PROJECT DOCUMENTATION

PROJECT NAME : **SMART SOLUTIONS FOR RAILWAYS**

Team ID :**PNT2022TMID06289**

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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

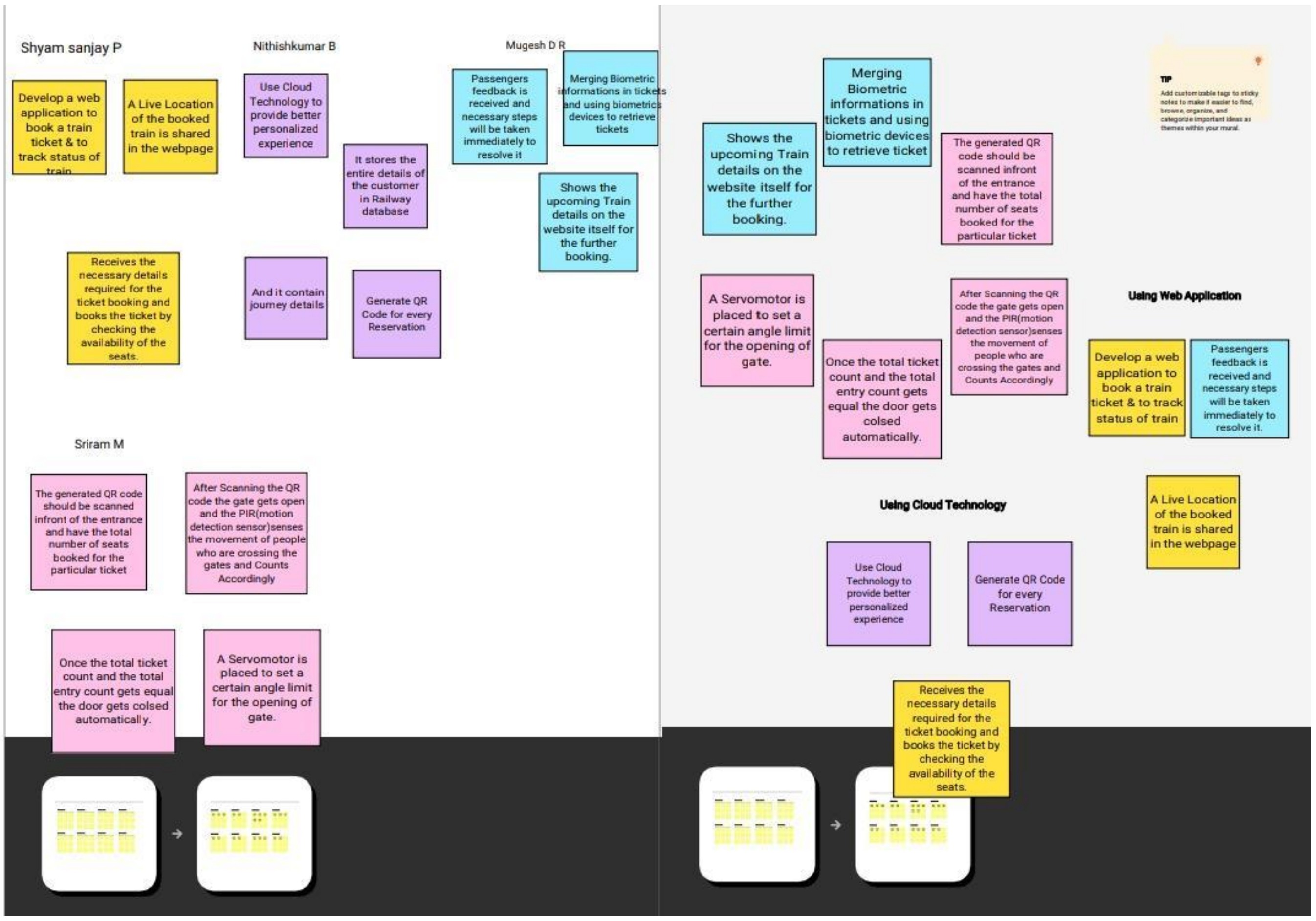
S.NO	TITLE	AUTHOR	YEAR	KEY TECHNOLOGY
1	Main geotechnical pr railways and roads in kriolitozone and their solutions.	Kondratiev, Valentin G	2017	Main problems in railways
2	Construction and Building Materials	Sañudo, Roberto, Marina Miranda, Carlos García, and David Garc Sanchez	2019	Drainage in railways
3	Problems of Indian Railways	Benjamin	2021	Common problems in I railways
4	A comparative study of Indian and worldwide railways.	Sharma, Su 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.

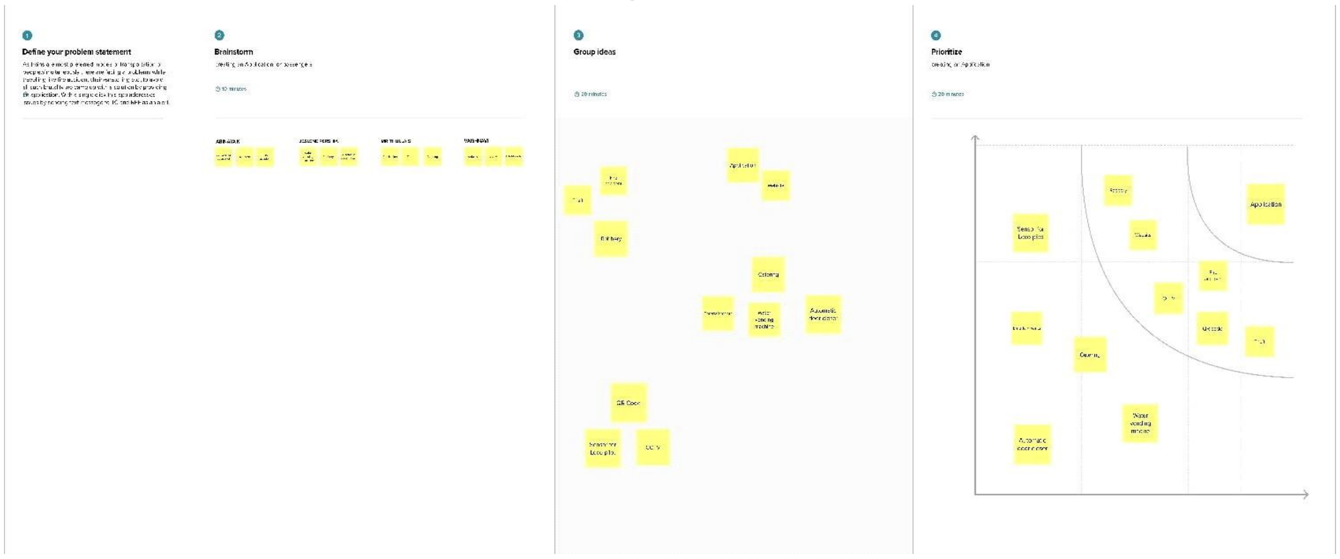
3. IDEATION & PROPOSED SOLUTION

3.1 Empathy Map Canvas



Shyam sanjay P
Develop a web application to book a train ticket & to track status of train
A Live Location of the booked train is shared in the webpage
Receives the necessary details required for the ticket booking and books the ticket by checking the availability of the seats.
Nithishkumar B
Use Cloud Technology to provide better personalized experience
It stores the entire details of the customer in Railway database
And it contain journey details
Generate QR Code for every Reservation
Mugesh D R
Passengers feedback is received and necessary steps will be taken immediately to resolve it
Merging Biometric informations in tickets and using biometric devices to retrieve tickets
Shows the upcoming Train details on the website itself for the further booking.
Sriram M
The generated QR code should be scanned infront of the entrance and have the total number of seats booked for the particular ticket
After Scanning the QR code the gate gets open and the PIR(motion detection sensor)senses the movement of people who are crossing the gates and Counts Accordingly
Once the total ticket count and the total entry count gets equal the door gets colsed automatically.
A Servomotor is placed to set a certain angle limit for the opening of gate.
Shows the upcoming Train details on the website itself for the further booking.
Merging Biometric informations in tickets and using biometric devices to retrieve ticket
The generated QR code should be scanned infront of the entrance and have the total number of seats booked for the particular ticket
TIP
Add customizable tags to sticky notes to make it easier to find, browse, organize, and categorize important ideas as themes within your mural.
A Servomotor is placed to set a certain angle limit for the opening of gate.
Once the total ticket count and the total entry count gets equal the door gets colsed automatically.
After Scanning the QR code the gate gets open and the PIR(motion detection sensor)senses the movement of people who are crossing the gates and Counts Accordingly
Using Web Application
Develop a web application to book a train ticket & to track status of train
Passengers feedback is received and necessary steps will be taken immediately to resolve it.
A Live Location of the booked train is shared in the webpage
Using Cloud Technology
Use Cloud Technology to provide better personalized experience
Generate QR Code for every Reservation
Receives the necessary details required for the ticket booking and books the ticket by checking the availability of the seats.

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 fell 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.

4. REQUIREMENT ANALYSIS

4.1 Functional requirement

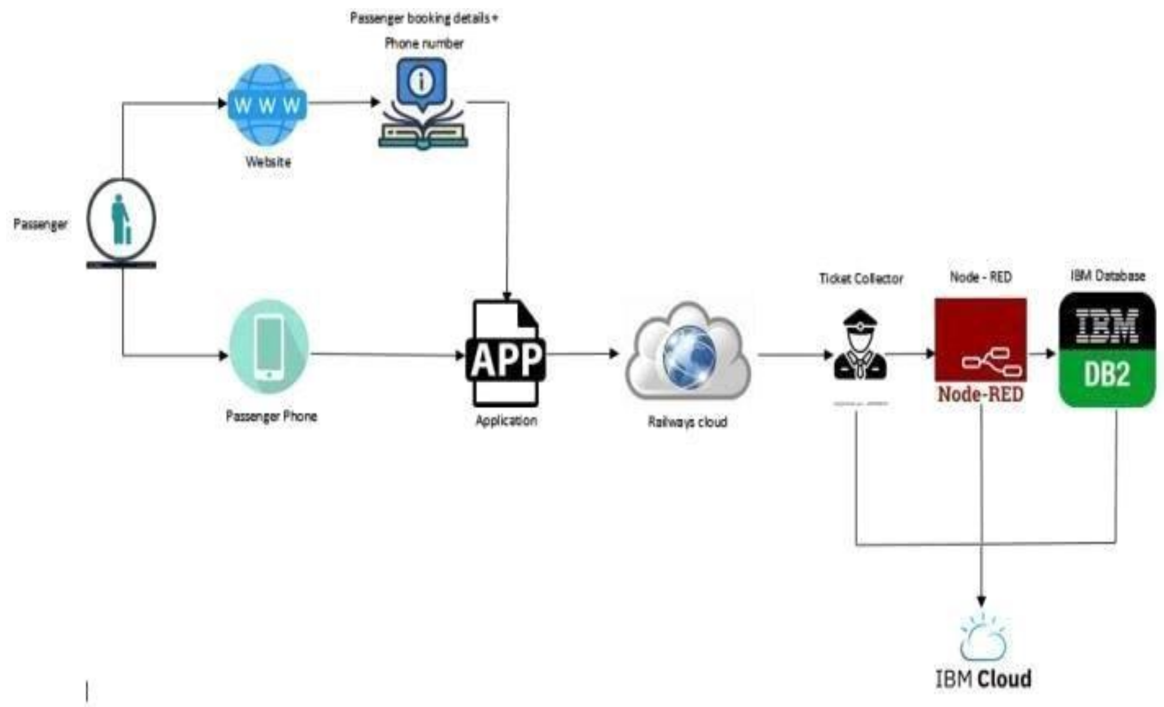
FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Online Registration through Gmail
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Application installation	The application is installed through the given link
FR-4	User access	Access the app requirements

4.2 Non-Functional requirement

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	• 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, app-development, 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 registered for the application	I can receive confirmation email & click confirm.	High	Sprint-1
	Application registration	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

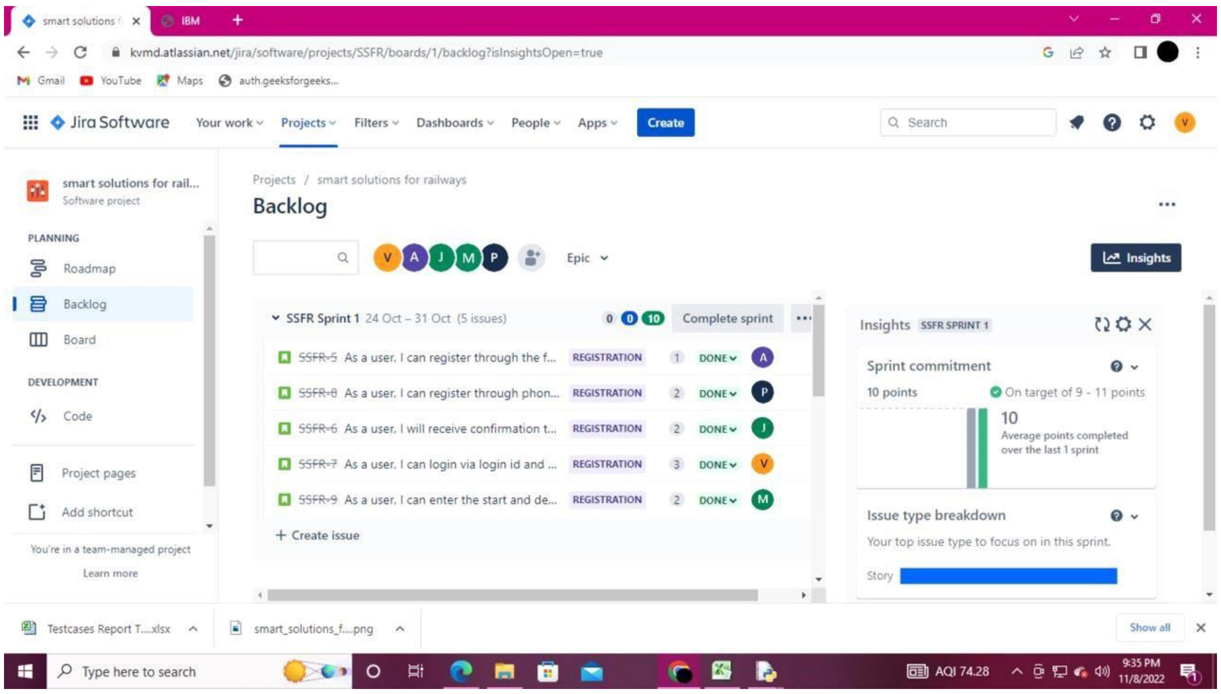
6. PROJECT PLANNING & SCHEDULING

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
STEP 5	Make a prototype
STEP 6	Test with the created code and check the designed prototype is working
STEP 7	Solution for the problem is found

6.1.Reports from

JIRA SPRINT 1



Projects / smart solutions for railways

Backlog

SSFR Sprint 1 24 Oct – 31 Oct (5 issues) 0 0 10

~~SSFR-5~~	As a user, I can register through the f...	REGISTRATION	1	DONE	A
~~SSFR-8~~	As a user, I can register through phon...	REGISTRATION	2	DONE	P
~~SSFR-6~~	As a user, I will receive confirmation t...	REGISTRATION	2	DONE	J
~~SSFR-7~~	As a user, I can login via login id and ...	REGISTRATION	3	DONE	V
~~SSFR-9~~	As a user, I can enter the start and de...	REGISTRATION	2	DONE	M

Insights SSFR SPRINT 1

Sprint commitment

10 points On target of 9 - 11 points

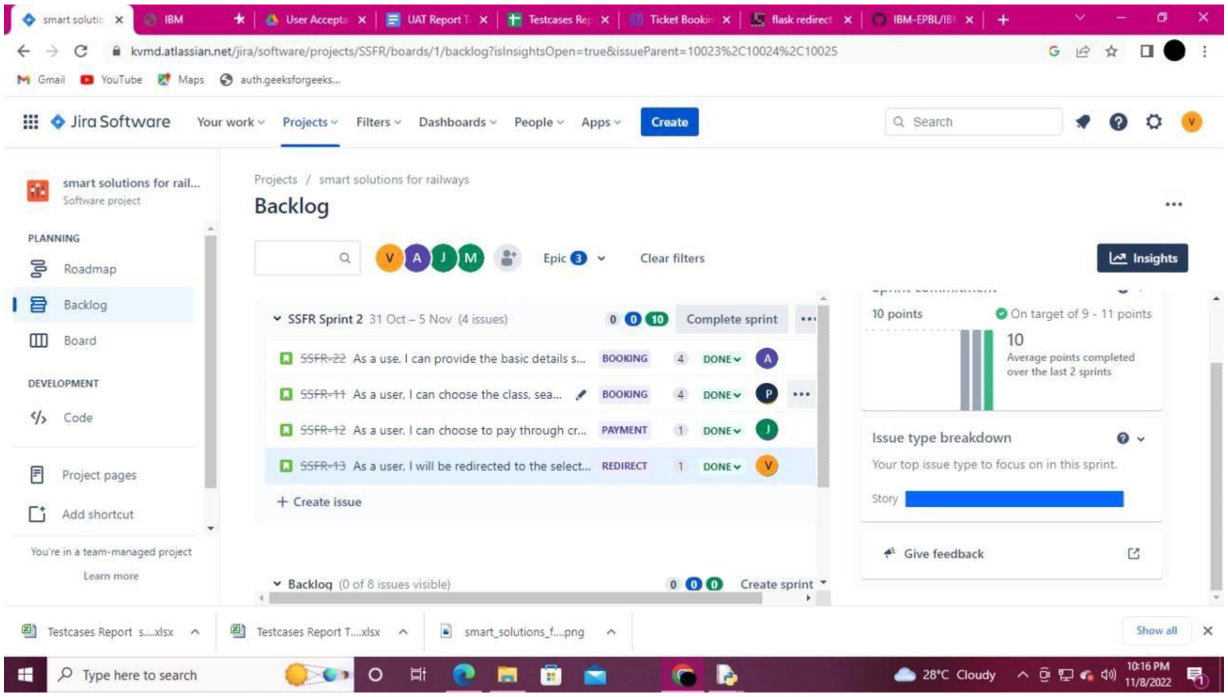
10 Average points completed over the last 1 sprint

Issue type breakdown

Your top issue type to focus on in this sprint.

Story

SPRINT 2



kvmd.atlassian.net/jira/software/projects/SSFR/boards/1/backlog?isInsightsOpen=true&issueParent=10023%2C10024%2C10025

Projects / smart solutions for railways

Backlog

SSFR Sprint 2 31 Oct – 5 Nov (4 issues) 0 0 10 Complete sprint

~~SSFR-22~~ As a use, I can provide the basic details s... BOOKING 4 DONE

~~SSFR-11~~ As a user, I can choose the class, sea... BOOKING 4 DONE

~~SSFR-12~~ As a user, I can choose to pay through cr... PAYMENT 1 DONE

~~SSFR-13~~ As a user, I will be redirected to the select... REDIRECT 1 DONE

+ Create issue

Backlog (0 of 8 issues visible) 0 0 0 Create sprint

10 points — On target of 9 - 11 points

10 Average points completed over the last 2 sprints

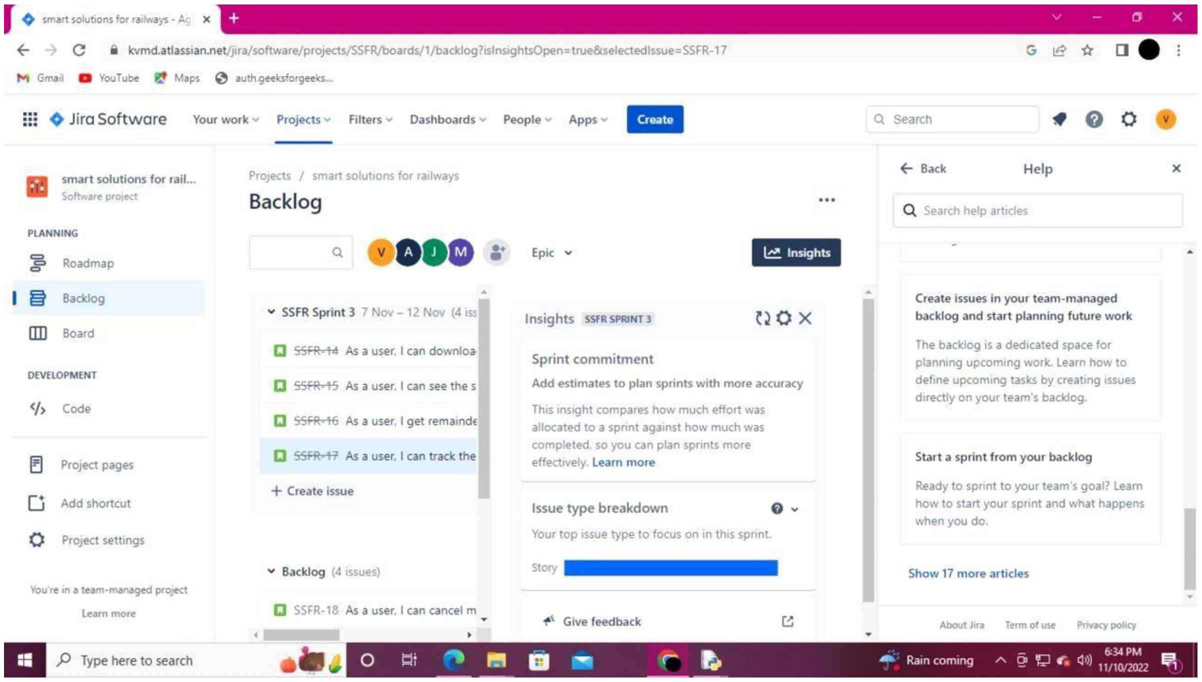
Issue type breakdown

Your top issue type to focus on in this sprint.

Story

Give feedback

SPRINT 3



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

Projects / smart solutions for railways

Backlog

SSFR Sprint 3 7 Nov – 12 Nov (4 iss

~~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

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

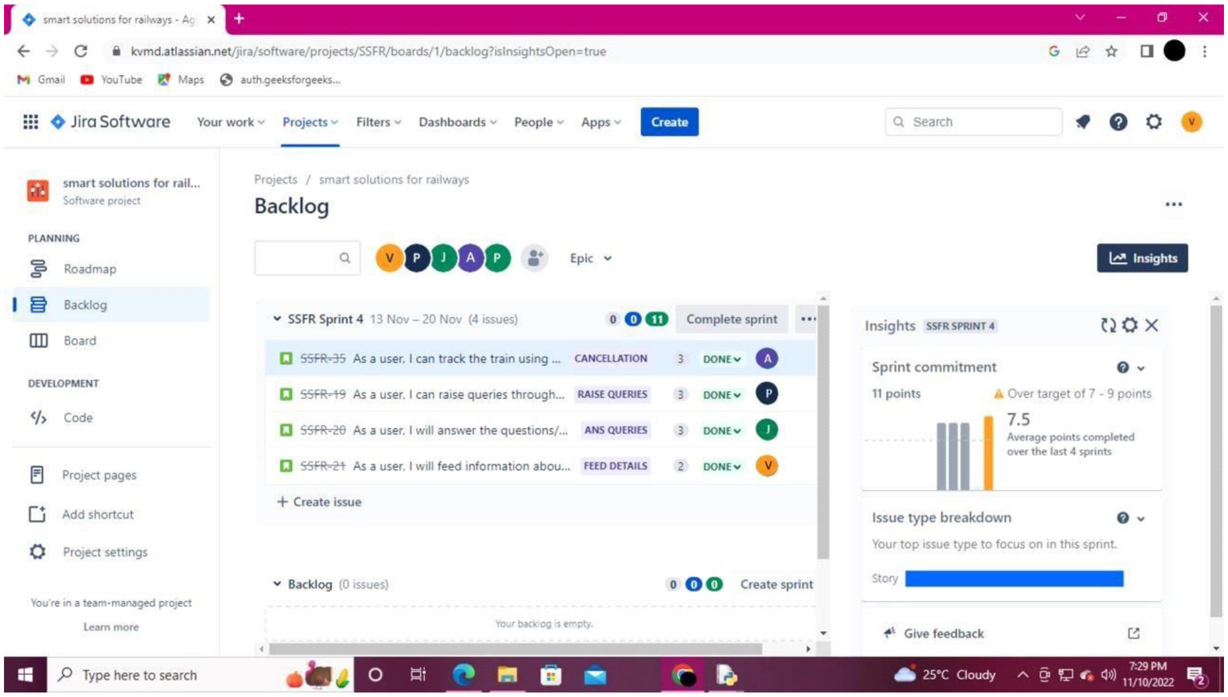
The backlog is a dedicated space for planning upcoming work. Learn how to define upcoming tasks by creating issues directly on your team's backlog.

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

SPRINT 4



Backlog

SSFR Sprint 4 13 Nov – 20 Nov (4 issues) 0 0 11

~~SSFR-35~~	As a user, I can track the train using ...	CANCELLATION	3	DONE	A
~~SSFR-19~~	As a user, I can raise queries through...	RAISE QUERIES	3	DONE	P
~~SSFR-20~~	As a user, I will answer the questions/...	ANS QUERIES	3	DONE	J
~~SSFR-21~~	As a user, I will feed information abou...	FEED DETAILS	2	DONE	V

Backlog (0 issues) 0 0 0

Your backlog is empty.

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

1. CODING & SOLUTIONING

1.1 Feature 1

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

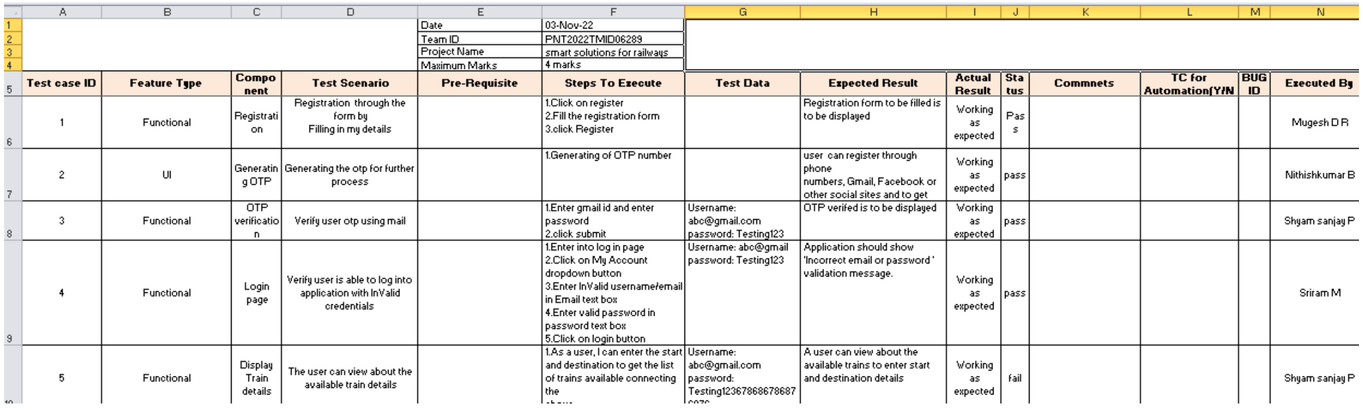
1.2 Feature 2

- Login
- Verification
- Ticket Booking
- Adding rating

2. TESTING AND RESULTS

2.1 Test Cases

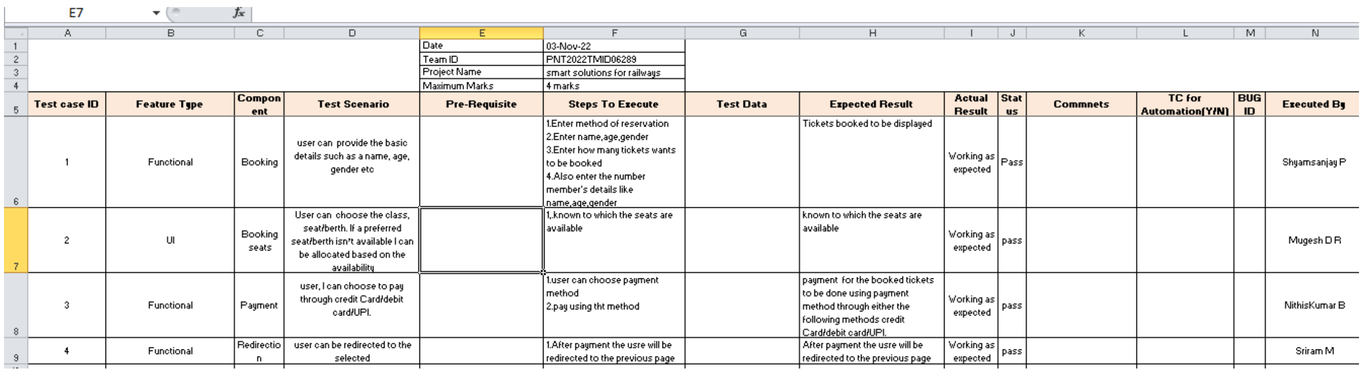
Test case 1



Date	03-Nov-22
Team ID	PNT2022TMID06289
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				Mugesh D R
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	Working as expected	pass				Nithishkumar B
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				Shyam sanjay P
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				Sriram M
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	Username: abc@gmail.com password: Testing12367868678687	A user can view about the available trains to enter start and destination details	Working as expected	fail				Shyam sanjay P

Test case 2

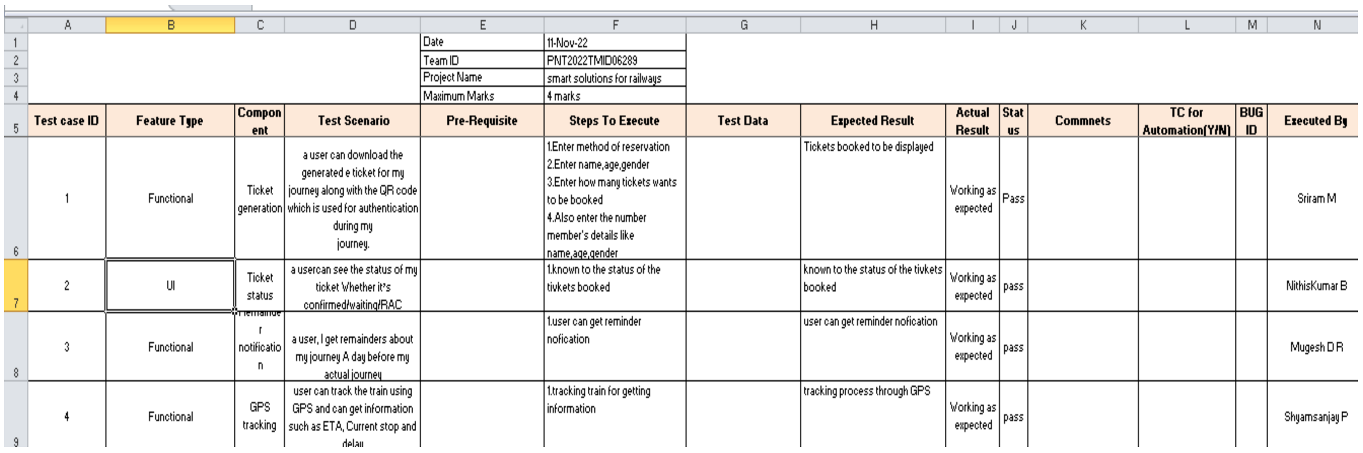


E7

Date	03-Nov-22
Team ID	PNT2022TMID06289
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				Shyamsanjay P
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				Mugesh D R
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				NithisKumar B
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				Sriram M

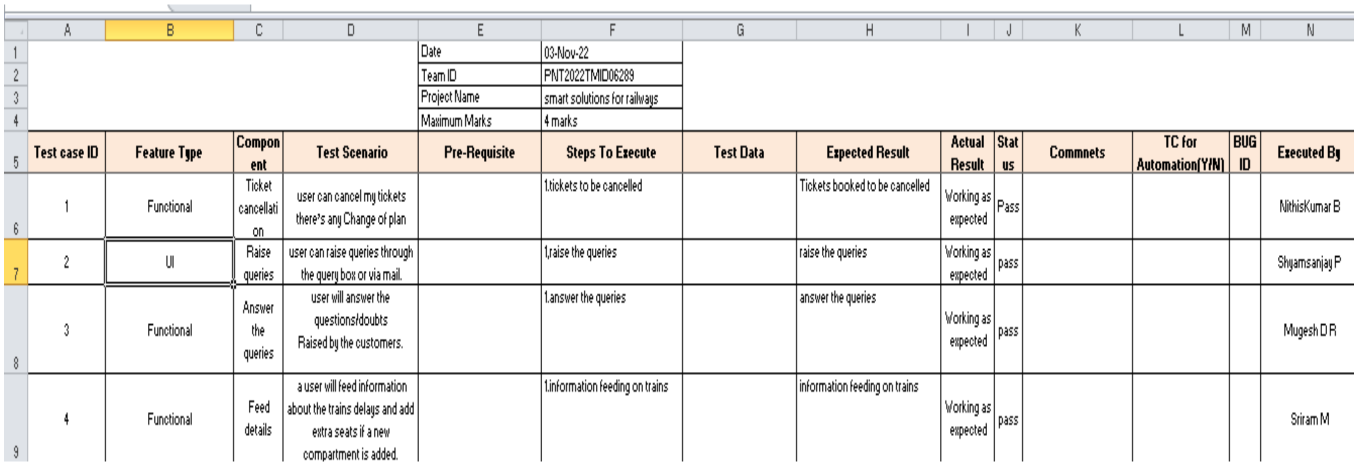
Test case 3



				Date	11-Nov-22
				Team ID	PNT2022TMID06289
				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				Sriram M
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				NithisKumar B
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				Mugesh D R
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				Shyamsanjay P

Test case 4



				Date	03-Nov-22
				Team ID	PNT2022TMID06289
				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				NithisKumar B
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				Shyamsanjay P
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				Mugesh D R
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				Sriram M

3. 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.

4. DISADVANTAGES

- Network issues may arise.

5. 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.

6. 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.

7. APPENDIX

7.1 Source Code

LOGIN

```
from tkinter import *
import sqlite3

root = Tk()
                    root.title("Python:
Simple Login
Application") width =
400 height = 280
screen_width =
root.winfo_screenwid
th() screen_height =
root.winfo_screenhei
ght() 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("pytho
ntut.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+&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.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")
```

7.2 GitHub

GitHub link:

https://github.com/IBM-EPBL/IBM-Project-758-1658320011