Northeastern University

Milestone 1

IE 7374 Data Warehousing and Business Intelligence

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Team Member's List

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Formula 1 Race Analysis

Problem Definition

Formula 1, spanning from 1950 to 2017, holds a rich dataset encompassing various aspects of racing. The challenge is to extract valuable insights and optimize strategies based on the provided tables: circuits, constructors, drivers, laptimes, pitstops, qualifying, races, results, seasons, and status.

Key Objectives:

Historical Performance Analysis: Explore the dataset to understand how circuits, constructors, and drivers have evolved over the years. Identify trends, successes, and challenges.

Driver and Constructor Evaluation: Assess the performance of individual drivers and constructors. Identify standout performers, analyze consistency, and determine factors contributing to success or struggle.

Lap Time Optimization: Analyze lap times to identify patterns and areas for improvement. Optimize car setups and strategies to enhance overall performance on different circuits.

Pit Stop Strategies: Evaluate pitstop data to refine strategies. Minimize pitstop times, identify optimal windows for pit stops, and mitigate potential issues.

Qualifying Performance: Understand historical qualifying data to analyze team and driver capabilities in securing favorable starting positions. Identify trends that correlate with race performance.

Race Outcomes and Points Distribution: Analyze race results and points earned to understand the impact of different factors on overall standings. Identify instances of strategic brilliance or missed opportunities.

Seasonal Trends and Performance: Examine data across seasons to identify overarching trends, challenges, and successes. Pinpoint seasons with exceptional team or driver performances.

Real-time Decision Support: Leverage real-time status data to simulate scenarios during races. Develop decision support mechanisms for teams to adapt strategies based on changing conditions.

Dataset Attributes

Circuits: Different circuit names with their location.

Car Constructor: Car constructor name and its location.

Drivers: Driver information.

Laptimes: Different laptimes as per different drivers.

Pitstops: Number of stops as per different race and drivers.

Qualifying: Top 3 qualifying drivers as per different race.

Races: Race details as per circuits.

Results: Results as per all other tables.

Seasons: A list of every season and corresponding Wikipedia link.

Status: A table of status codes and their status.

Expected Outputs

The project aims to provide teams, analysts, and enthusiasts with actionable insights derived from historical Formula 1 data. This includes improved decision-making strategies, optimized car setups, and a deeper understanding of the factors influencing success in one of the world's premier racing championships.