Global Sales Data Analytics

A PROJECT REPORT

Submitted by

G.SANDHIYA

S.SHALINI

R.VARSHASREE

G.RISHEGA

**TEAM ID**:**PNT2022TMID00352**

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| **S.NO** | **TITLE** |
| **1** | **INTRODUCTION** |
| 1.1 | Project Overview |
| 1.2 | Purpose |
| **2** | **LITERATURE SURVEY** |
| 2.1 | Existing problem |
| 2.2 | References |
| 2.3 | Problem Statement Definition |
| **3** | **IDEATION &PROPOSED SOLUTION** |
| 3.1 | Empathy Map Canvas |
| 3.2 | Ideation & Brainstorming |
| 3.3 | Proposed Solution |
| 3.4 | Problem Solution Fit |
| **4** | **REQUIREMENT ANALYSIS** |
| 4.1 | Functional requirements |
| 4.2 | Non-Functional requirements |
| **5** | **PROJECT DESIGN** |
| 5.1 | Data Flow Diagrams |
| 5.2 | Solution &Technical Architecture |
| 5.3 | User Stories |
| **6** | **PROJECT PLANNING & SCHEDULING** |
| 6.1 | Sprint Planning & Estimation |
| 6.2 | Sprint Delivery Schedule |
| 6.3 | Reports from JIRA |
| **7** | **CODING & SOLUTIONING** |
| 7.1 | Feature 1 |
| 7.2 | Feature 2 |
| 7.3 | Database Schema |
| **8** | **TESTING** |
| 8.1 | Test Cases |
| 8.2 | User Acceptance Testing |
| **9** | **RESULTS** |
| 9.1 | Performance Metrics |
| **10** | **ADVANTAGES & DISADVANTAGES** |
| **11** | **CONCLUSION** |
| **12** | **FUTURE SCOPE** |
| **13** | **APPENDIX** |

**1.INTRODUCTION**

Shopping online is currently the need of the hour. Because of this COVID, it's not easy to walk in a store randomly and buy anything you want. So, try to understand a few things like, Customer Analysis and Product Analysis of this Global Super Store

**1.1 Project Overview:**

The automated, future analyses supplied by data mining go beyond the analysis of historical events provided by the typically used decision support tools that are retrospective.

**1.2PURPOSE:**

You can better understand the products that your customers are buying by regularly analysing your sales data, which also gives you the chance to examine why specific consumer behaviours are occurring. Both your lead conversions and lead dropoffs might show patterns.

Data mining techniques, which predict future trends and behaviours, enable firms to make proactive, knowledge-driven decisions.

There are thousands of data points at your disposal. Utilize our user-friendly platform to create, hone, and analyse your audience. track trends. Global Granular Analysis 46 countries. There are 17 million panellists. 40000 data points Create individualised segments.

Sales analytics refers to the processes and technologies used to gather sales data and assess sales effectiveness. Sales managers utilise these indicators to set goals, improve internal processes, and make more accurate predictions.

**2.LITERATURE SURVEY**

**2.1 Existing Problem:**

1. There aren't enough leads and the global sales process is simply too drawn out.
2. Leads are unqualified and waste your time on prospects who are the wrong fit.
3. Devoting excessive time to low-value tasks
4. The statement might refer to resource constraints, workflow bottlenecks, or more basic issues like a problem with comprehending a client base.
5. Select the crucial sales KPIs that you require, such as the win rate and average deal size.
6. Use a solution to keep track of this information as leads go through your pipeline, such as Pipe drive's CRM. Put these information in visual dashboards.

**2.2 REFERANCES:**

1.Han Jiawei, Micheline Kamber and Jian Pei, "Data Mining Concepts and

Techniques" in , MK Publications, 2009.

[**https://scholar.google.com/scholar?as\_q=Data+Mining+Concepts+and+Techniques**](https://scholar.google.com/scholar?as_q=Data+Mining+Concepts+and+Techniques&as_occt=title&hl=en&as_sdt=0%2C31)

2.M. Tennekes and E. de Jonge, "Top-down Data Analysis with Tree maps",

Proceedings of the International Conference on Information Visualization

Theory and Applications (IVAPP' 11), pp. 236-241, March 2011.

[**https://scholar.google.com/scholar?as\_q=Top-down+Data+Analysis+with+TreemapsHYPERLINK "https://scholar.google.com/scholar?as\_q=Top-down+Data+Analysis+with+Treemaps&as\_occt=title&hl=en&as\_sdt=0%2C31" HYPERLINK**](https://scholar.google.com/scholar?as_q=Top-down+Data+Analysis+with+Treemaps&as_occt=title&hl=en&as_sdt=0%2C31)

3.P. Hoek, "Parallel Arc Diagrams: Visualizing Temporal Interactions", Journal of

Social Structure, vol. 12, 2011.

[**https://scholar.google.com/scholar?as\_q=Parallel+Arc+Diagrams%3A+Visualizing+Temporal+InteractionsHYPERLINK "https://scholar.google.com/scholar?as\_q=Parallel+Arc+Diagrams%3A+Visualizing+Temporal+Interactions&as\_occt=title&hl=en&as\_sdt=0%2C31" HYPERLINK**](https://scholar.google.com/scholar?as_q=Parallel+Arc+Diagrams%3A+Visualizing+Temporal+Interactions&as_occt=title&hl=en&as_sdt=0%2C31)

**2.3 Problem Statement definition:**

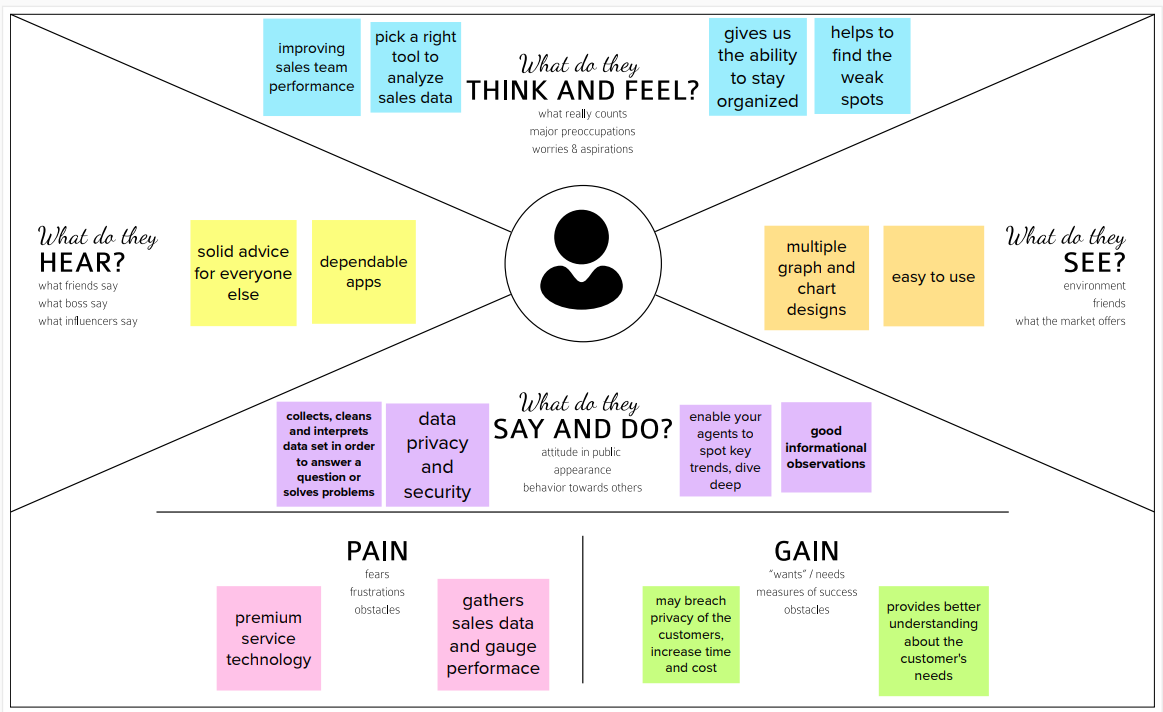
Businesses, people, and other entities need problem statements to create projects that clearly outline the difficulties their clients are facing.

In order to generate insightful conclusions that have a beneficial impact on your bottom line, you must examine the appropriate types of sales data.

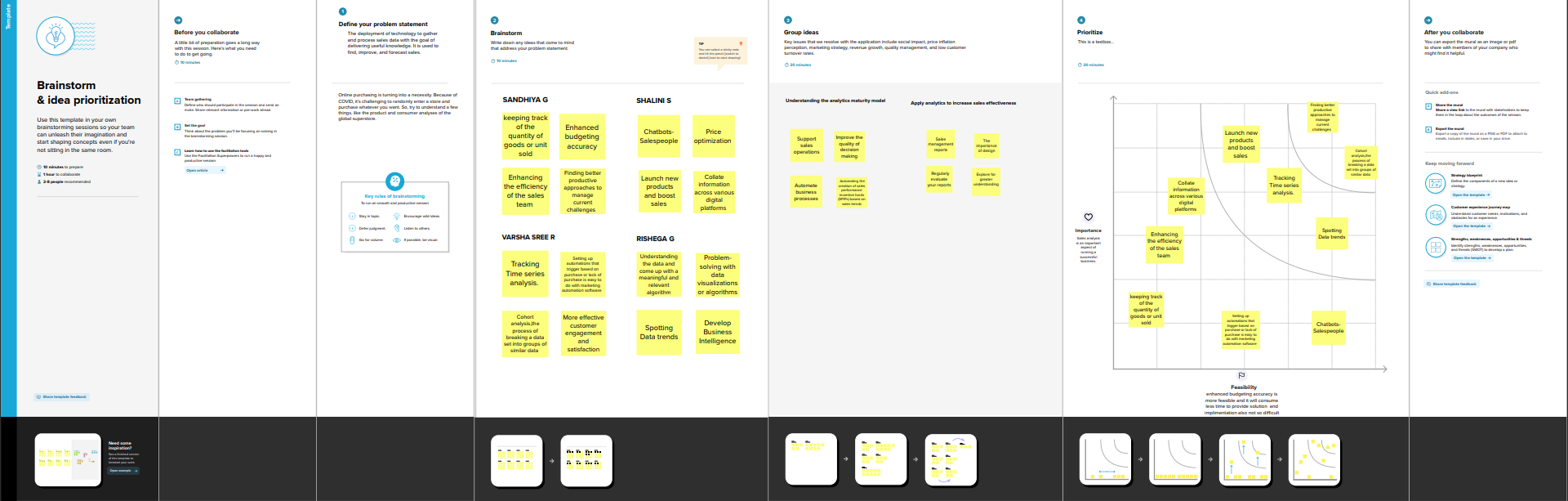
Finding weak points and bottlenecks in sales processes is essential for gathering and utilising sales data to further sales objectives.

**3.IDEATION & PROPOSED SOLUTION**

**3.1 Empathy Map Canvas**

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**3.2 Ideation & Brainstorming**

****

**3.3 Proposed Solution:**

|  |  |  |
| --- | --- | --- |
| **S.NO.** | **PARAMETER** | **DESCRIPTION** |
| 1. | Problem Statement (Problem to be solved) | Online purchasing is turning into a necessity. Because of COVID, it's challenging to randomly enter a store and purchase whatever you want. The deployment of technology to gather and process sales data with the goal of delivering useful knowledge. It is used to find, improve, and forecast sales. |
| 2. | Idea / Solution description | The term "sales analytics" refers to the use of technology to gather and analyse sales data in order to provide technical experience. It is utilised to pinpoint, enhance, and forecast sales.  The processed data is looked at in terms of the understanding of sales. |
| 3. | Novelty / Uniqueness | By giving more varieties in product can improve the sales and also improve profits by providing doorstep delivery. |
| 4. | Social Impact/ Customer Satisfaction | * Optimize sales and marketing * The power to respond to the plans of opponents. * Gaining knowledge about sales at various locations and periods. |

|  |  |  |
| --- | --- | --- |
| 5. | Business Model (Revenue Model) | * Enhance the decision-making process with a focus on cost reduction, scale market analysis, and business revenue growth. * The basic model gives the better dashboard analysis |
| 6. | Scalability of the Solution | Using this approach, the varieties in brand may reliable so that the profit can increase in different domains. |

**3.4 Problem solution fit:**



**4.Requirement analysis:**

**4.1 Functional requirement :**

|  |  |  |
| --- | --- | --- |
| **FR No.** | **Functional Requirement(Epic)** | **Sub Requirement(Story/Sub- Task)** |
| FR-1 | User enrollment | Enrollment via Gmail or Google  Business |
| FR-2 | User confirmation | Confirmation via Email  Confirmation via OTP |
| FR-3 | User Login | Login via email and password |
| FR-4 | User Input | Data must be in proper valid  format |
| FR-5 | Data Validation | Data is cleaned and verified for  duplications |
| FR-6 | End user benefits | Getting higher efficiency and  also to know entire data analysis |

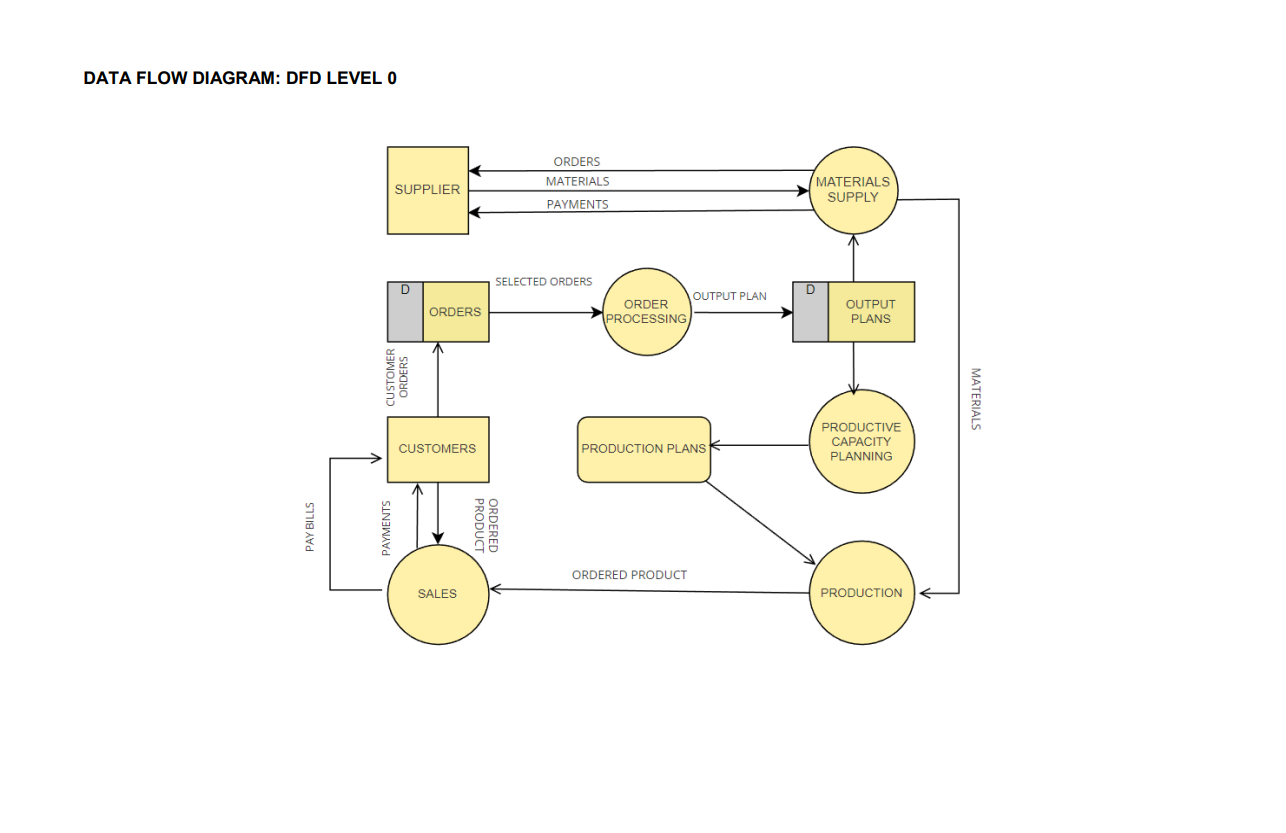
**4.2 Non Functional requirement:**

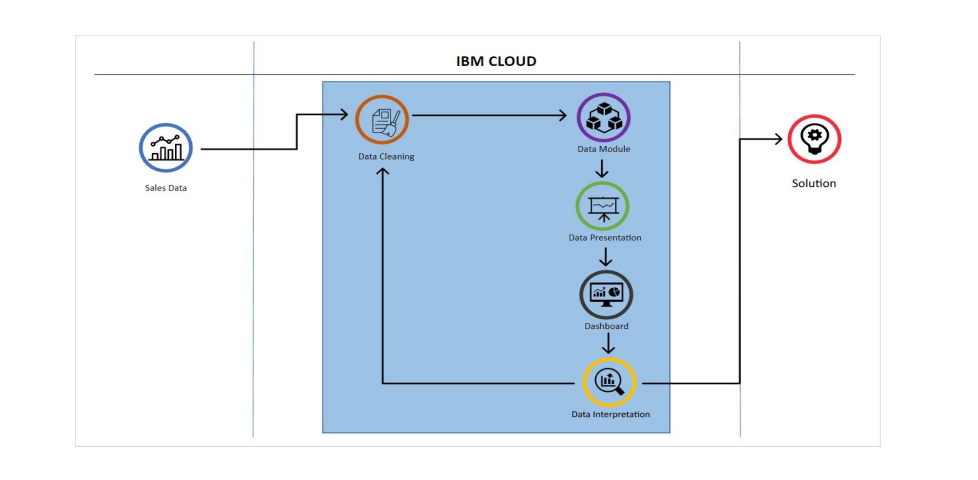
|  |  |  |
| --- | --- | --- |
| **NFR No.** | **Non Functional Requirement** | **Description** |
| NFR-1 | Usability | Optimized resources and it can be used by everyone |
| NFR-2 | Security | It is securable because it has end to end encryption |
| NFR-3 | Reliability | It has high reliability based on development |
| NFR-4 | Performance | It has high state of performance and efficiency |
| NFR-5 | Availability | It is available in all platforms and websites |
| NFR-6 | Scalability | Ability of hardware and software parallel system's capacity to take advantage of rising computing resource efficiency in the analysis of  (extremely) big data sets. |

**5.Project Design:**

**5.1.Data Flow Diagram**:

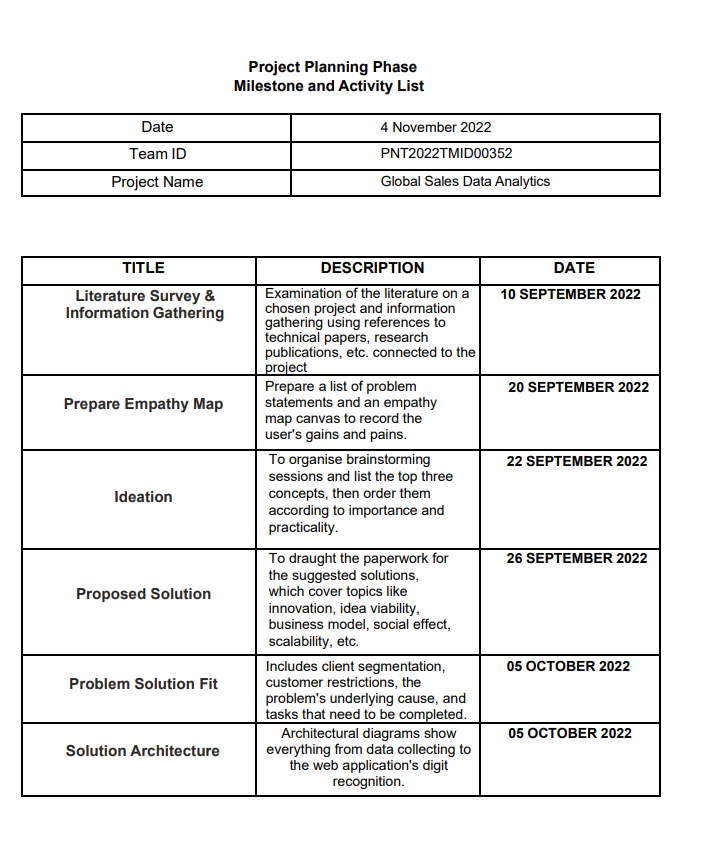
**5.2 Solution and Technical Architecture:**

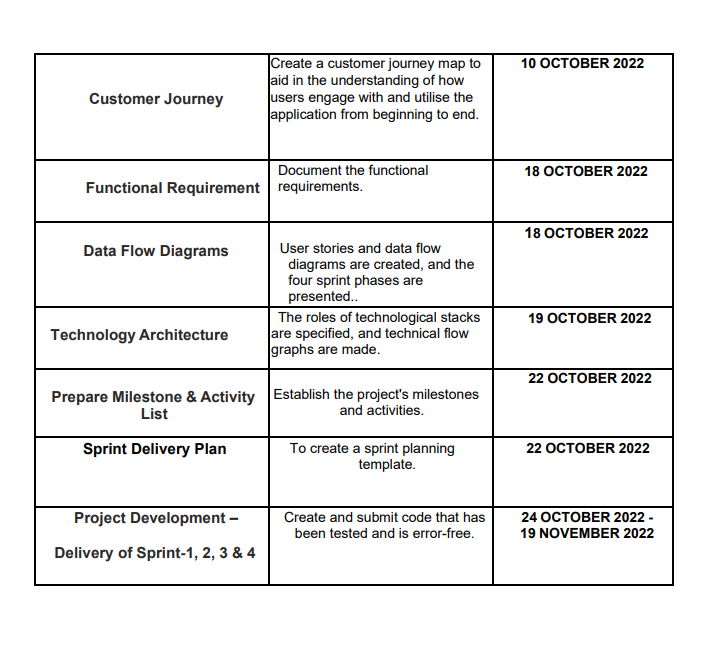


****

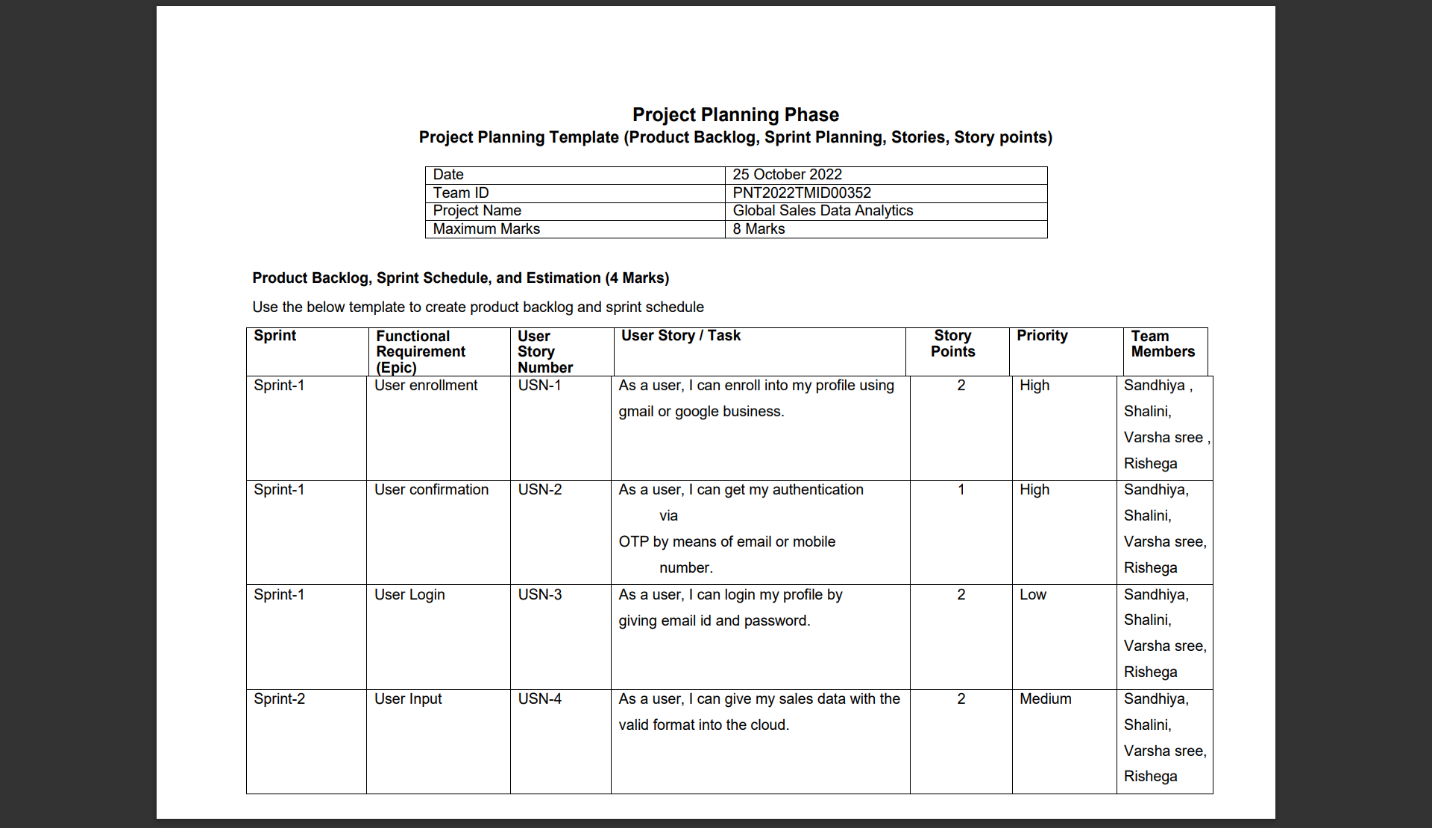
**6.Project Planning & Scheduling:**

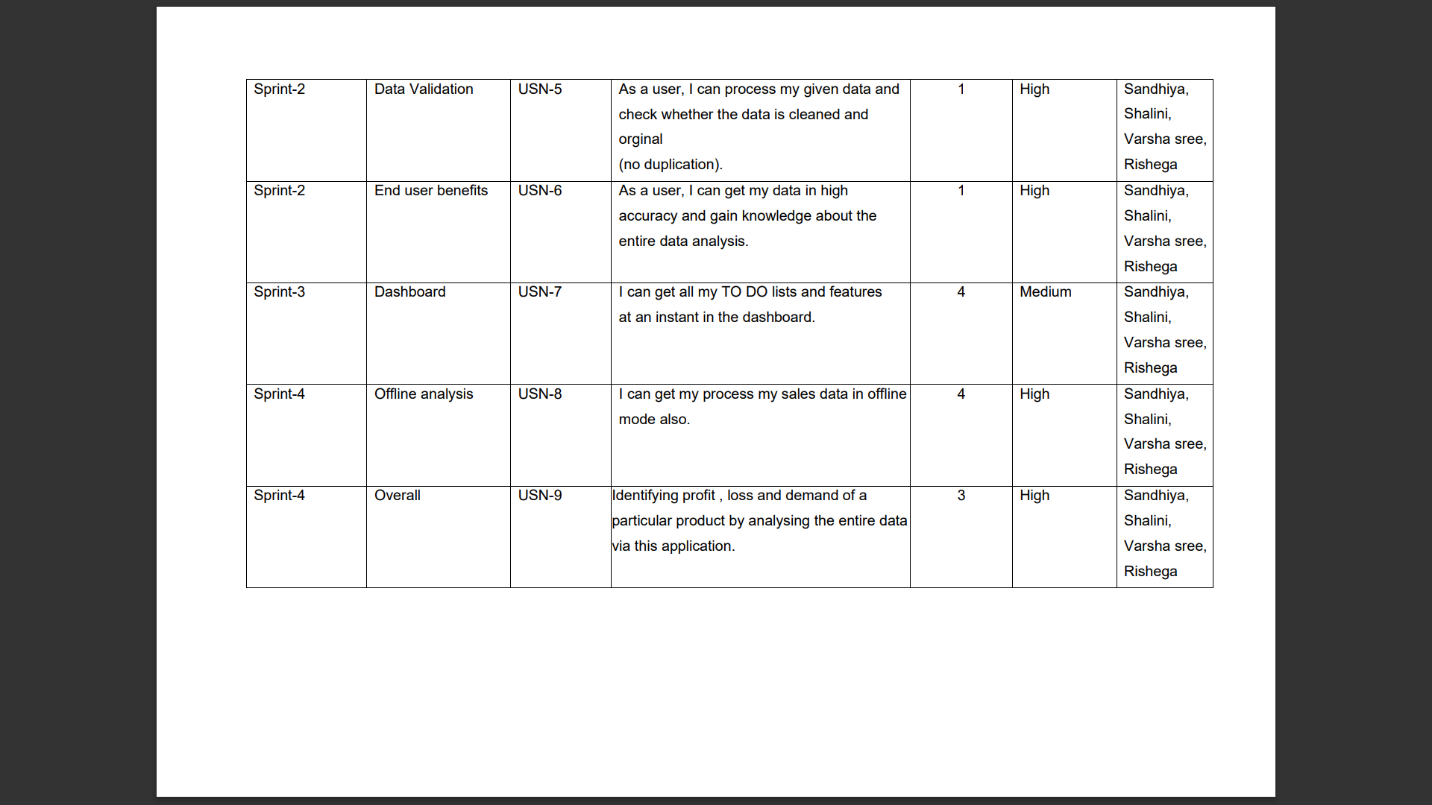
**6.1 Sprint Planning & Estimation**

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**6.2 Sprint Delivery Schedule :**





**Velocity:**

We have a 24-day sprint duration, and the velocity of the team is 20 (points per sprint). Let’s calculate the team’s average velocity (AV) per iteration unit (story

points per day)

**AV = Sprint Duration / Velocity = 20 / 10 = 2**

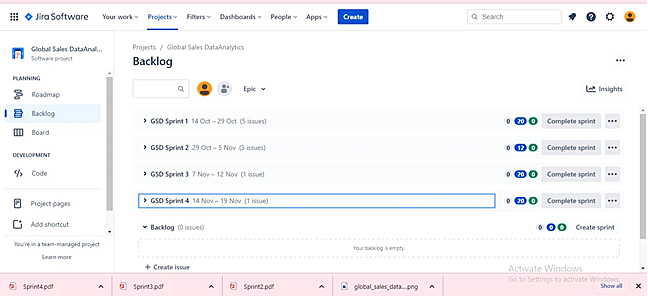
**Burndown Chart :**

A burn down chart is a graphical representation of work left to do versus time. It is often used in agile software development methodologies such as Scrum. However, burn down charts can be applied to any project containing measurable progress over time

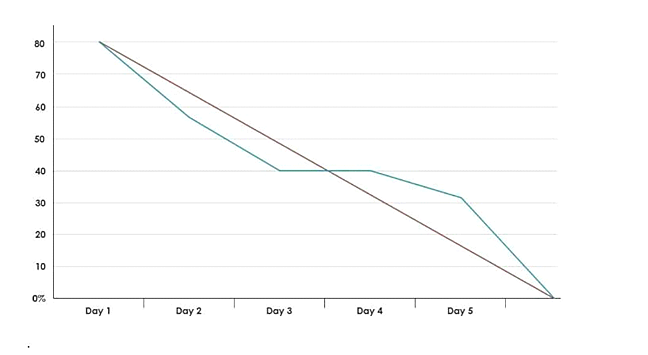
.



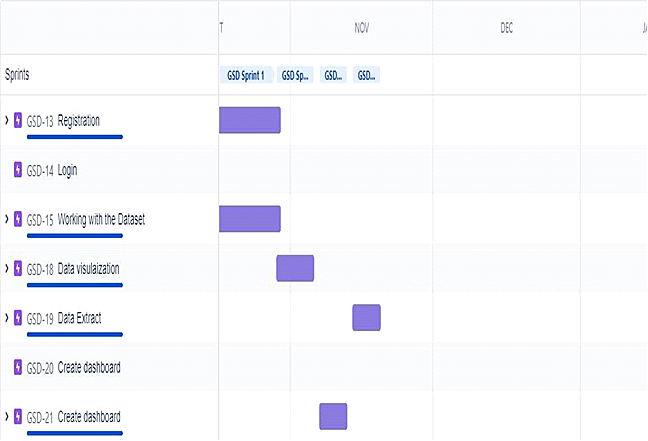
**6.3 Reports from JIRA :**



**Burndown chart :**



**Road Map:**



**7.Coding & Solution:**

**7.1 Feature 1**

**Sales – Analysis:**

This is an analysis of the sales data with particular focus given to how promotions and advertising translate into sales, in terms of both units sold and sales dollars.

**Different types of Sales Analysis**

**●** Furniture company sales analysis HTML file

● Cereal Company Sales Analysis HTML file

● Financial Statement Analysis PDF file

**Analysis using R Shiny Dashboard**

**●** Furniture company sales Dashboard R Shiny app

**Steps for Cereal Company Sales Analysis**

1**.** Download the Raw Data

2. Analysis code R file

3. Final Analysis R file

**Steps for Furniture company sales analysis**

1. Download the Raw Data

2. Analysis code R file

3. Dashboard Code HTML file

4. Final Dashboard PDF file

5. Final Analysis HTML file

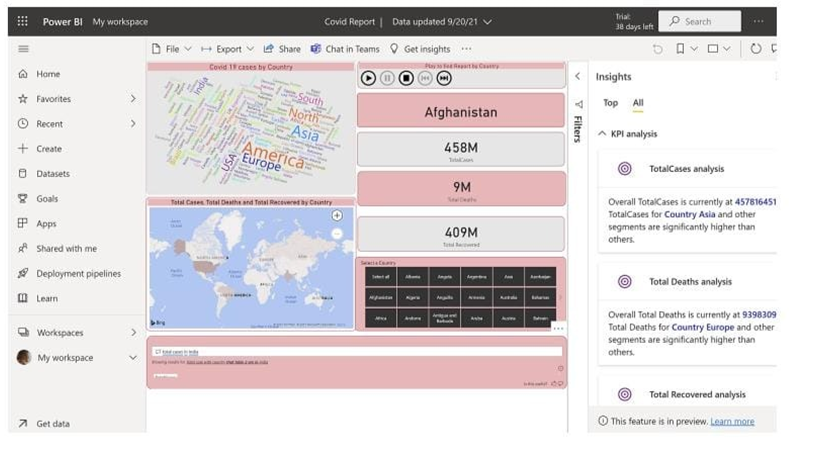
**fearture-1:**

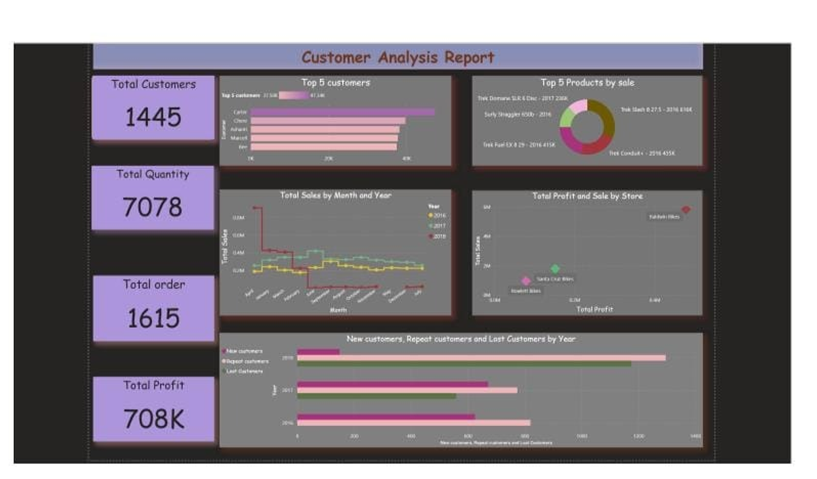
**Step 1: Understand the Business**

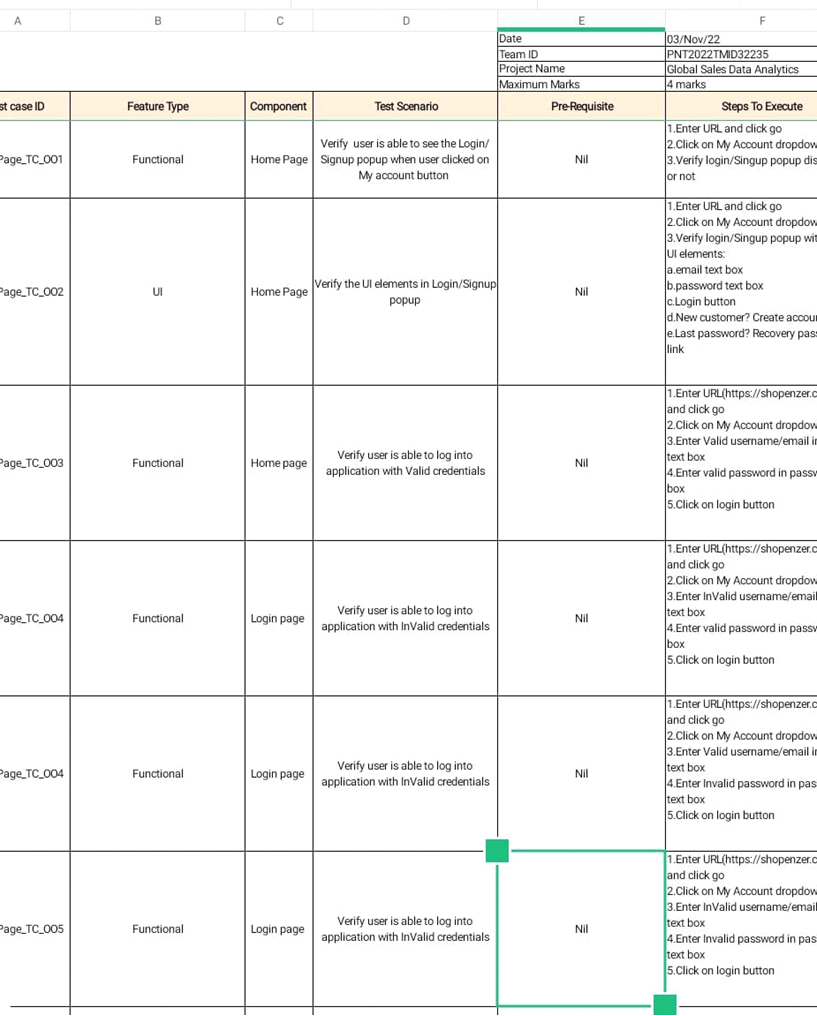
**Step 2: Get Your Data**

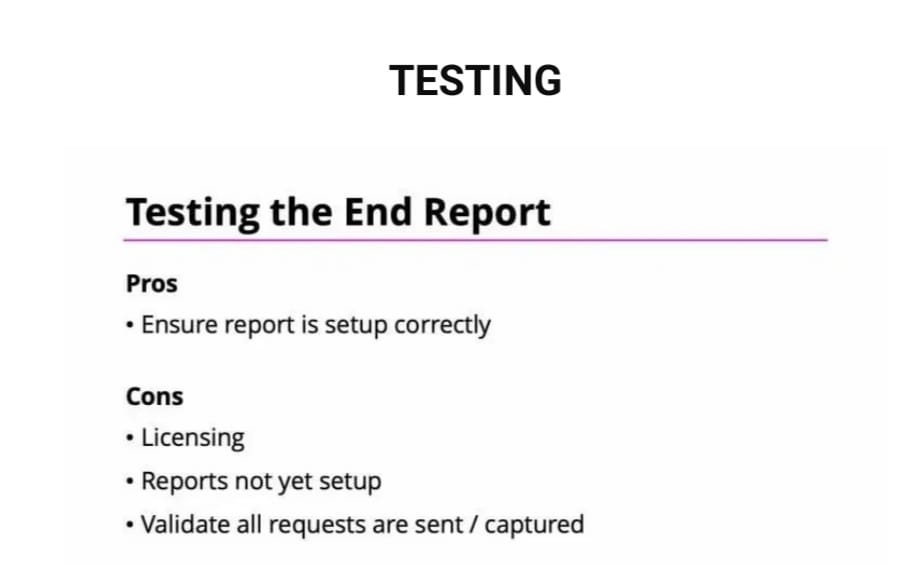
**Step 3: Explore and Clean Your Data**

**Step 4: Enrich Your Datasets**



**8.Testing : 8.1 Test cases:**





**8.2 USER ACCEPTANCE TESTING**

Copying and pasting screenshots of test results into Word or Excel is

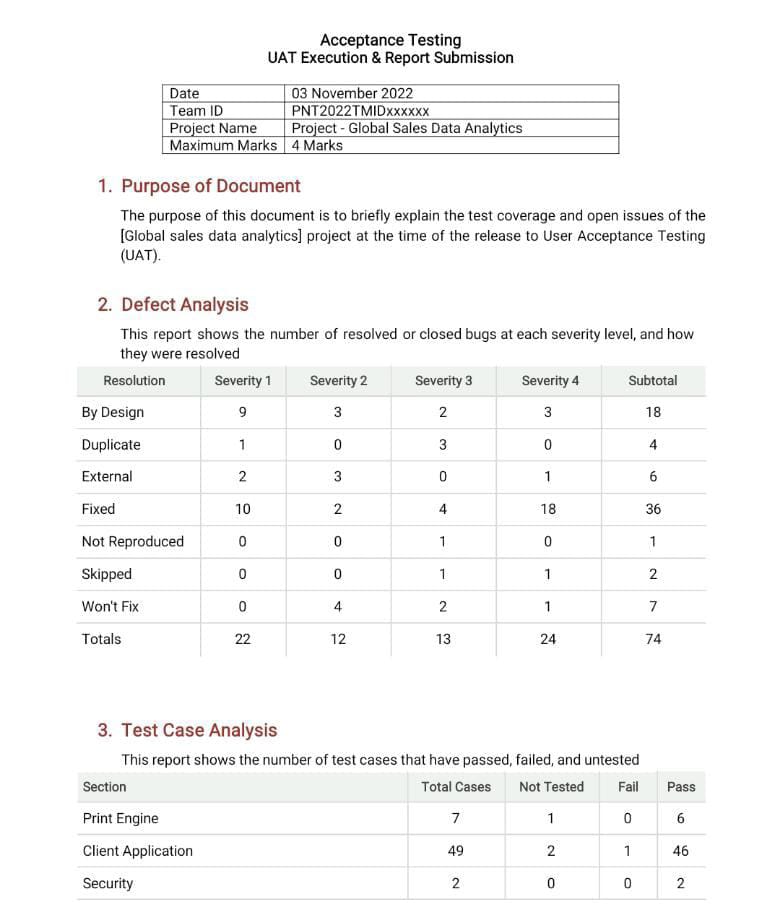
very time-consuming and prone to human error. Optimize your UAT testing

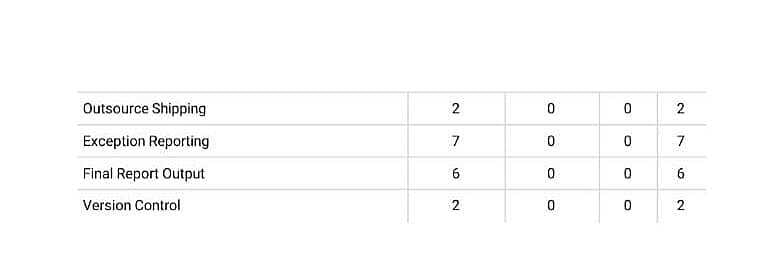
with automated documentation, workflow and defect management. The

right tool will help you with exploratory testing and be able to document

tests using a recorder for playback as needed, accelerating the process and

reducing the back-and-forth between the software development and testing teams.





**9.RESULTS**

**9.1 PERFORMANCE Metrics:**

The analysis covered the period from 2012 to 2015, with conversion to the Brazilian currency Real BRL (R$). Some results:

• The US was the country with the highest profit.

• The country that presented the biggest loss in sales was Turkey.

• There was greater demand for Superstore products to be shipped via the standard mode.

• The Technology Category presented better results in Profit and Sales.

• The Retail segment performed better for all the years evaluated.

**10.ADVANTAGES**

1. Cost efficiency
2. Receive full-scale services
3. Maximize presentation
4. Save time

**DISADVANTAGES**

1. Risk of choosing the wrong provider
2. Lack of on-site support
3. Less control
4. Data security

**11.CONCLUSION**

By implementing this analytics solution, the company brought their competitive and sales data reporting in-house, cut costs and increased the accuracy of their reporting and analysis. As the company moves forward with this new solution, their sales reporting costs will most likely be reduced by 50 to 70%. They are now able to analyze raw data themselves, respond more quickly to changes in market trends and perform root cause analysis to determine those shifts in the market. By securing quicker access to their data with the new solution, the company was also able to reduce the risk associated with delayed responses to changes in their markets.With the new solution, the company can now process sales reports faster than the outsourced solution, reducing turnaround time between 50% to 60%. The reporting needs of the company have been streamlined, consolidating over 10reports into the centralized dashboard solution. The company’s competitive analysis group is also able to more quickly respond to internal data requests given they have the ability to pull the information themselves. With this quicker response, the company is better able to react to changes in the market and predict opportunities for its sales force.The business also experienced an increase in the overall understanding of their sales data throughout the organization. The company now has great flexibility in the presentation of their sales and competitive data, while also being able to integrate sales data with other key data points for the organization.

**12.FUTURE SCOPE**

Sales analytics refers to the use of technology to collect and use sales data to derive actionable insights. It is used to identify, optimize, and forecast sales. It uses different metrics and KPIs to plan an efficient sales model that generates higher revenue for the business.

**13.APPENDIX**

**SOURCE CODE :**

from flask import Flask, render\_template, request, redirect, url\_for, session

import ibm\_db

import re

app = Flask(\_name\_)

hostname = '2f3279a5-73d1-4859-88f0-a6c3e6b4b907.c3n41cmd0nqnrk39u98g.databases.appdomain.cloud'

uid = 'hmf80902'

pwd = 'oHzpnV88erkd09'

driver = "{IBM DB2 ODBC DRIVER}"

db\_name = 'bludb'

port = '30756'

protocol = 'TCPIP'

cert = "C:/Users/Prithiarun/Desktop/IBM/TEST/certi.crt"

dsn = (

"DATABASE ={0};"

"HOSTNAME ={1};"

"PORT ={2};"

"UID ={3};"

"SECURITY=SSL;"

"PROTOCOL={4};"

"PWD ={6};"

).format(db\_name, hostname, port, uid, protocol, cert, pwd)

connection = ibm\_db.connect(dsn, "", "")

print(dsn)

# query = "SELECT username FROM USER1 WHERE username=?"

# stmt = ibm\_db.prepare(connection, query)

# ibm\_db.bind\_param(stmt, 1, username)

# ibm\_db.execute(stmt)

# username = ibm\_db.fetch\_assoc(stmt)

# print(username)

try:

conn = ibm\_db.connect(dsn,"", "")

print("connected to database")

except:

print("unable to connect")

server = ibm\_db.server\_info(conn)

print("DBSNAME: ", server.DBMS\_NAME)

print("DBMS\_VER: ", server.DBMS\_VER)

print("DBNAME: ", server.DB\_NAME)

app.secret\_key = 'a'

@app.route('/', methods=['GET', 'POST'])

@app.route('/register', methods=['GET', 'POST'])

def register():

msg = " "

if request.method == 'POST':

username = request.form['username']

email\_id = request.form['email\_id']

phone\_no = request.form['phone\_no']

password = request.form['password']

query = "SELECT \* FROM USER1 WHERE username=?;"

stmt = ibm\_db.prepare(connection, query)

ibm\_db.bind\_param(stmt, 1, username)

ibm\_db.execute(stmt)

account = ibm\_db.fetch\_assoc(stmt)

if (account):

msg = "Account already exists!"

return render\_template('register.html', msg=msg)

# elif not re.match(r'[^@]+@[^@]+\.[^@]+', email\_id):

# msg = "Invalid email addres"

# elif not re.match(r'[A-Za-z0-9+', username):

# msg = "Name must contain only characters and numbers"

else:

query = "INSERT INTO USER1 values(?,?,?,?)"

stmt = ibm\_db.prepare(connection, query)

ibm\_db.bind\_param(stmt, 1, username)

ibm\_db.bind\_param(stmt, 2, email\_id)

ibm\_db.bind\_param(stmt, 3, phone\_no)

ibm\_db.bind\_param(stmt, 4, password)

ibm\_db.execute(stmt)

msg = 'You have successfully Logged In!!'

return render\_template('login.html', msg=msg)

else:

msg = 'PLEASE FILL OUT OF THE FORM'

return render\_template('register.html', msg=msg)

@app.route('/login', methods=['GET', 'POST'])

def login():

global userid

msg = ' '

if request.method == "POST":

username = request.form['username']

password = request.form['password']

query = "select \* from user1 where username=? and password=?"

stmt = ibm\_db.prepare(connection, query)

ibm\_db.bind\_param(stmt, 1, username)

ibm\_db.bind\_param(stmt, 2, password)

ibm\_db.execute(stmt)

account = ibm\_db.fetch\_assoc(stmt)

print(account)

if account:

session['Loggedin'] = True

session['id'] = account['USERNAME']

session['username'] = account['USERNAME']

msg = 'Logged in Successfully'

return render\_template('welcome.html', msg=msg, username=str.upper(username))

else:

msg = 'Incorrect Username or Password'

return render\_template('login.html', msg=msg)

else:

msg = 'PLEASE FILL OUT OF THE FORM'

return render\_template('login.html', msg=msg)

@app.route('/welcome', methods=['GET', 'POST'])

def welcome():

if request.method == 'POST':

username = request.form['username']

print(username)

return render\_template('welcome.html', username=username)

else:

return render\_template('welcome.html', username=username)

if "main" == \_name\_:

app.run()

LOGIN PAGE:

<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8">

<meta http-equiv="X-UA-Compatible" content="IE=edge">

<meta name="viewport" content="width=device-width, initial-scale=1.0">

<link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/bootstrap@4.6.1/dist/css/bootstrap.min.css">

<script src="https://cdn.jsdelivr.net/npm/jquery@3.6.0/dist/jquery.slim.min.js"></script>

<script src="https://cdn.jsdelivr.net/npm/popper.js@1.16.1/dist/umd/popper.min.js"></script>

<script src="https://cdn.jsdelivr.net/npm/bootstrap@4.6.1/dist/js/bootstrap.bundle.min.js"></script>

<title>About</title>

<style>

\*{

margin:0px;

box-sizing: border-box;

}

body{

font-family: Arial, Helvetica, sans-serif;

margin: 0;

background: #8e9eab; /\* fallback for old browsers \*/

background: -webkit-linear-gradient(to right, #eef2f3, #8e9eab); /\* Chrome 10-25, Safari 5.1-6 \*/

background: linear-gradient(to right, #eef2f3, #8e9eab); /\* W3C, IE 10+/ Edge, Firefox 16+, Chrome 26+, Opera 12+, Safari 7+ \*/

}

#about{

margin-top: 50px;

}

h1{

font-size: 60px;

}

p{

font-size: 20px;

}

#cards{

padding: 30px

}

.column{

padding: 30px;

}

.card{

border: none;

box-shadow: rgba(0, 0, 0, 0.24) 0px 3px 8px;

}

button{

margin-left: 100px;

margin-top: 50px;

}

#home-btn{

margin-top: 50px;

margin-left: 100px;

padding:10px 30px;

font-size: 30px;

}

</style>

</head>

<body>

<a href="index.html" class="btn btn-dark stretched-link" id="home-btn">Home</a>

<div class="container-fluid" id="about">

<h1>ABOUT US </h1>

<p>Who are we and what we do.</p>

<p>Resize the browser window to see that this page is responsive by the way.</p>

</div>

<h2 style="text-align:center">Our Team</h2>

<div class="container-fluid" id="cards">

<div class="row">

<div class="column">

<div class="card" style="width:400px;">

<img class="card-img-top" src="{{url\_for('static', filename='avatar2.jpg')}}" alt="Card image" style="width:100%"/>

<div class="card-body">

<h4 class="card-title">G.SANDHIYA</h4>

<h5 class="title">Team Leader</h5><br>

<p class="card-text">ECE<br>LEADING THE TASK.<br></p><br>

<p>sandhiya05062002@gmail.com</p><br>

<a href="#" class="btn btn-primary stretched-link">See Profile</a>

</div>

</div>

</div>

<div class="column">

<div class="card" style="width:400px">

<img class="card-img-top" src="{{url\_for('static', filename='avatar2.jpg')}}" alt="Card image" style="width:100%"/>

<div class="card-body">

<h4 class="card-title">R.VARSHASREE</h4>

<h5 class="title">Team Member 1</h5><br>

<p class="card-text">ECE<br>Does data visulaizations.<br></p><br>

<p>varshasree2001@gmail.com</p><br>

<a href="#" class="btn btn-primary stretched-link">See Profile</a>

</div>

</div>

</div>

<div class="column">

<div class="card" style="width:400px">

<img class="card-img-top" src="{{url\_for('static', filename='avatar2.jpg')}}" alt="Card image" style="width:100%">

<div class="card-body">

<h4 class="card-title">S.SHALINI</h4>

<h5 class="title">Team Member 2</h5><br>

<p class="card-text">ECE.<br>Does back end tasks.<br></p><br>

<p>shalinitkm02@gmail.com</p><br>

<a href="#" class="btn btn-primary stretched-link">See Profile</a>

</div>

</div>

</div>

<div class="column">

<div class="card" style="width:400px">

<img class="card-img-top" src="{{url\_for('static', filename='avatar2.jpg')}}" alt="Card image" style="width:100%">

<div class="card-body">

<h4 class="card-title">G.RISHEGA</h4>

<h5 class="title">Team Member 3</h5><br>

<p class="card-text">ECE.<br>Manages storage and data.</p><br>

<p>rishegaganesan11@gmail.com</p><br>

<a href="#" class="btn btn-primary stretched-link">See Profile</a>

</div>

</div>

</div>

</div>

</body>

</html>

GITHUB : https://github.com/IBM-EPBL/IBM-Project-12816-1659494178

PROJECT DEMO LINK:

<https://youtu.be/k3IWbfrZxnM>