**Data Analytics on Indigo Airlines’ Business Model**

**Objective:**

To develop an interactive, modular application that analyses Indigo Airlines’ business model using real-world aviation data.  
The primary aim is to identify key sectors contributing to passenger traffic, forecast future demand trends, analyse airline market share growth, and explore the factors influencing route expansion decisions.

**Problem Statement:**

Indigo Airlines holds the largest market share in India’s aviation industry. However, understanding what drives its operational success, route strategy, and continued dominance requires detailed analysis of passenger traffic, market trends, and route performance.  
This project addresses the following core questions:

* What are the top-performing air travel sectors in India?
* Which sectors are likely to witness increased demand in the future?
* Which airline is best positioned to grow based on current trends?
* How do delays impact performance, and which airlines/sectors are most affected?
* What data-driven factors influence Indigo’s decisions to launch new routes?

**Implementation Approach:**

The project is structured into three main modules, following Object-Oriented Programming principles:

1. **DataLoader Module**

* Handles data import, preprocessing, null value treatment, and column refinement
* Uses datasets from Kaggle and DGCA, focusing on passenger data and airline statistics

1. **Analysis Module**

* Performs key analytical functions including:
  + - Top 3 high-traffic sectors
    - Growth trend predictions
    - Market share evaluation per airline
    - Flight delay pattern analysis

1. **Graphical User Interface Module**

* Built using tkinter
* Enables user-friendly interaction with various analytics and visualizations

**Technologies Used:**

* Programming Language: **Python**
* Libraries: **pandas, numpy, matplotlib, seaborn, tkinter**
* Design Paradigm: **Object-Oriented Programming**
* Data Sources: **DGCA (Directorate General of Civil Aviation), Kaggle**

**Expected Outcomes:**

* Identification of the top 3 air travel sectors in India by passenger traffic
* Forecast of sectors with increasing demand potential
* Market share growth analysis for competing airlines
* Insights into delay patterns by airline and route
* Hypothesis-driven understanding of Indigo’s route expansion strategies
* A GUI-based application that provides easy access to all analytical results

**Extended Feature: Flight Delay Pattern Analysis**

An additional dataset will be incorporated to analyse time-based operational challenges, including:

* Frequency and causes of flight delays
* Airline-wise on-time performance
* Seasonal trends affecting punctuality

**Conclusion:**

This project leverages real-world aviation datasets to deliver a comprehensive, data-driven analysis of Indigo Airlines’ operations.  
The application is designed to provide actionable insights through an intuitive interface, blending domain understanding with technical precision.