NAAN MUDHALVAN PROJECT- DATA ANALYTICS WITH TABLEAU

PROJECT TITLE: INDIAN FOOD EDA



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1. INTRODUCTION

1.1. PROJECT OVERVIEW

The aim of this project is to perform Exploratory Data Analysis (EDA) on a dataset related to Indian food. Exploratory Data Analysis is a crucial step in data analysis that helps in understanding the dataset, discovering patterns, and extracting insights. In this project, we will explore various aspects of Indian cuisine, such as ingredients, recipes, regional variations, and popularity.

1.2. PURPOSE

The project aims to analyse different Indian dishes and infer about the time taken for preparing each dish with help of Exploratory Data Analysis (EDA) on a dataset created based on Indian food varieties, thus pictorially representing the preparation process as slow, medium, and fast.

2. LITERATURE SURVEY

2.1. EXISTING PROBLEM

Despite the growing popularity of Indian cuisine worldwide, there is a lack of comprehensive data-driven insights into the consumption and preferences for Indian food, both domestically and internationally. The existing data sources are often fragmented and outdated, making it challenging for restaurants, food businesses, and culinary enthusiasts to make informed decisions about menu planning, marketing strategies, and ingredient sourcing. This knowledge gap hinders the ability to cater to the diverse tastes and preferences of consumers who enjoy Indian food. Therefore, the problem is to conduct an EDA to bridge this information gap and provide actionable insights for the Indian food industry.

2.2. REFERENCES

INTRODUCTION

Exploratory Data Analysis (EDA) has become an essential tool in understanding and extracting insights from large datasets. In the context of Indian food, EDA plays a crucial role in unraveling the complexities of this diverse and rich culinary heritage. This literature review explores existing research and studies that have employed EDA techniques to analyze Indian food datasets, shedding

light on the ingredients, regional variations, popularity, and nutritional aspects of Indian cuisine.

DIETARY ASSESSMENT AND INDIAN CUISINE ANALYSIS USING KNN AND EDA by Pearl Ahuja, Diksha Solani, Amita Goel, Nidhi Sengar, Vasudha Bahl (2021)

Description: In this paper, an exertion has been made to analyse the various food items for assessment of most favoured cuisine in every region of India along with recommendation of various dishes preferable to that region using KNN and EDA.

FOOD NUTRITIONAL ANALYSIS AND EDA by Atishya Mahesh Jain, KrishnaPriya B, Seno Sunil, Helen Grace Jikku, Sheethal Kj (2022)

Description: This project deals with the usage of Exploratory Data Analysis (EDA) in order to carry out nutritional analysis, thus finding the nutrient composition, quality, and contamination of a food variety.

ZOMATO DATA WITH EDA, GEOSPATIAL AND SENTIMENT ANALYSIS by Priyadharshini R (2021)

Description: The main objective of this project is to find insights and get some idea about the restaurants in Bangalore using different techniques like EDA, Geospatial and Sentiment Analysis.

EDA AND VISUALIZATION OF INDIAN STREET FOOD: A DATA-DRIVEN PERSPECTIVE by Das and Mohanty (2022)

Description: This study employs EDA and visualization techniques to analyze data on Indian street food. The authors explore the regional variations, popularity, and ingredients of street food across different Indian cities. Through visualizations, they highlight the street food culture and its unique culinary offerings, uncovering hidden gems and trends.

EDA OF POPULAR INDIAN DISHES ON SOCIAL MEDIA by Patel and Shah (2020)

Description: This study utilizes EDA to analyze the popularity of Indian dishes on social media platforms. The authors collect data from various social media sources and explore metrics such as user ratings, reviews, and mentions. They identify popular dishes, trends, and emerging flavors, providing insights into the changing preferences of consumers.

2.3. PROBLEM STATEMENT DEFINITION

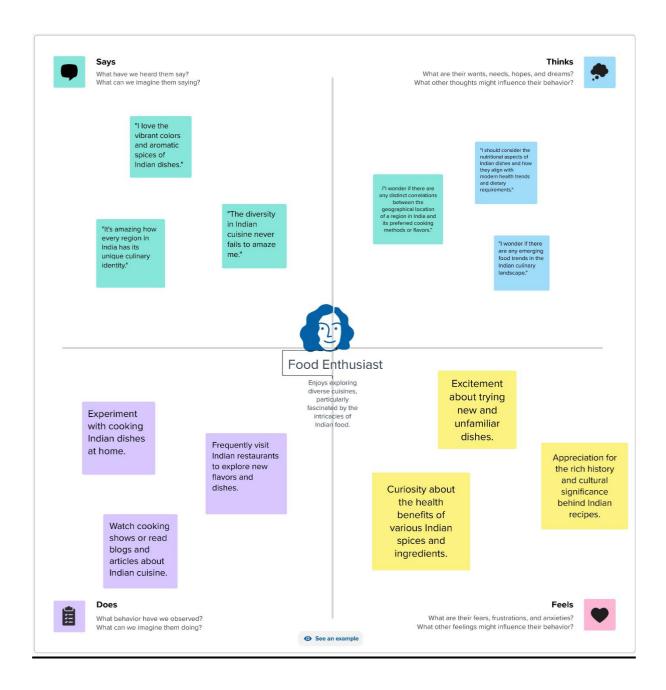
Conduct an exploratory data analysis (EDA) to gain insights into the consumption, preferences, and trends related to Indian cuisine in a specific geographic area or across a particular demographic group. This analysis aims to provide a comprehensive understanding of the patterns, ingredients, dishes, and factors influencing the popularity and consumption of Indian food, ultimately informing decisions related to restaurant menus, marketing strategies, or culinary innovation within the context of Indian cuisine.

3. IDEATION AND PROPOSED SOLUTION

3.1. EMPATHY MAP CANVAS

DEFINITION:

An empathy map is a simple, *easy-to-digest visual that captures knowledge about a user's* behaviours *and attitudes.*An empathy map canvas for an exploratory data analysis (EDA) of Indian food can help you understand the perspectives and needs of stakeholders involved in this project.



3.2. IDEATION AND BRAINSTORMING

- 1. Prepare for your brainstorming session
- 2Define your problem statement
- 3. Collect ideas and gather feedback from everyone
- 4. Group ideas by theme
- 5. Prioritize your solutions and get aligned on next steps

Ideation and brainstorming for an exploratory data analysis (EDA) of Indianfood can help generate ideas, concepts, and potential research directions.

• Cuisine Regional Variation Analysis:

- Explore regional variations in Indian cuisine and their popularity.
- Analyze which regions are known for specific dishes and ingredients.

• Ingredient Popularity:

- Investigate the popularity of individual spices, herbs, and ingredients in Indian recipes.
 - Identify trends in ingredient usage over time.

• Consumer Preferences and Demographics:

- Understand consumer preferences in Indian cuisine.
- Analyze how age, location, and cultural background influence food choices.

• Health and Dietary Trends:

- Investigate the impact of health and dietary trends on Indian food choices.
 - Examine the rise of vegetarian and vegan options in Indian cuisine.

• Ingredient Sourcing and Supply Chain:

- Study the supply chain and sourcing of ingredients for Indian restaurants and products.
 - Analyze the impact of global events on ingredient availability and prices.

• Food Pairing and Flavor Profiles:

- Explore which flavors and ingredients pair well in Indian dishes.
- Create data-driven flavor profiles for different types of Indian cuisine.

• Recipe and Cooking Trends:

- Analyze the popularity of specific Indian recipes and cooking methods.
- Identify emerging cooking trends in Indian cuisine.

• Cultural and Culinary History:

- Explore the historical and cultural significance of different Indian dishes and cooking styles.
 - Analyze how these aspects influence present-day preferences.

• Globalization of Indian Food:

- Investigate the globalization of Indian food and its adaptation to different cultures.
- Analyze international food trade related to Indian cuisine.

4.REQUIREMENTS

4.1.FUNCTIONAL REQUIREMENTS

DATA COLLECTION

The first step is to collect a comprehensive dataset on Indian food. This dataset can be obtained from various sources such as recipe websites, food blogs, culinary books, or public repositories. The dataset should ideally include information such as the name of the dish, ingredients, cooking methods, region, popularity, and any other relevant attributes.

DATA CLEANING AND PREPROCESSING

Once the dataset is obtained, it needs to be cleaned and pre-processed before analysis. This involves handling missing values, removing duplicates, standardizing formats, and transforming the data into a suitable structure for analysis. For example, ingredient names and measurements might need to be standardized, and textual data may require text cleaning techniques like removing stop words, punctuation, and converting to lowercase.

EXPLORATORY DATA ANALYSIS (EDA)

After cleaning the dataset, the EDA process begins. The analysis can involve various steps and techniques, including:

- 1. Descriptive Statistics: Calculating basic statistics such as mean, median, mode, range, and standard deviation of different attributes. This provides an initial overview of the dataset.
- 2. Data Visualization: Creating visual representations of the data to identify patterns, trends, and relationships. This can be done using charts, graphs, heatmaps, scatter plots, and geographical maps. For example, visualizing the distribution of recipes across different regions or plotting the popularity of dishes over time.
- 3. Ingredient Analysis: Analyzing the most used ingredients, their frequency, and variations across different regions. This can help identify key ingredients that define Indian cuisine and understand regional preferences.
- 4. Regional Variations: Investigating the diversity of Indian cuisine across different regions and states. This can include analyzing the prevalence of specific dishes, spices, cooking styles, and regional specialties.
- 5. Popularity and Ratings: Analyzing the popularity and ratings of Indian dishes or cuisines. This can involve examining user reviews, ratings, social media mentions, or any available popularity metrics to identify popular dishes or trends.
- 6. Nutritional Analysis: Exploring the nutritional content of Indian dishes, such as calories, macronutrients, and common ingredients contributing to specific nutritional values. This can help understand the health aspects of Indian cuisine.

4.2.NON FUNCTIONAL REQUIREMENTS

Non-functional requirements for an Indian food Exploratory Data Analysis (EDA) outline the qualities, constraints, and performance expectations of the EDA system rather than its specific functionalities.

1. Performance:

- The EDA system should provide fast and responsive data analysis, visualization, and query capabilities, even when dealing with large datasets.
- The system should be able to handle concurrent user interactions without significant performance degradation.

2. Scalability:

- The EDA system should be designed to scale horizontally to accommodate increasing data volumes and user loads.
- It should be able to support the addition of new data sources and analysis features.

3. Reliability and Availability:

- The EDA system should be highly available, with minimal downtime for maintenance.
- It should have mechanisms in place to recover from failures and ensure data integrity.

4. Security:

- Ensure data security and privacy, adhering to industry standards and regulations.
- Implement access controls, authentication, and encryption to protect sensitive data.

5. Compatibility:

- The EDA system should be compatible with a wide range of data formats and sources.
 - It should support various web browsers and devices for user access.

6.Usability:

- The system should have an intuitive and user-friendly interface.
- Provide clear documentation and training materials for users to understand and navigate the EDA platform.

7. Data Integrity and Quality:

- Ensure that data stored and processed by the system is accurate, complete, and up-to-date.
- Implement data validation and error-handling mechanisms to maintain data quality.

8. Data Storage:

- Choose appropriate storage solutions to manage and store large datasets efficiently.
 - Optimize data storage for performance and cost-effectiveness.

9. Compliance:

- Adhere to legal and regulatory requirements, especially regarding data privacy and security.
- Ensure that data collection and analysis methods comply with ethical guidelines.

10. Interoperability:

- The EDA system should be able to integrate with other data analysis tools and software commonly used in the industry.
 - It should support data exchange protocols and formats.

11. Auditability:

- Implement auditing capabilities to track user activities, data modifications, and system changes.
 - Maintain audit logs for compliance and troubleshooting purposes.

12. Resource Efficiency:

- Optimize resource utilization, including CPU, memory, and storage, to reduce operational costs.
 - Minimize unnecessary resource consumption during data processing.

13. Response Time:

- Specify acceptable response time thresholds for data queries, visualizations, and report generation.
 - Ensure that the system meets these response time expectations.

14. Disaster Recovery:

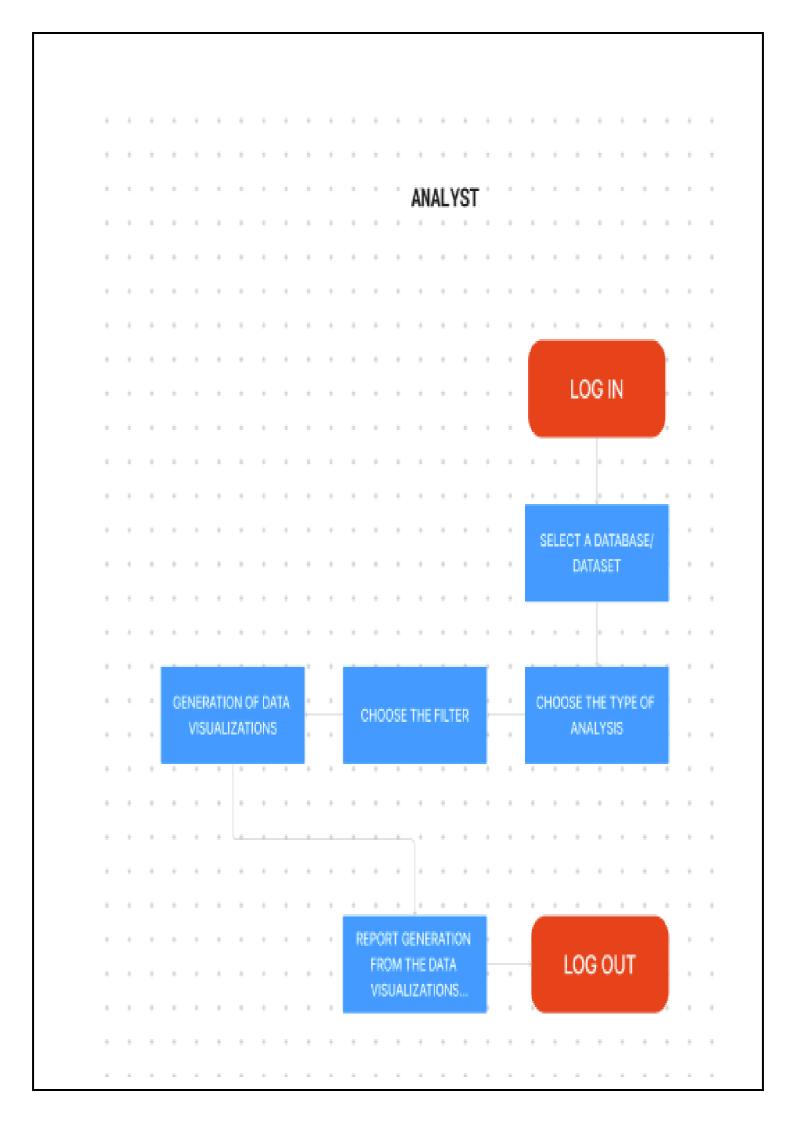
- Develop and implement a disaster recovery plan to minimize data loss and downtime in case of system failures or disasters.

15. Documentation and Training:

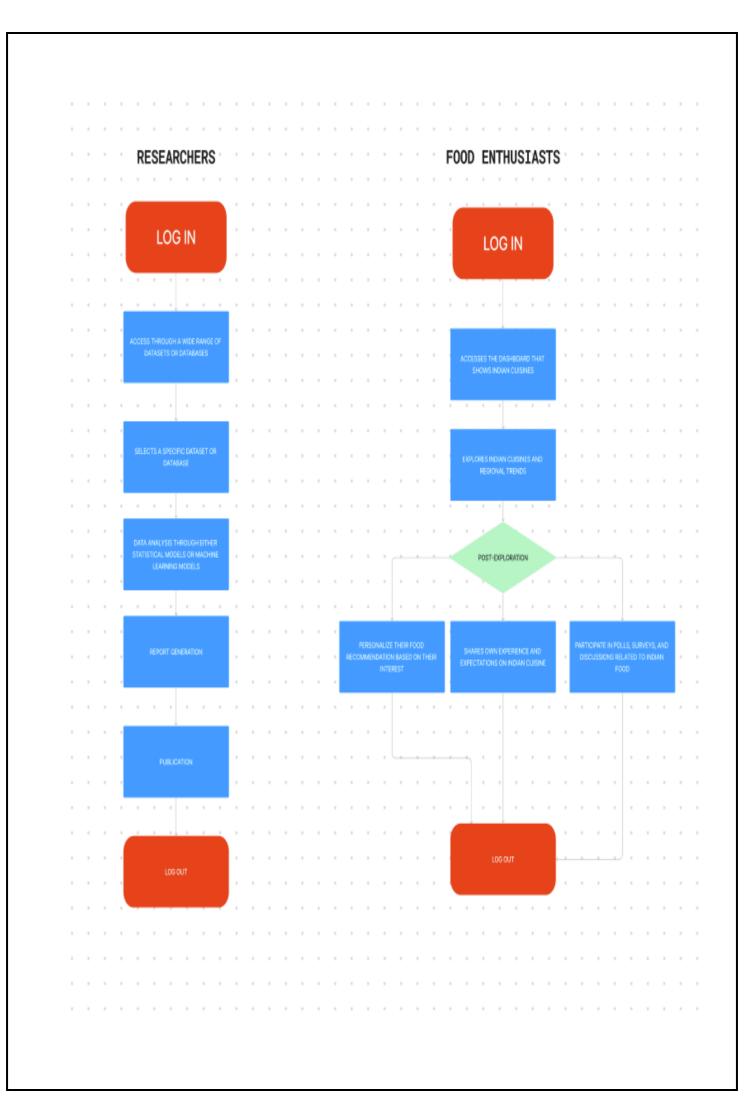
- Provide comprehensive documentation for system administrators, analysts, and end-users.
 - Offer training and onboarding resources for users to make effective.

5. PROJECT DESIGN

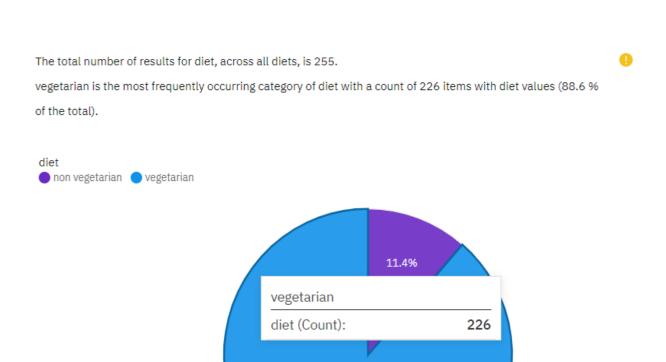
5.1. USER FLOW DIAGRAMS AND USER STORIES: User flow diagramsfor an Indian food Exploratory Data Analysis (EDA) can help visualize how different users or personas interact with the system and navigate through the various stages of data exploration.



RESTAURANT OWNERS LOG IN DASHBOARD TO SEE THE PERFORMANCE METRICS SEASONAL TRENDS, AND AREAS FOR MENU IMPROVEMENT AFTER USES SYSTEM'S RECOMMENDATION ENGINE TO ENHANCE THEIR MENU EXPORT FEEDBACK FOR FURTHER REVIEWS **LOG OUT**



A data story is a way of presenting data and analysis in a narrative format, with the goal of making the information more engaging and easier to understand. A data story typically includes a clear introduction that sets the stage and explains the context for the data, a body that presents the data and analysis in a logical and systematic way, and a conclusion that summarizes the key findings and highlights their implications. Data stories can be told using a variety of mediums, such as reports, presentations, interactive visualizations, and videos.



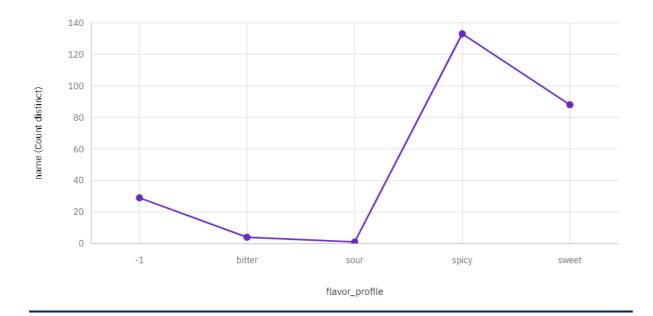
88.6%

The total number of results for Dishes, across all flavor_profile, is 255.

of 221

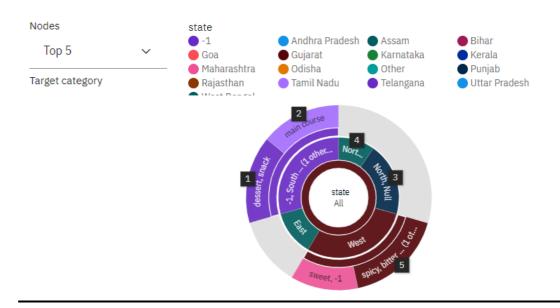
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spicy (52.2 %) and sweet (34.5 %) are the most frequently occurring categories of flavor_profile with a combined count of 221 items with Dishes values (86.7 % of the total).



region, flavor_profile, and course predict state with a strength of 52.7%.
region is the most significant predictor of state being five times better than any other field.

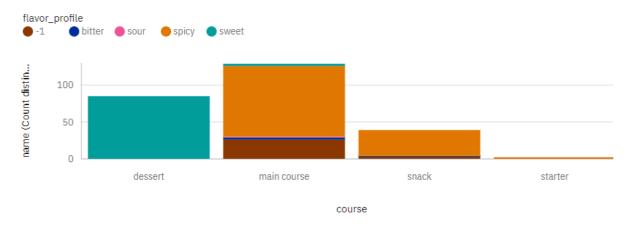




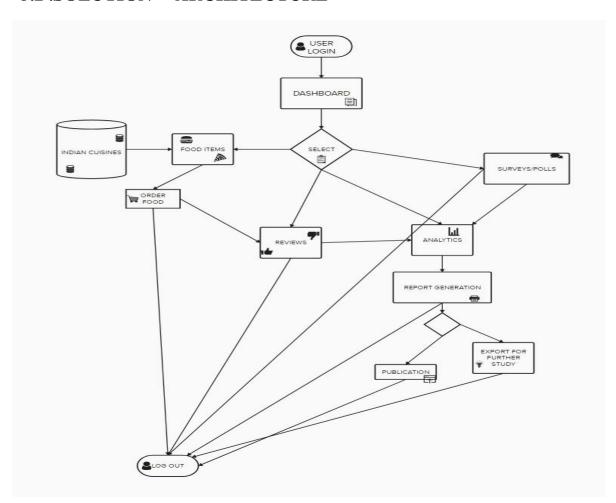
The overall number of results for Dishes is 255.

main course (50.6 %) and dessert (33.3 %) are the most frequently occurring categories of course with a combined count of 214 items with Dishes values (83.9 % of the total).

spicy (52.2 %) and sweet (34.5 %) are the most frequently occurring categories of flavor_profile with a combined count of 221 items with Dishes values (86.7 % of the total).

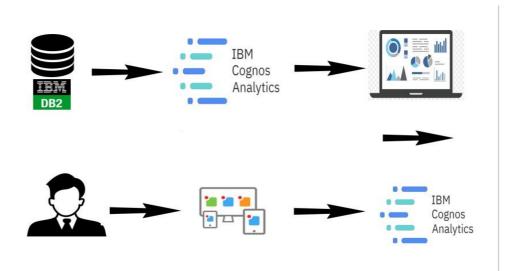


5.2 .SOLUTION ARCHITECTURE



6.PROJECT PLANNING AND SCHEDULING

6.1.TECHNICAL ARCHITECTURE



6.2.SPRINT PLANNING AND SCHEDULING

Sprint planning and estimation for an Indian food Exploratory Data Analysis (EDA) project typically involves breaking down the project into smaller, time-bound iterations or sprints.

Project: Indian Food EDA

Total Project Duration: 6 months

Number of Sprints: 12 (2 weeks per sprint)

Sprint 1: Project Initiation (2 weeks)

- Define project objectives and scope (3 days).
- Assemble the project team (4 days).
- Identify and gather initial data sources (5 days).

Sprint 2: Data Preparation (2 weeks)

- Ingest and integrate data sources (6 days).
- Data cleansing and preprocessing (7 days).

- Establish data storage and indexing strategies (5 days).

Sprint 3: User Interface Design (2 weeks)

- Design user interfaces and dashboards (9 days).
- Implement basic authentication and authorization controls (3 days).

Sprint 4: Data Analysis Foundations (2 weeks)

- Develop data analysis and visualization components (8 days).
- Implement basic statistical analysis features (6 days).

Sprint 5: Security and Compliance (2 weeks)

- Strengthen data security measures and implement access controls (8 days).
- Ensure compliance with data privacy regulations (6 days).

Sprint 6: Reporting and Export (2 weeks)

- Develop reporting features with customizable templates (8 days).
- Implement data export functionalities in various formats (6 days).

Sprint 7: Recommendation Engine (2 weeks)

- Develop a recommendation engine using machine learning algorithms (8 days).
- Begin integration of the recommendation engine (6 days).

Sprint 8: Scalability and Performance (2 weeks)

- Optimize the system for scalability and performance (8 days).
- Implement load balancing and caching mechanisms (6 days).

Sprint 9: Documentation and Training (2 weeks)

- Create comprehensive documentation for users and administrators (8 days).
- Develop training materials and resources (6 days).

Sprint 10: Monitoring and Analytics (2 weeks)

- Set up monitoring tools for system performance and user activity tracking (9 days).
- Implement analytics tools for gaining insights into user behavior (5 days).

Sprint 11: User Acceptance Testing (2 weeks)

- Invite representative users to participate in user acceptance testing (8 days).
- Gather feedback and make necessary adjustments (6 days).

Sprint 12: Deployment and Launch (2 weeks)

- Deploy the EDA system to a production environment (6 days).
- Perform final checks, security assessments, and launch the system (8 days).

6.3.SPRINT DELIVERY SCHEDULE

A sprint delivery schedule for an Indian food Exploratory Data Analysis (EDA) project outlines when specific features or functionalities will be delivered to stakeholders at the end of each sprint. Below is an example of a sprint delivery schedule for a 6-month Indian food EDA project with 12 sprints:

Sprint 1: Project Initiation (2 weeks)

- Sprint Start Date: Month 1, Day 1
- Sprint End Date: Month 1, Day 14
- Delivery:
- Definition of project objectives and scope.
 - Assembled project team.
- Initial data sources identified and gathered.

Sprint 2: Data Preparation (2 weeks)

- Sprint Start Date: Month 1, Day 15
- Sprint End Date: Month 1, Day 28
- Delivery:
- Data sources ingested and integrated.
- Data cleansing and preprocessing. Data storage and indexing strategies established.

Sprint 3: User Interface Design (2 weeks)

- Sprint Start Date: Month 2, Day 1
- Sprint End Date: Month 2, Day 14
- Delivery:
- Designed user interfaces and dashboards.
- Basic authentication and authorization controls.

Sprint 4: Data Analysis Foundations (2 weeks)

- Sprint Start Date: Month 2, Day 15
- Sprint End Date: Month 2, Day 28
- Delivery:
- Data analysis and visualization components.
- Basic statistical analysis features.

Sprint 5: Security and Compliance (2 weeks)

- Sprint Start Date: Month 3, Day 1
- Sprint End Date: Month 3, Day 14
- Delivery:

- Strengthened data security measures and access controls.
- Compliance with data privacy regulations.

Sprint 6: Reporting and Export (2 weeks)

- Sprint Start Date: Month 3, Day 15
- Sprint End Date: Month 3, Day 28
- Delivery:
- Reporting features with customizable templates.
- Data export functionalities in various formats.

Sprint 7: Recommendation Engine (2 weeks)

- Sprint Start Date: Month 4, Day 1
- Sprint End Date: Month 4, Day 14
- Delivery:
- Development of a recommendation engine using machine learning.
- Integration of the recommendation engine begins

Sprint 8: Scalability and Performance (2 weeks)

- Sprint Start Date: Month 4, Day 15
- Sprint End Date: Month 4, Day 28
- Delivery:
- Optimized system for scalability and performance.
- Implementation of load balancing and caching mechanisms.

Sprint 9: Documentation and Training (2 weeks)

- Sprint Start Date: Month 5, Day 1

- Sprint End Date: Month 5, Day 14
- Delivery:
- Comprehensive documentation for users and administrators.
- Development of training materials and resources.

Sprint 10: Monitoring and Analytics (2 weeks)

- Sprint Start Date: Month 5, Day 15
- Sprint End Date: Month 5, Day 28
- Delivery:
- Monitoring tools for system performance and user activity tracking.
- Implementation of analytics tools for user behavior insights.

Sprint 11: User Acceptance Testing (2 weeks)

- Sprint Start Date: Month 6, Day 1
- Sprint End Date: Month 6, Day 14
- Delivery:
- User acceptance testing with gathered feedback.

Sprint 12: Deployment and Launch (2 weeks)

- Sprint Start Date: Month 6, Day 15
- Sprint End Date: Month 6, Day 28
- Delivery:
- Deployment of the EDA system to a production environment.
 - Final checks, security assessments, and system launch

7.RESULT OF THE DASHBOARD

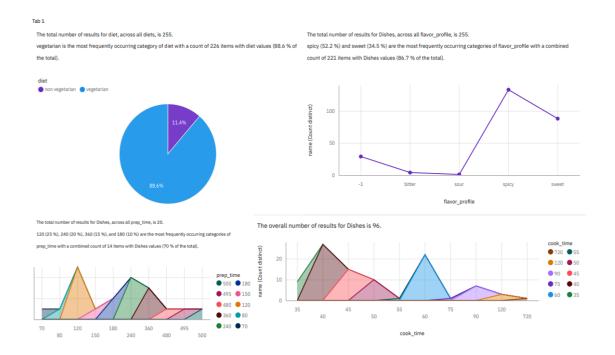
A dashboard is a graphical user interface (GUI) that displays information and data in an organized, easy-to-read format. Dashboards are often used to provide real-time monitoring and analysis of data and are typically designed for a specific purpose or use case. Dashboards can be used in a variety of settings, such as business, finance, manufacturing, healthcare, and many other industries. They can be used to track key performance indicators (KPIs), monitor performance metrics, and display data in the form of charts, graphs, and tables.

Dashboard video explanation link

 $\frac{https://drive.google.com/drive/folders/1SUzDoW8ld84VtnnNVY9uakr7KORybxU}{o}$

LINKS FOR VIEWING A DASHBOARD IN IBM

 $\frac{https://us1.ca.analytics.ibm.com/bi/?perspective=dashboard\&pathRef=.my_folder}{s\%2Ffinal\%2Bdash\%2Bboard\&action=view\&mode=dashboard\&subView=mode}{10000018b41c0195f_00000002}$





The total number of results for Dishes, across all states, is 255.

Gujarat (13.7 %), Punjab (12.5 %), and Maharashtra (11.8 %) are the most frequently occurring categories of state with a combined count of 97 items with Dishes values (38 % of the total).

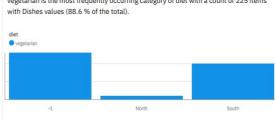
The total number of results for Dishes, across all courses, is 255. main course (50.6 %) and dessert (33.3 %) are the most frequently occurring categories of course with a combined count of 214 items with Dishes values (83.9



The overall number of results for Dishes is 254.

West is the most frequently occurring category of region with a count of 74 items with Dishes values (29.1 % of the total).

vegetarian is the most frequently occurring category of diet with a count of 225 items



The total number of results for ingredients, across all states, is 255. The counts are unusually high when the values of state are Gujarat, Punjab, Maharashtra, -1, West Bengal and more.

Gujarat (13.7 %), Punjab (12.5 %), and Maharashtra (11.8 %) are the most frequently occurring categories of state with a combined count of 97 items with ingredients values (38 % of the total).



Tab 4

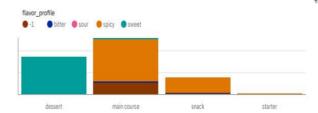
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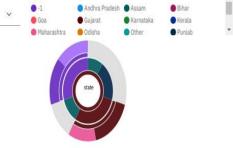
main course (50.6 %) and dessert (33.3 %) are the most frequently occurring categories of course with a combined region is the most significant predictor of state being five times better than any other field. count of 214 items with Dishes values (83.9 % of the total).

spicy (52.2 %) and sweet (34.5 %) are the most frequently occurring categories of flavor_profile with a combined count of 221 items with Dishes values (86.7 % of the total).

region, flavor_profile, and course predict state with a strength of 52.7%.

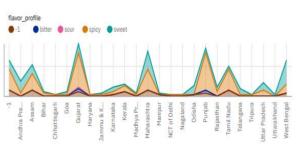
Top 5

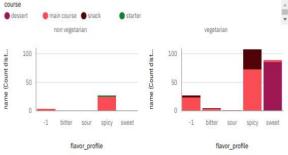




The overall number of results for Dishes is 255.Gujarat (13.7 %), Punjab (12.5 %), and Maharashtra (11.8 %) are the most frequently occurring categories of state with a combined count of 97 items with Dishes values (38 % of the total) spicy (52.2 %) and sweet (34.5 %) are the most frequently occurring categories of flavor_profile with a combined count of 221 items with Dishes values (86.7 % of the total). spicy (52.2 %) and sweet (34.5 %) are the most frequently occurring categories of flavor Dishes values (86.7 % of the total).main course (50.6 %) and

dessert (33.3 %) are the most frequently occurring categories oDishes values (83.9 % of the total).





Tab 3

The orall number of results for Dishes is 241.

West is the most frequently occurring category of region with a count of 74 items with Dishes values (30.7 % of the total).

The total number of results for diet, across all diets, is 255.

spicy (52.2 %) and sweet (34.5 %) are the most frequently occurring categories of flavor_profile with a combined count of 221 items with diet values (86.7 % of the total).

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Self (Count)

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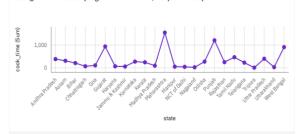
Self (Count)

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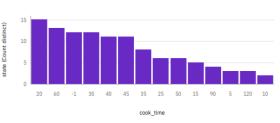
spicy (52.2 %) and sweet (34.5 %) are the most frequently occurring categories of flavor_profile with a combined count of 221 items with diet values (86.7 % of the total).

Tab 5

Over all states, the sum of $cook_time$ is nearly eight thousand. ${\sf cook_time}$ ranges from -1, in Tripura, to over 1500, in Maharashtra. ${\sf cook_time}$ is unusually high in Maharashtra, Punjab and Gujarat.

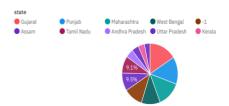


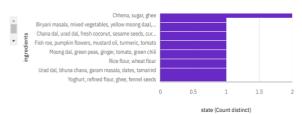
The total number of results for state, across all cook_time, is 250. 30 is the most frequently occurring category of cook_time with a count of 59 items with state values (23.6 % of the total).



The total number of results for ingredients, across all states, is 220. Gujarat (15.9 %), Punjab (14.5 %), and Maharashtra (13.6 %) are the most frequently occurring categories of state with a combined count of 97 items with ingredients values (44.1 % of the total).

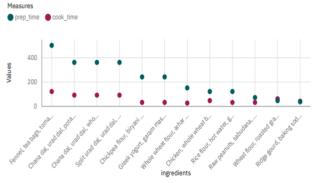
The total number of results for state, across all ingredients, is 16. Chhena, sugar, ghee is the most frequently occurring category of ingredients with a count of 2 items with state values (12.5 % of the total).





Tab 6

prep_time and cook_time by ingredients



The total number of results for course, across all flavor_profile, is 255.

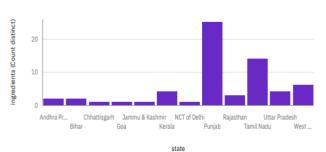
course (Count dist...

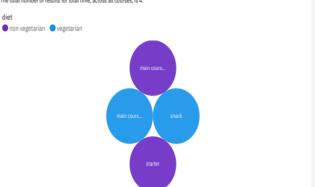
spicy (52.2 %) and sweet (34.5 %) are the most frequently occurring categories of flavor_profile with a combined count of 221 items with course values (86.7 % of the total).



The total number of results for ingredients, across all states, is 128.

Punjab is the most frequently occurring category of state with a count of 32 items with ingredients values (25 % of the total).



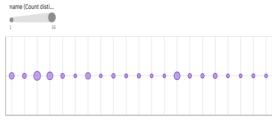


The overall number of results for course is 255.

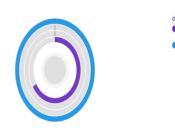
vegetarian is the most frequently occurring category of diet with a count of 226 items with course values (88.6 % of the total).

 $cook_time$ is unusually high when flavor_profile is spicy and sweet.

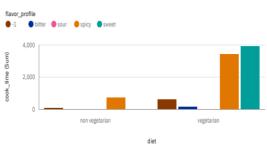
ned values of cook_time range from 10 to nearly four thousand.



Karnataka Haryana Kerala Assam Madhya... Chh... iihar Goa Maharash... Rajasthan Jammu &... Telangana



vegetarian is the most frequently occurring category of diet with a count of 70 items with total time values (82.4 % of the total).



flavor_profile



ber of results for total time, across all flavor, profile, is 5.

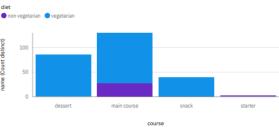
The total number of results for total time, across all flavor_profile, is 5.

-1|-1 15|5 20|40 30|15 30|480 40|35 45|120 60|20 90|10 10|5 20|10 25|20 30|70 40|5 45|15 50|20 60|120 120...

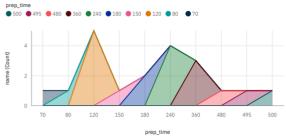
cook_time - prep_time

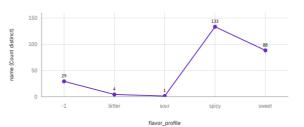
ian is the most frequently occurring category of diet with a count of 226 items with Dishes values (88.6 % of the total).

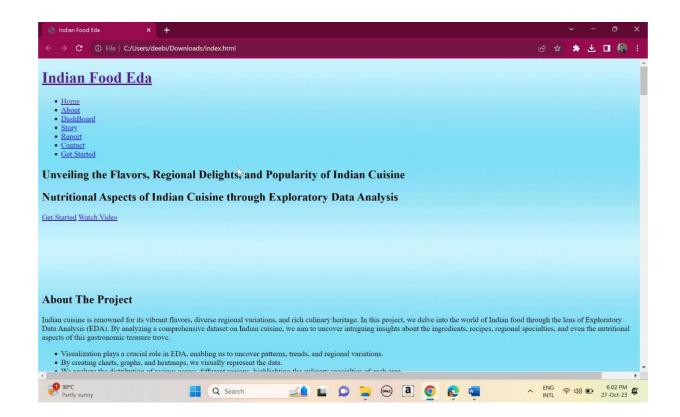
vegetarian is the most frequently occurring category of diet with a count of 70 items with total time values (82.4 % of the total).

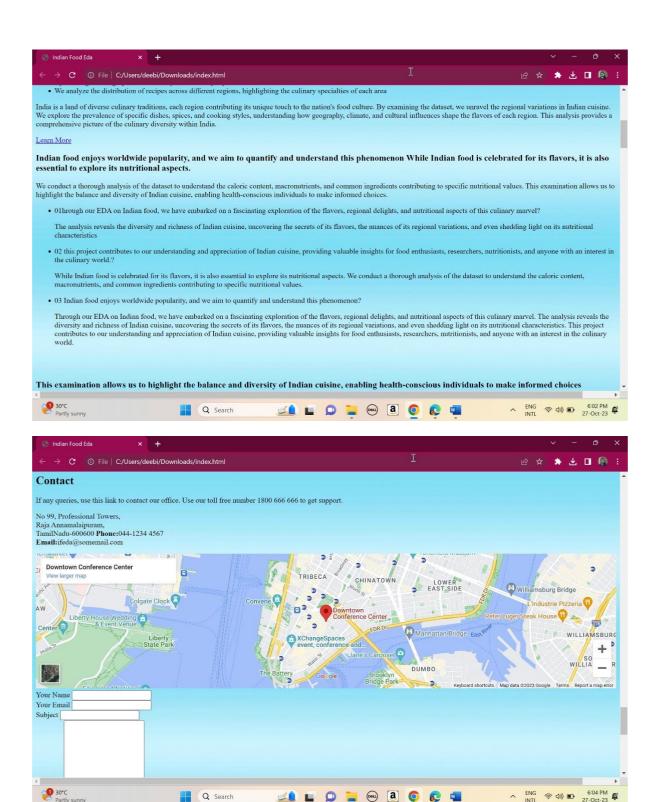


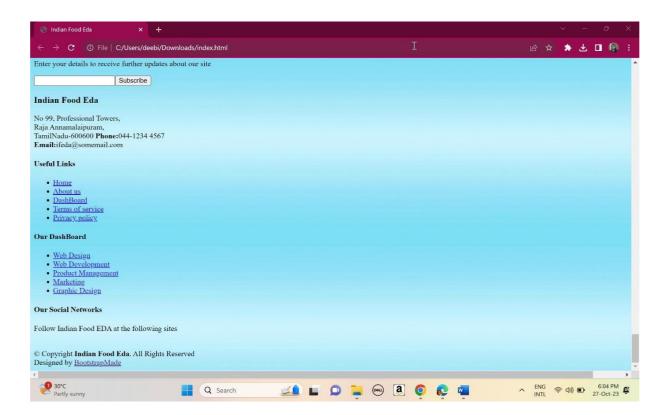
120 (25 %), 240 (20 %), 360 (15 %), and 180 (10 %) are the most frequently occurr 14 items with Dishes values (70 % of the total).











8.CONCLUSION

The EDA on Indian food dataset provides valuable insights into the characteristics, variations, and popularity of Indian cuisine. The analysis helps in understanding the diversity of Indian food, identifying key ingredients, regional variations, and popular dishes. These insights can be useful for culinary enthusiasts, food researchers, nutritionists, and even restaurant owners looking to understand Indian cuisine better or develop new recipes.

9.APPEDIX

9.1.SOURCE CODE

```
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="utf-8">
<meta content="width=device-width, initial-scale=1.0" name="viewport">
<title>Indian Food Eda</title>
```

```
<meta content="" name="description">
 <meta content="" name="keywords">
 <!-- Favicons -->
 <link href="static/img/favicon.png" rel="icon">
 k href="static/img/apple-touch-icon.png" rel="apple-touch-icon">
 <!-- Google Fonts -->
 link
href="https://fonts.googleapis.com/css?family=Open+Sans:300,300i,400,400i,6"
00,600i,700,700i|Jost:300,300i,400,400i,500,500i,600,600i,700,700i|Poppins:30
0,300i,400,400i,500,500i,600,600i,700,700i" rel="stylesheet">
 <!-- Vendor CSS Files -->
 <link href="static/vendor/aos/aos.css" rel="stylesheet">
 k href="static/vendor/bootstrap/css/bootstrap.min.css" rel="stylesheet">
 k href="static/vendor/bootstrap-icons/bootstrap-icons.css"
rel="stylesheet">
 <link href="static/vendor/boxicons/css/boxicons.min.css" rel="stylesheet">
 k href="static/vendor/glightbox/css/glightbox.min.css" rel="stylesheet">
 k href="static/vendor/remixicon/remixicon.css" rel="stylesheet">
 k href="static/vendor/swiper/swiper-bundle.min.css" rel="stylesheet">
 <!-- Template Main CSS File -->
 <link href="static/css/style.css" rel="stylesheet">
 <!--
```

```
* Template Name: Indian Food Eda
 * Updated: Jul 05 2023 with Bootstrap v5.3.0
 * Template URL: https://bootstrapmade.com/Indian Food Eda-free-bootstrap-
html-template-corporate/
 * Author: BootstrapMade.com
 * License: https://bootstrapmade.com/license/
-->
</head>
<body background="C:\Users\deebi\Desktop\Beige-Plain-Light-Background-
.jpg">
 <!-- ===== Header ===== -->
 <header id="header" class="fixed-top">
  <div class="container d-flex align-items-center">
   <h1 class="logo me-auto"><a href="index.html">Indian Food
Eda</a></h1>
   <!-- Uncomment below if you prefer to use an image logo -->
   <!-- <a href="index.html" class="logo me-auto"><img
src="static/img/logo.png" alt="" class="img-fluid"></a>-->
   <nav id="navbar" class="navbar">
    \langle ul \rangle
     <a class="nav-link scrollto active" href="#hero">Home</a>
     <a class="nav-link scrollto" href="#about">About</a>
```

```
<a class="nav-link scrollto"</li>
href="#DashBoard">DashBoard</a>
     <a class="nav-link scrollto" href="#Story">Story</a>
     <a class="nav-link scrollto" href="#Report">Report</a>
     <a class="nav-link scrollto" href="#contact">Contact</a>
     <a class="getstarted scrollto" href="#about">Get Started</a>
    <i class="bi bi-list mobile-nav-toggle"></i>
   </nav><!-- .navbar -->
  </div>
 </header><!-- End Header -->
 <!-- ===== Hero Section ====== -->
 <section id="hero" class="d-flex align-items-center">
  <div class="container">
   <div class="row">
    <div class="col-lg-6 d-flex flex-column justify-content-center pt-4 pt-lg-0"</pre>
order-2 order-lg-1" data-aos="fade-up" data-aos-delay="200">
     <h1>Unveiling the Flavors, Regional Delights, and Popularity of Indian
Cuisine</h1>
     <h2>Nutritional Aspects of Indian Cuisine through Exploratory Data
Analysis</h2>
     <div class="d-flex justify-content-center justify-content-lg-start">
```

```
<a href="#about" class="btn-get-started scrollto">Get Started</a>
      <a href="https://dexterit-
my.sharepoint.com/:v:/g/personal/sam_dexterit_onmicrosoft_com/EXgqJr_pV3
RBIYUfWyJ2a64BLY5qV494HXKmu_WNh4aSnQ?e=LdIeYe&nav=eyJyZW
ZlcnJhbEluZm8iOnsicmVmZXJyYWxBcHAiOiJTdHJlYW1XZWJBcHAiLCJ
yZWZlcnJhbFZpZXciOiJTaGFyZURpYWxvZyIsInJlZmVycmFsQXBwUGxhd\\
GZvcm0iOiJXZWIiLCJyZWZlcnJhbE1vZGUiOiJ2aWV3In19"
class="glightbox btn-watch-video"><i class="bi bi-play-
circle"></i><span>Watch Video</span></a>
     </div>
    </div>
    <div class="col-lg-6 order-1 order-lg-2 hero-img" data-aos="zoom-in"</pre>
data-aos-delay="200">
     <img src="static/img/hero-img.png" class="img-fluid animated" alt="">
    </div>
   </div>
  </div>
 </section><!-- End Hero -->
 <main id="main">
  <!-- ===== Clients Section ====== -->
  <section id="clients" class="clients section-bg">
   <div class="container">
    <div class="row" data-aos="zoom-in">
```

```
<div class="col-lg-2 col-md-4 col-6 d-flex align-items-center justify-</pre>
content-center">
       <img src="static/img/clients/client-1.png" class="img-fluid" alt="">
      </div>
      <div class="col-lg-2 col-md-4 col-6 d-flex align-items-center justify-</pre>
content-center">
       <img src="static/img/clients/client-2.png" class="img-fluid" alt="">
      </div>
      <div class="col-lg-2 col-md-4 col-6 d-flex align-items-center justify-</pre>
content-center">
       <img src="static/img/clients/client-3.png" class="img-fluid" alt="">
      </div>
      <div class="col-lg-2 col-md-4 col-6 d-flex align-items-center justify-</pre>
content-center">
       <img src="static/img/clients/client-4.png" class="img-fluid" alt="">
      </div>
      <div class="col-lg-2 col-md-4 col-6 d-flex align-items-center justify-</pre>
content-center">
       <img src="static/img/clients/client-5.png" class="img-fluid" alt="">
      </div>
      <div class="col-lg-2 col-md-4 col-6 d-flex align-items-center justify-</pre>
content-center">
       <img src="static/img/clients/client-6.png" class="img-fluid" alt="">
```

```
</div>
</div>
</div>
</div>
</section><!-- End Cliens Section -->
<!-- ====== About Us Section ====== -->
<section id="about" class="about">
<div class="container" data-aos="fade-up">
<div class="section-title">
<h2>About The Project</h2>
</div>
</div class="row content">
<div class="row content">
<div class="col-lg-6">
<div class="col-lg-6">
```

Indian cuisine is renowned for its vibrant flavors, diverse regional variations, and rich culinary heritage. In this project, we delve into the world of Indian food through the lens of Exploratory Data Analysis (EDA). By analyzing a comprehensive dataset on Indian cuisine, we aim to uncover intriguing insights about the ingredients, recipes, regional specialties, and even the nutritional aspects of this gastronomic treasure trove.

 $\langle ul \rangle$

<i class="ri-check-double-line"></i> Visualization plays a crucial
role in EDA, enabling us to uncover patterns, trends, and regional
variations.

<i class="ri-check-double-line"></i> By creating charts, graphs,
and heatmaps, we visually represent the data.

<i class="ri-check-double-line"></i> We analyze the distribution
of recipes across different regions, highlighting the culinary specialties of each
area

```
</div>
<div class="col-lg-6 pt-4 pt-lg-0">
```

India is a land of diverse culinary traditions, each region contributing its unique touch to the nation's food culture. By examining the dataset, we unravel the regional variations in Indian cuisine. We explore the prevalence of specific dishes, spices, and cooking styles, understanding how geography, climate, and cultural influences shape the flavors of each region. This analysis provides a comprehensive picture of the culinary diversity within India.

```
<a href="#" class="btn-learn-more">Learn More</a>
</div>
</div>
</div>
</section><!-- End About Us Section -->
```

```
<!-- ====== Why Us Section ====== -->

<section id="why-us" class="why-us section-bg">

<div class="container-fluid" data-aos="fade-up">

<div class="row">

<div class="col-lg-7 d-flex flex-column justify-content-center align-items-stretch order-2 order-lg-1">

<div class="content">
```

<h3>Indian food enjoys worldwide popularity, and we aim to quantify and understand this phenomenon While Indian food is celebrated for its flavors, it is also essential to explore its nutritional aspects.</h3>

>

We conduct a thorough analysis of the dataset to understand the caloric content, macronutrients, and common ingredients contributing to specific nutritional values. This examination allows us to highlight the balance and diversity of Indian cuisine, enabling health-conscious individuals to make informed choices.

```
</div>
<div class="accordion-list">

<
```

<a data-bs-toggle="collapse" class="collapse" data-bs-target="#accordion-list-1">01hrough our EDA on Indian food, we have embarked on a fascinating exploration of the flavors, regional delights,

and nutritional aspects of this culinary marvel? <i class="bx bx-chevron-down icon-show"></i><i class="bx bx-chevron-up icon-close"></i>

>

The analysis reveals the diversity and richness of Indian cuisine, uncovering the secrets of its flavors, the nuances of its regional variations, and even shedding light on its nutritional characteristics

</div>

<1i>>

<a data-bs-toggle="collapse" data-bs-target="#accordion-list-2" class="collapsed">02 this project contributes to our understanding and appreciation of Indian cuisine, providing valuable insights for food enthusiasts, researchers, nutritionists, and anyone with an interest in the culinary world.? <i class="bx bx-chevron-down icon-show"></i><i class="bx bx-chevron-up icon-close"></i>

<div id="accordion-list-2" class="collapse" data-bsparent=".accordion-list">

>

While Indian food is celebrated for its flavors, it is also essential to explore its nutritional aspects. We conduct a thorough analysis of the dataset to understand the caloric content, macronutrients, and common ingredients contributing to specific nutritional values.

</div>

<

<a data-bs-toggle="collapse" data-bs-target="#accordion-list-3"
class="collapsed">03 Indian food enjoys worldwide popularity,
and we aim to quantify and understand this phenomenon? <i class="bx bxchevron-down icon-show"></i><i class="bx bx-chevron-up iconclose"></i>

<div id="accordion-list-3" class="collapse" data-bsparent=".accordion-list">

>

Through our EDA on Indian food, we have embarked on a fascinating exploration of the flavors, regional delights, and nutritional aspects of this culinary marvel. The analysis reveals the diversity and richness of Indian cuisine, uncovering the secrets of its flavors, the nuances of its regional variations, and even shedding light on its nutritional characteristics. This project contributes to our understanding and appreciation of Indian cuisine, providing valuable insights for food enthusiasts, researchers, nutritionists, and anyone with an interest in the culinary world.

</div>

</div>

```
</div>
      <div class="col-lg-5 align-items-stretch order-1 order-lg-2 img"</pre>
style='background-image: url("static/img/why-us.png"); data-aos="zoom-in"
data-aos-delay="150"> </div>
    </div>
   </div>
  </section><!-- End Why Us Section -->
  <!-- ===== Skills Section ====== -->
  <section id="skills" class="skills">
   <div class="container" data-aos="fade-up">
    <div class="row">
      <div class="col-lg-6 d-flex align-items-center" data-aos="fade-right"</pre>
data-aos-delay="100">
       <img src="static/img/skills.png" class="img-fluid" alt="">
      </div>
      <div class="col-lg-6 pt-4 pt-lg-0 content" data-aos="fade-left" data-aos-</pre>
delay="100">
       <h3>This examination allows us to highlight the balance and diversity
of Indian cuisine, enabling health-conscious individuals to make informed
choices</h3>
```

Through our EDA on Indian food, we have embarked on a fascinating exploration of the flavors, regional delights, and nutritional aspects of this culinary marvel. The analysis reveals the diversity and richness of Indian

cuisine, uncovering the secrets of its flavors, the nuances of its regional variations, and even shedding light on its nutritional characteristics.

```
<div class="skills-content">
        <div class="progress">
         <span class="skill">HTML <i class="val">100%</i></span>
         <div class="progress-bar-wrap">
          <div class="progress-bar" role="progressbar" aria-valuenow="100"</pre>
aria-valuemin="0" aria-valuemax="100"></div>
         </div>
        </div>
        <div class="progress">
         <span class="skill">CSS <i class="val">90%</i></span>
         <div class="progress-bar-wrap">
          <div class="progress-bar" role="progressbar" aria-valuenow="90"</pre>
aria-valuemin="0" aria-valuemax="100"></div>
         </div>
        </div>
        <div class="progress">
         <span class="skill">Data analytics<i class="val">75%</i></span>
         <div class="progress-bar-wrap">
          <div class="progress-bar" role="progressbar" aria-valuenow="75"</pre>
aria-valuemin="0" aria-valuemax="100"></div>
```

```
</div>
        </div>
        <div class="progress">
         <span class="skill">Data Science <i class="val">55%</i></span>
         <div class="progress-bar-wrap">
          <div class="progress-bar" role="progressbar" aria-valuenow="55"</pre>
aria-valuemin="0" aria-valuemax="100"></div>
         </div>
        </div>
       </div>
     </div>
    </div>
   </div>
  </section><!-- End Skills Section -->
  <!-- ===== DashBoard Section ====== -->
  <section id="DashBoard" class="DashBoard section-bg">
   <div class="container" data-aos="fade-up">
    <a href='#'>Dashboard</a>
    </div>
   </div>
  </section><!-- End DashBoard Section -->
```

```
<!-- ====== Story Section ======= -->

<section id="Story" class="Story">

<div class="container" data-aos="fade-up">

<div class="section-title">

<h2>Story</h2>
```

The Story section in IBM Cognos enables users to weave together a narrative by combining different visualizations, text descriptions, and annotations. It allows for the creation of interactive and engaging presentations that bring data to life. Users can utilize various storytelling techniques to convey the message effectively, such as introducing the problem or scenario, presenting data-driven insights, and concluding with actionable recommendations

```
</div>
```

```
<img src="C:\Users\deebi\Documents\ScreenRecorder\Screenshots\2023-
10\ScreenShot_21-Oct-23_9_56_13_PM.png" height =500, width=500></br>
<img src="C:\Users\deebi\Documents\ScreenRecorder\Screenshots\2023-
10\ScreenShot_21-Oct-23_10_10_21_PM.png" height=500,width=500></br>
<img src="C:\Users\deebi\Documents\ScreenRecorder\Screenshots\2023-
10\ScreenShot_24-Oct-23_9_24_29_PM.png" height=500,width=500></br>
</div>
</div>
</div>
</div>
</div>
</section><!-- End Story Section -->
<!-- ====== Report Section ====== -->
```

```
<section id="Report" class="Report section-bg">
   <div class="container" data-aos="fade-up">
    <div class="section-title">
     <h2>Report</h2>
     In the context of IBM software and solutions, a "report" refers to a
structured document that presents information or data in a specific format for
analysis, decision-making, or communication purposes. IBM offers various
tools and products designed for creating, generating, and distributing reports in
different domains, such as business intelligence, analytics, and data
management. 
    </div>
  <img src="C:\Users\deebi\Documents\ScreenRecorder\Screenshots\2023-</pre>
10\ScreenShot_21-Oct-23_10_10_39_PM.png" height=500,width=500></br>
  <img src="C:\Users\deebi\Documents\ScreenRecorder\Screenshots\2023-</pre>
10\ScreenShot_21-Oct-23_9_06_11_PM.png" height=500,width=500></br>
  <img src="C:\Users\deebi\Documents\ScreenRecorder\Screenshots\2023-</pre>
10\ScreenShot_21-Oct-23_9_56_56_PM.png" height=500,width=500></br>
     </div>
    </div>
   </div>
  </section><!-- End Report Section -->
  <!-- ===== Exploration Section ====== -->
  <section id="Exploration" class="Exploration">
   <div class="container" data-aos="fade-up">
```

```
<div class="section-title">
      <h2>Exploration</h2>
      Exploration in IBM Cognos refers to the process of analyzing and
investigating data to uncover insights, patterns, and trends. It involves</br>
interactively exploring data from various perspectives, drilling down into
details, and gaining a deeper understanding of the underlying information
    </div>
   <img src= "C:\Users\deebi\Documents\ScreenRecorder\Screenshots\2023-</pre>
10\ScreenShot_24-Oct-23_9_20_42_PM.png" height=500,width=500>
        </111>
  </section><!-- End Exploration Section -->
  <!-- ===== Contact Section ====== -->
  <section id="contact" class="contact">
   <div class="container" data-aos="fade-up">
    <div class="section-title">
      <h2>Contact</h2>
      If any queries, use this link to contact our office. Use our toll free
number 1800 666 666 to get support.
    </div>
    <div class="row">
      <div class="col-lg-5 d-flex align-items-stretch">
       <div class="info">
        No 99, Professional Towers,</br>
```

```
Raja Annamalaipuram,</br>
        TamilNadu-600600
        <strong>Phone:</strong>044-1234 4567</br>
        <strong>Email:</strong>ifeda@somemail.com</br>
      </div>
        <iframe
src="https://www.google.com/maps/embed?pb=!1m14!1m8!1m3!1d12097.4332
13460943!2d-
74.0062269!3d40.7101282!3m2!1i1024!2i768!4f13.1!3m3!1m2!1s0x0%3A0xb
89d1fe6bc499443!2sDowntown+Conference+Center!5e0!3m2!1smk!2sbg!4v15
39943755621" frameborder="0" style="border:0; width: 100%; height: 290px;"
allowfullscreen></iframe>
      </div>
     </div>
     <div class="col-lg-7 mt-5 mt-lg-0 d-flex align-items-stretch">
      <form action="forms/contact.php" method="post" role="form"</pre>
class="php-email-form">
        <div class="row">
         <div class="form-group col-md-6">
          <label for="name">Your Name</label>
          <input type="text" name="name" class="form-control" id="name"</pre>
required>
         </div>
```

```
<div class="form-group col-md-6">
          <label for="name">Your Email</label>
          <input type="email" class="form-control" name="email" id="email"</pre>
required>
         </div>
        </div>
        <div class="form-group">
         <label for="name">Subject</label>
         <input type="text" class="form-control" name="subject" id="subject"</pre>
required>
        </div>
        <div class="form-group">
         <label for="name">Message</label>
         <textarea class="form-control" name="message" rows="10"
required></textarea>
        </div>
        <div class="my-3">
         <div class="loading">Loading</div>
         <div class="error-message"></div>
         <div class="sent-message">Your message has been sent. Thank
you!</div>
        </div>
```

```
<div class="text-center"><button type="submit">Send
Message</button></div>
       </form>
     </div>
    </div>
   </div>
  </section><!-- End Contact Section -->
 </main><!-- End #main -->
 <!-- ===== Footer ===== -->
 <footer id="footer">
  <div class="footer-newsletter">
   <div class="container">
    <div class="row justify-content-center">
     <div class="col-lg-6">
       <h4>Join Our Newsletter</h4>
      Enter your details to receive further updates about our site
      <form action="" method="post">
        <input type="email" name="email"><input type="submit"</pre>
value="Subscribe">
       </form>
     </div>
    </div>
```

```
</div>
  </div>
  <div class="footer-top">
   <div class="container">
    <div class="row">
     <div class="col-lg-3 col-md-6 footer-contact">
      <h3>Indian Food Eda</h3>
      No 99, Professional Towers,</br>
        Raja Annamalaipuram,</br>
        TamilNadu-600600
       <strong>Phone:</strong>044-1234 4567</br>
       <strong>Email:</strong>ifeda@somemail.com</br>
      </div>
     <div class="col-lg-3 col-md-6 footer-links">
      <h4>Useful Links</h4>
      \langle ul \rangle
       <i class="bx bx-chevron-right"></i> <a href="#">Home</a>
       <i class="bx bx-chevron-right"></i> <a href="#">About
us</a>
       <i class="bx bx-chevron-right"></i> <a
href="#">DashBoard</a>
```

```
<i class="bx bx-chevron-right"></i> <a href="#">Terms of
service</a>
       <i class="bx bx-chevron-right"></i> <a href="#">Privacy</a>
policy</a>
      </div>
     <div class="col-lg-3 col-md-6 footer-links">
      <h4>Our DashBoard</h4>
      \langle ul \rangle
       <i class="bx bx-chevron-right"></i> <a href="#">Web
Design</a>
       <i class="bx bx-chevron-right"></i> <a href="#">Web
Development</a>
       <i class="bx bx-chevron-right"></i> <a href="#">Product</a>
Management</a>
       <i class="bx bx-chevron-right"></i> <a
href="#">Marketing</a>
       <i class="bx bx-chevron-right"></i> <a href="#">Graphic</a>
Design</a>
      </div>
     <div class="col-lg-3 col-md-6 footer-links">
      <h4>Our Social Networks</h4>
```

```
Follow Indian Food EDA at the following sites</br>
       <div class="social-links mt-3">
        <a href="#" class="twitter"><i class="bx bxl-twitter"></i></a>
        <a href="#" class="facebook"></i>>ci class="bx bxl-facebook"></i></a>
        <a href="#" class="instagram"><i class="bx bxl-instagram"></i>
        <a href="#" class="google-plus"><i class="bx bxl-skype"></i></a>
        <a href="#" class="linkedin"></i>linkedin"></i>
       </div>
     </div>
    </div>
   </div>
  </div>
  <div class="container footer-bottom clearfix">
   <div class="copyright">
    © Copyright <strong><span>Indian Food Eda</span></strong>. All
Rights Reserved
   </div>
   <div class="credits">
    <!-- All the links in the footer should remain intact. -->
    <!-- You can delete the links only if you purchased the pro version. -->
    <!-- Licensing information: https://bootstrapmade.com/license/ -->
```

```
<!-- Purchase the pro version with working PHP/AJAX contact form:
https://bootstrapmade.com/Indian Food Eda-free-bootstrap-html-template-
corporate/ -->
    Designed by <a href="https://bootstrapmade.com/">BootstrapMade</a>
   </div>
  </div>
 </footer><!-- End Footer -->
 <div id="preloader"></div>
 <a href="#" class="back-to-top d-flex align-items-center justify-content-
center"><i class="bi bi-arrow-up-short"></i></a>
 <!-- Vendor JS Files -->
 <script src="static/vendor/aos/aos.js"></script>
 <script src="static/vendor/bootstrap/js/bootstrap.bundle.min.js"></script>
 <script src="static/vendor/glightbox/js/glightbox.min.js"></script>
 <script src="static/vendor/isotope-layout/isotope.pkgd.min.js"></script>
 <script src="static/vendor/swiper/swiper-bundle.min.js"></script>
 <script src="static/vendor/waypoints/noframework.waypoints.js"></script>
 <script src="static/vendor/php-email-form/validate.js"></script>
 <!-- Template Main JS File -->
 <script src="static/js/main.js"></script>
</body>
</html>
```

Data Collection & Extraction from Database

Activity: Collect the dataset

Please use the link to download the dataset:-

https://www.kaggle.com/datasets/nehaprabhavalkar/indian-food-101

Activity 1: Understand the data

Check the below link out to understand the dataset in detail:-

https://www.kaggle.com/datasets/nehaprabhavalkar/indian-food-101

Activity 2: Connect IBM DB2 with IBM Cognos Explanation video link:

https://drive.google.com/drive/folders/1SUzDoW8ld84VtnnNVY9uakr7KORybxUo

