TRAFFIC AND CAPACITY ANALYTICS FOR MAJOR PORTS

IBM-Project-15695-1659603134

TEAM ID: PNT2022TMID08273

SUBMITTED BY:-

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Of

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In

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DHANALAKSHMI SRINIVASAN ENGINEERING COLLEGE

(AUTONOMOUS)

PERAMBALUR-621212

1.INTRODUCTION

Ports serves as an important link in global supply chain. The Indian Railways has a capital base of about Rs.100000 crores and is often referred to as the lifeline of the Indian economy because of its predominance in transportation of bulk freight and long distance passenger traffic. Data analytics can be used for analyzing the port performance. In this project, the port capacity topic was addressed through Cognos analysis. Reducing the congestion on rail corridors and improving portconnectivity. Railways have also stepped-up developmental efforts and are preparing themselves for an even bigger role in the future. So, data analytics plays the major role in this project

1.1 Project Overview

The main intention of the performance of 13 major ports of India in respect of key operational performance indicators. Following rapid economic growth India's share in international trade is escalating. This puts increased pressure on these ports, which handle a substantial portion of the trade to perform with optimal efficiency. The study presents a systematic analysis of different performance indicators for a ten-year time period (2003 to 2013) using a variety of statistical methods and evaluates status of each port in different categories of performance. This will enable the ports to gauge their own effectiveness and appraise reasons for their shortcomings. In this context, the work further develops an integrated composite performance index by relegating comparative weightages to different indicators, to assess the relative overall performance of different ports. The study underlines the need of such estimates to adjudge the consistency of performance, internal and across ports to enable planning and development of measures for enhanced.

1.2 Purpose

Traffic Handling Capacity of Major Ports. The Infrastructural development and capacity augmentation of Major Ports is a continual process. The process inter-alia includes mechanization of the Ports by way of use of latest version of crane and other equipments/techniques for quicker turnaround of cargo.

Implementation of some of the new initiatives suggested by benchmarking consultants had a positive impact in this regard. Keeping in view the recent initiatives taken like new Berthing Policy, 2016, Stevedoring Policy, Project Unnati, an exercise was taken to re-rate the capacities of Major Ports. This has resulted in the installed capacity of the Major Ports going up from 1065.83MTPA during 2016-17 to 1359MTPA.

2.LITERATURE SUREVEY

A systematic Analysis of Port Capacity Literature: Trends and Future Research Avenues

Publication year:31 January ,2021

Author name: Secil-Guelmez

Journal name: Journal of maritime transport & logistics

Summary: The continuous growth in the world economy, technology, and the population still shapes the industrialization patterns. This massive progress has also shaped the international transportation requirements. Ports, as the one of the important infrastructure in international transportation and supply chains, have been pushed by these changes in terms of structuring their capacitiesto satisfy the demand. To do this, this study adopted a systematic literature review and content analysis together. The result of this studyshowed that the most attractive topics are service level andperformance in main category.

2.1 Existing problems

The port performance has frequently been studied in the academic literature, and the first studies on the subject are focused on financial or operational dimensions. However, today, port performance has become multi-dimensional due to the changing roles of the ports to its stakeholders, and the fact that local competition has been replaced by global competition through continuously developing routes, etc. Within this study, it is aimed to determine each dimension of the port performance concept which had been handled as a multi- dimensional process in recent years in literature. So, the concept of port performance had been divided into four basic dimensions which are operational, financial, sustainable, and logistics.

2.2 References

https://www.ibm.com/cloud/architecture

https://aws.amazon.com/architecture

https://medium.com/the-internal-startup/how-to-draw-useful-technical-architecture-diagrams-2d20c9fda90d

2.3 Problem Statement Definition

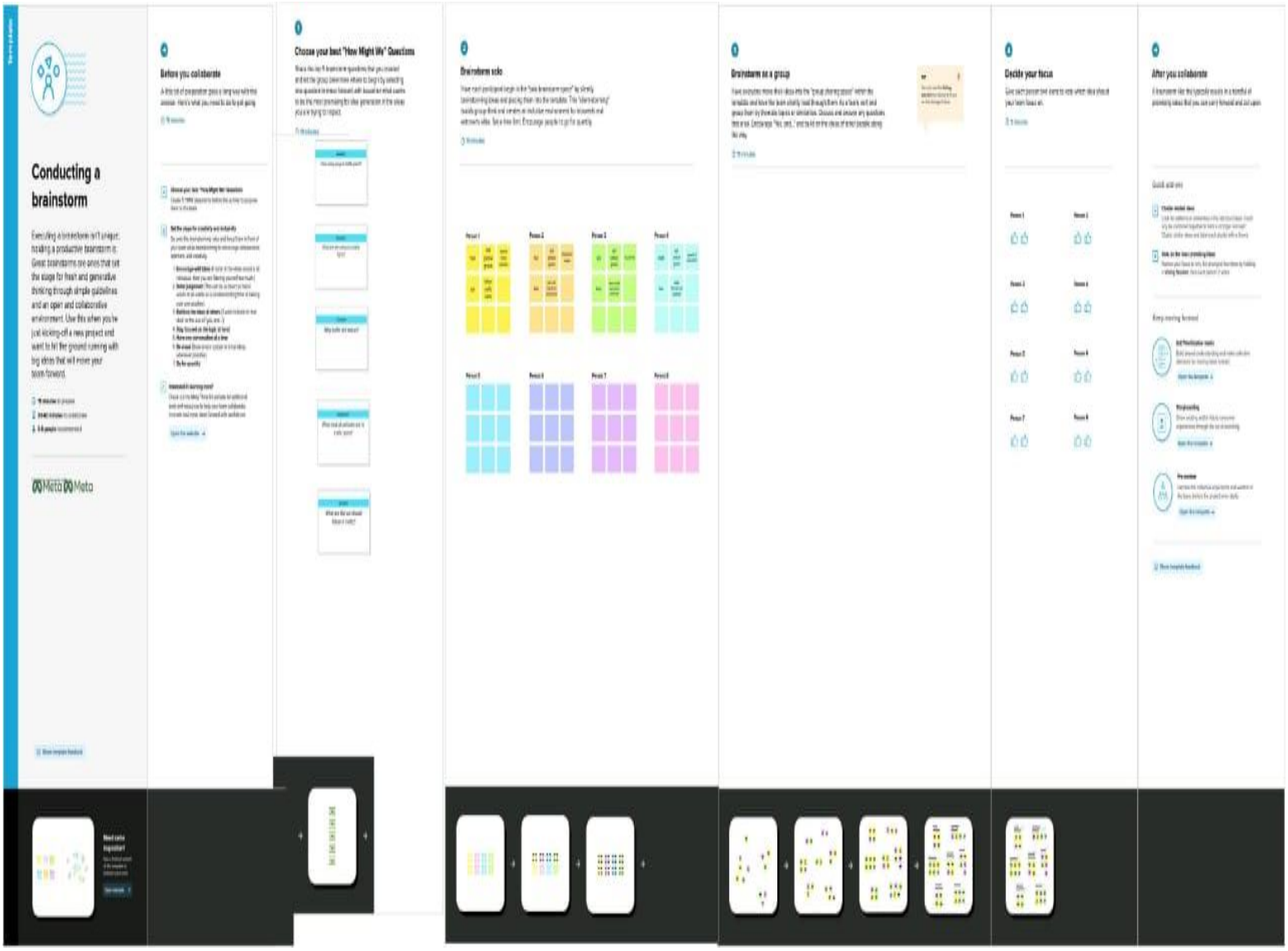
The impact of port congestion is far reaching and affects all industries resulting in slowdown in business, lack of inventory in stores, customers having to airfreight certain essential goods to alleviate shortages, especially of the consumer goods. Seasonal goods may not arrive in time .

3.IDEATION & PROPOSED SOLUTION

3.1Empathy Map Canvas

An empathy map is a simple, easy-to-digest visual that captures knowledge abouta user's behaviours and attitudes. It is a useful tool to helps teams better understand their users. Creating an effective solution requires understanding thetrue problem and the person who is experiencing it. The exercise of creating the map helps participants consider things from the user's perspective along with their her goals and challenges**.**

3.2 Ideation&Brainstorming



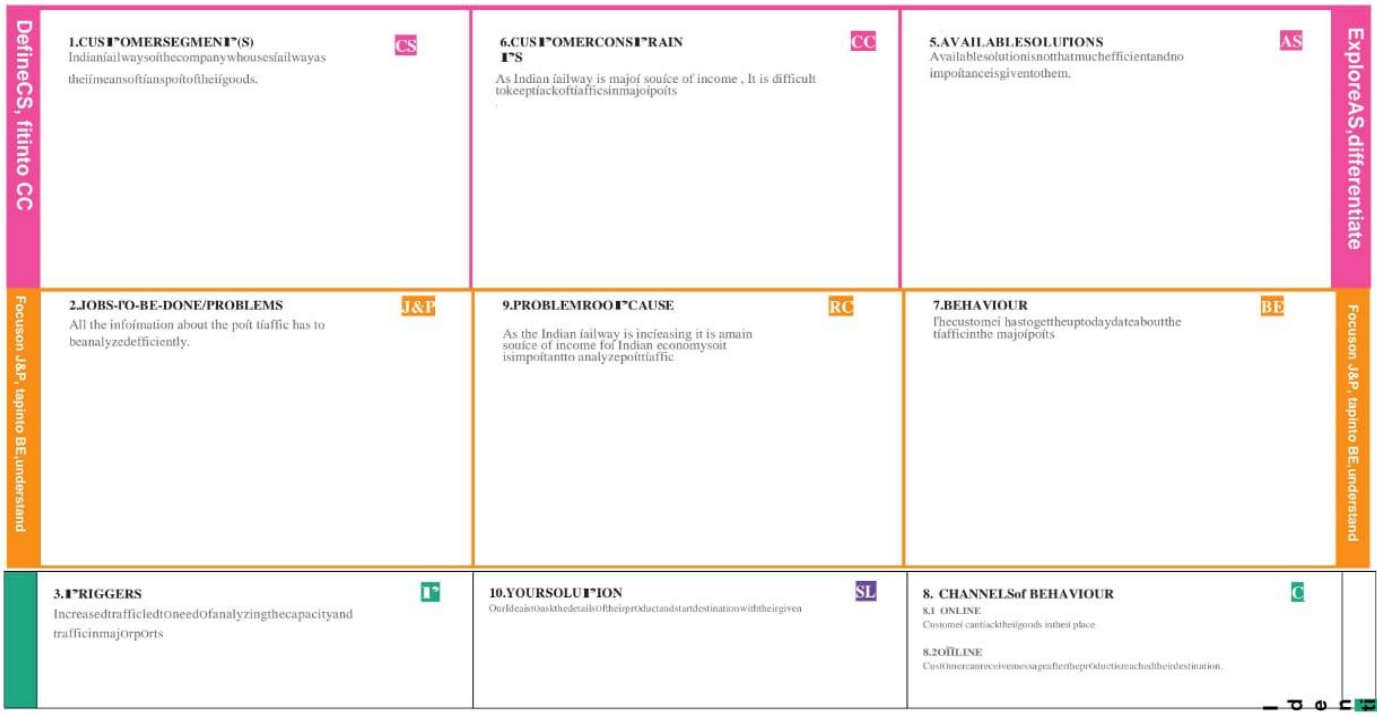
3.2Proposed Solutions

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Port capacity is a relevant parameter to estimate the expected performance of a port facility. Many simulation models have been used to predict traffic in ports and waterways, but they do not include provisions for estimating the port's capacity. The innovative method presented here determines a Port Network Traffic Capacity(PNTC) based on simulation. This method estimates PNTC giventhe configuration and processing characteristics of the port. It can be a useful tool to apply while designing ports, because only a limited number of simulations are required to estimate of the capacity of the infrastructure under consideration. Capacity Analysis represents a key piece of Traffic Impact Study-determining whether the roadways or intersections can handle the traffic. This part of our series presents an overview of the essential tasks in a capacity analysis
2.	Idea / Solution description	Automatic Identification System (AIS), has theability to track and analyze vessel behaviour within the marine domain was introduced. Nowadays, the ubiquitous availability of huge amounts of data presents challenges for systems aimed at using AIS data for analysis purposes regarding computability and how to extract valuable information from the data. This thesis covers the process of developing a system capable of performing AIS data analytics using state of the art Big data technologies, supporting key features from a system called Marine Traffic Analyzer 3. The results show that the developed system has improved performance, supports larger files and is accessible by more users at the same

		time. To build a python application using python notebook by importing the AIS data and classifying the voyages to determine port traffic. This project explores the possibility of detecting identity fraud by using clustering techniques for extracting voyages of vessels using movement patterns and presents a prototype algorithm for doing so. The results concerning the validation show some merits, but also exposes weaknesses such as time consuming tuning of parameters.
3.	Novelty / Uniqueness	▪ Data Analytics ▪ Predicting port traffic by importin and analyzing the datasets
4.	Social Impact / Customer Satisfaction	• Employment (including labour market standards and rights) • Income • Access to services (including education, socialservices, etc.) • Respect for fundamental rights (including equality) • Public health and safety.
5.	Business Model (Revenue Model)	AIS message validationK-means clustering
6.	Scalability of the Solution	Automatic Identification System (AIS) transponders broadcast information about position, course, speed and its navigational status. Originally, the purpose was solely collision avoidance

3.3 Problem Solution Fit

ProjectDesignPhase-I-SolutionFitTemplate



4. REQUIREMENT ANALYSIS-

4.1 FUNCTIONAL REQUIREMENTS:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail
FR-2	User Confirmation	Confirmation via Email
FR-3	User Input Acceptance	The dashboard accepts user input by means of selecting the location of the ports.
FR-4	Options for User to filter location of ports	The user can use filter options to view ports by countries.
FR-5	Visualization of ports.	The dashboard provides various visualization techniques to understand the flow.
FR-6	Providing Delay Information of trains.	The dashboard is able to provide the user the information like delay of a particular train to the ports.

4.2 Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	The dashboard is able to provide the users the consistency and the aesthetic they expect. The user can constantly use the dashboard without any flaw in the visual quality.
NFR-2	**Security**	The dashboard is much secured that the data of the users are kept confidential and also it is not prone to any kind of attacks.
NFR-3	**Reliability**	The failure rate is minimal and the failure can easily be rectified using the measures. Thus this makes the dashboard much reliable.
NFR-4	**Performance**	The dashboard gives better performance. It provides the user a convenient and flexible User Interface.
NFR-5	**Availability**	The dashboard is always available to serve the users. The availability is ensured in such a way that the user can access the dashboard any time anywhere.
NFR-6	**Scalability**	The dashboard is highly scalable. It can withstand any increase or decrease of loads.

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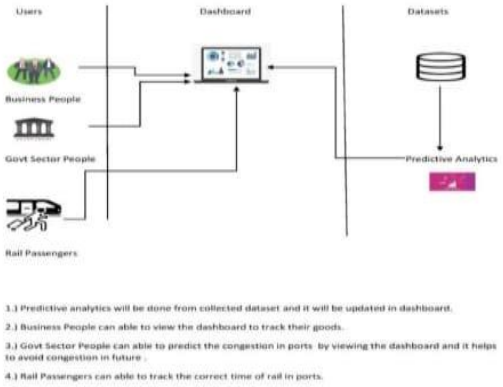
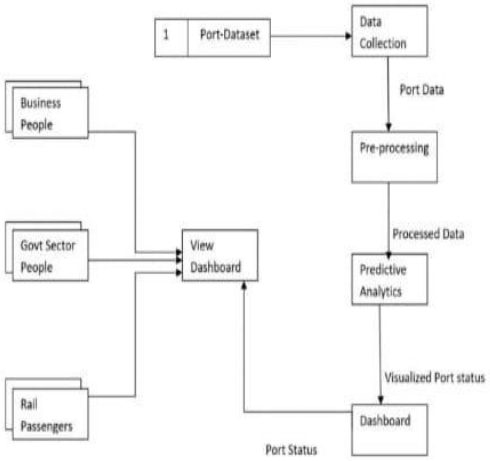
5. PROJECT DESIGN-

5.1Data Flow Diagram:

Data Flow Diagrams: A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information.





5.2 SOLUTION &TECHNICAL ARCHITECTURE

The architectural diagram of the model is as below and the Technology used isshown in Table1

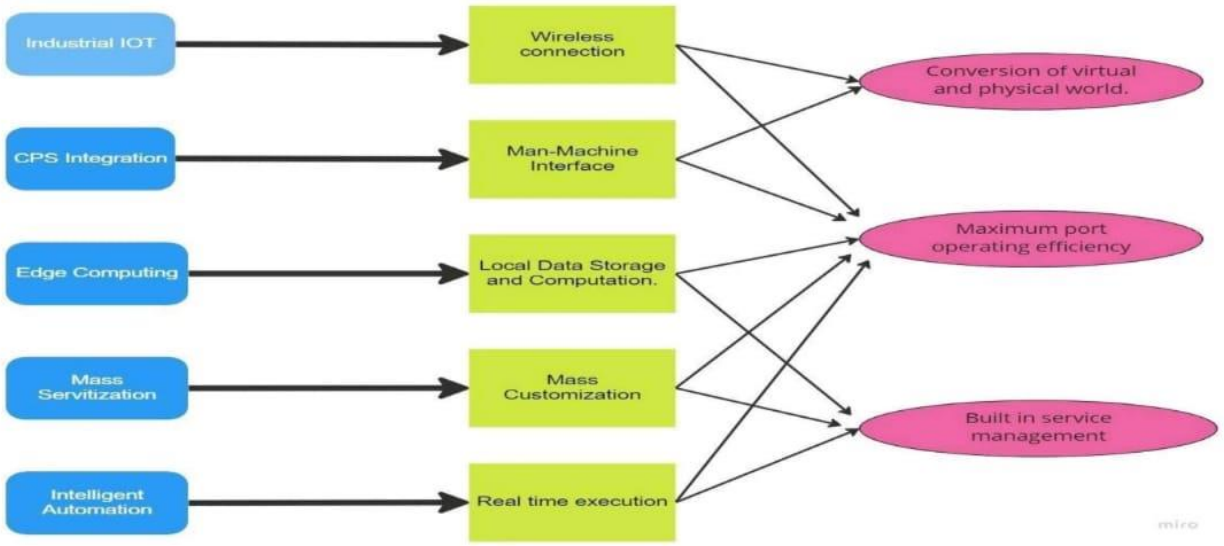


Table-1:Components&Technologies:

S.No	Component	Description	Technology
1.	UserInterface	Howuser interactswithapplicationе.g. WebUI,MobileApp,Chatbotetc.	HTML,CSS,JavaScript
2.	ApplicationLogic-1	Logicforaprocessintheapplication	Python
3.	ApplicationLogic-2	Logicforaprocessintheapplication	IBMWatsonSTT service
4.	ApplicationLogic-3	Logicforaprocessintheapplication	IBMWatson Assistant
5.	Database	DataType,Configurations etc.	MySQL
6.	Cloud Database	DatabaseService onCloud	IBMDB2,IBMCloudant etc.

5.3USER STORIES

Use the below template to list all the user stories for the product

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Business People	Monitoring	USN-1	As a user, I can view the dashboard to see the port status .	I can visualize the port status in dashboard.	High	Sprint-1
	Tracking	USN-2	As a user,I can track the goods.	I can track the goods by it's arrival/departure time	High	Sprint-1
Government Sector People	Viewing	USN-1	As a user,I can view the port status regularly	I can able to know the port status	Low	Sprint-2
	Predicting	USN-2	As a user,I will reduce the congestion in ports by predicting the port congestion through dashboard.	I can able to predict the congestion in future	High	Sprint-2
Passengers	Tracing	USN-1	As a user, I can trace the arrival/departure time of rail in ports.	I can able to track the correct time of rail.	High	Sprint-2

6. PROJECT PLANNING AND SCHEDULING

6.1 SPRINT PLANNING & ESTIMATION

Sprint	Functional Requirement(epic)	User story number	User Story/Task	Story priority points	Team members
Sprint-1	**Application**	**USN-1**	All the modules and futures are planned which going to the implemented.	High	A .Mahendra K .Brahmaiah M.Siva sankar K.bhargav sai
Sprint-1		**USN-2**	The modules like long in page and dashboard are going to be resigned.	High	A .Mahendra K .Brahmaiah M.Siva sankar K.bhargav sai
Sprint-2		**USN-3**	The prediator is going to be developed which analysis be previous data set.	Medium	A .Mahendra K .Brahmaiah M.Siva sankar K.bhargav sai

6.2Sprint Delivery Schedule:

Sprint	Total story points	Duration	Sprint start Date	Sprint end date	Story points completed	Sprint Release
Sprint-1	20	5 Days	1 Nov 2022	05 Nov 2022	20	05 Nov 2022
Sprint-2	20	5 Days	06 Nov 2022	10 Nov 2022	20	10 Nov 2022
Sprint-3	20	5 Days	11 Nov 2022	15 Nov 2022	20	15 Nov 2022
Sprint-4	20	5 Days	16 Nov 2022	20 Nov 2022	20	20 Nov 2022

6.3 REPORT FROM JIRA:-

VELOCITY: SPRINT - 1

Sprint duration = 5 days

Velocity of team = 20 points

Average Velocity (AV) = Velocity/ Sprint durationAV

= 20/5 = 4

Average Velocity=4

VELOCITY: Sprint 1 – 4

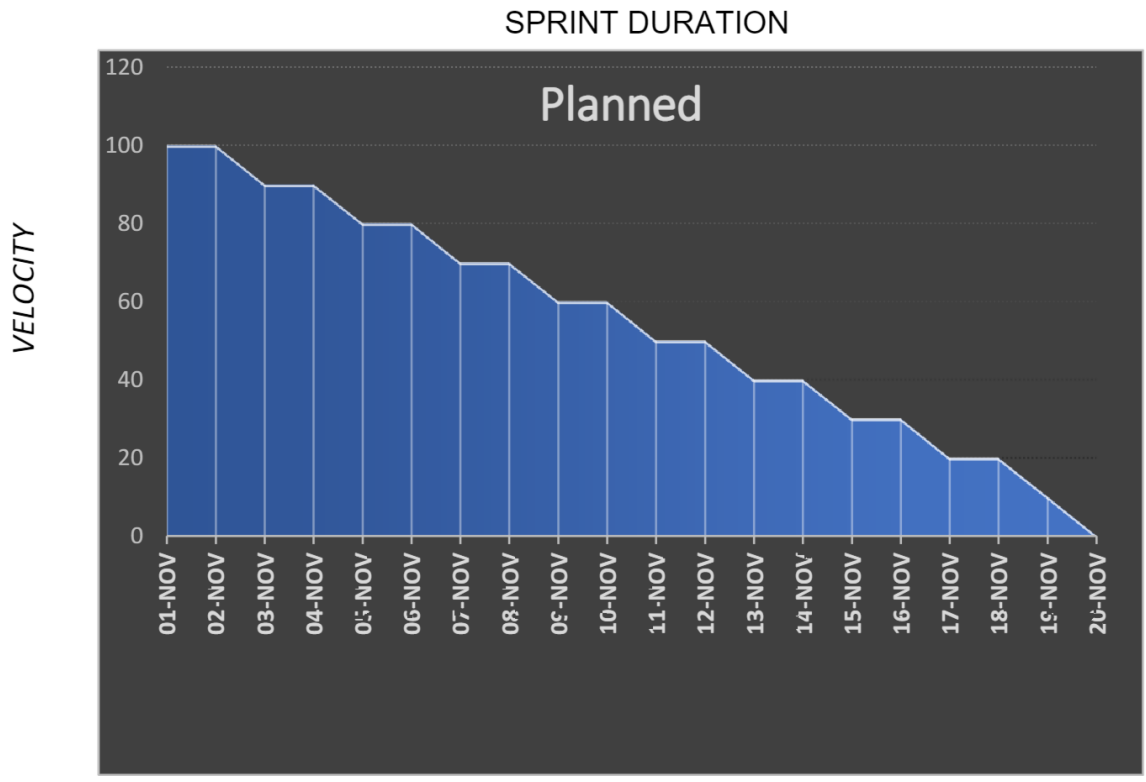
Sprint duration = 20 days

Velocity of team = 80 points

Average Velocity (AV) = Velocity/ Sprint durationAV =

80/20 = 4

Total Average Velocity=4



7.CODING & SOLUTIONING:

```
+ Code  + Text                                                    Connect   Editing

[ ] import numpy as np
    import pandas as pd

    # Loading the dataset
    df = pd.read_csv('/content/drive/MyDrive/Projects/datafile_02.csv')
    print(df.columns)
    df.head()
```

```
# Loading the dataset
df = pd.read_csv('/content/drive/MyDrive/Projects/datafile_02.csv')
print(df.columns)
df.head()
```

```
Index(['Port', 'Traffic in Eleventh Plan (MT) (2011-12)Proj.',
       'Traffic in Eleventh Plan (MT) (2011-12) Ach.',
       'Traffic in Eleventh Plan (MT) (2011-12) %',
       'Total Capacity  in Eleventh Plan (MT) (2011-12) Proj.',
       'Total Capacity  in Eleventh Plan (MT) (2011-12) Ach.',
       'Total Capacity  in Eleventh Plan (MT) (2011-12) %'],
      dtype='object')
```

	Port	Traffic in Eleventh Plan (MT) (2011-12)Proj.	Traffic in Eleventh Plan (MT) (2011-12) Ach.	Traffic in Eleventh Plan (MT) (2011-12) %	Total Capacity in Eleventh Plan (MT) (2011-12) Proj.	Total Capacity in Eleventh Plan (MT) (2011-12) Ach.	Total Capacity in Eleventh Plan (MT) (2011-12) %
0	Kolkata	1343	1223	9100	3145	1635	5100
1	Haldia	4450	3101	7000	6340	5070	7900
2	Paradeep	7640	5425	7100	10640	7650	7100
3	Visakhapatnam	8220	6742	8200	10810	7293	6700
4	Ennore	4700	1496	3200	6420	3100	4800

```
[ ] # Replacing the existing columns with newly created columns
    df.rename(columns = {'Traffic in Eleventh Plan (MT) (2011-12) %':'Traffic_Percent','Total Capacity  in Eleventh Plan (MT) (2011-12) %':'Total_Percent'}, inplace
    df.iloc[:,3:4] = Traffic_Percent
    df.iloc[:,6:] = Total_Percent
    df
```

	Port	Traffic_Projected	Traffic_Achieved	Traffic_Percent	Total_Capacity_Projected	Total_Capacity_Achieved	Total_Percent
0	Kolkata	1343	1223	91.06	3145	1635	51.99
1	Haldia	4450	3101	69.69	6340	5070	79.97
2	Paradeep	7640	5425	71.01	10640	7650	71.90
3	Visakhapatnam	8220	6742	82.02	10810	7293	67.47
4	Ennore	4700	1496	31.83	6420	3100	48.29
5	Chennai	5750	5571	96.89	7230	7972	110.26
6	Tuticorin	3172	2810	88.59	6398	3334	52.11
7	Cochin	3817	2010	52.66	5475	4098	74.85
8	NMPT	4881	3294	67.49	6050	5097	84.25
9	Mormugao	4455	3900	87.54	6690	4190	62.63


```
[ ]
```

10	Mumbai	7105	5618	79.07	9191	4453	48.45
11	JNPT	6604	6575	99.56	9560	6400	66.95
12	Kandla	8672	8250	95.13	12220	8691	71.12

```
[ ] df.shape
```

```
(13, 7)
```

```
[ ] # Checking for null values

    df.isnull().sum()
```

```
Port                       0
Traffic_Projected          0
Traffic_Achieved           0
Traffic_Percent            0
Total_Capacity_Projected   0
Total_Capacity_Achieved    0
Total_Percent              0
dtype: int64
```

```
[ ] # Perparing the Calculations:

    Traffic_Percent = round((df.Traffic_Achieved/df.Traffic_Projected)*100,2)
```

```
[ ] Traffic_Percent
```

```
0     91.06
1     69.69
2     71.01
3     82.02
4     31.83
5     96.89
6     88.59
7     52.66
8     67.49
9     87.54
10    79.07
11    99.56
12    95.13
dtype: float64
```

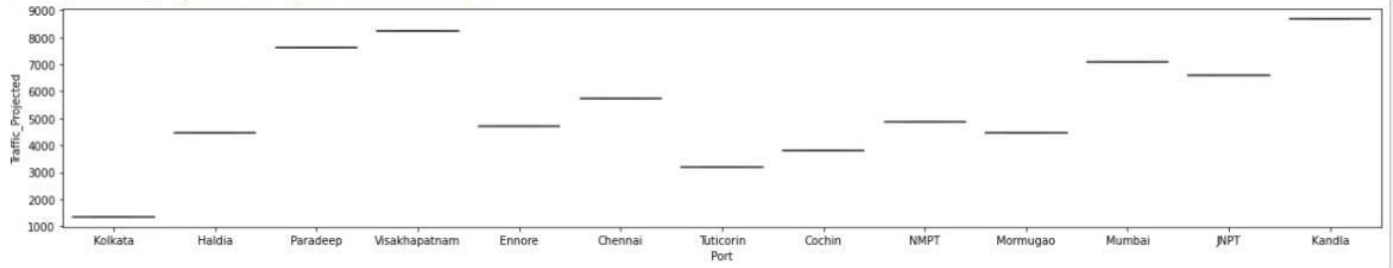

+ Code + Text Connect Editing

```
#Finding Outliers anr replacing the outliers

import seaborn as sns
import matplotlib.pyplot as plt
plt.rcParams["figure.figsize"] = [17.50, 3.50]
plt.rcParams["figure.autolayout"] = True

sns.boxplot(x='Port',y='Traffic_Projected',data=df)
```

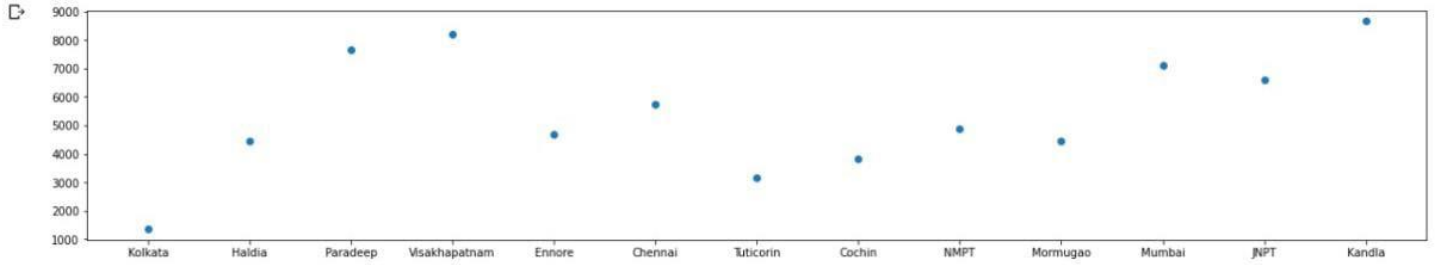
```
<matplotlib.axes._subplots.AxesSubplot at 0x7fbd67320b50>
```



```
# Visualization using various plots
import matplotlib.pyplot as plt
import seaborn as sns


import matplotlib.pyplot as plt
import seaborn as sns

plt.scatter(df.Port,df.Traffic_Projected)
sns.set()
```



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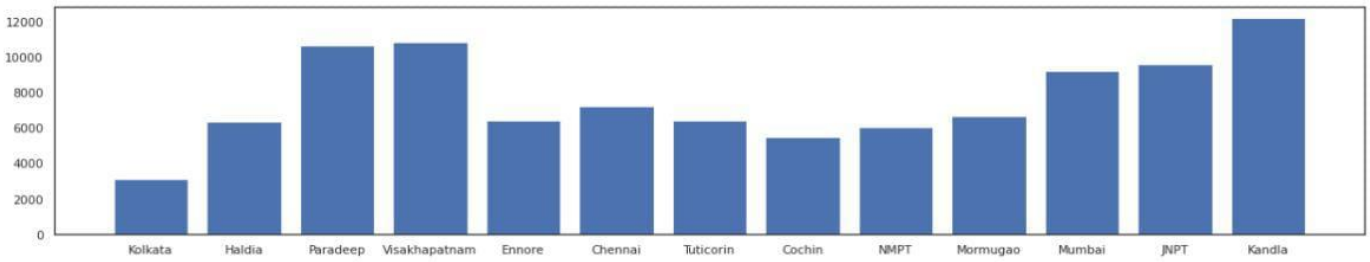
```
[ ] plt.bar(df.Port,df.Total_Capacity_Projected)
    sns.set_style('ticks')
```

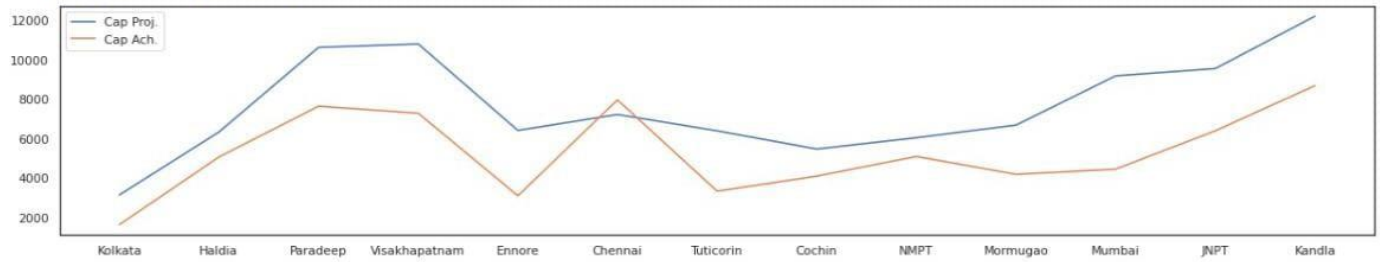


+ Code + Text

Connect Editing

```
[ ] plt.plot(df.Port,df.Total_Capacity_Projected,label='Cap Proj.')
    plt.plot(df.Port,df.Total_Capacity_Achieved,label='Cap Ach.')
    plt.legend()
```

```
<matplotlib.legend.Legend at 0x7fbd6420d310>
```




```
[ ] plt.bar(df.Port,df.Total_Capacity_Projected)
    sns.set_style('ticks')
```

23°C Partly cloudy

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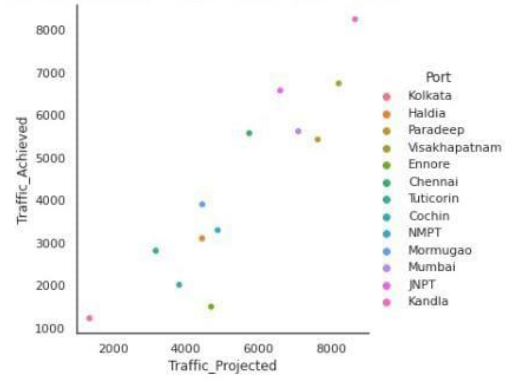
+ Code + Text

Connect Editing

```
[ ] sns.relplot(data=df,x="Traffic_Projected",y='Traffic_Achieved',hue='Port')
```

```
<seaborn.axisgrid.FacetGrid at 0x7fbd64401c10>
```



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8. TESTING.

8.1 TEST CASE

A test case has components that describe input, action and an expected response , in order to determine if a feature of an application is working correctly. A test case is a set of instruction ”HOW” to validate a particular test objective/target, Which when followed will tell us if the expected behavior of the system is satisfied or not.

Characteristics of good test care:

Accurate: Exacts the purpose.

Economical: No unnecessary steps or words.

Traceable : Capable of being traced to requirements.

Repeatable: Can be used to perform the test over and over.

Reusable: Can be reused if necessary.

8.2 User Acceptance Testing

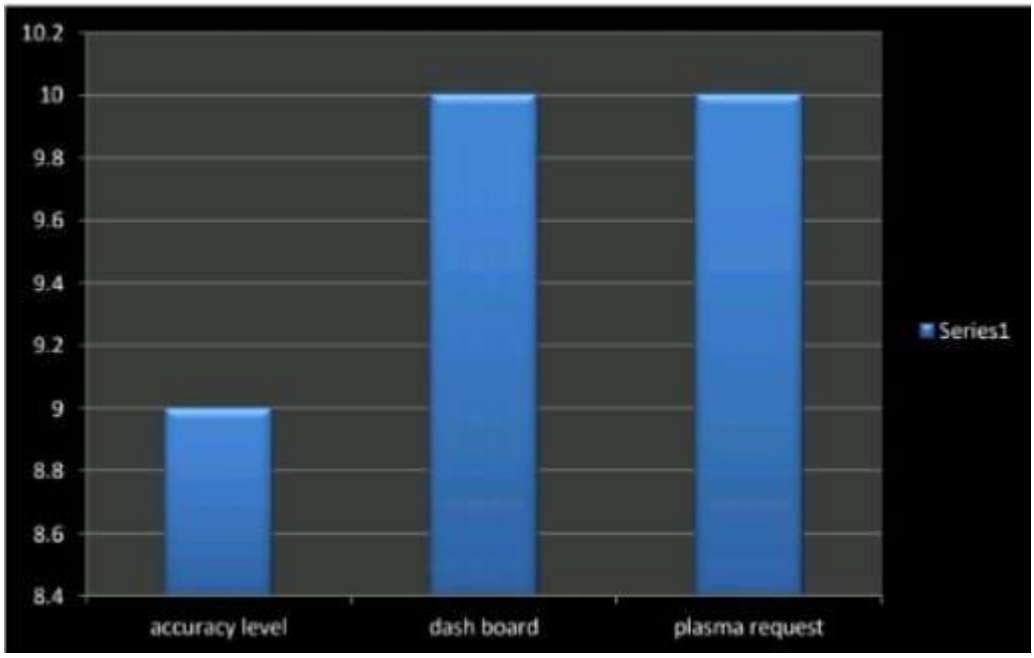
What is UAT?

User Acceptance Testing (UAT) is a type of testing performed by the end user or the client to verify/accept the software system before moving the software application to the production environment. UAT is done in the final phase of testing after functional, integration and system testing is done.

This sort of testing is carried out by clients, or other authorized bodies to identify the requirements and operational procedures of an applications or piece of software. The most crucial stage of testing is acceptance testing since it determine whether or not the customer will accept the application or programmer. It could entail the application's U I., performance, usability, and usefulness. It is also reffered to as end-user testing . Operational acceptance testing. And user acceptancetesting (UAT).

9.RESULTS

9.1Performance Metrics.



The infrnaround of cargoastural development and capacity augmentaion of major ports is a continual process. The process inter-alia includes mechanization of the ports by way of use of latest version of crane and other equipments/techniques for quicker turnaround of cargo.

10. ADVANTAGES.

1.The generative models can perform recognition driven segmentation.

2.The method involves a relatively. .

3.High (99.1) accuracy.

4.Quick dectection

10.1 DISADVANTAGES.

1.poor location accuracy.

2.Used for specific purposes only.

11. Conclusion

The investment in port infrastructure is critical to maintain the necessary capacity for an efficiently functioning port system and to meet expected demand growth forall types of cargo. However, these large-scale, expensive investments in long-term infrastructure assets must be made despite a variety of future uncertainties that may potentially influence a port's throughput demand. The objective of this thesis was to enhance the investment decision-making process for port infrastructure through the application and modification of existing methodologies and the development of an investment tool.

12.FUTURE SCOPE.

Extend the capacity measurement methodology to those port components and terminal types that were not tested in this thesis. Port components for examination include port terminal gates, rail connectivity such as rail terminal gates and rail yards (in addition to the rail network), and the road network; terminal types include ro-ro (rolling-on, rolling-off cargo, such as vehicles), cruise, and passed

13.APPENDIX .

Source code.

```
<?php

// Include config file

require_once
"config.php";



// Define variables and
initialize with empty
values

$username = $email =
$password =
$confirm_password =
"";

$username_err =
$email_err
=$password_err =
$confirm_password_err
= "";



// Processing form data
when form is submitted

if($_SERVER["REQUE
ST_METHOD"] ==
"POST"){
```

```
    // Validate username


if(empty(trim($_POST[
"username"]))){

        $username_err =
"Please enter a
username.";

    }
elseif(!preg_match('/^[a
-zA-Z0-9_]+$/',
trim($_POST["usernam
e"]))){

        $username_err =
"Username can only
contain letters,
numbers, and
underscores.";

    } else{

        // Prepare a select
statement

        $sql = "SELECT id
FROM users WHERE
username = ?";



        if($stmt =
mysqli_prepare($link,
$sql)){

            // Bind variables
to the prepared
statement as
parameters
```

```
mysqli_stmt_bind_para
m($stmt, "s",
$param_username);


        // Set parameters


$param_username =
trim($_POST["usernam
e"]);


        // Attempt to
execute the prepared
statement


if(mysqli_stmt_execute(
$stmt)){

            /* store result
*/


mysqli_stmt_store_resu
lt($stmt);



if(mysqli_stmt_num_ro
ws($stmt) == 1){


$username_err = "This
username is already
taken.";
```

```
            } else{

                $username
=
trim($_POST["usernam
e"]);

            }

        } else{

            echo "Oops!
Something went wrong.
Please try again later.";

        }



        // Close
statement


mysqli_stmt_close($stm
t);

    }

  }



if(empty(trim($_POST[
"email"]))){

    $email_err =
"Please enter a email.";



  } else{
```

```
        $email =
trim($_POST["email"])
;

    }




    // Validate password


if(empty(trim($_POST[
"password"]))){

        $password_err =
"Please enter a
password.";

    }
elseif(strlen(trim($_PO
ST["password"])) < 6){

        $password_err =
"Password must have
atleast 6 characters.";

    } else{

        $password =
trim($_POST["passwor
d"]);

    }



    // Validate confirm
password
```

```
if(empty(trim($_POST[
"confirm_password"])))
{


$confirm_password_err
= "Please confirm
password.";

    } else{


$confirm_password =
trim($_POST["confirm
_password"]);


if(empty($password_err
) && ($password !=
$confirm_password)){


$confirm_password_err
= "Password did not
match.";

        }

    }



    // Check input errors
before inserting in
database


if(empty($username_er
r) &&
empty($email_err)  &&
empty($password_err)
```

```
&&
empty($confirm_passw
ord_err)){



        // Prepare an insert
statement

        $sql = "INSERT
INTO users
(username,email,
password) VALUES (?,
?, ?)";



        if($stmt =
mysqli_prepare($link,
$sql)){

            // Bind variables
to the prepared
statement as
parameters


mysqli_stmt_bind_para
m($stmt, "sss",
$param_username,$par
am_email,
$param_password);



            // Set parameters


$param_username =
$username;

            $param_email
```

```
= $email;


$param_password =
password_hash($passw
ord,
PASSWORD_DEFAUL
T); // Creates a
password hash



        // Attempt to
execute the prepared
statement


if(mysqli_stmt_execute(
$stmt)){

            // Redirect to
login page


header("location:
Success.php");

        } else{

            echo "Oops!
Something went wrong.
Please try again later.";

        }



        // Close
statement


mysqli_stmt_close($stm
```

```
t);
        }
    }

    // Close connection
    mysqli_close($link);
}
?>

<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="utf-
8">
    <title>Sign Up</title>
    <link
rel="stylesheet"
href="https://stackpath.
bootstrapcdn.com/boots
trap/4.5.2/css/bootstrap.
min.css">
    <style>
        body{ font: 14px
sans-serif; }
```

```
.center {
  margin: auto;
  width: 500px;
  border: 3px solid blue;
  padding: 10px;
  font-size: 14px;
  opacity: 0.9;
  background-color:
gray;

}

body {
  background-image:
url(rail.jpg);
    background-size:
cover;



}

    #apDiv1 {
```

```
  position: absolute;
  width: 1645px;
  height: 75px;
  z-index: 1;
  color: #39F;
  background-color:
#660066;
  top: 1px;
  left: 1px;
  border: 3px solid gray;
  padding: 10px;
}
   #apDiv2 {
  position: absolute;
  width: 134px;
  height: 54px;
  z-index: 2;
  left: 1224px;
  top: 7px;
  color: #F00;
  text-align: center;
  border: 3px;
```

```
  padding: 10px;
}
   #apDiv3 {
  position: absolute;
  width: 138px;
  height: 55px;
  z-index: 2;
  left: 1385px;
  top: 7px;
  color: #000;
  text-align: center;
  font-weight: bold;
  border: 3px solid
black;
  padding: 10px;
}
   #apDiv1 #apDiv2 h3 a
{
  color: #0F0;
}
   #apDiv1 #apDiv3 h3 a
{
  color: #F00;
```

```
}
a{
  color: #0F0;
}


    </style>
</head>
<body>
<a
href="home.php"></a>
<div id="apDiv1">
  <h1><a
href="home.php"><spa
n style="width: 100px;
height: 100px; font-size:
36px; color: #F0F; font-
family: 'Times New
Roman', Times,
serif;"><strong>
Home</strong></span>
</a>        </h1>
  <div id="apDiv2">
    <h3><a
href="Login.php">Sign
in</a></h3></div>
    <div id="apDiv3">
      <h3> <a
href="Register.php">Si
```

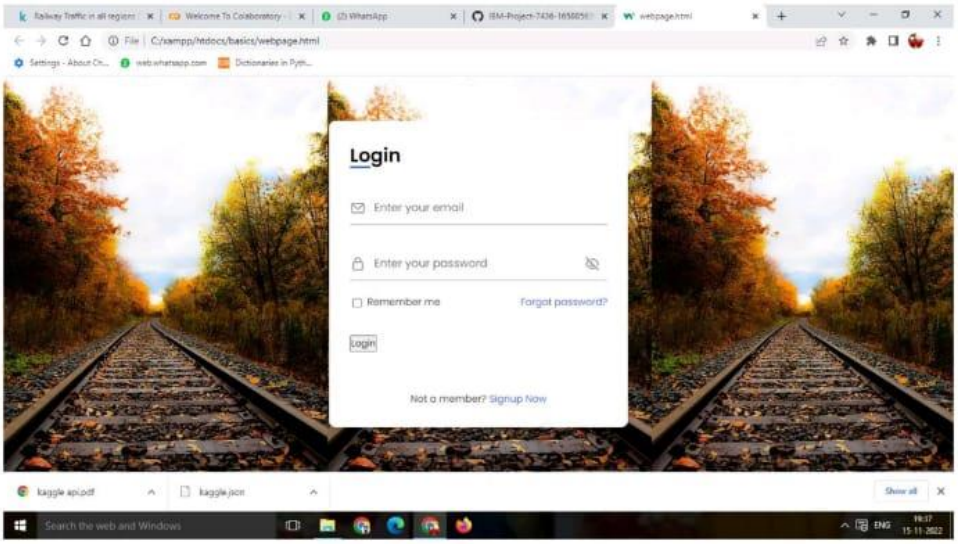
```
gn up</a></h3>

    </div>



</div>

<a href="home.php">

<H1
style="width:100px;hei
ght:100px;"> </
H1>

</a>



    <div class="center">

      <h2>Sign Up</h2>

        <p>Please fill this
form to create an
account.</p>

        <form
action="<?php echo
htmlspecialchars($_SE
RVER["PHP_SELF"]);
?>" method="post">

            <div
class="form-group">


<label>Username</label
>

                <input
type="text"
```

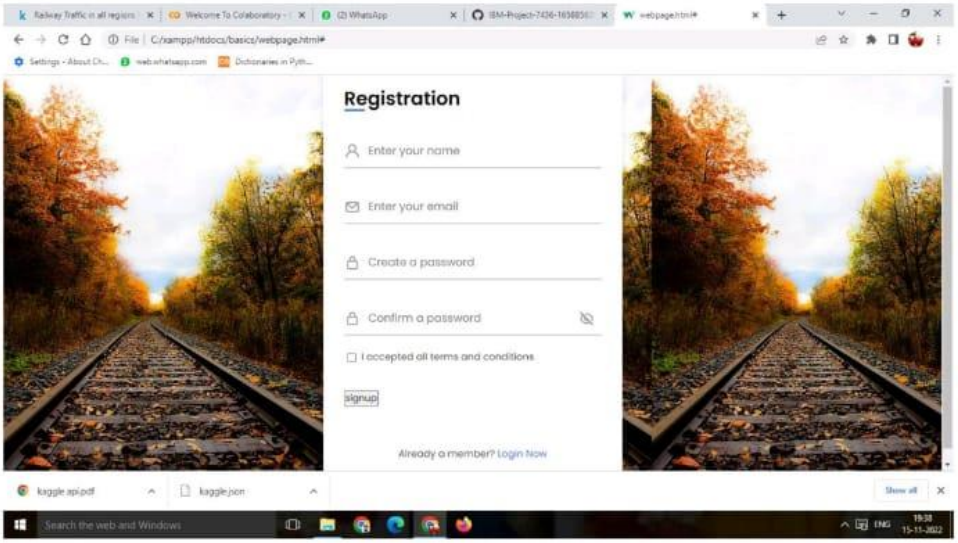
```
name="username"
class="form-control
<?php echo
(!empty($username_err
)) ? 'is-invalid' : ''; ?>"
value="<?php echo
$username; ?>">

            <span
class="invalid-
feedback"><?php echo
$username_err;
?></span>

        </div>

        <div
class="form-group">

            <label>Email
Address</label>

            <input
type="email"
name="email"
class="form-control
<?php echo
(!empty($email_err)) ?
'is-invalid' : ''; ?>"
value="<?php echo
$email; ?>">

            <span
class="invalid-
feedback"><?php echo
$email_err; ?></span>

        </div>



        <div
```

```
class="form-
group"></div>



        <div
class="form-group">


<label>Password</label
>

            <input
type="password"
name="password"
class="form-control
<?php echo
(!empty($password_err)
) ? 'is-invalid' : ''; ?>"
value="<?php echo
$password; ?>">

            <span
class="invalid-
feedback"><?php echo
$password_err;
?></span>

        </div>

        <div
class="form-group">


<label>Confirm
Password</label>

            <input
type="password"
name="confirm_passwo
rd" class="form-control
<?php echo
```

```
(!empty($confirm_pass
word_err)) ? 'is-invalid'
: ''; ?>" value="<?php
echo
$confirm_password;
?>">

            <span
class="invalid-
feedback"><?php echo
$confirm_password_err
; ?></span>

        </div>

        <div
class="form-group">

          <input
type="submit"
class="btn btn-
primary"
value="Submit">

        </div>

        <p>Already have
an account? <a
href="Login.php">Logi
n here</a>.</p>



    </form>

</div>

</body>

</html>
```

OUTPUT


Login
Enter your email
Enter your password
Remember me
Forgot password?
Login
Not a member? Signup Now


Registration
Enter your name
Enter your email
Create a password
Confirm a password
I accepted all terms and conditions
signup
Already a member? Login Now

DASHBOARD:

```
<iframe src="https://us1.ca.analytics.ibm.com/bi/?perspective=dashboard&amp;pat
hRef=.my_folders%2Ftraffic%2Banalysis%2Bdashboard%2Bcreation&amp;closeWindowOnL
astView=true&amp;ui_appbar=false&amp;ui_navbar=false&amp;shareMode=embedded&amp
;action=view&amp;mode=dashboard&amp;subView=model000001846563a8c5_00000000" wid
th="320" height="200" frameborder="0" gesture="media" allow="encrypted-media" a
llowfullscreen=""></iframe>
```

STORY:

```
<iframe src="https://us1.ca.analytics.ibm.com/bi/?perspective=story&amp;pathRef
=.my_folders%2Ftraffic%2Banalysis%2Bstory%2Bcreation&amp;closeWindowOnLastView=
true&amp;ui_appbar=false&amp;ui_navbar=false&amp;shareMode=embedded&amp;action=
view&amp;sceneId=model0000018465c0e7c5_00000000&amp;sceneTime=0" width="320" he
ight="200" frameborder="0" gesture="media" allow="encrypted-media" allowfullscr
een=""></iframe>
```

REPORT:

```
<iframe src="https://us1.ca.analytics.ibm.com/bi/?pathRef=.my_folders%2Freport&
amp;closeWindowOnLastView=true&amp;ui_appbar=false&amp;ui_navbar=false&amp;shar
eMode=embedded&amp;action=run&amp;format=HTML&amp;prompt=false" width="320" hei
ght="200" frameborder="0" gesture="media" allow="encrypted-media" allowfullscre
en=""></iframe>
```

GitHub& Project Demo Link

GITHUB LINK

https://github.com/IBM-EPBL/IBM-Project-15695-1659603134.git

YOUTUBE LINK

https://youtu.be/QLElNSZ8zRU