PROJECT REPORT

Project Name: **SMART SOLUTIONS FOR RAILWAYS**

Team ID: **PNT2022TMID44729**

Team: **MANGAIYARKARASI.E (Team leader)**

Team Member**: JAI KRISHNAN.A.P**

Team Member**: RAHUL.M**

Team Member**: SHANMUGAPRIYA.A**

COLLEGE NAME**:SHREE VENKATESWARA HI-**

TECH ENGI NEERING

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, app-development, 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

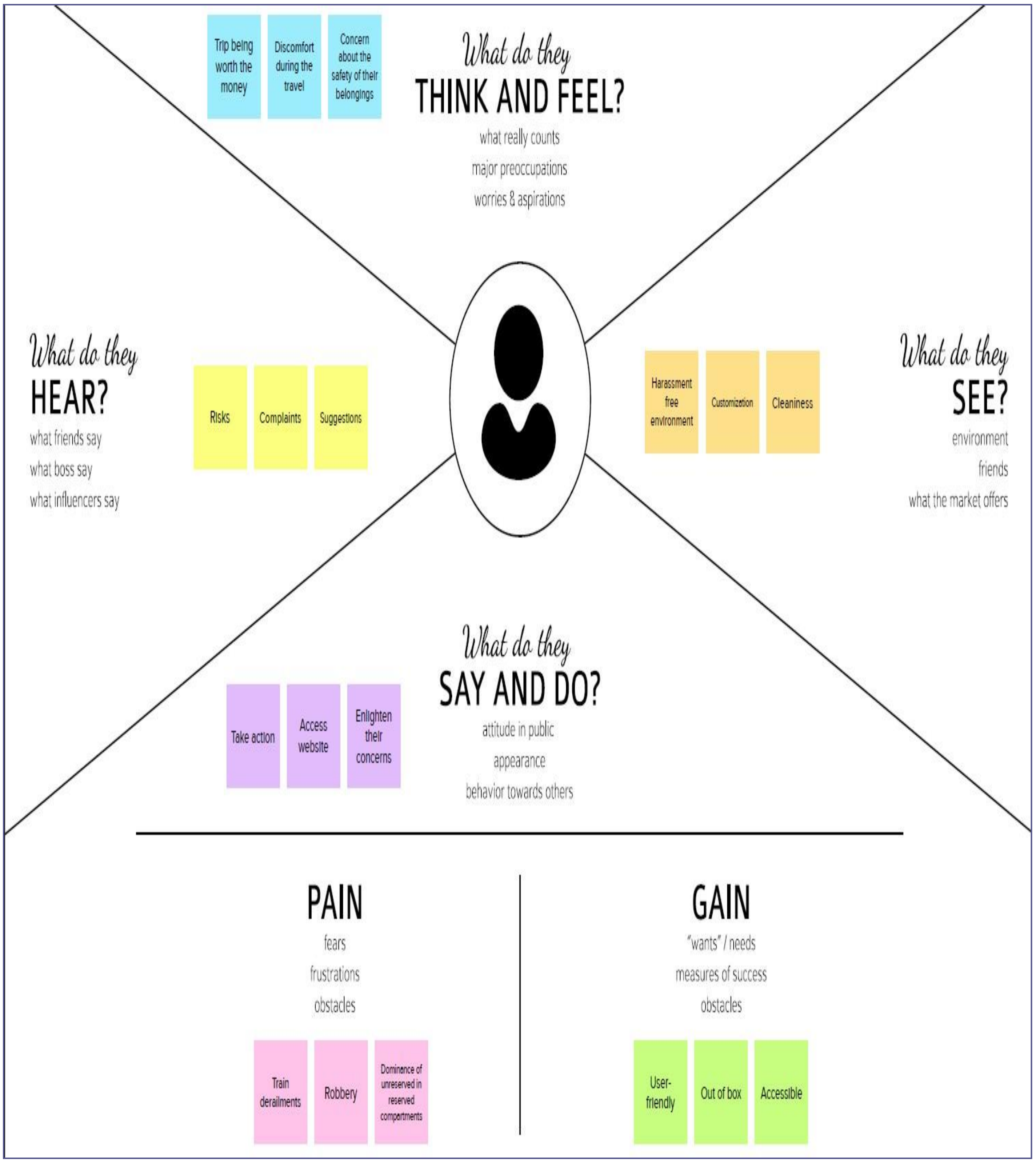
S.NO	TITLE	AUTHOR	YEAR	KEY TECHNOLOGY
1	A REVIEW ON SECURITY AS A SAFETY ISSUE IN RAIL COMMUNICATION AT INFORMATIONSECURITY RESEARCH CENTRE QUEENSLAND UNIVERSITY OF TECHNOLOGY.	J.SMITH, S.RUSSELL AND M.LOOI	2003	Systems whose failure can lead to the damage of property or the environment, or loss of human life are regarded as safety-critical systems. It is no longer adequate to build safety-critical systems based on the control of errors and failures alone.
2	"A SECURE RAILWAY CROSSING SYSTEM USING IOT",INTERNATIONAL CONFERENCE ON ELECTRONICS.	E.AMARNATH REDDY,I.KAVATI, K.SRINIVAS RAO AND G.KIRAN KUMAR	2017	communication and aerospace technology iceca
3	"SAFEGUARD OF RAILWAY CROSSING USING IOT", JOURNAL OF TELECOMMUNICATIONS SYSTEM & MANAGEMENT.	B.KUMAR REDDY,S.KUMAR REDDY,R.REDDY AND NAVYA	2018	The main prototype of this paper is to develop an application based on Internet of Things. In the present day world, railway gates at the crossings were monitored and operated manually. The master of the station gets the information about the arrival
4	RAILROAD GRADE CROSSING MONITORING SYSTEM	E.GOOLSBY,M.J.VICKICH,A.P.VOIGT	2003	In North America, highway-railway grade crossings can lead to significant travel delays for emergency responders trying to reach an incident. Grade separation cannot be justified for most grade crossings, but a grade crossing monitoring system (GCMS) can detect a blockage and communicate the information to local emergency dispatchers in real-time.

2.3 Problem Statement Definition

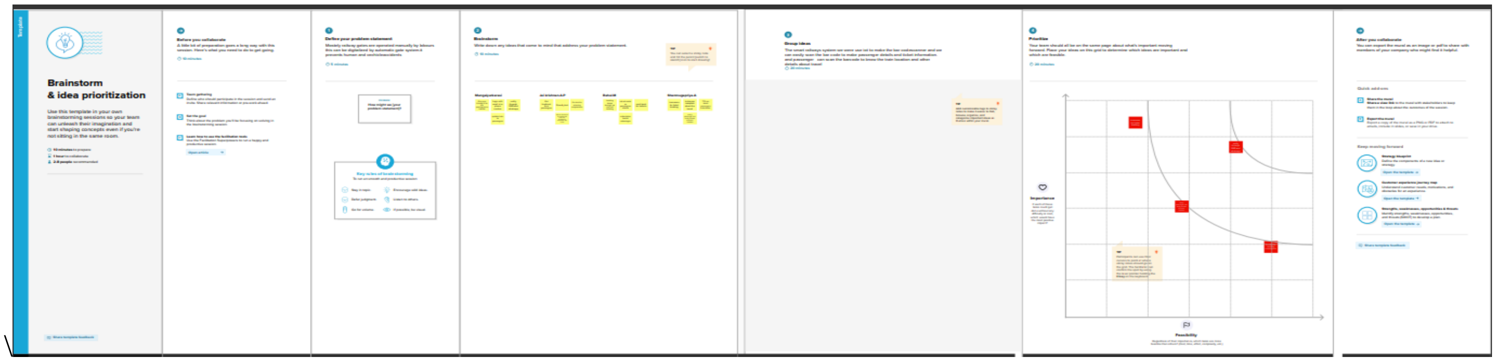
Smart Solutions for railways are designed to reduce the work load of the user and the use of paper.In current system there are many disadvantages which are to be rectified. The main thing which comes under is allocation of lower berths. Even for senior citizens, medically ill and pregnant ladies. during verification there could possibilities for fake identifications also. So there could possibility of unauthenticated travel by stranger also. More over the main disadvantage is about payment for waiting list passengers and un travelled passengers. They are not given any refund and those un travelled seats were sold out for the officers profit. Even in verification there is a lot’s of quantity of paper is used.

3. **IDEATION & PROPOSED SOLUTION**

3.1 Empathy Map Canvas



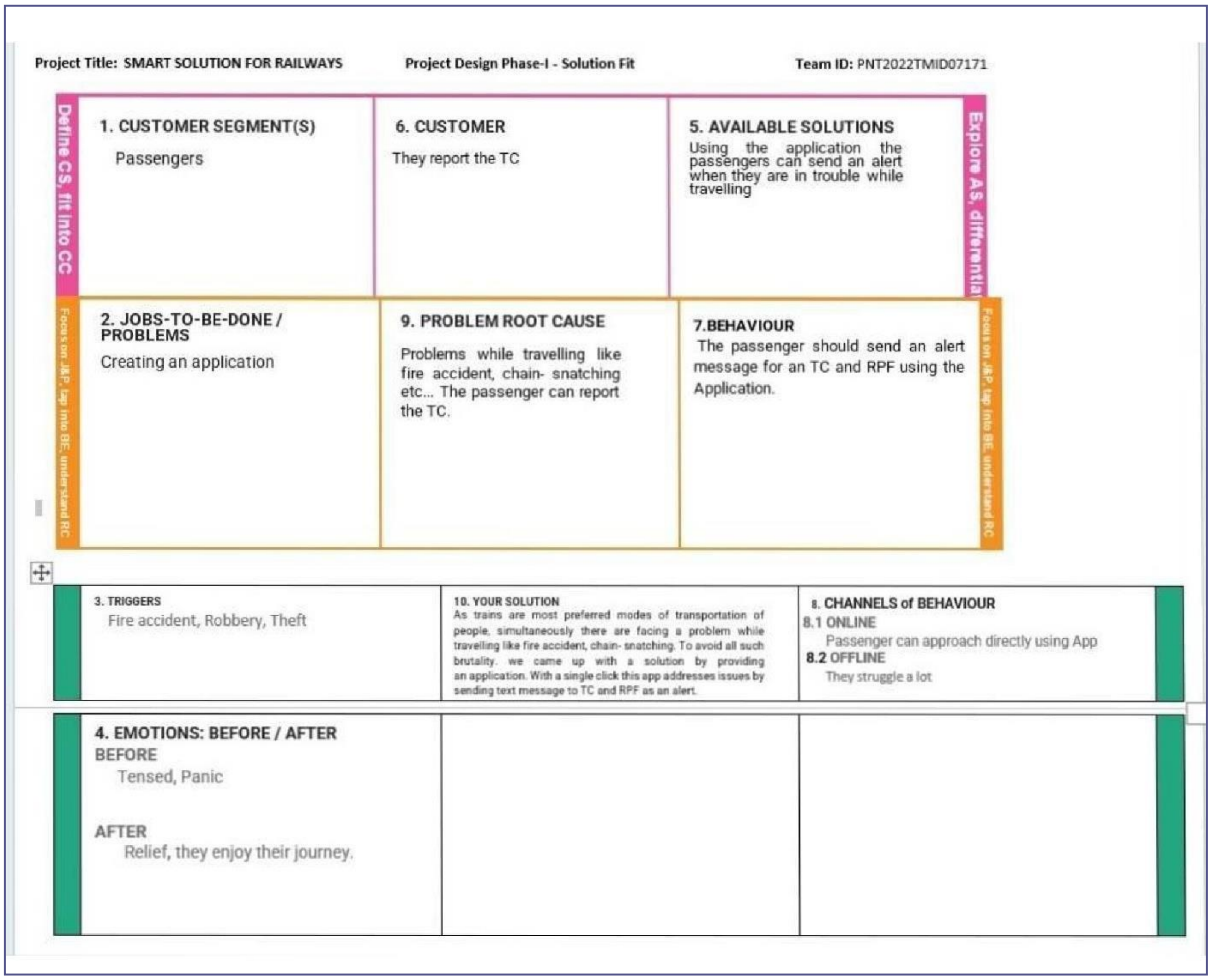
3.2 Ideation & Brainstorming



3.3 Proposed Solution

- For booking tickets for multiple passengers, It is necessary to enter have their Aadhar number for booking ticket.
- While in case of verification time, QR code should be verified for all the passengers who boarded in the train.
- If the passenger has a confirmed ticket then it will be verify, Otherwise it will check in the waiting list.
- For waiting list, not authentication means it will go refund if not no refund will be provided. For verification we are going to use a specifically designed mobile application .
- This application is accessed by using an external fingerprint sensor or with an inbuild sensor. each official will have individual login credentials so, by this itself we can identify every thing.
- Untravelled seats are automatically allocated for boarded waiting list passengers. More over with is application. Lower seats preference will be adjusted by the QR code and sensor citizenship claim also.

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

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 J&P, tap into BE, understand RC

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.

Focus on J&P, tap into BE, understand RC

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 in any website.
FR-2	User Confirmation	Conformation notification OTP will send through email or other message.
FR-3	User QR code generation	QR code is generated after the confirmation.
FR-4	GPS tracking	Passenger can easily find the location through GPS tracker.

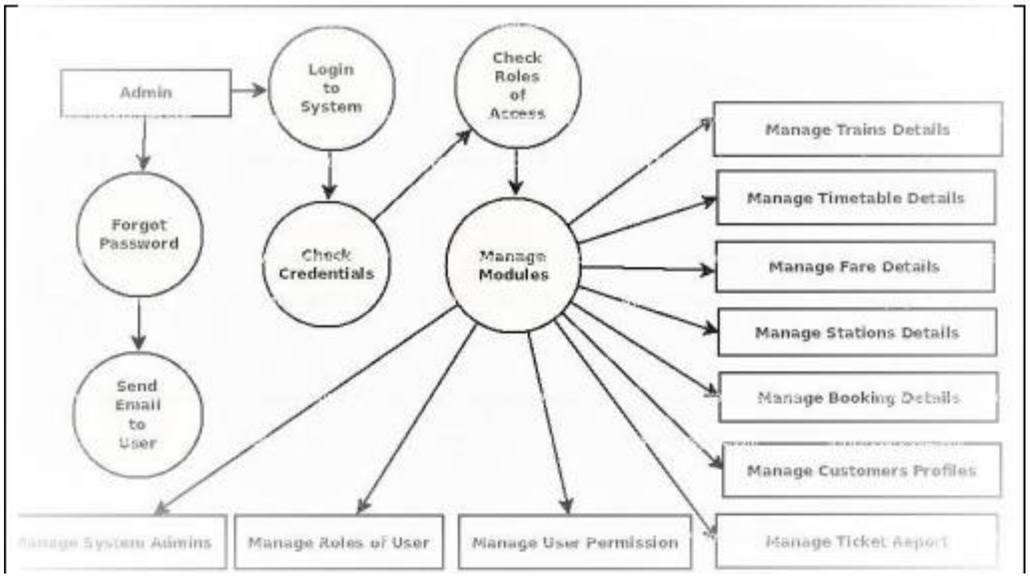
4.2 Non-Functional requirement

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	Easy to know the availability of seats and location.
NFR-2	**Security**	User information will be secured and safely stored in the database.
NFR-3	**Reliability**	Reliable to the user without any failure as it is not fixed to limited number of users.
NFR-4	**Performance**	All devices are user friendly.
NFR-5	**Availability**	User can access the availability anytime, anywhere.
NFR-6	**Scalability**	Support the user with their needs in reserving tickets and location tracking.

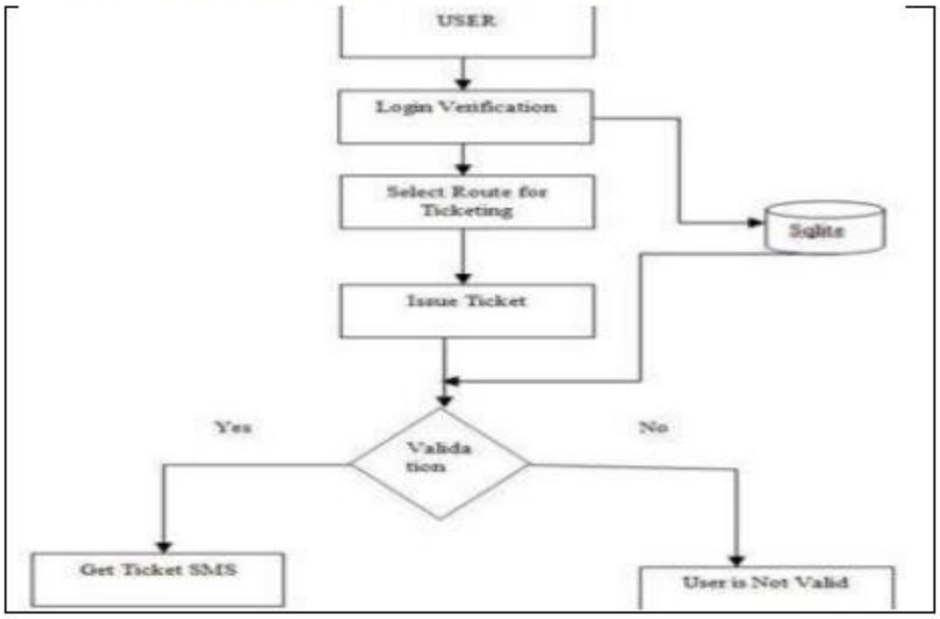
5. PROJECT DESIGN

5.1 Data Flow Diagrams

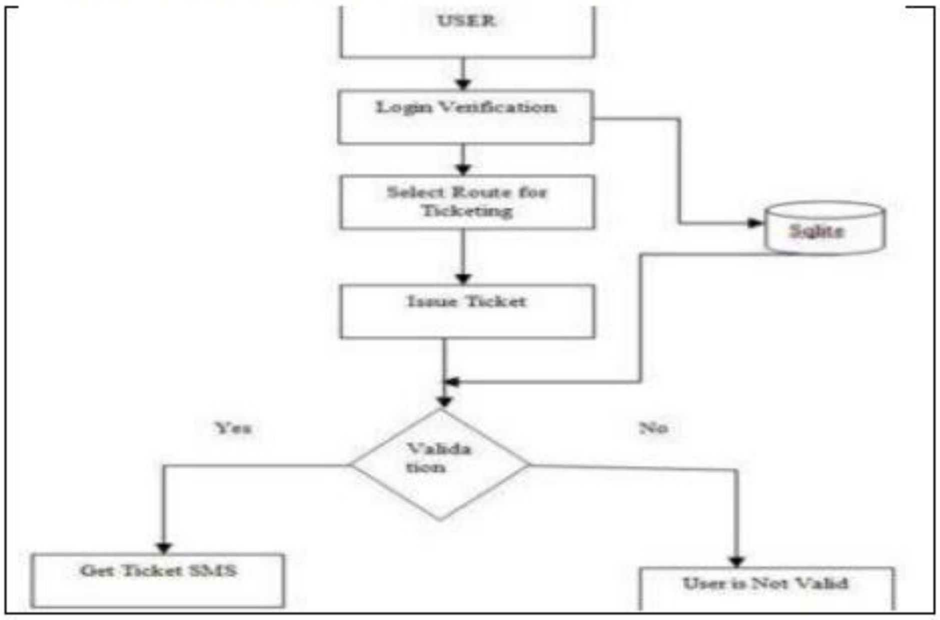
Data flow diagram for the managing system is shown below.



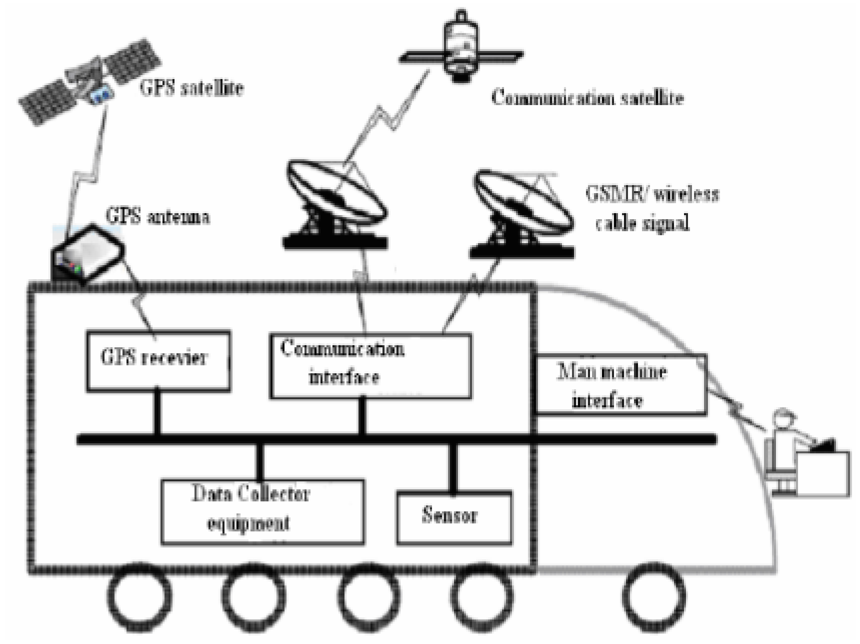
DATA FLOW FOR VALIDATION PROCESS:



DATA FLOW FOR VALIDATION PROCESS:



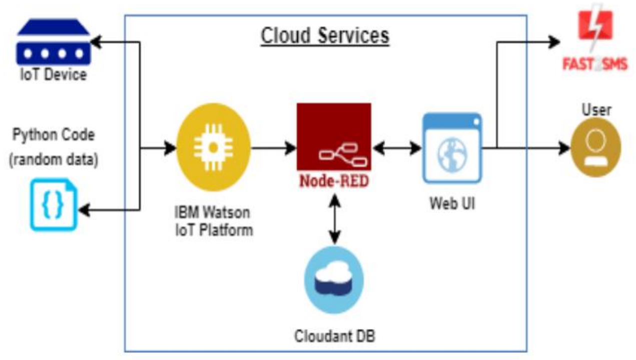
DATA FLOW DIAGRAM FOR GPS TRACKING:



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, app-development, IBM cloud platform to store passenger data.

SOLUTION ARCHITECTURE:



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 registered for the application	I can receive confirmation email & click confirm.	High	Sprint-1
	Application registation	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, problemstatement
STEP 3	List required objects needed
STEP 4	Create a code and run it
STEP 5	Make a prototype
STEP 6	Test with the created code and check the designedprototype is working
STEP 7	Solution for the problem is found

6.2 Reports from JIRA

SPRINT 1

```
importwiotp.sdk.device
importtime
importrandom
myConfig={
"identity":{
"orgId":"gagtey",
"typeId":"GPS",
"deviceId":"12345"
},
"auth":{
"token":"12345678"
}
}
defmyCommandcallback(cmd):
print("messagereceivedfromIBMIOTPlatform:%s"%cmd.data['command'])
m=cmd.data['command']
client=wiotp.sdk.device.deviceclient(config=myConfig,logHandlers=None)
client.connect()
defpub(data):
client.publishEvent(eventId="status",msgFormat="json",data=mydata,qos=0,
print("publishedatasuccessfully:%s",mydata)
whileTrue:
mydata={'name':'Train1','lat':17.6387448,'lon':78.4754336)
pub(myData)
time.sleep(3)
#mydata={'name':'Train2','lat':17.6387448,'lon':78.4754336)
#pub(myData)
#time.sleep(3)
mydata={'name':'Train1','lat':17.6341908,'lon':78.4744722)
```

SPRINT 2

```
importtime
importrandom
myConfig={
"identity":{
"orgId":"gagtey",
"typeId":"GPS",
"deviceId":"12345"
},
"auth":{
"token":"12345678"
}
}
defmyCommandcallback(cmd):
print("messagereceivedfromIBMIOTPlatform:%s"%cmd.data['command'])
m=cmd.data['command']
client=wiotp.sdk.device.deviceclient(config=myConfig,logHandlers=None)
client.connect()
defpub(data):
client.publishEvent(eventId="status",msgFormat="json",data=mydata,qos=0,
print("publishedatasuccessfully:%s",mydata)
whileTrue:
mydata={'name':'Train1','lat':17.6387448,'lon':78.4754336)
pub(myData)
time.sleep(3)
#mydata={'name':'Train2','lat':17.6387448,'lon':78.4754336)
#pub(myData)
#time.sleep(3)
mydata={'name':'Train1','lat':17.6341908,'lon':78.4744722)
pub(myData)
```

SPRINT 3

```
importwiotp.sdk.device
importtime
importrandom
```

```
myConfig={
"identity":{
"orgId":"gagtey",
"typeId":"GPS",
"deviceId":"12345"
},
"auth":{
"token":"12345678"
}
}
defmyCommandcallback(cmd):
print("messagereceivedfromIBMIOTPlatform:%s"%cmd.data['command'])
m=cmd.data['command']
client=wiotp.sdk.device.deviceclient(config=myConfig,logHandlers=None)
client.connect()
defpub(data):
client.publishEvent(eventId="status",msgFormat="json",data=mydata,qos=0,
print("publishedatasuccessfully:%s",mydata)
whileTrue:
mydata={'name':'Train1','lat':17.6387448,'lon':78.4754336)
pub(myData)
time.sleep(3)
#mydata={'name':'Train2','lat':17.6387448,'lon':78.4754336)
#pub(myData)
#time.sleep(3)
```

SPRINT 4

```
importwiotp.sdk.device
importtime
importrandom
myConfig={
"identity":{
"orgId":"gagtey",
"typeId":"GPS",
"deviceId":"12345"
},
"auth":{
"token":"12345678"
}
}
defmyCommandcallback(cmd):
print("messagereceivedfromIBMIOTPlatform:%s"%cmd.data['command'])
m=cmd.data['command']
client=wiotp.sdk.device.deviceclient(config=myConfig,logHandlers=None)
client.connect()
defpub(data):
client.publishEvent(eventId="status",msgFormat="json",data=mydata,qos=0,
print("publishedatasuccessfully:%s",mydata)
whileTrue:
mydata={'name':'Train1','lat':17.6387448,'lon':78.4754336)
pub(myData)
time.sleep(3)
#mydata={'name':'Train2','lat':17.6387448,'lon':78.4754336)
#pub(myData)
#time.sleep(3)
```

7. CODING & SOLUTIONING

7.1 Feature 1

- IoT device
- IBM Watson Platform
- Node red
- Cloudant DB
- Web UI

- MIT App Inventor
- Python code

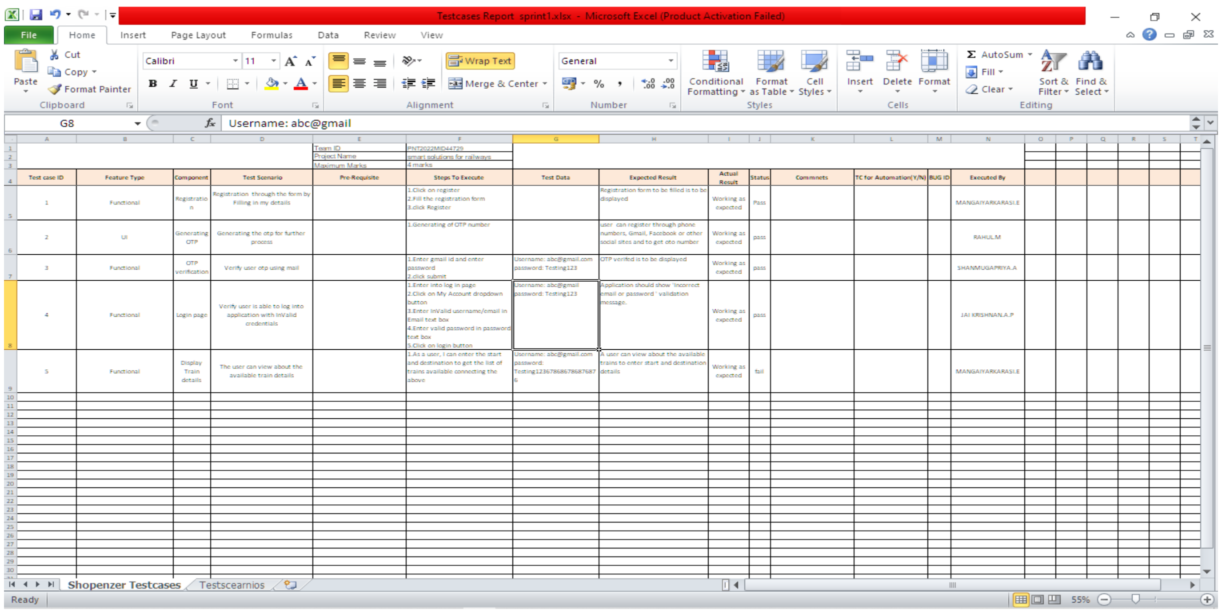
7.2 Feature 2

- Login
- Verification
- Ticket Booking
- Adding rating

8. TESTING AND RESULTS

8.1 Test Case

Test case 1



Testcases Report_sprint1.xlsx - Microsoft Excel (Product Activation Failed)

G8 — Username: abc@gmail

Team ID	PNT2022MID44729
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				MANGAIYARKARASI.E
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				RAHUL.M
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				SHANMUGAPRIYA.A
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				JAI KRISHNAN.A.P
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: Testing12367868678687687 6	A user can view about the available trains to enter start and destination details	Working as expected	fail				MANGAIYARKARASI.E

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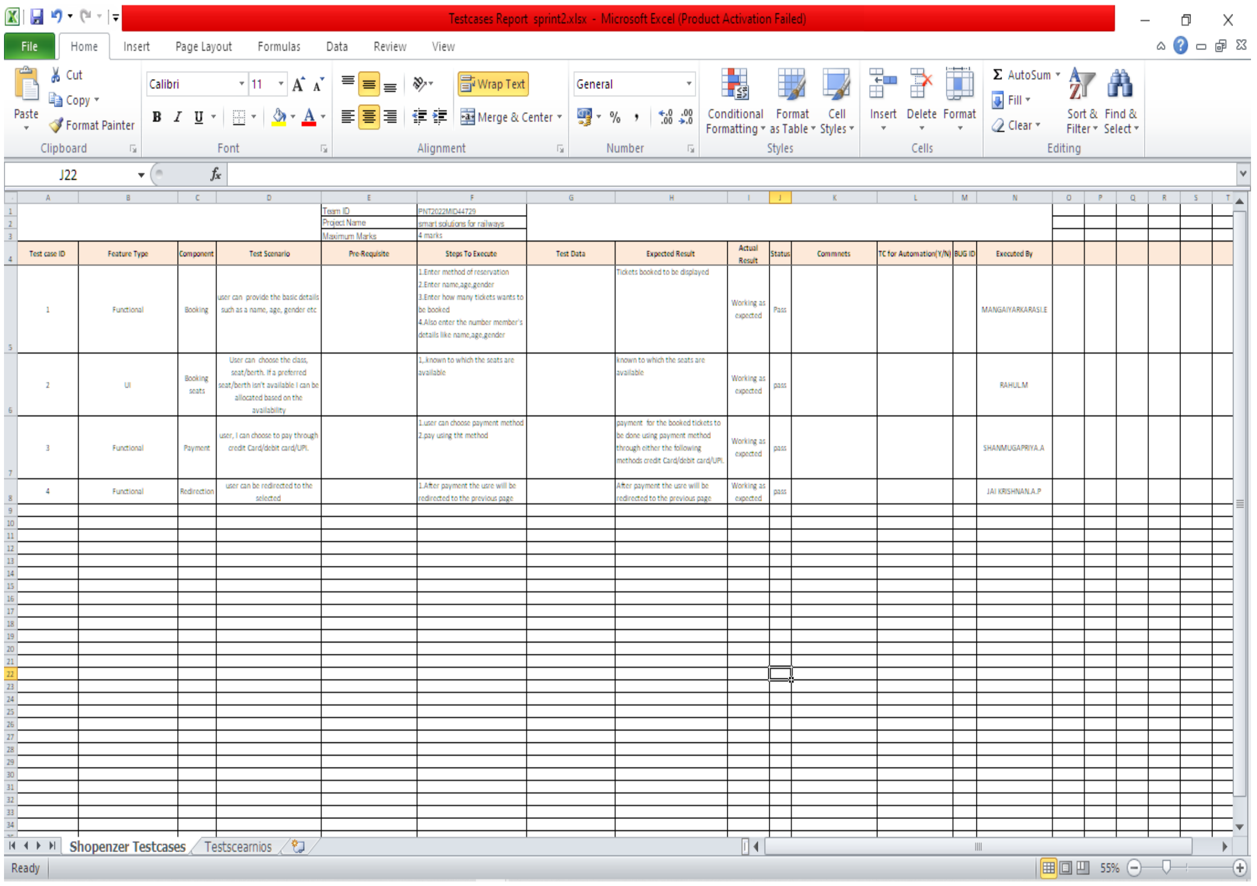
Test case 2



Testcases Report_sprint2.xlsx - Microsoft Excel (Product Activation Failed)

J22

Team ID	PNT2022MID44729
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				MANGAIYARKARASI.E
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				RAHUL.M
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				SHANMUGAPRIYA.A
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				JAI KRISHNAN.A.P

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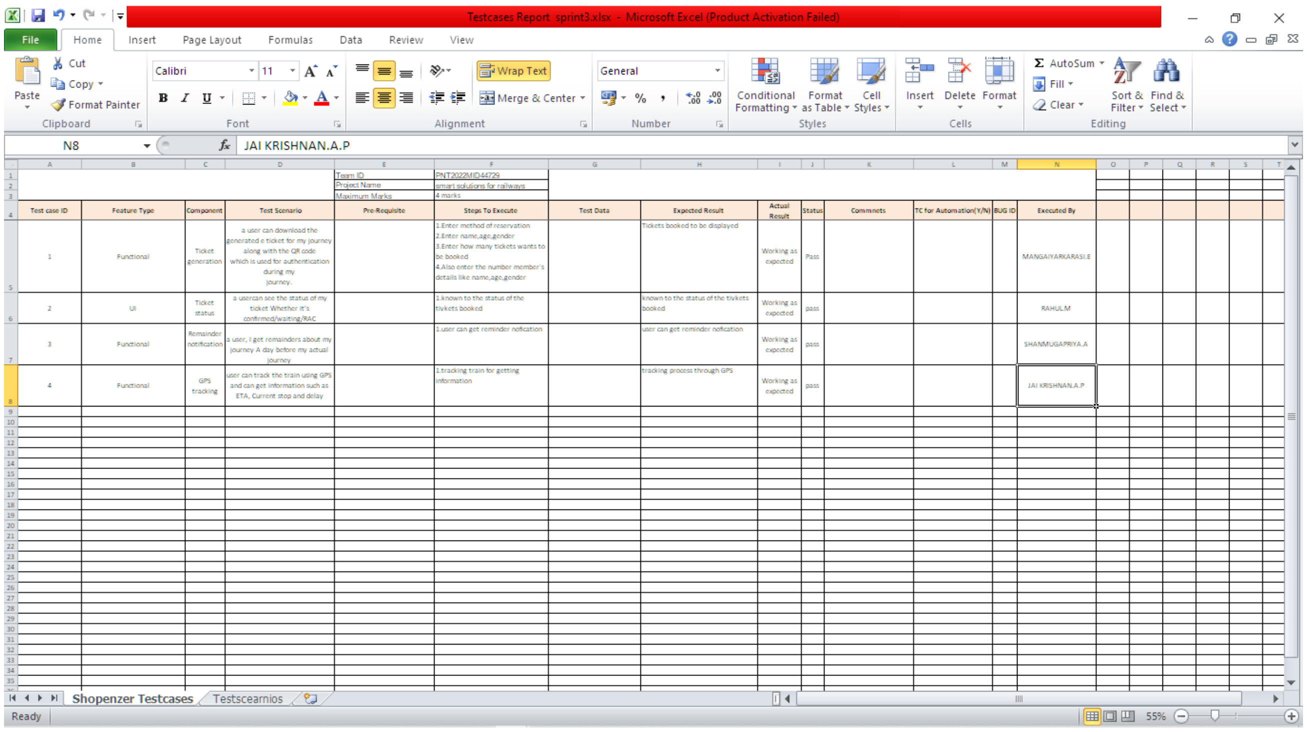
Test case 3



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N8 | JAI KRISHNAN.A.P

Team ID	PNT2022MID44729
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				MANGAIYARKARASI.E
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				RAHUL.M
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				SHANMUGAPRIYA.A
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				JAI KRISHNAN.A.P

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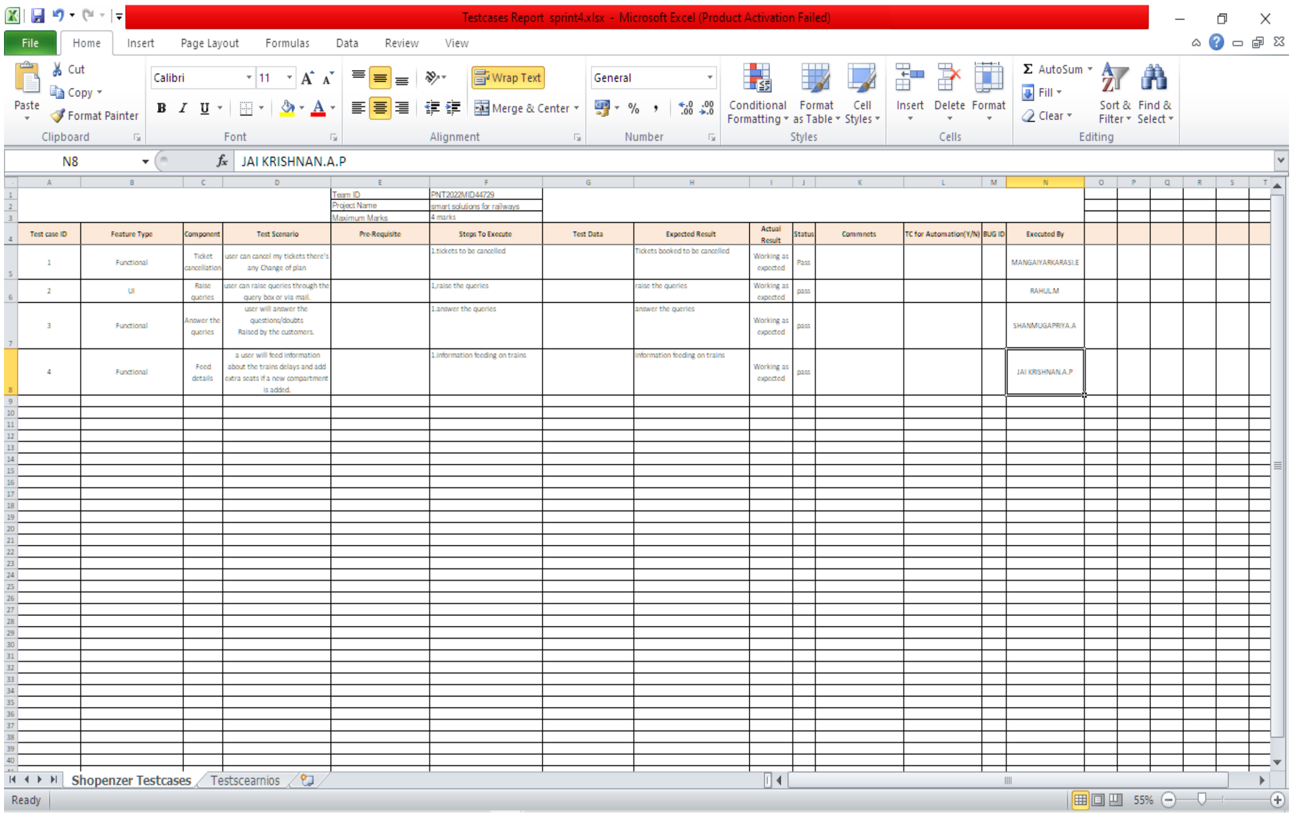
Ready 55%

Test case 4



Testcases Report sprint4.xlsx - Microsoft Excel (Product Activation Failed)

N8 | JAI KRISHNAN.A.P

Team ID	PNT2022MID44729
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				MANGAIYARKARASI.E
2	UI	Raise queries	user can raise queries through the query box or via mail.		1,raise the queries		raise the queries	Working as expected	pass				RAHUL.M
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				SHANMUGAPRIYA.A
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				JAI KRISHNAN.A.P

Shopenzer Testcases | Testscearnios

Ready 55%

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 user-friendly websites, mobile applications for real-time information about vehicles in motion, and e-ticket 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.railyatri.in/booking/trains-between-stations?from_code="+from_Station_code+"&from_name="+from_Station_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=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.railyatri.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,source,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 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
```

OTP GENERATION

```
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")
```

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-19581-1659700929