

Project Report

Project Name: **SMART SOLUTIONS FOR RAILWAYS**

Team ID: **PNT2022TMID13609**

Team: **SHANKAR MAHADEVAN G - TEAM LEAD**

PARTHASARATHY A

SATHISHKUMAR B

ABISHEK S

1. INTRODUCTION

1.1 Project Overview

As trains are one of the most preferred modes of transportation among middle class and impoverished people as it attracts for its amenities. Simultaneously there is an increase at risk from thefts and accidents like chain snatching, derailment, fire accident. In order to avoid or in better words to stop all such brutality we came up with a solution by providing an application which can be accessed by the user after booking their tickets. With a single click this app addresses issues by sending a text message to TC and RPF as an alert. In our project we use Node-Red service, appdevelopment, IBM cloud platform to store passenger data.

1.2 Purpose

The purpose of this project is to report and get relived from the issues related to trains.

2. LITERATURE SURVEY

2.1 Existing problem

- A Web page is designed for the public where they can book tickets by seeing the available seats.
- After booking the train, the person will get a QR code which has to be shown to the Ticket Collector while boarding the train.
- The ticket collectors can scan the QR code to identify the personal details.
- A GPS module is present in the train to track it. The live status of the journey is updated in the Web app continuously
- All the booking details of the customers will be stored in the database with a unique ID and they can be retrieved back when the Ticket Collector scans the QR Code.

2.2 References

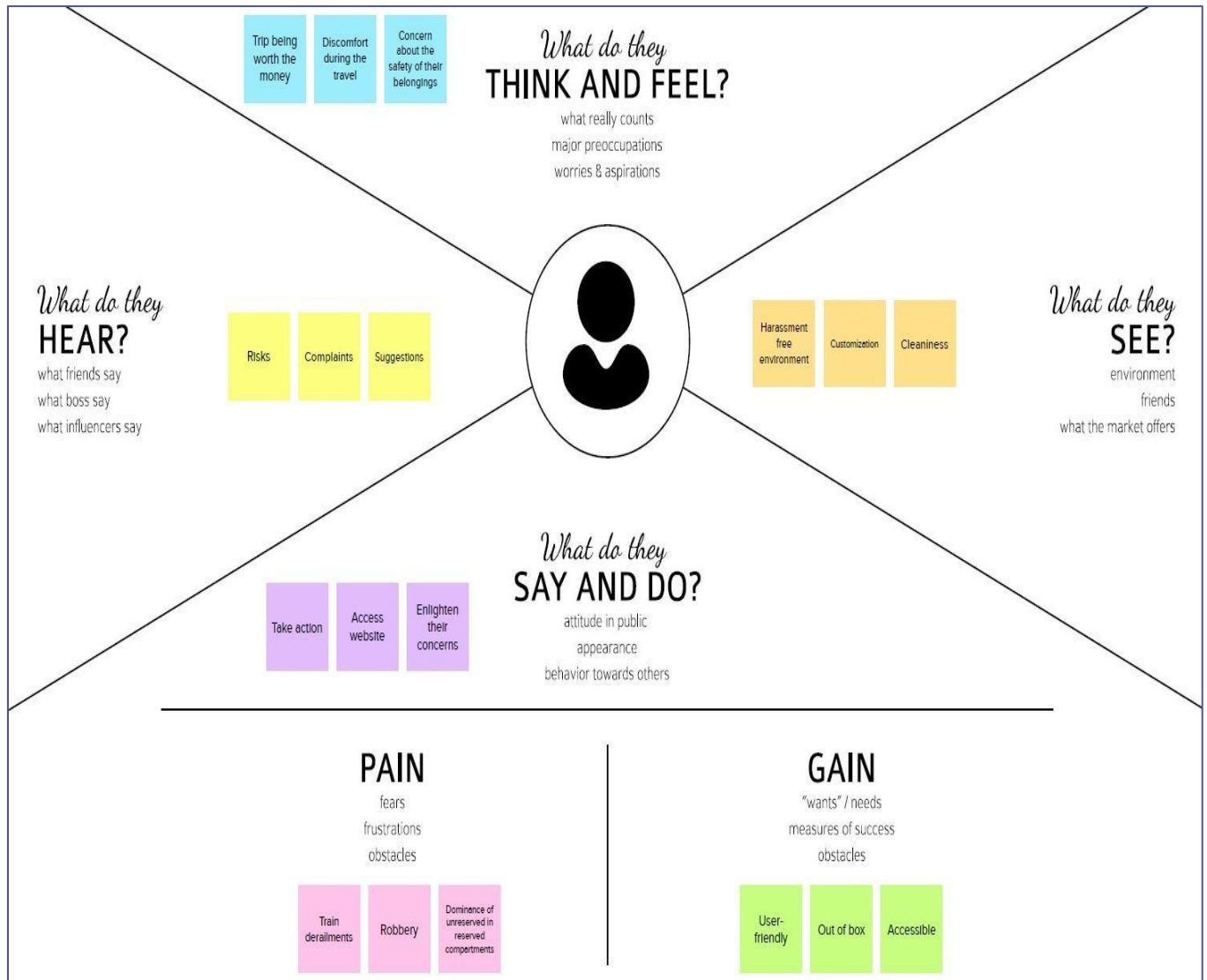
S.NO	TITLE	AUTHOR	YEAR	KEY TECHNOLOGY
1	Main geotechnical problems of railways and roads in kriolitozone and their solutions.	Kondratiev, Valentin G	2017	Main problems in railways
2	Construction and Building Materials	Sañudo, Roberto, Marina Miranda, Carlos García, and David García-Sanchez	2019	Drainage in railways
3	Problems of Indian Railways	Benjamin	2021	Common problems in Indian railways
4	A comparative study of Indian and worldwide railways.	Sharma, Sunil Kumar, and Anil Kumar	2014	Study of Indian railways
5	Ticketing solutions for Indian railways using RFID technology	Prasanth, Venugopal, and K.P. Soman	2009	Solution for ticketing using RFID

2.3 Problem Statement Definition

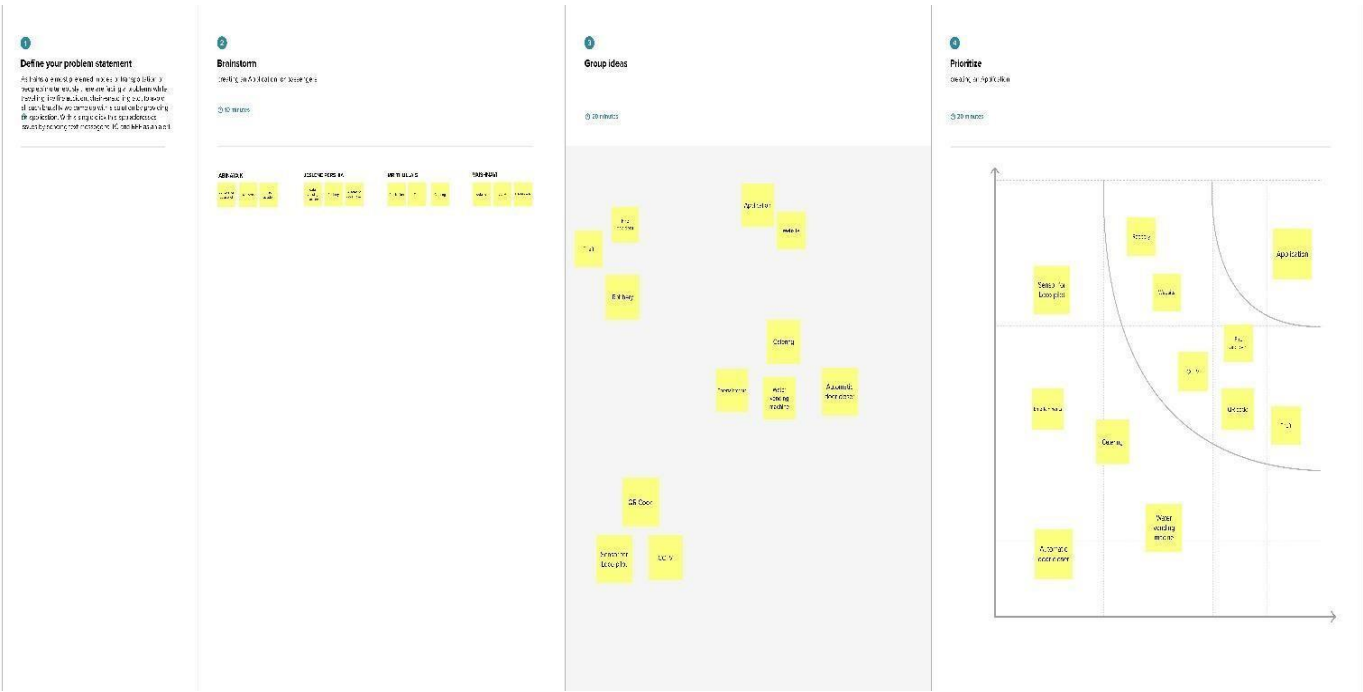
Smart Solutions for railways are designed to reduce the work load of the user and the use of paper.

3. IDEATION & PROPOSED SOLUTION

3.1 Empathy Map Canvas



3.2 Ideation & Brainstorming



3.3 Proposed Solution

S.No.	Parameter	Description
-------	-----------	-------------

1.	Problem Statement (Problem to be solved)	Problems in the railways like robbery, fire accidents etc..
2.	Idea / Solution description	Developing an app for the passengers.
3.	Novelty / Uniqueness	The passengers can send an alert to the respective officials during the travel time through the app when they are in trouble so that they can easily solve it.
4.	Social Impact / Customer Satisfaction	Usage of this app can be a great relief to the passengers, so that they can travel without any fear.
5.	Business Model (Revenue Model)	5000
6.	Scalability of the Solution	This solution will be useful for passengers while travelling. They can use the app between the time of their travel. The users will feel more secured, in-case of an emergency by simply clicking on a button the alert signal will be sent to the respective officials and the corresponding measures will be taken.

3.4 Problem Solution fit

Project Title: SMART SOLUTION FOR RAILWAYS			Project Design Phase-I - Solution Fit			Team ID: PNT2022TMID07171		
Define CS, fit into CC Focus on JRP, map into RJC, understand RJC	1. CUSTOMER SEGMENT(S) Passengers	6. CUSTOMER They report the TC	5. AVAILABLE SOLUTIONS Using the application the passengers can send an alert when they are in trouble while travelling			Explore AS, differentia Focus on JRP, map into RJC, understand RJC		
	2. JOBS-TO-BE-DONE / PROBLEMS Creating an application	9. PROBLEM ROOT CAUSE Problems while travelling like fire accident, chain- snatching etc... The passenger can report the TC.	7.BEHAVIOUR The passenger should send an alert message for an TC and RPF using the Application.					
3. TRIGGERS Fire accident, Robbery, Theft		10. YOUR SOLUTION As trains are most preferred modes of transportation of people, simultaneously there are facing a problem while travelling like fire accident, chain- snatching. To avoid all such brutality, we came up with a solution by providing an application. With a single click this app addresses issues by sending text message to TC and RPF as an alert.		8. CHANNELS of BEHAVIOUR 8.1 ONLINE Passenger can approach directly using App 8.2 OFFLINE They struggle a lot				
4. EMOTIONS: BEFORE / AFTER BEFORE Tensed, Panic AFTER Relief, they enjoy their journey.								

4. REQUIREMENT ANALYSIS

4.1 Functional requirement

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Online Registration through Gmail

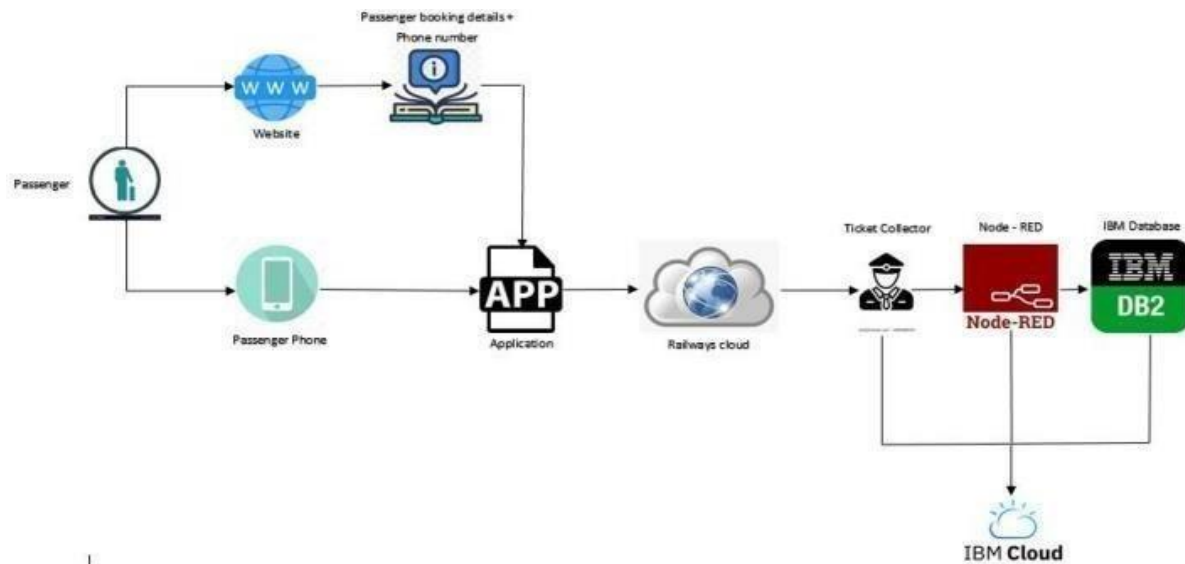
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Application installation	The application is installed through the given link
FR-4	User access	Access the app requirements

4.2 Non-Functional requirement

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	<ul style="list-style-type: none"> • The app can be used during the travelling time • Easy and simple • Efficiency is high
NFR-2	Security	By clicking on the icon, the alert will be given to the respective officials
NFR-3	Reliability	Highly reliable to use
NFR-4	Performance	Low error rate
NFR-5	Availability	Free source
NFR-6	Scalability	It is scalable enough to support many users at the same time

5. PROJECT DESIGN

5.1 Data Flow Diagrams



5.2 Solution Architecture

As trains are one of the most preferred modes of transportation among middle class and impoverished people as it attracts for its amenities. Simultaneously there is an increase at risk from thefts and accidents like chain-snatching, derailment, fire accident. In order to avoid or in better words to stop all such brutality we came up with a solution by providing an application which can be accessed by the user after booking their tickets. With a single click this app addresses issues by sending a text message to TC and RPF as an alert. In our project we use Node-Red service, appdevelopment, IBM cloud platform to store passenger data.

5.3 User Stories

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
PASSENGER (Mobile user)	Booking registration	USN-1	As a passenger, I book the ticket for the journey by entering my personal information.	I can access the web link to install the application.	High	Sprint-1
	Confirmation	USN-2	As a passenger, I will receive confirmation of the booking once I have	I can receive confirmation email & click confirm.	High	Sprint-1

			registered for the application		
	Applicat ion registrat ion	USN-3	As a passenger, I can register for the application through the weblink.	I can register & access the application through google login.	Low Sprint-2
	Application access	USN-4	As a passenger, I can access the application during my travel for resolving my issues.		Medium Sprint-1

6. PROJECT PLANNING & SCHEDULING

6.1 Sprint Planning & Estimation

STEP 1	Identify the problem
STEP 2	Prepare an abstract, problem statement
STEP 3	List required objects needed
STEP 4	Create a code and run it
	Make a prototype

STEP 5

STEP 6

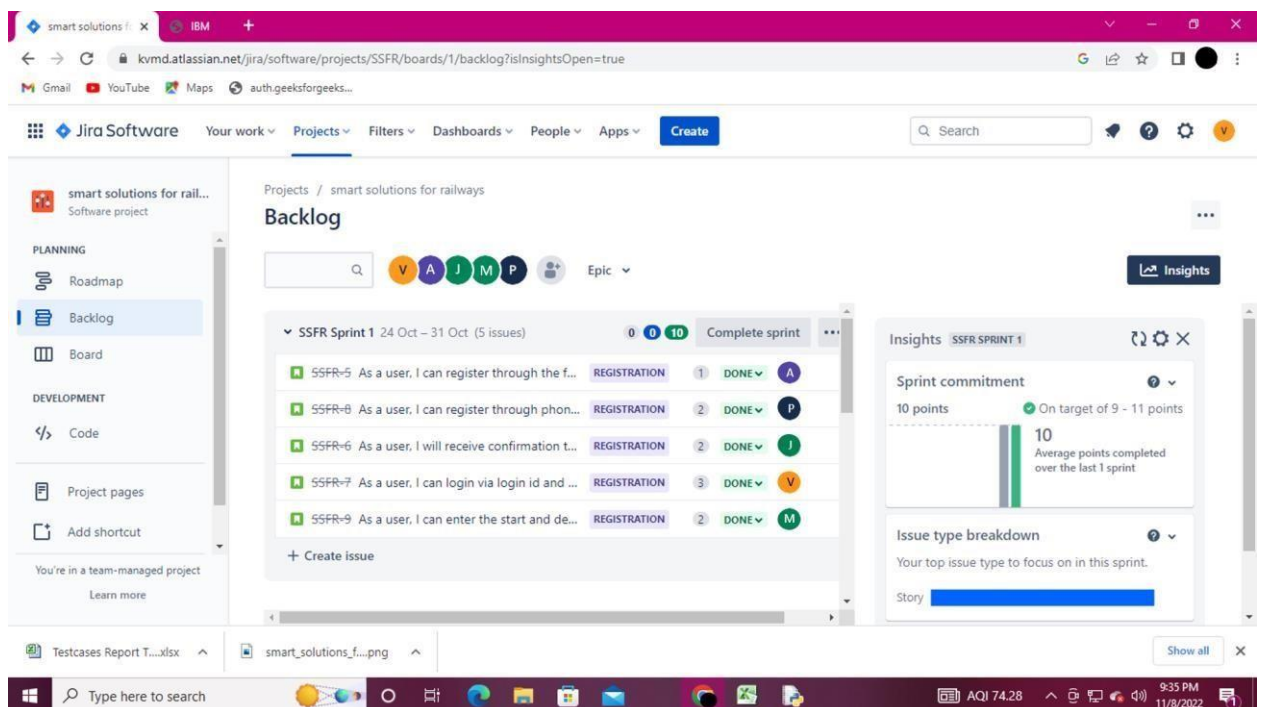
Test with the created code and check the designed prototype is working

STEP 7

Solution for the problem is found

6.2 Reports from JIRA

SPRINT 1



SPRINT 2

The screenshot displays the Jira Software interface for a project named "smart solutions for railways". The main view is the "Backlog", which lists issues for "SSFR Sprint 2" (31 Oct - 5 Nov) with 4 issues. The issues are:

- 55FR-22: As a user, I can provide the basic details s... (BOOKING, 4, DONE, A)
- 55FR-11: As a user, I can choose the class, sea... (BOOKING, 4, DONE, P)
- 55FR-12: As a user, I can choose to pay through cr... (PAYMENT, 1, DONE, J)
- 55FR-13: As a user, I will be redirected to the select... (REDIRECT, 1, DONE, V)

Below the sprint view, there is a "Backlog" section showing 0 of 8 issues visible. On the right, the "Insights" panel shows a progress bar for "10 points" (On target of 9 - 11 points) and an "Issue type breakdown" section.

The interface includes a left sidebar with navigation options: Roadmap, Backlog, Board, Code, Project pages, and Add shortcut. The top navigation bar shows "Your work", "Projects", "Filters", "Dashboards", "People", and "Apps". The bottom status bar indicates the system time as 10:16 PM on 11/8/2022.

SPRINT 3

smart solutions for railways - Ag

kvmd.atlassian.net/jira/software/projects/SSFR/boards/1/backlog?isInsightsOpen=true&selectedIssue=SSFR-17

Gmail YouTube Maps auth.geeksforgoeks...

Jira Software Your work Projects Filters Dashboards People Apps Create

smart solutions for rail... Software project

PLANNING Roadmap Backlog Board

DEVELOPMENT Code Project pages Add shortcut Project settings

You're in a team-managed project Learn more

Projects / smart solutions for railways

Backlog

SSFR Sprint 3 7 Nov - 12 Nov (4 issues)

SSFR-14 As a user, I can downloa

SSFR-15 As a user, I can see the s

SSFR-16 As a user, I get remainde

SSFR-17 As a user, I can track the

+ Create issue

Backlog (4 issues)

SSFR-18 As a user, I can cancel m

Insights SSFR SPRINT 3

Sprint commitment

Add estimates to plan sprints with more accuracy

This insight compares how much effort was allocated to a sprint against how much was completed, so you can plan sprints more effectively. [Learn more](#)

Issue type breakdown

Your top issue type to focus on in this sprint.

Story

Give feedback

Help

Search help articles

Create issues in your team-managed backlog and start planning future work

The backlog is a dedicated space for planning upcoming work. Learn how to define upcoming tasks by creating issues directly on your team's backlog.

Start a sprint from your backlog

Ready to sprint to your team's goal? Learn how to start your sprint and what happens when you do.

Show 17 more articles

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Type here to search

Rain coming

6:34 PM 11/10/2022

SPRINT 4

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kvmd.atlassian.net/jira/software/projects/SSFR/boards/1/backlog?isInsightsOpen=true

Gmail YouTube Maps auth.geeksforgoeks...

Jira Software Your work Projects Filters Dashboards People Apps Create

smart solutions for rail... Software project

PLANNING Roadmap Backlog Board

DEVELOPMENT Code Project pages Add shortcut Project settings

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Projects / smart solutions for railways

Backlog

SSFR Sprint 4 13 Nov - 20 Nov (4 issues)

SSFR-19 As a user, I can track the train using ... CANCELLATION 3 DONE

SSFR-20 As a user, I can raise queries through... RAISE QUERIES 3 DONE

SSFR-21 As a user, I will answer the questions/... ANS QUERIES 3 DONE

SSFR-22 As a user, I will feed information about... FEED DETAILS 2 DONE

+ Create issue

Backlog (0 issues)

Your backlog is empty.

Complete sprint

Insights SSFR SPRINT 4

Sprint commitment

11 points

Over target of 7 - 9 points

7.5

Average points completed over the last 4 sprints

Issue type breakdown

Your top issue type to focus on in this sprint.

Story

Give feedback

Type here to search

25°C Cloudy

7:29 PM 11/10/2022

7. CODING & SOLUTIONING

7.1 Feature 1

- IoT device
- IBM Watson Platform
- Node red
- Cloudant DB
- Web UI
- MIT App Inventor
- Python code

7.2 Feature 2

- Login
- Verification
- Ticket Booking
- Adding rating

8. TESTING AND RESULTS

8.1 Test Cases

Test case 1

File Home Insert Page Layout Formulas Data Review View Help

Clipboard Font Alignment Number Conditional Formatting Styles Cell Styles Format Cells Comments Share

Calibri 11 A^A

B I U Bold Italic Underline Paragraph styles icons

General % < > .00 Number formatting icons

Conditional Formatting Styles Cell Styles Format Cells

Sort & Filter Find & Select Editing

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1					Date	15-Nov-23								
2					Team ID	PHT2022TMD13689								
3					Project Name	Smart Solutions for Railways								
4					Maximum Marks	4 marks								
5	Test case ID	Feature Type	Component	Test Scenario	Pre-Requisite	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Comments	TC for Automation(Y/N)	BUG ID	Executed By
6	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				SHANKAR
7	2	UI	Generating OTP	Generating the otp for further process		1.Generating of OTP number		User can register through phone numbers and to get otp number	Working as expected	PASS				ABISHIKH
8	3	Functional	OTP verification	Verify user otp using mail		1.Enter email id and enter password 2.Enter into log in page 3 Click on My Account dropdown button 4 Enter initial username/email in Email text box 5 Click on login button	Username: railways password: admin Username: railways password: admin	Application should show "incorrect email or password" validation message	Working as expected	FAIL				PARTHAGRATHY
9	4	Functional	Login page	Verify user is able to log into application with invalid credentials					Working as expected	FAIL				SATHISH
10	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: railways password: admin	A user can view about the available trains to enter start and destination details	Working as expected	PASS				SHANKAR
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														

< > Shopenzer Testcases Testscenarios +

Ready

Test case 2

AutoSave Off Testcase 2 - Excel Search (Alt+Q) GS SHANKAR

File Home Insert Page Layout Formulas Data Review View Help Comments Share

Undo Paste Font Arial 11 Bold Italic Underline Color Fill Border Alignment Number General Conditional Formatting Format as Table Cell Styles Delete Format Cells Sort & Find & Filter Select Editing

F2 PNT2022TMD13609

Test case ID	Feature Type	Component	Test Scenario	Pre-Requlite	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Comments	TC for Automation(Y/N)	BUG ID	Executed By
1	Functional	Booking	User can provide the basic details such as a name, number, etc.		1. Enter the member's details like name, number.		Tickets booked to be displayed	Working as expected	Pass				ABISHK
2	UI	Booking seats	User can choose the train, starting and ending destination, date of travel.		1. Known to which train is available		known to which seats are available	Working as expected	Fail				SATHISH
3	Functional	Payment	User can choose to pay through credit Card/debit card/UPI.		1. user can choose payment method 2. payment method		payment for the booked tickets to be done using payment method through either the following methods credit card/debit	Working as expected	Fail				PARTHASARATHY
4	Functional	Redirection	User can be redirected to the selected		1. After payment the user will be redirected to the previous page		after payment the user will be redirected to the previous page	Working as expected	pass				SHANKAR

Shopenzer Testcases Testscenarios +

Ready 27°C Haze 18:51 20-11-2022

Test case 3

AutoSave Off Testcase 3 - Excel Search (Alt+Q) GS SHANKAR

File Home Insert Page Layout Formulas Data Review View Help Comments Share

Undo Paste Font Calibri 11 Bold Italic Underline Color Fill Border Alignment Number Custom Conditional Formatting Format as Table Cell Styles Delete Format Cells Sort & Find & Filter Select Editing

F1 15-11-2022

Test case ID	Feature Type	Component	Test Scenario	Pre-Requlite	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Comments	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				ABISHK
2	UI	Ticket status	a user can see the status of my ticket whether it's confirmed/Waiting/BAC		1. known to the status of the tickets booked		known to the status of the tickets booked	Working as expected	Fail				PARTHASARATHY
3	Functional	Reporting Issues	User can access the reporting portal once the journey begins		1. reporting		issues have been reported	Working as expected	pass				SHANKAR

Shopenzer Testcases Testscenarios +

Ready 27°C Haze 18:52 20-11-2022

Test case 4

Test case ID	Feature Type	Component	Test Scenario	Pre-Requirement	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Comments	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	Fail				SATHISH
2	Functional	Rate	* user will feed rating about the train journey		1 information feeding on trains		information feeding on trains	Working as expected	pass				SHANKAR

9. ADVANTAGES

- The passengers can use this application, while they are travelling alone to ensure their safety.
- It is easy to use.
- It has minimized error rate.

10. DISADVANTAGES

- Network issues may arise.

11. CONCLUSION

Almost all the countries across the globe strive to meet the demand for safe, fast, and reliable rail services. Lack of operational efficiency and reliability, safety, and security issues, besides aging railway systems and practices are haunting various countries to bring about a change in their existing rail infrastructure. The global rail industry struggles to meet the increasing demand for freight and passenger transportation due to lack of optimized use of rail network and inefficient use of rail assets. Often, they suffer from the lack in smart technologies and latest technological updates to provide the most efficient passenger services. This is expected to induce rail executives to build rail systems that are smarter and more efficient. The passenger reservation system of

Indian Railways is one of the world's largest reservation models. Daily about one million passengers travel in reserved accommodation with Indian Railways. Another sixteen million travel with unreserved tickets in Indian Railways. In this vast system, it is a herculean task to efficiently handle the passenger data, which is a key point of consideration now-a-days. But the implementation of the latest technological updates in this system gradually turns inevitable due to increasing demand for providing the most efficient passenger services. Handling the passenger data efficiently backed by intelligent processing and timely retrieval would help backing up the security breaches. Here we've explored different issues of implementing smart computing in railway systems pertaining to reservation models besides pointing out some future scopes of advancement. Most significant improvements have been evidenced by more informative and userfriendly websites, mobile applications for real-time information about vehicles in motion, and eticket purchases and timetable information implemented at stations and stops. With the rise of Industry, railway companies can now ensure that they are prepared to avoid the surprise of equipment downtime. Like above mentioned, the developed application of our project can lead the passenger who travel can travel safely without any fear.

12. FUTURE SCOPE

This application is ensured for safety for the passengers while they are travelling alone as well as they travel with their family or friends.

In future, this application may also be used by passengers who travel through bus. By further enhancement of the application the passengers can explore more features regarding their safety.

13. APPENDIX

13.1 Source Code

LOGIN

```
from tkinter import *
import
sqlite3
```

```
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)
```

```
#=====VARIABLES=====
```

```
=====
```

```
USERNAME = StringVar()
```

```
PASSWORD = StringVar()
```



```

#=====FRAMES=====
=====
Top = Frame(root, bd=2, relief=RIDGE)
Top.pack(side=TOP, fill=X)
Form = Frame(root, height=200)
Form.pack(side=TOP, pady=20)

#=====LABELS=====
===== 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)

#=====ENTRY
WIDGETS=====
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)

#=====METHODS=====
===== 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.close()
    conn.close()

```

```

#=====BUTTON
WIDGETS===== 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 HomeWindow():    global
    Home
    root.withdraw()
    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.destroy()
root.deiconify()

```

REGISTRATION

```

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()

```

START AND DESTINATION

```
# import module import requests
```

```

from bs4 import BeautifulSoup

# user define function #
Scrape the data def
getdata(url):    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.railatri.in/booking/trains-between-
stations?from_code="+from_Station_code+"&from_name="+from_Station_name+"&JN+&j
ourney_date=+Wed&src=tbs&to_code=" + \
    To_station_code+"&to_name="+To_station_name + \
    "+JN+&user_id=-
1603228437&user_token=355740&utm_source=dwebsearch_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("")

# Display the result
for item in result:    if
item != "":
print(item)
TICKET BOOKING
print("\n\nTicket Booking System\n") restart
= ('Y')

```

```

while restart != ('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

```

SEATS BOOKING 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 CONFIRMATION
# import module import requests
from bs4 import BeautifulSoup
import pandas
as pd

# user define function #
Scrape the data def
getdata(url):    r
    =
requests.get(url)
return r.text

# input by geek train_name = "03391-rajgir-new-delhi-clone-
special-rgd-to-ndls"

# url url = "https://www.railatri.in/live-train-
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]['acceptedAnswer']['text'])

TICKET GENERATION class
Ticket: counter=0 def
    __init__(self,passenger_name,s
ource,destination):

```

```

self.__passenger_name=passenger_name
self.__source=source
self.__destination=destination
self.Counter=Ticket.counter    Ticket.counter+=1
def validate_source_destination(self):
    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_ticket(self ):    if
True:
        __ticket_id=self.__source[0]+self.__destination[0]+"0"+str(self.Counter)
print( "Ticket id will be:",__ticket_id)    else:
        return False    def
get_ticket_id(self):    return
self.ticket_id    def
get_passenger_name(self):
return self.__passenger_name    def
get_source(self):    if
self.__source=="Delhi":
        return    self.__source
else:    print("you have written invalid source
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

```

OTP GENERATION

```

import os
import random
import smtplib

```

```

digits = "0123456789"

```

```
OTP = ""
```

```
for i in range (6):
```

```
    OTP += digits[math.floor(random.random()*10)]
```

```
otp = OTP + " is your OTP" message
```

```
= otp s =
```

```
smtplib.SMTP('smtp.gmail.com', 587)
```

```
s.starttls()
```

```
emailid = input("Enter your email: ")
```

```
s.login("YOUR Gmail ID", "YOUR APP PASSWORD")
```

```
s.sendmail('&&&&&',emailid,message)
```

```
a = input("Enter your OTP >>: ") if
```

```
a == OTP:    print("Verified")
```

```
else:
```

```
    print("Please Check your OTP again")
```

OTP VERIFICATION

```
import os import
```

```
    math import random
```

```
import smtplib
```

```
digits = "0123456789"
```

```
OTP = ""
```

```
for i in range (6):
```

```
    OTP += digits[math.floor(random.random()*10)]
```

```
otp = OTP + " is your OTP" message
```

```
= otp
```

```
s = smtplib.SMTP('smtp.gmail.com', 587)
```

```
s.starttls()
```

```
emailid = input("Enter your email: ")
```

```
s.login("YOUR Gmail ID", "YOUR APP PASSWORD")
```

```
s.sendmail('&&&&&',emailid,message)
```



```
a = input("Enter your OTP >>: ")
if a == OTP:
    print("Verified")
else:
    print("Please Check your OTP again")
```

13.2 GitHub

GitHub link:

<https://github.com/IBM-EPBL/IBM-Project-30913-1660192382>