**Problem Statement: Exploratory Data Analysis of Airline Booking Dataset**

**Objective:** Engage in an in-depth Exploratory Data Analysis (EDA) to uncover patterns, trends, and insights from a dataset capturing various facets of airline bookings. This assignment aims to enhance your understanding of customer behavior, booking dynamics, and operational aspects related to airline travel.

**Dataset Description:**

The dataset includes the following columns:

* **Number of Passengers:** The number of passengers associated with each booking.
* **Sales Channel:** How customers reached the airline's website.
* **Trip Type:** Specifies whether the booking is for a one-way or round trip.
* **Purchase Lead:** The duration (in days) between the booking date and the date of travel.
* **Length of Stay:** The duration of the holiday stay (in days).
* **Flight Hour:** Specifies the hour of the flight.
* **Flight Day:** Indicates the day of the week for the flight.
* **Route:** Specifies the flight route taken by the customer.
* **Booking Origin:** Describes the source of the booking, i.e., the country.
* **Wants Extra Bag:** Indicates whether the customer expressed a desire for extra baggage allowance (Yes/No).
* **Wants Preferred Seating:** Indicates customer's preference for premium seating (Yes/No).
* **Wants In-flight Meal:** Indicates customer's preference for an in-flight meal (Yes/No).
* **Flight Duration:** Duration of the flight (in hours).
* **Booking Complete:** Indicates whether the customer successfully booked a holiday or not (Yes/No).

**Tasks:**

1. **Data Cleaning and Preprocessing:**
   1. Inspect the dataset for missing values and implement appropriate handling strategies.
   2. Identify any outliers or anomalies in the data and decide how to address them.
2. **Booking Dynamics Analysis:**
   1. Analyze the distribution of the number of passengers, trip types, and booking completions.
   2. Investigate patterns related to purchase leads, flight durations, and lengths of stay.
3. **Temporal Analysis:**
   1. Explore trends based on flight hours and flight days.
   2. Investigate if there are peak times or days for bookings and travel.
4. **Sales and Marketing Insights:**
   1. Analyse the sales channels to understand how customers reach the airline’s website.
   2. Investigate the geographical distribution of bookings through the booking origin.
5. **Customer Preferences:**
   1. Explore customer preferences for extra baggage, preferred seating, and in-flight meals.
   2. Investigate how these preferences relate to other factors such as trip type, flight duration, and number of passengers.
6. **Route Analysis:**
   1. Analyze the popularity and characteristics of different flight routes.
   2. Investigate if specific routes have unique booking patterns or customer preferences.
7. **Conversion Analysis:**
   1. Explore factors that influence booking completion.
   2. Investigate if there are discernible patterns among bookings that did not complete.
8. **Conclusion and Insights:**
   1. Summarize the key findings from your EDA.
   2. Provide actionable insights and recommendations for the airline to optimize their operations, marketing strategies, and customer experience..