Data Analytics Assignment Report

1. Introduction

This report presents the findings from analyzing datasets related to user behavior, cooking preferences, and order trends. The primary objective of this assignment was to:

- Clean and merge the provided datasets: `UserDetails`, `CookingSessions`, and `OrderDetails`.
- Analyze the relationship between cooking sessions and user orders.
- Identify popular dishes and demographic factors influencing user behavior.
- Provide actionable business recommendations based on the analysis.

2. Data Preparation

Datasets Overview:

1. **UserDetails:** Contains demographic details, registration dates, and meal preferences for users.
2. **CookingSessions:** Records session details, including dish names, session ratings, and durations.
3. **OrderDetails:** Includes information about orders, such as dish names, order statuses, and amounts.

Steps Taken:

1. **Cleaning:**
   - Removed rows with critical missing values in `User ID` or `Session ID`.
   - Filled missing ratings with a default value of 0.
   - Removed duplicate rows from all datasets.
2. **Merging:**
   - `CookingSessions` and `OrderDetails` were merged using `Session ID`, `User ID`, `Dish Name`, and `Meal Type`.
   - The resulting dataset was then merged with `UserDetails` on `User ID` to create the final dataset.
3. **Outcome:**

- ○ The merged dataset contained comprehensive information on user demographics, cooking sessions, and orders.

3. Key Insights

3.1 Popular Dishes:

The analysis revealed the top 5 most frequently ordered dishes:

1. **Spaghetti**
2. **Grilled Chicken**
3. **Caesar Salad**
4. **Pancakes**
5. **Veggie Burger**

3.2 Relationship Between Cooking Sessions and Orders:

- On average, users placed approximately 1 order per cooking session.
- Sessions with higher ratings (4.5+) had a higher likelihood of completed orders.

3.3 Demographic Influences:

1. **Orders by Location:**
   - ○ Major cities such as **Chicago**, **Los Angeles**, and **New York** had the highest order volumes.
2. **Orders by Age:**
   - ○ Users aged 25-35 placed the most orders, contributing to 50% of total orders.

3.4 Meal Type Preferences:

- The distribution of orders by meal type showed:
  - ○ **Dinner:** 50%
  - ○ **Lunch:** 31.2%
  - ○ **Breakfast:** 18.8%

4. Business Recommendations

1. **Promote Popular Dishes:**
   - ○ Offer discounts on high-demand dishes like Spaghetti and Grilled Chicken during peak meal times.
2. **Demographic-Based Strategies:**

- ○ Launch targeted campaigns in top cities like Chicago, Los Angeles, and New York.
- ○ Develop marketing content appealing to the age group 25-35.
3. **Enhance Session Experience:**
   - ○ Encourage higher session ratings by offering rewards for detailed feedback.
   - ○ Optimize session durations to around 30-40 minutes to improve order conversions.
4. **Expand Meal Type Offerings:**
   - ○ Develop more breakfast options to boost engagement during morning hours.

5. Conclusion

This analysis provided valuable insights into user behaviour, cooking preferences, and order trends. By leveraging these findings, businesses can tailor their strategies to improve user satisfaction and increase revenue. Implementing the recommendations can lead to higher engagement and stronger customer loyalty.

Appendix

1. **Visualizations:** Included in the supplementary materials folder.
2. **Datasets:** Merged dataset and cleaned individual datasets are available in the GitHub repository.
3. **Code:** All scripts used for data preparation, analysis, and visualizations are included in the GitHub repository.