# <u>Project Report</u>

Project Name: **SMART SOLUTIONS FOR RAILWAYS**

Team ID: **PNT2022TMID51489**

Team: **Threase Sopra-TEAM LEAD**

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**Pemila**

**Velammal**

# 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

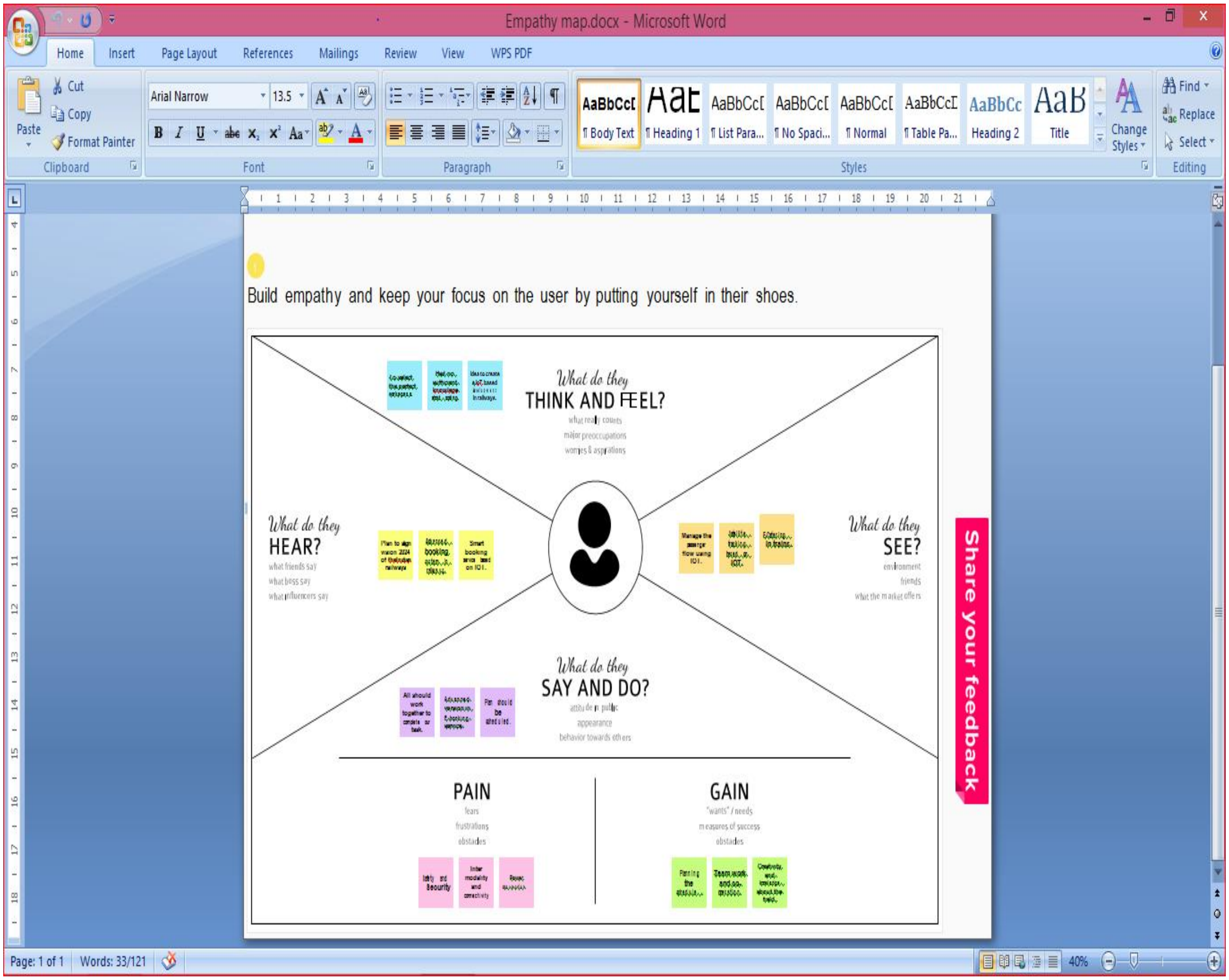
| S.NO | TITLE | AUTHOR | YEAR | KEY TECHNOLOGY |
|---|---|---|---|---|
| 1 | Main geotechnical problems of railways androads in kriolitozone and their solutions. | Kondratiev,Valentin G | 2017 | Main problems in railways |
| 2 | Construction and Building Materials | Sañudo, Roberto, Marina Miranda, 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 worldwiderailways. | Sharma, Sunil Kumar, and AnilKumar | 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

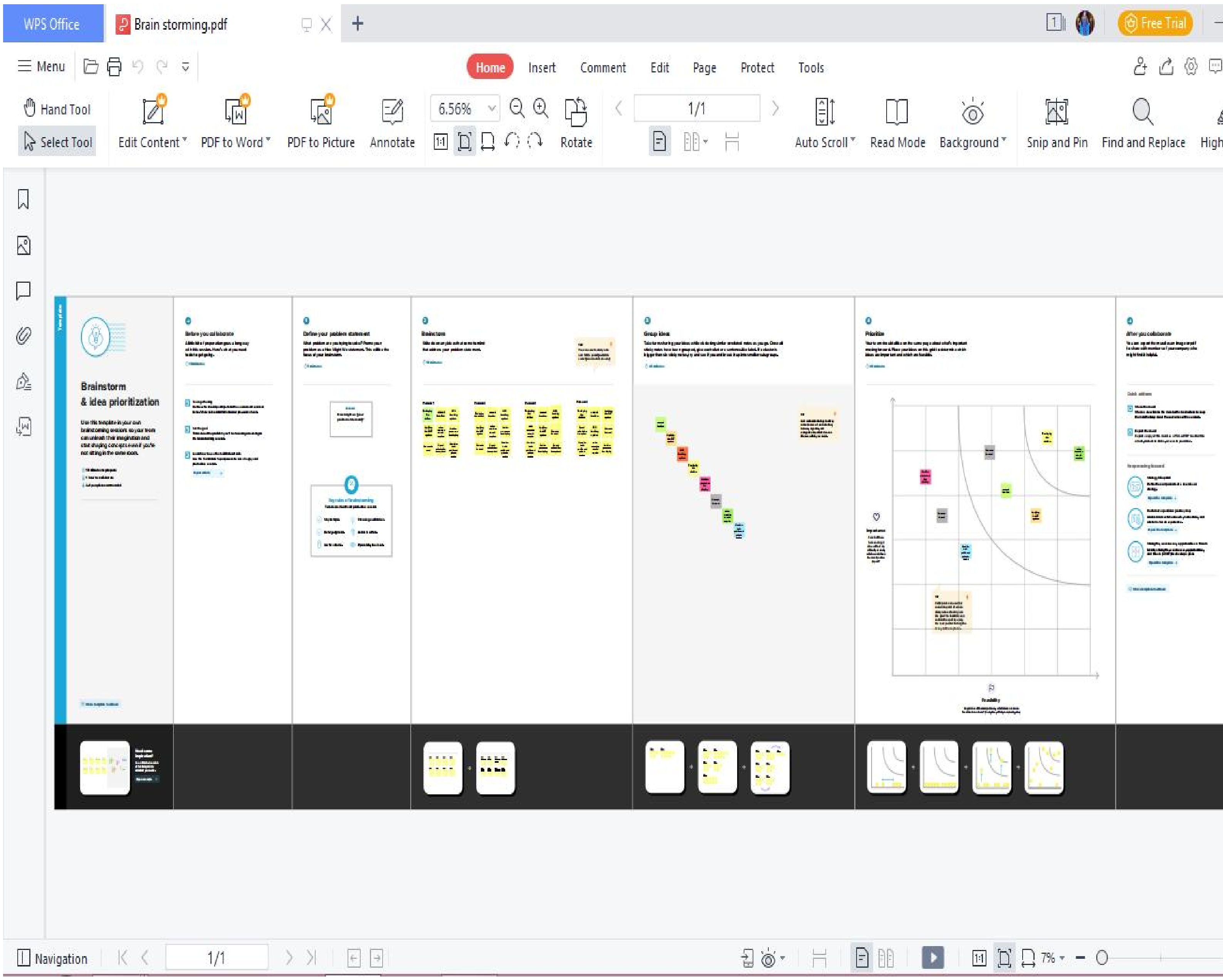
Smart Solutions for railways are designed to reduce the work load of the user and the use of paper.

# 3. IDEATION & PROPOSED SOLUTION

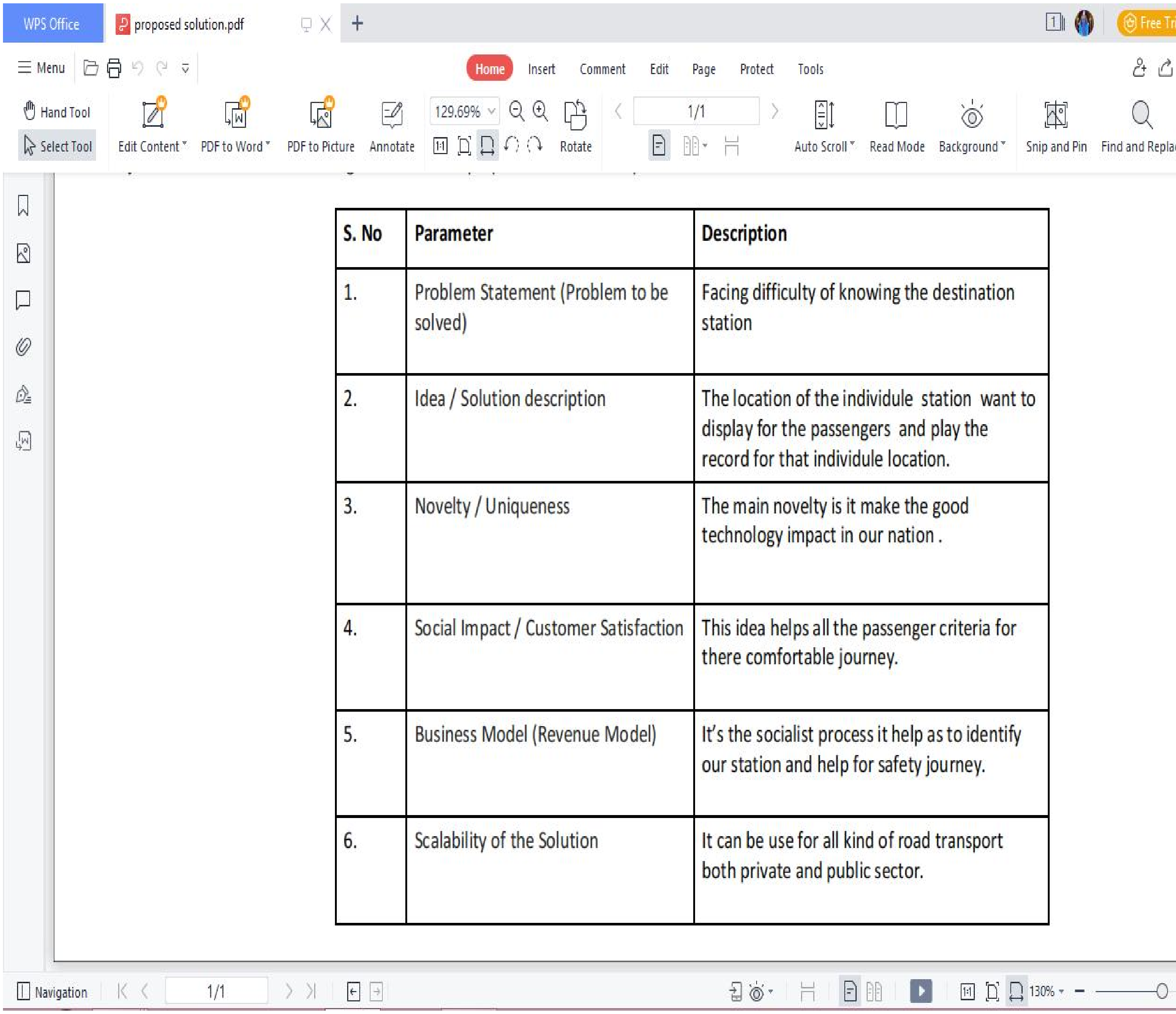
## 3.1 Empathy Map Canvas


Build empathy and keep your focus on the user by putting yourself in their shoes.

## 3.2 Ideation & Brainstorming

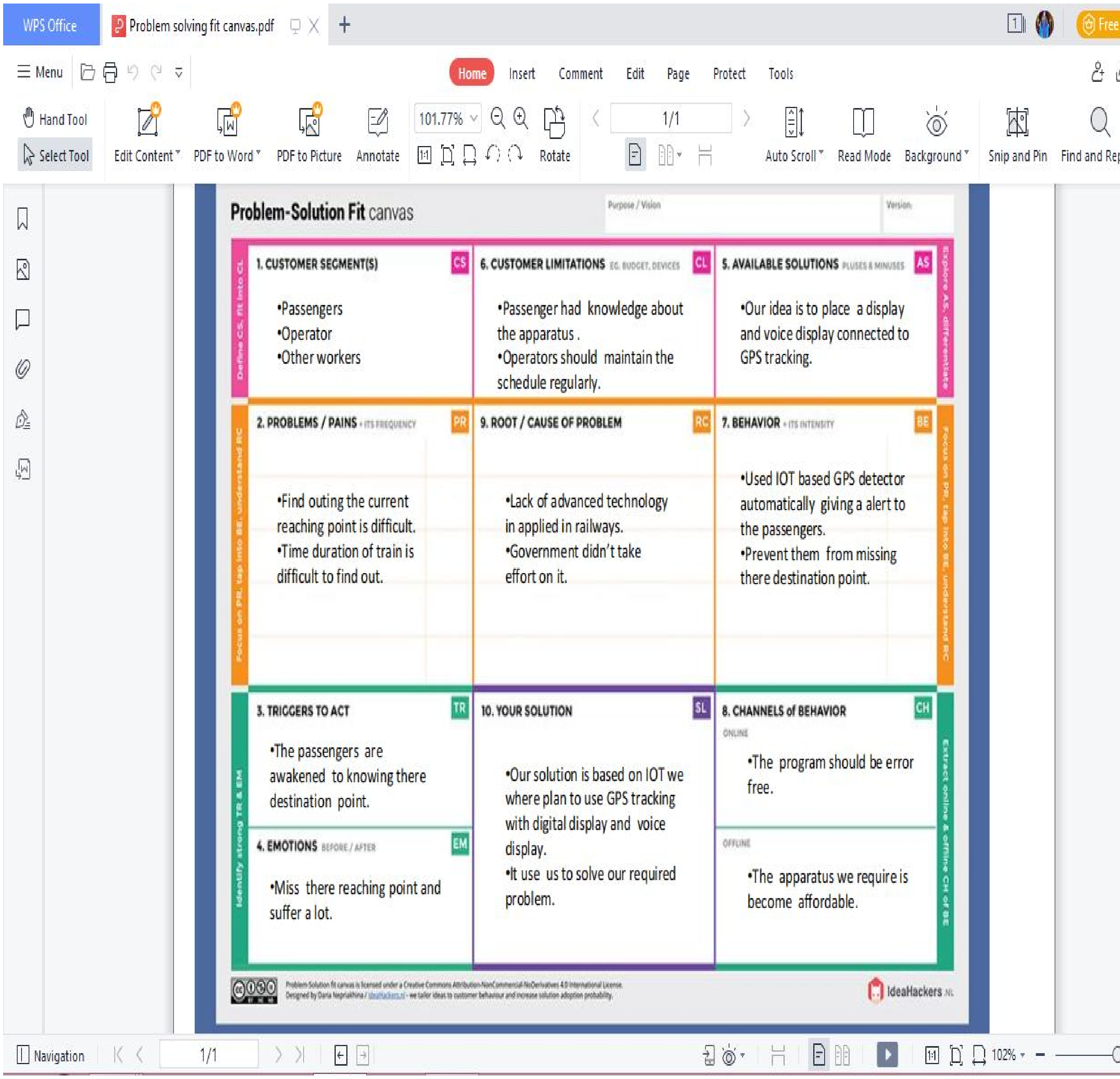


## 3.3 Proposed Solution



| S. No | Parameter | Description |
|---|---|---|
| 1. | Problem Statement (Problem to be solved) | Facing difficulty of knowing the destination station |
| 2. | Idea / Solution description | The location of the individule station want to display for the passengers and play the record for that individule location. |
| 3. | Novelty / Uniqueness | The main novelty is it make the good technology impact in our nation . |
| 4. | Social Impact / Customer Satisfaction | This idea helps all the passenger criteria for there comfortable journey. |
| 5. | Business Model (Revenue Model) | It's the socialist process it help as to identify our station and help for safety journey. |
| 6. | Scalability of the Solution | It can be use for all kind of road transport both private and public sector. |

## 3.4 Problem Solution fit



**Problem-Solution Fit canvas**

Purpose / Vision | Version:

Define CS, fit into CL

**1. CUSTOMER SEGMENT(S)** CS

- Passengers
- Operator
- Other workers

**6. CUSTOMER LIMITATIONS** EG. BUDGET, DEVICES CL

- Passenger had knowledge about the apparatus .
- Operators should maintain the schedule regularly.

**5. AVAILABLE SOLUTIONS** PLUSES & MINUSES AS

- Our idea is to place a display and voice display connected to GPS tracking.

Explore AS, differentiate

Focus on PR, tap into BE, understand RC

**2. PROBLEMS / PAINS** + ITS FREQUENCY PR

- Find outing the current reaching point is difficult.
- Time duration of train is difficult to find out.

**9. ROOT / CAUSE OF PROBLEM** RC

- Lack of advanced technology in applied in railways.
- Government didn't take effort on it.

**7. BEHAVIOR** + ITS INTENSITY BE

- Used IOT based GPS detector automatically giving a alert to the passengers.
- Prevent them from missing there destination point.

Focus on PR, tap into BE, understand RC

Identify strong TR & EM

**3. TRIGGERS TO ACT** TR

- The passengers are awakened to knowing there destination point.

**4. EMOTIONS** BEFORE / AFTER EM

- Miss there reaching point and suffer a lot.

**10. YOUR SOLUTION** SL

- Our solution is based on IOT we where plan to use GPS tracking with digital display and voice display.
- It use us to solve our required problem.

**8. CHANNELS of BEHAVIOR** CH

ONLINE

- The program should be error free.

OFFLINE

- The apparatus we require is become affordable.

Extract online & offline CH of BE

IdeaHackers.nl

# 4. REQUIREMENT ANALYSIS

## 4.1 Functional requirement

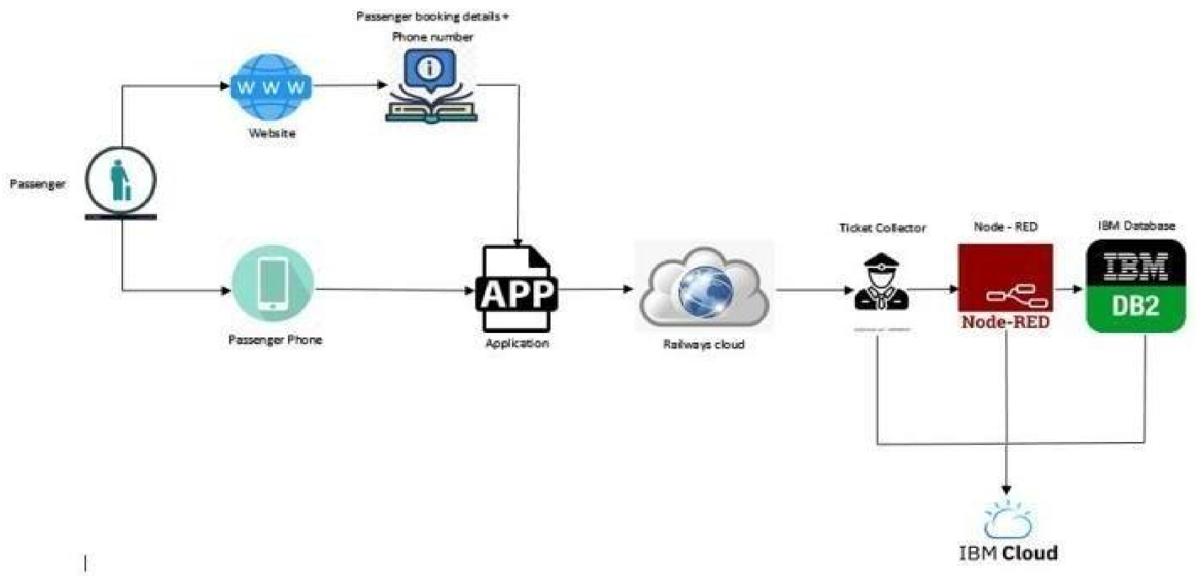
| FR No. | Functional Requirement (Epic) | Sub Requirement (Story / Sub-Task) |
|---|---|---|
| FR-1 | User Registration | Registration through Online<br>Registration through Gmail |
| FR-2 | User Confirmation | Confirmation via Email Confirmation<br>via OTP |
| FR-3 | Application installation | The 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<br>• Easy and simple<br>• 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 Num ber | User Story / Task | Acceptance criteria | Priority | Release |
|---|---|---|---|---|---|---|
| PASSENGER (Mobile user) | Booking registrat ion | USN-1 | As a passenger, I book the ticket for the journey by entering my personal information. | I can access the web linkto install the application. | High | Sprint-1 |
|  | Confirmation | USN-2 | As a passenger, I will receive confirmation of the booking once I have registered for theapplication | I can receive confirmationemail & 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

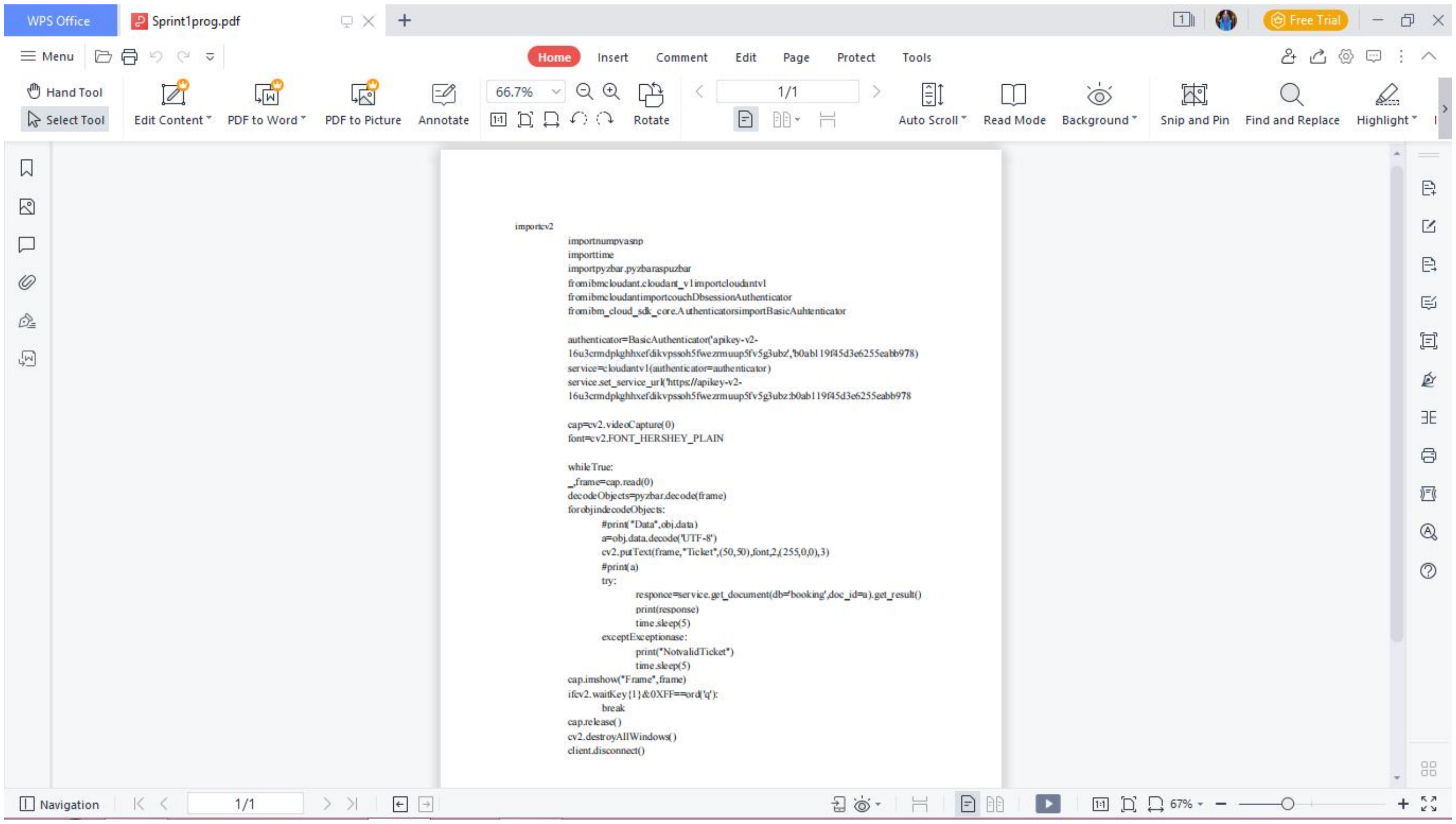
### 6.1 Sprint Planning & Estimation

|  |  |
|---|---|
| **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

## 6.2 Reports from JIRA

### SPRINT 1



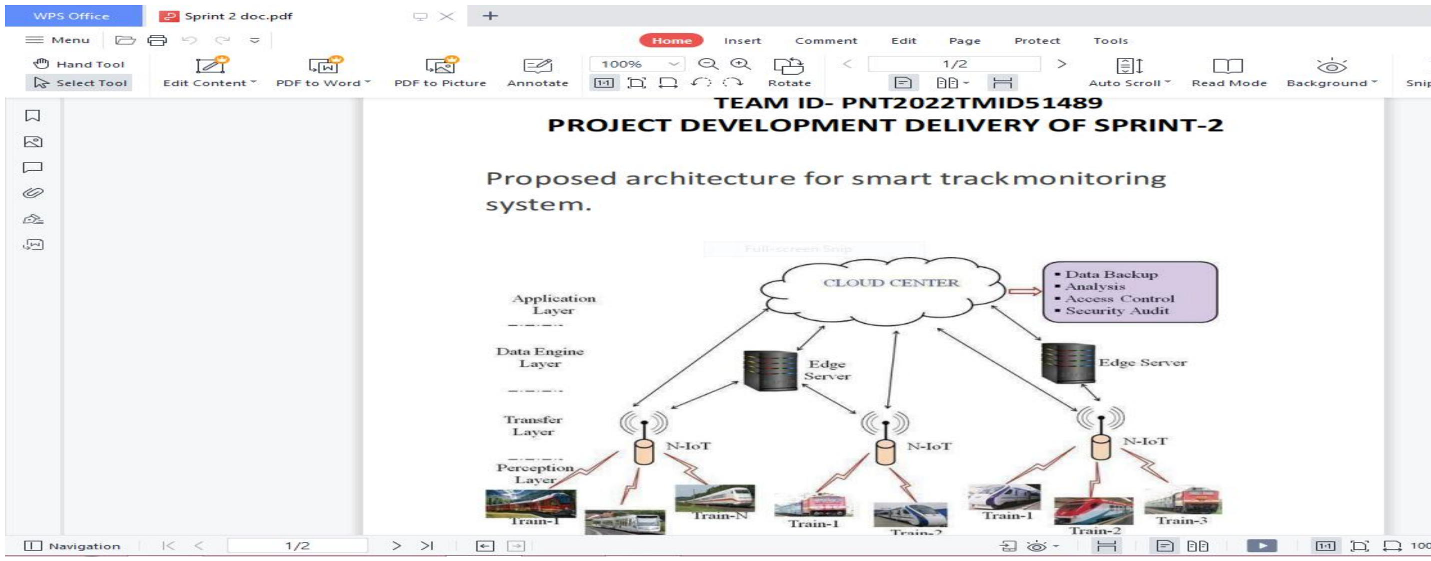
```
importcv2
            importnumpyasnp
            importtime
            importpyzbar.pyzbaraspuzbar
            fromibmcloudant.cloudant_v1importcloudantv1
            fromibmcloudantimportcouchDbsessionAuthenticator
            fromibm_cloud_sdk_core.AuthenticatorsimportBasicAuhtenticator

            authenticator=BasicAuthenticator('apikey-v2-
            16u3crmdpkghhxefdikvpssoh5fwezmuup5fv5g3ubz','b0ab119f45d3e6255eabb978)
            service=cloudantv1(authenticator=authenticator)
            service.set_service_url('https://apikey-v2-
            16u3crmdpkghhxefdikvpssoh5fwezmuup5fv5g3ubz:b0ab119f45d3e6255eabb978

            cap=cv2.videoCapture(0)
            font=cv2.FONT_HERSHEY_PLAIN

            whileTrue:
            _,frame=cap.read(0)
            decodeObjects=pyzbar.decode(frame)
            forobjindecodeObjects:
                  #print("Data",obj.data)
                  a=obj.data.decode('UTF-8')
                  cv2.putText(frame,"Ticket",(50,50),font,2,(255,0,0),3)
                  #print(a)
                  try:
                        responce=service.get_document(db='booking',doc_id=a).get_result()
                        print(response)
                        time.sleep(5)
                  exceptExceptionase:
                        print("NotvalidTicket")
                        time.sleep(5)
            cap.imshow("Frame",frame)
            ifcv2.waitKey{1}&0XFF==ord('q'):
                  break
            cap.release()
            cv2.destroyAllWindows()
            client.disconnect()
```

## SPRINT 2



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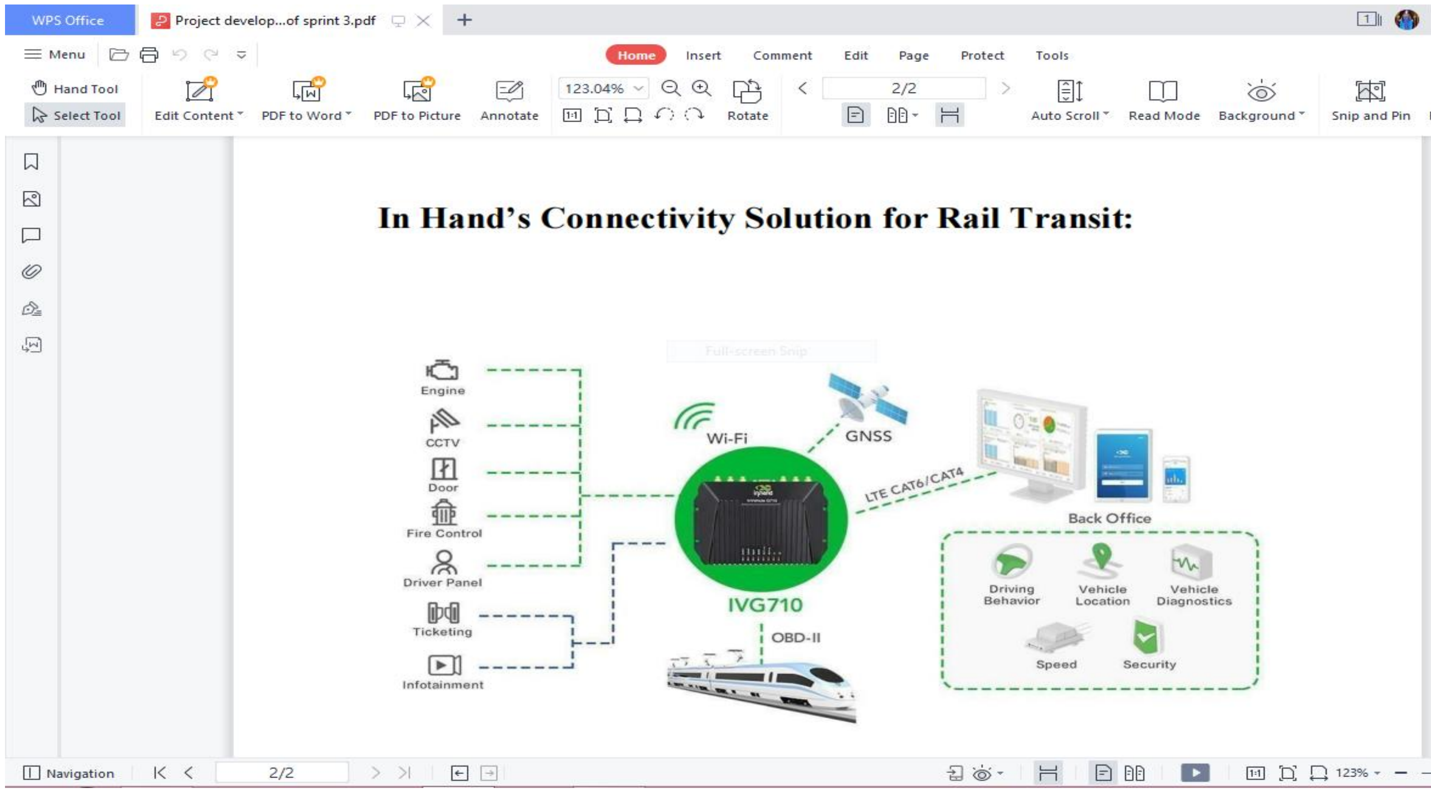
PROJECT DEVELOPMENT DELIVERY OF SPRINT-2

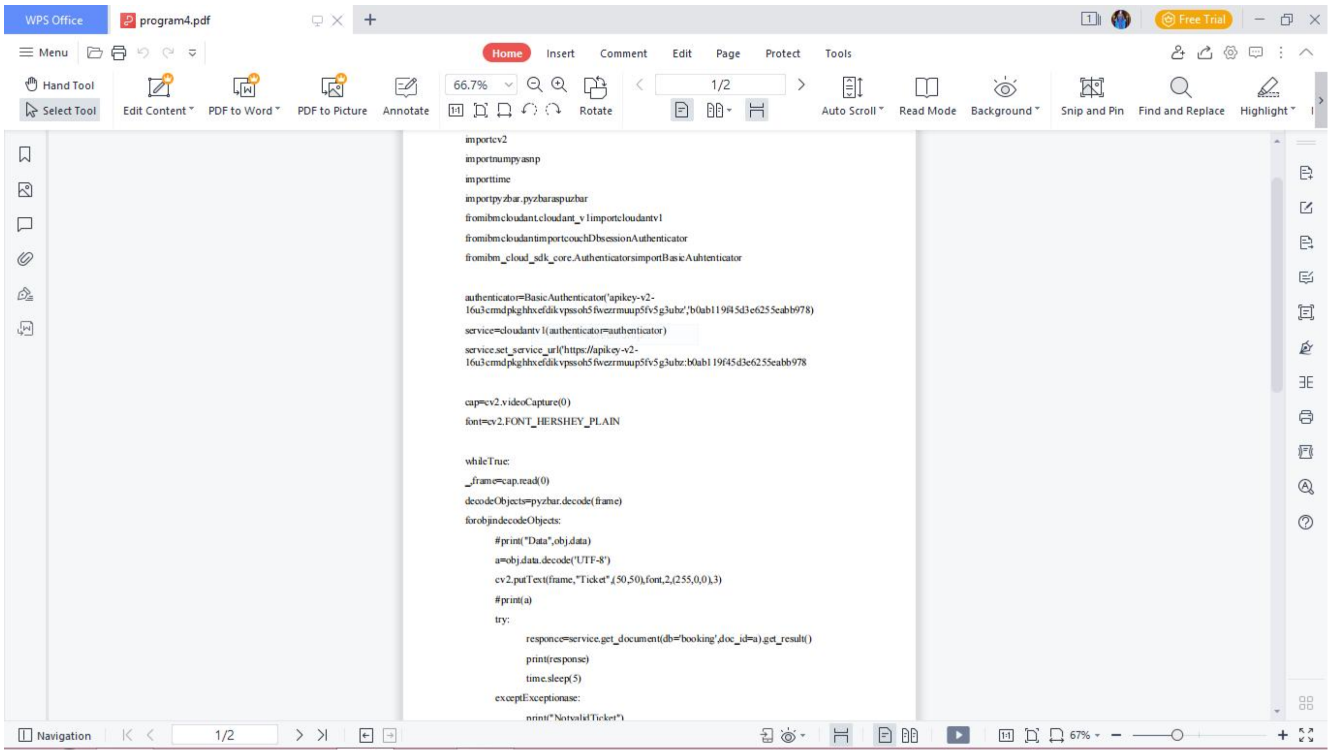
Proposed architecture for smart trackmonitoring system.

## SPRINT 3



In Hand's Connectivity Solution for Rail Transit:

## SPRINT 4


```
importcv2
importnumpyasnp
importtime
importpyzbar.pyzbaraspuzbar
fromibmcloudant.cloudant_v1importcloudantv1
fromibmcloudantimportcouchDbsessionAuthenticator
fromibm_cloud_sdk_core.AuthenticatorsimportBasicAuhtenticator


authenticator=BasicAuthenticator('apikey-v2-
16u3crmdpkghhxefdikvpssoh5fwezrmuup5fv5g3ubz','b0ab119f45d3e6255eabb978)
service=cloudantv1(authenticator=authenticator)
service.set_service_url('https://apikey-v2-
16u3crmdpkghhxefdikvpssoh5fwezrmuup5fv5g3ubz:b0ab119f45d3e6255eabb978


cap=cv2.videoCapture(0)
font=cv2.FONT_HERSHEY_PLAIN


whileTrue:
_,frame=cap.read(0)
decodeObjects=pyzbar.decode(frame)
forobjindecodeObjects:
        #print("Data",obj.data)
        a=obj.data.decode('UTF-8')
        cv2.putText(frame,"Ticket",(50,50),font,2,(255,0,0),3)
        #print(a)
        try:
                responce=service.get_document(db='booking',doc_id=a).get_result()
                print(response)
                time.sleep(5)
        exceptExceptionase:
                print("NotvalidTicket")
```

# 7. CODING & SOLUTIONING

## 7.1 Feature 1

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

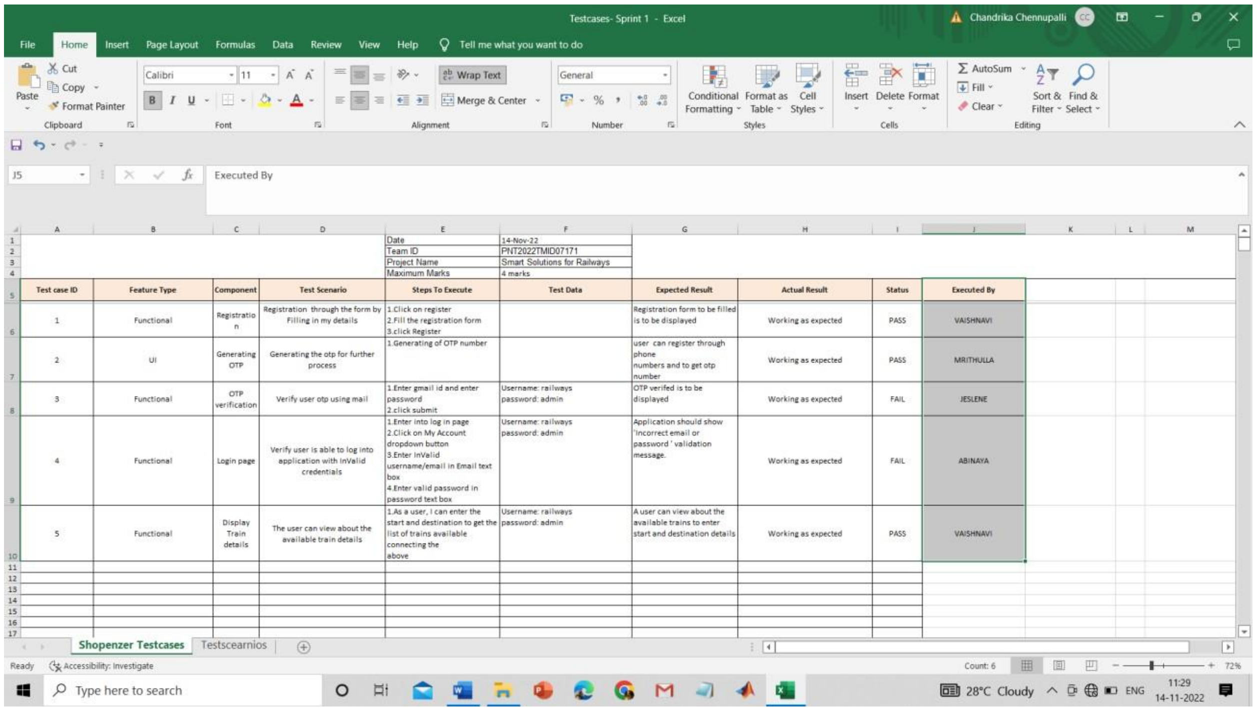
## 7.2 Feature 2

- Login
- Verification
- Ticket Booking
- Adding rating

# 8. TESTING AND RESULTS

## 8.1 Test Cases

## Test case 1



Testcases- Sprint 1 - Excel

J5 — Executed By

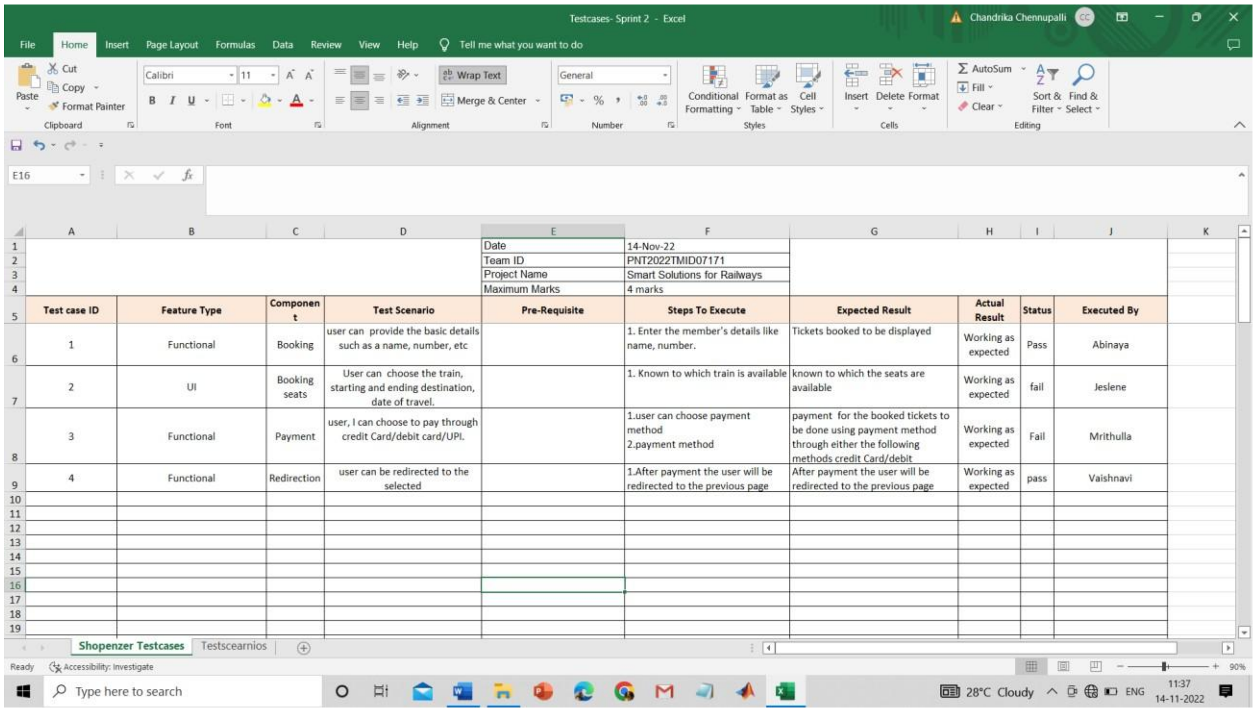
| | |
|---|---|
| Date | 14-Nov-22 |
| Team ID | PNT2022TMID07171 |
| Project Name | Smart Solutions for Railways |
| Maximum Marks | 4 marks |

| Test case ID | Feature Type | Component | Test Scenario | Steps To Execute | Test Data | Expected Result | Actual Result | Status | Executed By |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Functional | Registration | Registration through the form by Filling in my details | 1.Click on register<br>2.Fill the registration form<br>3.click Register | | Registration form to be filled is to be displayed | Working as expected | PASS | VAISHNAVI |
| 2 | UI | Generating OTP | Generating the otp for further process | 1.Generating of OTP number | | user can register through phone<br>numbers and to get otp number | Working as expected | PASS | MRITHULLA |
| 3 | Functional | OTP verification | Verify user otp using mail | 1.Enter gmail id and enter password<br>2.click submit | Username: railways<br>password: admin | OTP verifed is to be displayed | Working as expected | FAIL | JESLENE |
| 4 | Functional | Login page | Verify user is able to log into application with InValid credentials | 1.Enter into log in page<br>2.Click on My Account dropdown button<br>3.Enter InValid username/email in Email text box<br>4.Enter valid password in password text box | Username: railways<br>password: admin | Application should show 'Incorrect email or password ' validation message. | Working as expected | FAIL | ABINAYA |
| 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<br>above | Username: railways<br>password: admin | A user can view about the available trains to enter start and destination details | Working as expected | PASS | VAISHNAVI |

Shopenzer Testcases | Testscearnios

Ready — Count: 6

## Test case 2



Testcases- Sprint 2 - Excel

E16

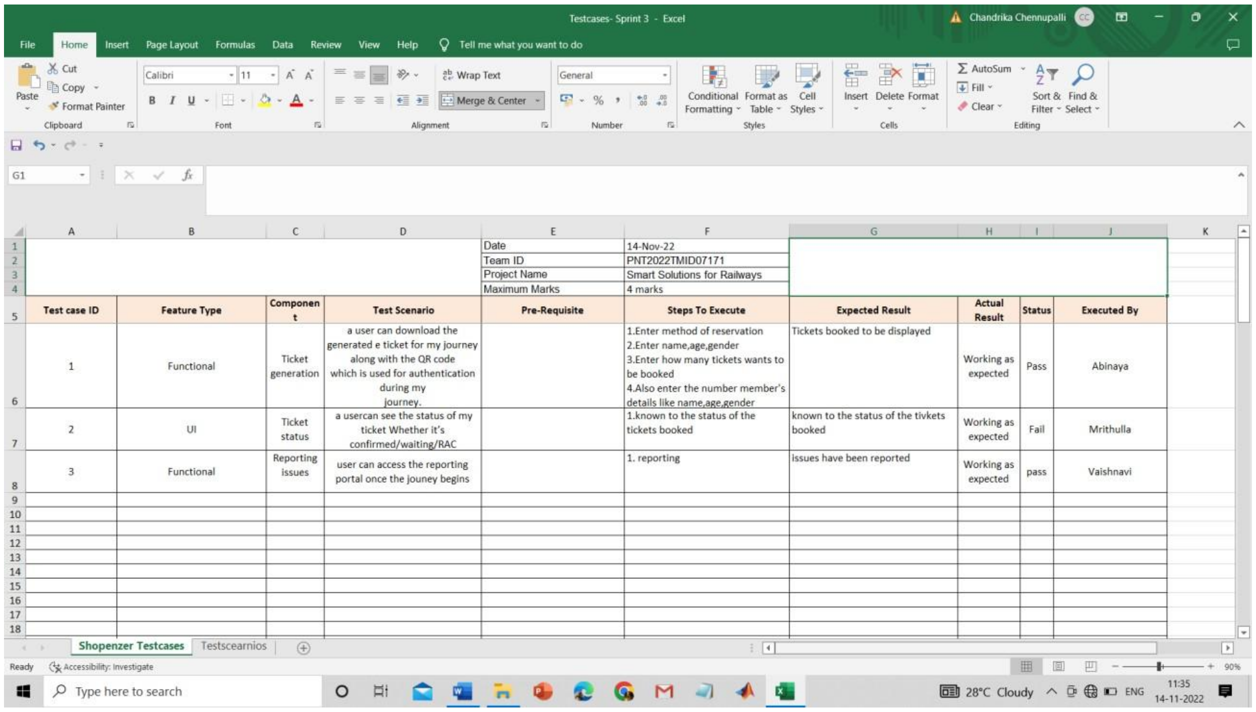
| | |
|---|---|
| Date | 14-Nov-22 |
| Team ID | PNT2022TMID07171 |
| Project Name | Smart Solutions for Railways |
| Maximum Marks | 4 marks |

| Test case ID | Feature Type | Component | Test Scenario | Pre-Requisite | Steps To Execute | Expected Result | Actual Result | Status | 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 | Abinaya |
| 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 the seats are available | Working as expected | fail | Jeslene |
| 3 | Functional | Payment | user, I can choose to pay through credit Card/debit card/UPI. | | 1.user can choose payment method<br>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 | Mrithulla |
| 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 | Vaishnavi |

Shopenzer Testcases | Testscearnios

Ready

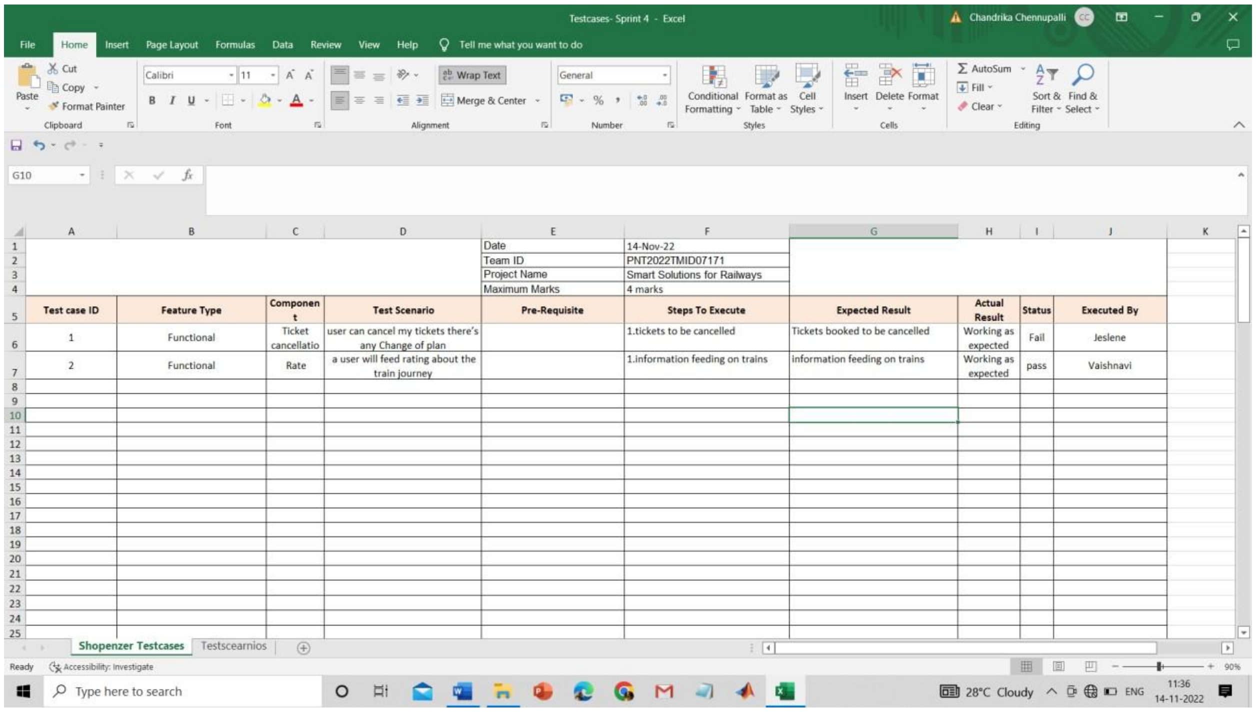
## Test case 3



| | |
|---|---|
| Date | 14-Nov-22 |
| Team ID | PNT2022TMID07171 |
| Project Name | Smart Solutions for Railways |
| Maximum Marks | 4 marks |

| Test case ID | Feature Type | Component | Test Scenario | Pre-Requisite | Steps To Execute | Expected Result | Actual Result | Status | 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 | Abinaya |
| 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 tickets booked | known to the status of the tivkets booked | Working as expected | Fail | Mrithulla |
| 3 | Functional | Reporting issues | user can access the reporting portal once the jouney begins | | 1. reporting | issues have been reported | Working as expected | pass | Vaishnavi |

## Test case 4



| | |
|---|---|
| Date | 14-Nov-22 |
| Team ID | PNT2022TMID07171 |
| Project Name | Smart Solutions for Railways |
| Maximum Marks | 4 marks |

| Test case ID | Feature Type | Component | Test Scenario | Pre-Requisite | Steps To Execute | Expected Result | Actual Result | Status | Executed By |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Functional | Ticket cancellatio | 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 | Jeslene |
| 2 | Functional | Rate | a user will feed rating about the train journey | | 1.information feeding on trains | information feeding on trains | Working as expected | pass | Vaishnavi |

## 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+&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")
```

## 13.2 GitHub GitHub link:

https://github.com/IBM-EPBL/IBM-Project-54524-1662183006