**Data Analysis Report**

**Introduction**

The objective of this assignment is to analyze datasets related to user behavior, cooking preferences, and order trends. The analysis involves cleaning and merging the data, exploring the relationship between cooking sessions and user orders, identifying popular dishes, and examining demographic factors that influence user behavior. This report summarizes the findings and provides business recommendations based on the insights derived.

**Datasets Overview**

1. **UserDetails.csv**
   * Contains user information including User ID, User Name, Age, Location, Registration Date, Favorite Meal, and Total Orders.
2. **CookingSessions.csv**
   * Contains session details including Session ID, User ID, Dish Name, Meal Type, Session Start, Duration (mins), and Session Rating.
3. **OrderDetails.csv**
   * Contains order details including Order ID, User ID, Order Date, Dish Name, Order Status, Amount (USD), and Rating.

**Data Cleaning and Merging**

1. **Data Cleaning**
   * Removed duplicate entries.
   * Handled missing values by filling with mean values for numeric columns.
   * Ensured correct data types for date and numeric fields.
2. **Data Merging**
   * Merged UserDetails.csv with CookingSessions.csv on User ID.
   * Merged the resulting dataset with OrderDetails.csv on User ID and Session ID.

**Findings**

1. **Distribution of Favorite Meals**
   * The favorite meals of users were distributed as follows:
     + Dinner: 43.8%
     + Lunch: 31.2%
     + Breakfast: 25%
2. **Total Orders by Location**
   * Chicago: 45 orders
   * New York: 36 orders
   * Los Angeles: 24 orders
   * San Fransisco: 20 orders
   * Seattle: 18 orders
3. **Order Trends by Day of the Week**
   * Orders were highest on Sunday, indicating peak activity towards the end of the weekend.
   * Lower order volumes on Weekdays.
4. **Top Rated Sessions**
   * Highest-rated sessions included dishes like "Spaghetti" and "Grilled Chicken" with average session ratings above 4.5.
5. **Session Duration vs. Ratings**
   * Sessions with durations between 20 to 40 minutes received higher ratings compared to shorter or longer sessions.
6. **Most Popular Dish**

* The most popular dish was "Spaghetti" with the highest number of orders followed by Grilled Chicken.

1. **Location with Highest Average Spending**

* The location with the highest total spending on orders was **Boston.**

**Business Recommendations**

1. **Targeted Marketing Campaigns**
   * **Weekends:** Focus marketing efforts on Sunday with special promotions and discounts to capitalize on peak order days.
   * **Meal Preferences:** Tailor campaigns to highlight popular dishes like "Spaghetti" and "Grilled Chicken," which received high session ratings.
2. **Location-Specific Strategies**

* **Order** Volume**:** Chicago has the highest number of orders. Implementing incentives like discounts for frequent orders can further boost engagement in this location.
* **Spending Patterns:** The average spending per order is highest in Boston. Offering exclusive premium services, personalized experiences, and high-value promotions can cater to this high-spending segment.

1. **Session Optimization**
   * **Ideal Session Duration:** Encourage cooking sessions to be within the 20 to 40-minute range to maintain high session ratings.
   * **Cooking Workshops:** Organize virtual cooking workshops featuring popular dishes and provide incentives for participation.

**Conclusion**

This analysis provides valuable insights into user behavior, cooking preferences, and order trends. By implementing the recommended strategies, the business can enhance user engagement, boost order volumes, and optimize overall performance.