usercan see the status of my ticket Whether it's confirmed/waiting/RAC		1.known to the status of the tivkets booked		known to the status of the tivkets booked	Working as expected	pass				Archana. S
3	Functional	Remainder notification	a user, I get remainders about my journey A day before my actual journey		1.user can get reminder nofication		user can get reminder nofication	Working as expected	pass				Thambidurai. P
4	Functional	GPS tracking	user can track the train using GPS and can get information such as ETA, Current stop and delay		1.tracking train for getting information		tracking process through GPS	Working as expected	pass				Mahalakshmi. R

Shopenzer Testcases | Testscearnios

Ready

00:06 18-11-2022



Testcases Report sprint4 (1) [Protected View] [Last saved by user] - Excel (Product Activation Failed)

PROTECTED VIEW Be careful—files from the Internet can contain viruses. Unless you need to edit, it's safer to stay in Protected View. Enable Editing

F2 PNT2022TMID40702

Date	17-Nov-22
Team ID	PNT2022TMID40702
Project Name	smart solutions for railways
Maximum Marks	4 marks

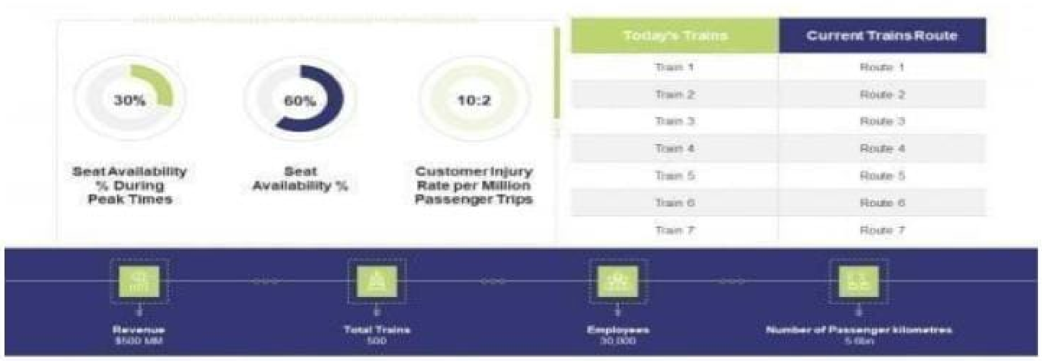
Test case ID	Feature Type	Component	Test Scenario	Pre-Requisite	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Commnets	TC for Automation(Y/N	BUG ID	Executed By
1	Functional	Ticket cancellation	user can cancel my tickets there's any Change of plan		1.tickets to be cancelled		Tickets booked to be cancelled	Working as expected	Pass				Negadharshini. B
2	UI	Raise queries	user can raise queries through the query box or via		1,raise the queries		raise the queries	Working as	pass				Archana. S
3	Functional	Answer the queries	user will answer the questions/doubts Raised by the customers.		1.answer the queries		answer the queries	Working as expected	pass				Thambidurai. P
4	Functional	Feed details	a user will feed information about the trains delays and add extra seats if a new compartment is added.		1.information feeding on trains		information feeding on trains	Working as expected	pass				Mahalakshmi. R

Shopenzer Testcases | Testscearnios

Ready

RESULTS

9.1.PERFORMANCE METRICS



ADVANTAGES &DISADVANTAGES

10.1.ADVANTAGES

- Openness – compatibility between different system modules, potentially from different vendors;
- Orchestration – ability to manage large numbers of devices, with full visibility over them; ○Dynamic scaling – ability to scale the system according to the application needs, through resource virtualization and cloud operation;
- Automation – ability to automate parts of the system monitoring application, leading to better performance and lower operation costs.

10.2.DISADVANTAGES

- Approaches to flexible, effective, efficient, and low-cost data collection for both railway vehicles and infrastructure monitoring, using regular trains;

- Data processing, reduction, and analysis in local controllers, and subsequent sending of that data to the cloud, for further processing;

- Online data processing systems, for real-time monitoring, using emerging communication technologies;

- Integrated, interoperable, and scalable solutions for railway systems preventive maintenance.

CONCLUSION

Accidents occurring in Railway transportation system cost a large number of lives. So this system helps us to prevent accidents and giving information about faults or cracks in advance to railway authorities. So that they can fix them and accidents cases becomes less. This project is cost effective. By using more techniques they can be modified and developed according to their applications. By this system many lives can be saved by avoiding accidents. The idea can be implemented in large scale in the long run to facilitate better safety standards for rail tracks and provide effective testing infrastructure for achieving better results in the future.

FUTURE SCOPE

12.FUTURE SCOPE

In future CCTV systems with IP based camera can be used for monitoring the visual videos captured from the track. It will also increase security for both passengers and railways. GPS can also be used to detect exact location of track fault area, IP cameras can also be used to show fault with the help of video. Locations on Google maps with the help of sensors can be used to detect in which area track is broken

APPENDIX

13.1.SOURCE PROGRAM

```
import
math,
random
import os
import
smtplib
import
sqlite3
import
requests
 from bs4 import BeautifulSoup
 from django.contrib.auth.base_user import AbstractBaseUser
from django.db import models
 import logging
import pandas as pd
import pyttsx3
```

```
  from plyer import notification
import time
  import
  numpy as np
  import matplotlib.pyplot as
  plt
    from PIL import Image,
  ImageDraw
  from  pickle
  import
  load,dump
  import smtplib, ssl
  from email.mime.text import
  MIMEText
  from email.mime.multipart import MIMEMultipart
  import email
 from email import encoders
 from email.mime.base import MIMEBase


   import attr
   from flask import Blueprint, flash, redirect, request,  url_for
  from flask.views import MethodView
  from flask_babelplus import gettext as _
  from flask_login import current_user, login_required
from pluggy import HookimplMarker

   from tkinter import*
    base = Tk()
   base.geometry("500x500")
base.title("registration form")

        labl_0 = Label(base, text="Registration
        form",width=20,font=("bold",   20))
        labl_0.place(x=90,y=53)

        lb1= Label(base, text="Enter Name",
        width=10, font=("arial",12))
        lb1.place(x=20, y=120)   en1= Entry(base)
        en1.place(x=200, y=120)

        lb3= Label(base, text="Enter Email",
        width=10, font=("arial",12))
        lb3.place(x=19, y=160)   en3= Entry(base)
        en3.place(x=200, y=160)

        lb4= Label(base, text="Contact Number",
        width=13,font=("arial",12))    lb4.place(x=19,
        y=200)   en4= Entry(base)     en4.place(x=200,
        y=200)

        lb5= Label(base, text="Select Gender", width=15,
        font=("arial",12))    lb5.place(x=5, y=240)   var =
        IntVar()
        Radiobutton(base, text="Male",
        padx=5,variable=var,   value=1).place(x=180, y=240)
        Radiobutton(base, text="Female", padx
        =10,variable=var, value=2).place(x=240,y=240)
        Radiobutton(base, text="others", padx=15,
        variable=var, value=3).place(x=310,y=240)

        list_of_cntry = ("United States", "India",
        "Nepal", "Germany")   cv = StringVar()
        drplist= OptionMenu(base, cv, *list_of_cntry)
        drplist.config(width=15)   cv.set("United States")
        lb2= Label(base, text="Select Country",
        width=13,font=("arial",12))
        lb2.place(x=14,y=280)
        drplist.place(x=200, y=275)

        lb6= Label(base, text="Enter Password",
        width=13,font=("arial",12))    lb6.place(x=19,
        y=320)   en6= Entry(base, show='*')
        en6.place(x=200, y=320)

        lb7= Label(base,
        text="Re-Enter
        Password",
        width=15,font=("arial",
        12))    lb7.place(x=21,
        y=360)   en7
        =Entry(base, show='*')
        en7.place(x=200, y=360)

        Button(base, text="Register",
        width=10).place(x=200,y=400)   base.mainloop()

        def generateOTP() :
            # Declare a digits variable
        # which stores all digits     digits
        = "0123456789"
            OTP = ""

           # length of
        password can be
        changed    # by
        changing value in
        range     for i in
        range(4) :
                OTP += digits[math.floor(random.random() *
        10)]

            return OTP

        # Driver code if __name__ == "__main__"
        :
            print("OTP of 4 digits:", generateOTP())

        digits="01234
        56789"
        OTP=""  for i
        in range(6):

        OTP+=digits[math.floor(random
        .random()*10)] otp = OTP + " is
        your OTP" msg= otp s =
        smtplib.SMTP('smtp.gmail.com',
        587)
        s.starttls()
        s.login("Your Gmail Account", "You app
        password") emailid
        = input("Enter your email: ")
        s.sendmail('&&&&&&&&
        &&&',emailid,msg) a =
        input("Enter Your OTP >>:
        ")
        if a == OTP:
        print("Verified") else:
            print("Please Check your OTP again") root
        = Tk() root.title("Python: Simple Login
        Application") width = 400
        height = 280 screen_width =
        root.winfo_screenwidth()
        screen_height =
        root.winfo_screenheight() x =
        (screen_width/2) - (width/2)
        y = (screen_height/2) - (height/2)
        root.geometry("%dx%d+%d+%d" %
        (width, height, x, y)) root.resizable(0, 0)
        USERNAME = StringVar()
        PASSWORD = StringVar()
        Top = Frame(root, bd=2,  relief=RIDGE)
        Top.pack(side=TOP, fill=X)
        Form = Frame(root, height=200)
        Form.pack(side=TOP, pady=20)   lbl_title =
        Label(Top, text = "Python: Simple Login
        Application",  font=('arial', 15))
        lbl_title.pack(fill=X) lbl_username = Label(Form,
        text = "Username:", font=('arial', 14), bd=15)
        lbl_username.grid(row=0, sticky="e") lbl_password
        = Label(Form,
        text = "Password:", font=('arial', 14), bd=15)
        lbl_password.grid(row=1, sticky="e") lbl_text =
        Label(Form)  lbl_text.grid(row=2, columnspan=2)
        username = Entry(Form,
        textvariable=USERNAME, font=(14))
        username.grid(row=0, column=1) password =
        Entry(Form, textvariable=PASSWORD,
        show="*", font=(14)) password.grid(row=1,
        column=1) def Database():
            global conn, cursor     conn =
        sqlite3.connect("pythontut.db")
        cursor = conn.cursor()     cursor.execute("CREATE
        TABLE IF
        NOT EXISTS `member` (mem_id INTEGER NOT
        NULL PRIMARY
        KEY
        AUTOINCREMENT, username TEXT, password
        TEXT)")            cursor.execute("SELECT * FROM
        `member` WHERE `username` =
        'admin' AND
        `password` =
        'admin'")
          if cursor.fetchone()
        is None:
                cursor.execute("INSERT INTO `member`
        (username, password)
        VALUES('admin', 'admin')")
        conn.commit() def Login(event=None):
        Database()
         if USERNAME.get() == "" or
        PASSWORD.get() == "":
        lbl_text.config(text="Please complete
        the required field!", fg="red")
        else:
                cursor.execute("SELECT * FROM `member`
        WHERE `username`  = ? AND `password` = ?",
        (USERNAME.get(), PASSWORD.get()))
        if cursor.fetchone() is not None:
                  HomeWindow()
                  USERNAME.set("")
        PASSWORD.set("")
        lbl_text.config(text="")
         else:
         lbl_text.config(text="Invalid username or
        password", fg="red")
                  USERNAME.set("")
        PASSWORD.set("")

        cursor.clo
        se()
        conn.clos
        e()
        btn_login = Button(Form, text="Login", width=45,
        command=Login)  btn_login.grid(pady=25, row=3,
        columnspan=2)
```

```
btn_login.bind('<Return>', Login)



def Home
window():
global
Home
root.withd
raw()
   Home = Toplevel()
   Home.title("Python: Simple Login
Application")     width = 600     height
= 500     screen_width =
root.winfo_screenwidth()
screen_height =
root.winfo_screenheight()
 x = (screen_width/2) - (width/2)     y =
(screen_height/2) - (height/2)
root.resizable(0, 0)
   Home.geometry("%dx%d+%d+%d" % (width,
height, x, y))     lbl_home = Label(Home,
text="Successfully Login!", font=('times new
roman', 20)).pack()     btn_back = Button(Home,
text='Back', command=Back).pack(pady=20, fill=X)

def Back():

Home.dest
roy()
root.deico
```

```
nify() def
getdata(ur
l):
r=requests
.get(url)
return
r.text



# input by geek
from_Station_code = "GAYA"
from_Station_name = "GAYA"

To_station_code = "PNBE"
To_station_name = "PATNA"
# url
url = "https://www.railyatri.in/booking/trains-
between-
stations?from_code="+from_Station_code+"&from
_name="+from_Stat
ion_name+"+JN+&journey_date=+Wed&src=tbs&
to_code=" + \

To_station_code+"&to_name="+To_station_name
+ \
   "+JN+&user_id=-
1603228437&user_token=355740&utm_source=dwe
bsearch_tbs_search_ trains"
```

```
# pass the url
# into getdata function htmldata =
getdata(url) soup = BeautifulSoup(htmldata,
'html.parser')

# find the Html tag
# with find()
# and convert into string  data_str = "" for item
in soup.find_all("div", class_="col-xs-12
TrainSearchSection"):      data_str = data_str +
item.get_text() result
= data_str.split("\n")

print("Train between "+from_Station_name+" and
"+To_station_name)
print("\n\nTicket Booking System\n")
restart = ('Y')
whilerestart!=('N','NO','n','
no'):
        print("1.Check PNR status")   print("2.Ticket
Reservation")
   option = int(input("\nEnter your option : "))

 if option == 1:
                print("Your PNR status is t3")
                exit(0)

elif option == 2:
               people = int(input("\nEnter no. of Ticket
you  want :  "))

               name_l = []
                 age_l = []
               sex_l = []
   for p in  range(people):
                      name =  str(input("\nName : "))
                      name_l.append(name)
                      age  = int(input("\nAge  : "))
               age_l.append(age)
                sex  = str(input("\nMale or Female : "))
                sex_l.append(sex)
                restart = str(input("\nDid you forgot someone? y/n:
               "))
                if restart in ('y','YES','yes','Yes'):
                      restart = ('Y')
  else :
                      x = 0
                         print("\nTotal Ticket : ",people)
               for p in range(1,people+1):
               print("Ticket : ",p)                print("Name : ",
               name_l[x])                  print("Age  :
               ", age_l[x])
 print("Sex : ",sex_l[x])                x
               += 1
```

7.2. FEATURE 2

```
class User(AbstractBaseUser):
    """
    User model.
    """

    USERNAME_FIELD = "email"

    REQUIRED_FIELDS = ["first_name",
"last_name"]

    email = models.EmailField(
    verbose_name="E-
mail",
        unique=True
    )

    first_name = models.CharField(
verbose_name="First name",
        max_length=30
    )

    last_name =
models.CharField(
verbose_name="Last name",
max_length=40
    )

    city = models.CharField(
verbose_name="City",        max_length=40
    )
    stripe_id = models.CharField(
verbose_name="Stripe ID",
        unique=True,        max_length=50,
blank=True,
        null=True
    )

    objects = UserManager()

    @property
def
get_full_name(self
):
        return f"{self.first_name} {self.last_name}"

    class Meta:
        verbose_name = "User"
        verbose_name_plural = "Users"


class Profile(models.Model):
    """
    User's profile.
    """

    phone_number = models.CharField(
verbose_name="Phone   number",
max_length=15
```

```
    )

    date_of_birth = models.DateField(
        verbose_name="Date of birth"
    )

    postal_code = models.CharField(
verbose_name="Postal code",
max_length=10,
        blank=True
    )

    address =
models.CharField(
verbose_name="Address",
max_length=255,
blank=True
    )

    class Meta:
        abstract = True



class UserProfile(Profile):
    """
    User's profile model.
    """

    user = models.OneToOneField(        to=User,
on_delete=models.CASCADE,
related_name="profile",
    )

    group = models.CharField(
verbose_name="Group type",
choices=GroupTypeChoices.choices(
),
max_length=20,
default=GroupTypeChoices.EMPLOYEE.name,
    )

    def __str__(self):
        return self.user.email

    class Meta:

# user 1 - employer  user1, _ =
User.objects.get_or_create(
email="foo@bar.com",
first_name="Employer",
last_name="Testowy",  city="Białystok",
)

user1.set_unusable_password()

group_name = "employer"

_profile1, _ =
UserProfile.objects.get_or_create(
user=user1,
date_of_birth=datetime.now() -
timedelta(days=6600),
group=GroupTypeChoices(group_name).name,
    address="Myśliwska 14",
postal_code="15569",
phone_number="+48100200300",
)

# user2 - employee  user2, _ =
User.objects.get_or_create()
email="bar@foo.com",     first_name="Employee",
last_name="Testowy",
    city="Białystok",
)

user2.set_unusable_password()

group_name = "employee"

_profile2, _ = UserProfile.objects.get_or_create()
user=user2,     date_of_birth=datetime.now() -
timedelta(days=7600),
group=GroupTypeChoices(group_name).name,
address="Myśliwska 14",     postal_code="15-
569",
phone_number="+48200300400",
)

response_customer = stripe.Customer.create()
email=user.email,
description=f"EMPLOYER -
{user.get_full_name}",
name=user.get_full_name,
phone=user.profile.phone_number,
)

user1.stripe_id = response_customer.stripe_id
user1.save()

mcc_code, url = "1520",
"https://www.softserveinc.com/"

response_ca = stripe.Account.create()
type="custom",     country="PL",
email=user2.email,
default_currency="pln",
business_type="individual",
settings={"payouts": {"schedule":
{"interval": "manual", }}},
requested_capabilities=["card_payments",
"transfers", ],     business_profile={"mcc":
mcc_code, "url": url},     individual={
        "first_name": user2.first_name,
        "last_name": user2.last_name,
        "email": user2.email,
        "dob": {
            "day": user2.profile.date_of_birth.day,
            "month": user2.profile.date_of_birth.month,
            "year": user2.profile.date_of_birth.year,
        },
        "phone": user2.profile.phone_number,
        "address": {
            "city": user2.city,
            "postal_code": user2.profile.postal_code,
            "country": "PL",
            "line1": user2.profile.address,
        },
    },
)

user2.stripe_id = response_ca.stripe_id user2.save()

tos_acceptance = {"date": int(time.time()), "ip":
user_ip},

stripe.Account.modify(user2.stripe_id,
tos_acceptance=tos_acceptance)

passport_front = stripe.File.create(
purpose="identity_document",     file=_file,
# ContentFile object
stripe_account=user2.stripe_id,
)
```

```
individual
= {
"verificati
on": {
      "document": {"front":
passport_front.get("id"),},
      "additional_document": {"front":
passport_front.get("id"),},
   }
}


stripe.Account.modify(user2.stripe_id,
individual=individual)  new_card_source =
stripe.Customer.create_source(user1.stripe_id,
source=token)

stripe.SetupIntent.create(
payment_method_types=["card"],
customer=user1.stripe_id,
description="some description",
payment_method=new_card_source.id,
)

payment_method =
stripe.Customer.retrieve(user1.stripe_id).default_so
urce

payment_intent = stripe.PaymentIntent.create(
amount=amount,     currency="pln",
payment_method_types=["card"],
capture_method="manual",
customer=user1.stripe_id, # customer
payment_method=payment_method,
application_fee_amount=application_fee_amount,
transfer_data={"destination": user2.stripe_id}, #
connect account     description=description,
    metadata=metadata,
)

payment_intent_confirm =
stripe.PaymentIntent.confirm(
payment_intent.stripe_id,
payment_method=payment_method
)

stripe.PaymentIntent.capture(
payment_intent.id, amount_to_capture=amount
)
stripe.Balance.retrieve(stripe_account=user2.stripe_
id)  stripe.Charge.create(     amount=amount,
currency="pln",      source=user2.stripe_id,
    description=description
)

stripe.PaymentIntent.cancel(payment_intent.id)
```

```
        unique_together = ("user", "group")
@attr.s(frozen=True, cmp=False, hash=False,
repr=True) class UserSettings(MethodView):
    form = attr.ib(factory=settings_form_factory)
settings_update_handler =
attr.ib(factory=settings_update_handler)

    decorators = [login_required]

    def get(self):
        return self.render()

    def post(self):
if
self.form.validate_on_
submit():              try:

self.settings_update_handler.apply_changeset(
current_user, self.form.as_change()
                )
            except
StopValidation as e:
self.form.populate_err
ors(e.reasons)
return     self.render()
except
PersistenceError:
logger.exception("Err
or  while
updating user settings")
flash(_("Error while updating user settings"),
"danger")                return self.redirect()

            flash(_("Settings updated."), "success")
            return self.redirect()
        return self.render()

    def render(self):        return
render_template("user/general_settings.html",
form=self.form)

    def redirect(self):
        return redirect(url_for("user.settings"))


@attr.s(frozen=True, hash=False, cmp=False,
repr=True) class ChangePassword(MethodView):
                                        form              =
attr.ib(factory=change_password_form_factory)
password_update_handler                                   =
attr.ib(factory=password_update_handler)
decorators = [login_required]

    def get(self):
        return self.render()

    def post(self):
        if self.form.validate_on_submit():
            try:
self.password_update_handler.apply_ch
angeset(                    current_user,
self.form.as_change()
                )
            except StopValidation as e:
self.form.populate_errors(e.reasons)
                return
self.render()
except
PersistenceError:
                logger.exception("Error while
changing                        password")
flash(_("Error        while        changing
password"), "danger")            return
self.redirect()

            flash(_("Password updated."), "success")
            return self.redirect()
        return self.render()

    def render(self):
        return
render_template("user/change_password.html",
form=self.form)

    def redirect(self):
        return
redirect(url_for("user.change_password"))
```

```
@attr.s(frozen=True, cmp=False, hash=False,
repr=True) class ChangeEmail(MethodView):
    form =
attr.ib(factory=change_email_form_factory)
update_email_handler =
attr.ib(factory=email_update_handler)     decorators
= [login_required]

    def get(self):
        return self.render()

    def post(self):
if
self.form.validate_on_
submit():              try:

self.update_email_handler.apply_changeset(
current_user, self.form.as_change()
                )
            except StopValidation as e:
self.form.populate_errors(e.reasons)
                return
self.render()
except
PersistenceError:
                logger.exception("Error while updating
email")                flash(_("Error while updating
email"), "danger")                return self.redirect()

            flash(_("Email address updated."),
"success")              return self.redirect()
        return self.render()

    def render(self):
        return
render_template("user/change_email.html",
form=self.form)

    def redirect(self):
        return
redirect(url_for("user.change_email")) def
berth_type(s):

    if s>0 and s<73:
        if s % 8 == 1 or s % 8 == 4:
            print (s), "is
lower berth"
elif s % 8 == 2 or s
% 8 == 5:
print (s), "is middle
berth"        elif s %
8 == 3 or s % 8 ==
6:            print (s),
"is upper berth"
elif s % 8 == 7:
            print (s), "is side
```

```
lower berth"         else:
print (s), "is side upper
berth"     else:
        print (s), "invalid seat number"

# Driver code s = 10
berth_type(s)      #
fxn call for berth
type

s = 7 berth_type(s)
# fxn call for  berth
type

s = 0 berth_type(s)      # fxn call for berth type class
Ticket:     counter=0      def
__init__(self,passenger_name,source,destination):

self.__passenger_name=passenger_name
self.__source=source
self.__destination=destination
self.Counter=Ticket.counter
Ticket.counter+=1      def
validate_source_destination(sel
f):
                          if   (self.__source=="Delhi"   and
(self.__destination=="Pune"                              or
self.__destination=="Mumbai"                          or
self.__destination=="Chennai"                         or
self.__destination=="Kolkata")):              return
```

True else:
return False

def
generate_tick
et(self):
if True:
__ticket_id=s
elf.__source[0
]+self.__desti
nation[0]+"0
"+str(self.Co
unter)
print("Ticket
id will
be:",__ticket_
id) else:

return
False
def
get_ticke
t_id(self
):
return
self.ticke
t_id
def
get_pass
enger_na

```
me(self):
return
self.__pa
ssenger_
name
def
get_sour
ce(self):
ifself.__
source==
"Delhi":
return
self.__so
urce
else:
          print("you have written invalid soure
option")            return None     def
get_destination(self):         if
self.__destination=="Pune":
          return self.__destination         elif
self.__destination=="Mumbai":
          return self.__destination  elif
self.__destination=="Chennai": return
self.__destination
elif
self.__destination
=="Kolkata":
return
self.__destination
```

```
else:

return
None
# user
define
functi
on #
Scrape
the
data
def
getdata
(url):
                    r = requests.get(url)
                    return r.text

# input by geek  train_name = "03391-rajgir-new-
delhi-clonespecial-rgd-to-ndls"  # url  url =
"https://www.railyatri.in/livetrain-
status/"+train_name

# pass the url # into getdata function htmldata
= getdata(url) soup =
BeautifulSoup(htmldata, 'html.parser')

# traverse the live status from
# this Html code data = [] for item in
soup.find_all('script', type="application/ld+json"):
```

```
                                        data.append(item.get_text())

                    # convert into dataframe
                    df = pd.read_json(data[2])

                    # display this column of # dataframe
                    print(df["mainEntity"][0]['name'])
                    print(df["mainEntity"][0]['acceptedA
                    nswer']['text']) Speak method def
                    Speak(self, audio):

                                        # Calling the initial constructor
                                        # of pyttsx3
                    engine =
          pyttsx3.init('sapi5')
          # Calling the getter method
          voices =
          engine.getProperty('voices')
          # Calling the setter method
          engine.setProperty('voice',
          voices[1].id)
          engine.say(audio)
          engine.runAndWait()

                          def
                    Take_break():
                                    Speak("Do you want to start sir?")
                                    question = input()
                    if "yes" in question:

                     Speak("Starting Sir")

                    if "no" in question:
                     Speak("We will automatically start after 5 Mins
          Sir.")

                     time.sleep(5*60)
                     Speak("Starting Sir")

                    # A notification we will held that
                    # Let's Start sir and with a message of
                    # will tell you to take a break after 45
                    # mins for 10 seconds
                    while(True):
                     notification.notify(title="Let's Start sir",
                     message="will tell you to take a break after 45
          mins",

                     timeout=10)

                     # For 45 min the will be no notification but


                     # after 45 min a notification will
                    pop up.
                       time.sleep(0.5*60)

                       Speak("Please Take a break Sir")
                    notification.notify(title="Break
```

Notification",   message="Please do use your device after sometime as you have"

"been continuously using it for 45 mins and it will affect your eyes",

timeout=10)

# Driver's Code   if __name__ == '__main__':

Take_break()

data_path = 'data.csv' data = pd.read_csv(data_path, names=['LATITUDE', 'LONGITUDE'], sep=',') gps_data = tuple(zip(data['LATITUDE'].values, data['LONGITUDE'].values))

image = Image.open('map.png', 'r') # Load map image.

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f
o
r

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n

g
p
s
_
d
a
t
a
:

    x1, y1 = scale_to_img(d, (image.size[0],
image.size[1])) # Convert GPS coordinates to
image coordinates.   img_points.append((x1, y1))
draw = ImageDraw.Draw(image)
draw.line(img_points, fill=(255, 0, 0), width=2) #
Draw converted records to the map image.

```
image.save('resultMap.png') x_ticks = map(lambda
x: round(x, 4),  np.linspace(lon1, lon2, num=7))
y_ticks = map(lambda x: round(x, 4),
np.linspace(lat1, lat2, num=8)) y_ticks =
sorted(y_ticks, reverse=True)  # y ticks must be
reversed due to conversion to image coordinates.
fig, axis1 = plt.subplots(figsize=(10, 10))
axis1.imshow(plt.imread('resultMap.png'))  # Load
the image to matplotlib plot.
axis1.set_xlab
el('Longitude
')
axis1.set_ylab
el('Latitude')
axis1.set_xtic
klabels(x_tick
s)
axis1.set_ytic
klabels(y_tick
s)  axis1.grid()
plt.show()
class    tickets:
def
__init__(self):
self.no_ofac1s
tclass=0
self.totaf=0
self.no_ofac2
ndclass=0
```

```
self.no_ofac3r
dclass=0
self.no_ofslee
per=0
self.no_oftick
ets=0
self.name=''
self.age=''
self.resno=0
self.status=''
def ret(self):
       return(self.resno)     def
retname(self):
  return(self.name)                    def
display(self):
f=0
fin1=open("tick
ets.dat","rb")
if not fin1:
          print "ERROR"
else:          print
          n=int(raw_input("ENTER PNR
NUMBER : "))          print "\n\n"
          print ("FETCHING DATA . . .".center(80))
time.sleep(1)
          print          print('PLEASE
WAIT...!!'.center(80))          time.sleep(1)
os.system('cls')          try:          while True:
                tick=load(fin1)
if(n==tick.ret()):                    f=1
```

```
print "="*80                    print("PNR
STATUS".center(80))

print"="*80
print
                    print "PASSENGER'S NAME
:",tick.name                        print
                    print "PASSENGER'S AGE
:",tick.age                         print
                    print "PNR NO :",tick.resno
print                        print "STATUS
:",tick.status                      print
print "NO OF SEATS BOOKED :
",tick.no_oftickets                 print
except:              pass           fin1.close()
if(f==0):   print
              print "WRONG PNR
NUMBER..!!"                print
def pending(self):
        self.status="WAITING LIST"
print "PNR NUMBER
:",self.resno          print
time.sleep(1.2)         print
"STATUS = ",self.status
        print
        print "NO OF SEATS BOOKED :
",self.no_oftickets         print     def
confirmation (self):
       self.status="CONFIRMED"
print "PNR NUMBER :
```

```
",self.resno          print
time.sleep(1.5)         print
"STATUS = ",self.status
        print     def
cancellation(self):
z=0
        f=0
fin=open("tickets.dat","rb")
fout=open("temp.dat","ab")
        print
        r= int(raw_input("ENTER PNR NUMBER :
"))
try:             while(True):                  tick=load(fin)
z=tick.ret() if(z!=r):

dump(tick,fout)
elif(z==r):

f=1
except:
pass
fin.clos
e()
        fout.close()
os.remove("tickets.dat")
os.rename("temp.dat","tickets.dat")         if
(f==0):             print
            print "NO SUCH RESERVATION
NUMBER FOUND"             print
time.sleep(2)             os.system('cls')               else:
```

```
print             print "TICKET
CANCELLED"
print"RS.600 REFUNDED...."
def reservation(self):
       trainno=int(raw_input("ENTER THE
TRAIN NO:"))        z=0
            f=0
fin2=open(
"tr1details
.dat")
fin2.seek(
0)           if
not     fin2:
print
"ERROR"
else:
try:
              while True:
                 tr=load(fin2)
z=tr.gettrainno()
n=tr.gettrainname()
if (trainno==z):
                     print                       print
"TRAIN NAME IS : ",n
f=1                    print                    print "-"*80
no_ofac1st=tr.getno_ofac1stclass()
no_ofac2nd=tr.getno_ofac2ndclass()
no_ofac3rd=tr.getno_ofac3rdclass()
no_ofsleeper=tr.getno_ofsleeper()
if(f==1):
```

```
fout1=open("tickets.dat","ab")
print
                    self.name=raw_input("ENTER THE
PASSENGER'S NAME ")
                    print

self.age=int(raw_input("PASSENGER'S AGE : "))
print
                    print"\t\t SELECT A CLASS YOU
WOULD LIKE TO TRAVEL IN :- "
                    print "1.AC FIRST
CLASS"                        print
                    print "2.AC SECOND
CLASS"                        print
                    print "3.AC THIRD
CLASS"                        print
                    print "4.SLEEPER CLASS"
print
c=int(raw_input("\t\t\tENTER YOUR
CHOICE = "))                    os.system('cls')
amt1=0                        if(c==1):

self.no_oftickets=int(raw_input("ENTER NO_OF
FIRST CLASS AC SEATS TO BE BOOKED : "))
i=1             while(i<=self.no_oftickets):
                          self.totaf=self.totaf+1
amt1=1000*self.no_oftickets
i=i+1                         print                          print
"PROCESSING. .",
time.sleep(0.5)
print ".",
time.sleep(0.3)
print'.'                    time.sleep(2)
os.system('cls')
              print "TOTAL AMOUNT TO BE
PAID = ",amt1
self.resno=int(random.randint(1000,2546))
              x=no_ofac1st-self.totaf
print                    if(x>0):
                self.confirmation()
dump(self,fout1)                  break
else:
                self.pending()
dump(tick,fout1)
break
elif(c==2):
self.no_oftickets=int(raw_input("ENTER
NO_OF  SECOND CLASS AC SEATS
TO BE BOOKED :
"))
i=1




def menu():

tr=trai
n()
```

```
tick=tic
kets()
print
   print "WELCOME TO PRAHIT
AGENCY".center(80)     while True:
          print           print "="*80           print
" \t\t\t\t  RAILWAY"
          print           print
"="*80
          print
          print "\t\t\t1. **UPDATE TRAIN
DETAILS."             print
          print "\t\t\t2. TRAIN
DETAILS. "            print
          print "\t\t\t3. RESERVATION OF
TICKETS."             print
          print "\t\t\t4. CANCELLATION OF
TICKETS. "            print
          print "\t\t\t5. DISPLAY
PNR STATUS."             print
print "\t\t\t6. QUIT."
print"** - office use......"
ch=int(raw_input("\t\t\tENTER
YOUR CHOICE : "))
os.system('cls')           print
"\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n
\n\t\t\t\t\t\t\tLOADI
NG. .",

time.sleep(
1)
print ("."),
time.sleep
(0.5)
print (".")
time.sleep
(2)
os.system(
'cls')
if ch==1:
        j="*****"
r=raw_input("\n\n\n\n\n\n\n\n\n\n\t\t\t\tENTER
THE  PASSWORD:
")
os.sy
stem
('cls
')
if
(j==
r):
x='y'
whi
le
(x.lo
wer(
)=='
y'):
            fout=open("tr1details.dat","ab")
tr.getinput()            dump(tr,fout)
```

```
fout.close()

print"\n\n\n\n\n\n\n\n\n\n\n\t\t\tUPDATING
TRAIN LIST PLEASE WAIT . .",

time.sleep(1)
print ("."),
time.sleep(0.5)                    print
("."),
time.sleep(
2)
os.system('cls')
                   print "\n\n\n\n\n\n\n\n\n\n\n"
                   x=raw_input("\t\tDO YOU WANT
TO ADD ANY MORE TRAINS DETAILS ? ")
                   os.system('cls')
continue             elif(j<>r):
print"\n\n\n\n\n"                print "WRONG
PASSWORD".center(80)          elif ch==2:

fin=open("tr1details.dat",'rb')
if not fin:
                print
    "ERROR"
else:                 try:
        while
True:
                      print"*"*80
print"\t\t\t\tTRAIN
DETAILS"
```

```
                    print"*"*80
print                       tr=load(fin)
tr.output()



                    raw_input("PRESS ENTER TO
VIEW NEXT TRAIN DETAILS")

os.system('cls')
except EOFError:
                  pass
elif ch==3:            print'='*80
            print "\t\t\t\tRESERVATION OF
TICKETS"
print'='*80            print
tick.reservation()                elif ch==4:
            print"="*80
print"\t\t\t\tCANCELLATION OF TICKETS"
print            print"="*80           print
tick.cancellation()        elif ch==5:
print
"="*80
print("PNR STATUS".center(80))

print"="*80
printclass
tickets:    def
__init__(self):
self.no_ofac1stcl
```

```
ass=0
self.totaf=0
self.no_ofac2ndc
lass=0
self.no_ofac3rdc
lass=0
self.no_ofsleeper
=0
self.no_ofticke
ts=0
self.name=''
self.age=''
self.resno=0
self.status=''
def ret(self):
       return(self.resno)    def
retname(self):
  return(self.name)                    def
display(self):
f=0
fin1=open("tick
ets.dat","rb")
if not fin1:
          print
"ERROR"
else:
print
n=int(raw_i
nput("ENT
ER PNR
NUMBER :
"))
print "\n\n"
print
("FETCHI
NG DATA . .
.".center(80))            time.sleep(1)            print
            print('PLEASE WAIT...!!'.center(80))

time.
sleep
(1)
os.sy
stem
('cls
')
try:
whi
le
Tru
e:
                    tick=load(fin1)
if(n==tick.ret()):                        f=1
print "="*80                        print("PNR
STATUS".center(80))
print"="*80                         print
                        print "PASSENGER'S NAME
:",tick.name                          print
                        print "PASSENGER'S AGE
:",tick.age                          print
```

```
                    print "PNR NO
:",tick.resno                    print
                    print "STATUS :",tick.status
print                      print "NO OF SEATS
BOOKED : ",tick.no_oftickets               print
except:              pass           fin1.close()
if(f==0):
print                print
"WRONG PNR
NUMBER..!!"
print                def
pending(self):

self.status="WAITING
LIST"          print "PNR
NUMBER :",self.resno
print         time.sleep(1.2)        print "STATUS
= ",self.status         print          print "NO OF
SEATS BOOKED :
",self.no_oftickets
print              def
confirmation
(self):
self.status="CON
FIRMED"
print            "PNR
NUMBER            :
",self.resno
print
time.sleep(1.5)
```

```
print
"STATUS = ",self.status
        print
def
cancellation(
self):
z=0         f=0
fin=open("tickets
.dat","rb")
fout=open("temp
.dat","ab")
        print
        r= int(raw_input("ENTER PNR NUMBER :
"))
try:            while(True):                tick=load(fin)
z=tick.ret()                 if(z!=r):

dump(tick,fout)
elif(z==r):

f=1
except:
pass
fin.clos
e()
        fout.close()
os.remove("tickets.dat")
os.rename("temp.dat","tickets.dat")         if
(f==0):             print
            print "NO SUCH RESERVATION
```

```
NUMBER FOUND"
print            time.sleep(2)
os.system('cls')               else:
print              print "TICKET
CANCELLED"
print"RS.600 REFUNDED...."
def reservation(self):
       trainno=int(raw_input("ENTER THE TRAIN
NO:"))
z=0
       f=0
fin2=open("tr1
details.dat")
fin2.seek(0)
if not fin2:
print
"ERROR"
else:
try:
while  True:
                  tr=load(fin2)
z=tr.gettrainno()
n=tr.gettrainname()
if (trainno==z):
                      print                        print
"TRAIN NAME IS : ",n
f=1                    print                      print "-"*80
no_ofac1st=tr.getno_ofac1stclass()
no_ofac2nd=tr.getno_ofac2ndclass()
no_ofac3rd=tr.getno_ofac3rdclass()
```

```
no_ofsleeper=tr.getno_ofsleeper()
if(f==1):

fout1=open("tickets.dat","ab")
print
                    self.name=raw_input("ENTER THE
PASSENGER'S NAME ")
                    print

self.age=int(raw_input("PASSENGER'S AGE : "))
print
                    print"\t\t SELECT A CLASS YOU
WOULD LIKE TO TRAVEL IN :- "
                    print "1.AC FIRST
CLASS"                        print
                    print "2.AC SECOND
CLASS"                        print
                    print "3.AC THIRD CLASS"
print                         print "4.SLEEPER
CLASS"
print
c=int(raw_input("\t\t\tENTER YOUR
CHOICE = "))                  os.system('cls')
amt1=0                        if(c==1):

self.no_oftickets=int(raw_input("ENTER NO_OF
FIRST CLASS AC SEATS TO BE BOOKED : "))
i=1             while(i<=self.no_oftickets):
                           self.totaf=self.totaf+1
```

```
amt1=1000*self.no_oftickets
i=i+1                        print
                       print "PROCESSING. .",
time.sleep(0.5)                         print ".",
time.sleep(0.3)
print'.'                          time.sleep(2)
os.system('cls')                          print "TOTAL
AMOUNT TO BE PAID = ",amt1
self.resno=int(random.randint(1000,2546))
                       x=no_ofac1st-self.totaf
print                          if(x>0):
                          self.confirmation()
dump(self,fout1)                               break
else:
                          self.pending()
dump(tick,fout1)                               break
elif(c==2):

self.no_oftickets=int(raw_input("ENTER NO_OF
SECOND CLASS AC SEATS TO BE BOOKED :
"))                  i=1



def menu():

tr=trai
n()
tick=tic
kets()
```

```
print
print
"WEL
COME
TO
PRAH
IT
AGEN
CY".ce
nter(8
0)
while
True:
        print           print "="*80            print
" \t\t\t\t  RAILWAY"
        print           print
"="*80
        print
        print "\t\t\t1. **UPDATE TRAIN
DETAILS."              print
        print "\t\t\t2. TRAIN
DETAILS. "             print
        print "\t\t\t3. RESERVATION OF
TICKETS."              print
        print "\t\t\t4. CANCELLATION OF
TICKETS. "             print
        print "\t\t\t5. DISPLAY
PNR STATUS."               print
print "\t\t\t6. QUIT."
print"** - office use......"
```

```
ch=int(raw_input("\t\t\tENTER
YOUR CHOICE : "))
os.system('cls')            print
"\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n\n
\n\t\t\t\t\t\t\tLOADI
NG. .",

time.sleep(
1)
print ("."),
time.sleep
(0.5)
print (".")
time.sleep
(2)
os.system(
'cls')
if ch==1:
j="*****"
r=raw_input("\n\n\n\n\
n\n\n\n\n\n\n\t\t\t\tENT
ER THE
PASSWORD: ")

os.system('cls')
if (j==r):
x='y'
while
(x.lower()=='y'):
```

```
fout=open("tr1details.dat","ab")
tr.getinput()                    dump(tr,fout)
fout.close()

print"\n\n\n\n\n\n\n\n\n\n\n\t\t\tUPDATING
TRAIN LIST PLEASE WAIT . .",

time.sleep(1)
print ("."),
time.sleep(0.5)                    print
("."),
time.sleep(
2)
os.system('cls')
                  print "\n\n\n\n\n\n\n\n\n\n\n"
                  x=raw_input("\t\tDO YOU WANT
TO ADD ANY MORE TRAINS DETAILS ? ")
                  os.system('cls')
continue              elif(j<>r):
print"\n\n\n\n\n"
print "WRONG
PASSWORD".center(80)
elif ch==2:
fin=open("tr1details.dat",'rb')
if not fin:
               print
"ERROR"
tick.display()
elif ch==6:
quit()
```

```
          raw_input("PRESS ENTER TO GO TO
BACK MENU".center(80))
          os.system('cls')

menu() sender_email =
"my@gmail.com" receiver_email =
"your@gmail.com" password =
input("Type your
password and press enter:")

message = MIMEMultipart("alternative")
message["Subject"] = "multipart test"
message["From"]
= sender_email  message["To"]
= receiver_email

# Create the plain-text and HTML version of your
message text
= """\
Hi,
How are you?
Real Python has many great tutorials:
www.realpython.com"""  html
=
""
"\
<h
tm
l>
```

```
<b
od
y>
   <p>Hi,<br>
      How are you?<br>
      <a href="http://www.realpython.com">Real
Python</a>        has many great tutorials.
   </p>
  </body>
</html>
"""
# Turn these into plain/html MIMEText objects
part1
= MIMEText(text, "plain")
part2 = MIMEText(html, "html")

# Add HTML/plain-text parts to MIMEMultipart
message
# The email client will try to render the last part
first  message.attach(part1) message.attach(part2)

# Create secure connection with server and send
email context = ssl.create_default_context() with
smtplib.SMTP_SSL("smtp.gmail.com", 465,
context=context) as server:
   server.login(sender_email,
password)     server.sendmail(
sender_email, receiver_email,
message.as_string()
```

```
    )
subject = "An email with attachment
from Python" body = "This is an email
with attachment sent from Python"
sender_email = "my@gmail.com"
receiver_email = "your@gmail.com"
password = input("Type your password
and press enter:") # Create a multipart
message and set headers  message =
MIMEMultipart() message["From"] =
sender_email message["To"] =
receiver_email message["Subject"] =
subject message["Bcc"] = receiver_email
# Recommended for mass emails

# Add body to email
message.attach(MIMEText(body,
"plain"))  filename
= "document.pdf"  # In same directory as script

# Open PDF file in
binary mode with
open(filename,
"rb") as
attachment:      #
Add file as
application/octet-
stream
    # Email client can usually download this
automatically as attachment
```

```
part = MIMEBase("application", "octet-stream")
part.set_payload(attachment.read())

# Encode file in ASCII characters to send by email
encoders.encode_base64(part)

# Add header as key/value pair to attachment
part part.add_header(     "Content-
Disposition",
    f"attachment; filename= {filename}",
)
# Add attachment to message and convert message
to string message.attach(part)
text = message.as_string()

# Log in to server using secure context and send
email context = ssl.create_default_context() with
smtplib.SMTP_SSL("smtp.gmail.com", 465,
context=context) as server:
    server.login(sender_email, password)
server.sendmail(sender_email, receiver_email, text)
api_key = "Your_API_key"

# base_url variable to store url
base_url = "https://api.railwayapi.com/v2/pnr-
status/pnr/"
# Enter valid pnr_number
pnr_number = "6515483790"
```

# Stores complete url address complete_url = base_url + pnr_number + "/apikey/" + api_key + "/"

# get method of requests module # return response object   response_ob = requests.get(complete_url)

# json method of response object convert # json format data into python format data
result = response_ob.json()

# now result contains list # of nested dictionaries if result["response_code"] == 200: # train name is extracting # from the result variable data train_name =

```
        result["train"]
        ["name"]

            # train number is extracting from   #
        the result variable data
                        train_number =
result["train"]["number"]

         # from station name is extracting   #
        from the result variable data
                        from_station =
result["from_station"]["name"]

             # to_station name is extracting from
        # the result variable data
                        to_station =
result["to_station"]["name"]

            # boarding point station name is        #
        extracting from the result variable data
        boarding_point =
        result["boarding_point"]["name"]

            # reservation upto station name is   #
        extracting from the result variable data
                        reservation_upto =
        result["reservation_upto"]["name"]


                        # store the value or data of
```

"pnr"

# key in pnr_num variable pnr_num = result["pnr"] # store the value or data of "doj" key # in variable date_of_journey variable date_of_journey = result["doj"]

# store the value or data of

# "total_passengers" key in variable

total_passengers = result["total_passengers"]

# store the value or data of "passengers" # key in variable passengers_list

passengers_list = result["passengers"]

# store the value or data of # "chart_prepared" key in variable

chart_prepared =

```
result["chart_prepared"]

                                        # print following values
                        print(" train name : " + str(train_name)
                    + "\n train  number : " + str(train_number)
                                        + "\n from station : " +
str(from_station)
                                        + "\n to station : " +
str(to_station)
                                        + "\n boarding point : " +
str(boarding_point)
                                    + "\n reservation upto : " +
str(reservation_upto)
                                        + "\n pnr number : " +
str(pnr_num)
                                      + "\n date of journey : " +
str(date_of_journey)
                          + "\n total no. of passengers: " +
str(total_passengers)
                  + "\n chart prepared : " + str(chart_prepared))

                                  # looping
                                  through
                                  passenger list
                                  for passenger
                                  in
                                  passengers_lis
                                  t:    # store the
                                  value or data
```

```
                         # of "no" key
                         in variable
                         passenger_n
                         um =
                         passenger["n
                         "]

  # store the value or data of   # "current_status"
 key in variable   current_status =
 passenger["current_status"]

  # store the value or data of   # "booking_status"
 key in variable   booking_status =
 passenger["booking_status"]

   # print following values
 print(" passenger number : " + str(passenger_num)
 + "\n current status : " + str(current_status)
+ "\n booking_status : " + str(booking_status))
 else:
         print("Record Not Found")
```