Capstone Project Submission

Team Member's Name, Email and Contribution:

Team
Contributor Roles:

1. **Avishek Patra**
   (Email: - avishekpatra511@gmail.com)
   - ➢ Data Wrangling
     - Handling null values
     - Dropping irrelevant columns and rows
     - Parsing date in string to Datetime format
     - Adding new feature columns
   - ➢ Data Visualization
     - Correlation between different booking criteria and plotting heatmap
     - Analyzing the booking trend round the year and plotting line chart

2. **Siddharth Ray**
   (Email: - sidharthray1994@gmail.com)
   - ➢ Data Wrangling
     - Handling null values
     - Dropping irrelevant columns and rows
     - Parsing date in string to Datetime format
     - Adding new feature columns
   - ➢ Data Visualization
     - Analysis the average booking rate of different Market Segments and plotting the chart
     - Analysing reservation status from different distribution Channels of hotels and plotting the chart

3. **Kaushik Dey**
   (Email: - deykaushik.1999@gmail.com)
   - ➢ Data Wrangling
     - Handling null values
     - Dropping irrelevant columns and rows
     - Parsing date in string to Datetime format
     - Adding new feature columns
   - ➢ Data Visualization
     - Analysing and booking percentage of different type of hotels and plotting the chart
     - Analysing and the preferred stay length in each hotel and plotting the chart

4. **Kushal Dixit**
   (Email: - kushal28dixit@gmail.com)
   - ➢ Data Wrangling
     - Handling null values
     - Dropping irrelevant columns and rows
     - Parsing date in string to Datetime format
     - Adding new feature columns
   - ➢ Data Visualization
     - Analysing the overview of guest's visit over different years and plotting the chart
     - Analysing the price trend round the year and plotting the chart

5. **Kanha Charan Pradhan**
   (Email: -kanhac64@gmail.com)
   - ➢ Data Visualization
     - Analysing and the home country of majority of guests
     - Analysing and the hotel preference of tourist from Top 5 Countries

Please paste the GitHub Repo link.
Github Link:- https://github.com/NikhilHSolanki/Hotel-Booking-Analysis.git

Please write a short summary of your Capstone project and its components. Describe the problem statement, your approaches and your conclusions. (200-400 words)

Hotel business is a lucrative yet very volatile business segment. It's dependent on multiple criteria like type of hotel, business seasons, customer segments, multiple modes of booking, amenities, services and many more. Over the past couple of decades, it saw a massive surge in terms of profit, but then global pandemic hit worldwide and almost all industry sectors observed a deprivation in their business with 'Hotel' sector taking a major blow. This has made many entrepreneurs and business leaders realize how important it is to be strategic and leverage data analysis for making intelligent business decisions, thereby penetrating the market deep and gain more market shares.

By applying Exploratory Data Analysis principles and feature engineering, this study aims to explore merits of analysis on Hotels dataset that governs bookings and can help in increasing customer base. Secondary objective is to help the customers in deciding the best period to visit places while availing low accommodation cost benefits. In this project we were provided dataset containing booking information about two types of hotel and various other related booking criteria.

First step of approach involved Data Exploration and Inspection over the raw data. Second step involved Data Cleaning by handling null values, dropping irrelevant columns and rows, parsing date in string to Datetime format and adding new feature columns that can help in better decision support. Final step involved performing a comprehensive data analysis over clean data to analyze the factors that affect hotel bookings and creating Data Visualization for the same. These factors can further helps in drawing booking, pricing and other correlated trends which can further aid in predicting business at high level.

Motivation behind this study is to address few problems discussed below:
- What are the hotel preferences of guests?
- From which country do the majority of guests visit the hotel?
- What is the booking trend of hotels round the year?
- What is the best season to leverage the benefits of low cost accommodation?
- Which market segment prospers more compared to others?
- What is the effect of different booking channels on reservation status?
- Is there any correlation between Booking, Pricing, Stay length, Cancellation, Parking and Guest revisiting with each other?
- What is the most preferred stay length?

Study concluded with insights gained from high correlation between Booking and Pricing. Price hikes to nearly 300% during the peak season of August when compared with off season of November through February. Guests can consider visiting these hotels during the shoulder season of June and September to enjoy benefits of both peak and off season with decent weather and almost full availability of hotel accommodation at very low cost. Increase in pricing and unavailability of parking space can also lead to cancellation in booking by guest. Guests coming from different country have different preference of Hotel type. The ideal stay is 1-4 days followed by 7 days vacation stay. Most of this guest make reservation for their booking via Online travel agencies (79%). Hotel owners should consider promoting their hotels more in different market segments to penetrate the market more.

Further scope can include future bookings prediction based on time series analysis and creating prediction model. The objective of assessing the data in any business segment is a productive step in achieving high success which is demonstrated in this study.