Database proposal

Group:

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Member:

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1. Description of the data

Dataset:

Formula 1 World Championship (1950 - 2024)

Introduction:

This database consists of 14 tables containing comprehensive data from the Formula 1 World Championship from 1950 to 2020. The dataset captures key information, such as circuit details, constructor and driver standings, race results, lap times, pit stops, and sprint results. Each table represents different facets of the championship, including constructors' performances, driver data, qualifying rounds, and race outcomes. The structured information can be used to analyze race history, driver and team performance, track data, and more over seven decades of F1 races.

Source:

https://www.kaggle.com/datasets/rohanrao/formula-1-world-championship-1950-2020

Columns and Tables Mean:

1. Circuits.csv:

   Contains data about F1 circuits, including location details like latitude, lon gitude, and altitude.

   - circuitId: Unique ID for each circuit.
   - circuitRef: Circuit reference name.
   - name: Circuit name.
   - location: City or location of the circuit.
   - country: Country where the circuit is located.
   - lat, lng: Latitude and longitude of the circuit.
   - alt: Altitude of the circuit (in meters).
   - url: Official URL of the circuit.

2. Constructor Results.csv:

   Performance data of constructors per race, including points and status.

   - constructorResultsId: Unique ID for constructor results.
   - raceId: Refers to the specific race.
   - constructorId: Constructor's unique identifier.
   - points: Points scored by the constructor in that race.
   - status: Performance status (e.g., finished, retired).

3. Constructor Standings.csv:

   Constructor rankings by points and wins.

   - constructorStandingsId: Unique ID for standings.
   - raceId: Refers to a particular race.
   - constructorId: Constructor's unique identifier.
   - points: Total points the constructor earned.
   - position: Constructor’ s position in the standings.
   - positionText: Text representation of position.
   - wins: Number of race wins by the constructor.

4. Pit Stops.csv:

   Information about pit stops during races, including duration.

   - raceId: Refers to a specific race.
   - driverId: Driver’ s unique identifier.
   - stop: Number of the pit stop.
   - lap: Lap during which the pit stop occurred.
   - time: Pit stop time.
   - duration: Duration of the pit stop.
   - milliseconds: Duration in milliseconds.

5. Constructors.csv:

   Basic details of constructors like nationality and names.

   - constructorId: Unique ID for the constructor.
   - constructorRef: Reference name for constructor.
   - name: Constructor name.
   - nationality: Constructor's nationality.
   - url: Official URL of the constructor.

6. Driver Standings.csv:

   Drivers’ ranking data across races.

   - driverStandingsId: Unique ID for the driver standings.
   - raceId: Refers to a specific race.
   - driverId: Driver’ s unique identifier.
   - points: Total points the driver earned.
   - position: Driver’ s position in the standings.
   - positionText: Text representation of position.
   - wins: Number of race wins by the driver.

7. Drivers.csv:

   Personal information about drivers including nationality, date of birth, and code.

   - driverId: Unique ID for the driver.
   - driverRef: Reference name for the driver.
   - number: Driver’ s car number.
   - code: Driver’ s code (short form).
   - forename, surname: Driver’ s first and last names.
   - dob: Date of birth.
   - nationality: Driver’ s nationality.
   - url: Official URL for more details on the driver.

8. Lap Times.csv:

   Details of lap times for drivers in each race.

   - raceId: Refers to a specific race.
   - driverId: Driver’ s unique identifier.
   - lap: Lap number.
   - position: Driver's position for the lap.
   - time: Lap time.
   - milliseconds: Lap time in milliseconds.

9. Qualifying.csv:

   Qualifying results for each driver per race.

   - qualifyId: Unique ID for qualifying data.
   - raceId: Refers to a specific race.
   - driverId: Driver’ s unique identifier.
   - constructorId: Constructor’ s unique identifier.
   - number: Driver’ s car number.
   - position: Qualifying position.
   - q1, q2, q3: Times for qualifying sessions 1, 2, and 3.

10. Races.csv:

Information about races, including dates, circuits, and race names.

- raceId: Unique ID for the race.
- year: Year the race was held.
- round: Round number in the season.
- circuitId: Refers to the circuit.
- name: Name of the race.
- date: Date of the race.
- time: Time the race started.
- url: Official race URL.
- fp1_date, fp1_time: Date and time of Free Practice 1.
- fp2_date, fp2_time: Date and time of Free Practice 2.
- fp3_date, fp3_time: Date and time of Free Practice 3.
- quali_date, quali_time: Date and time of qualifying.
- sprint_date, sprint_time: Date and time of sprint race.

11. Sprint Results.csv:

Results of sprint races, including fastest laps and positions.

- resultId: Unique ID for the sprint result.
- raceId: Refers to a specific sprint race.
- driverId: Driver’ s unique identifier.
- constructorId: Constructor’ s unique identifier.
- number: Driver’ s car number.
- grid: Starting grid position for the sprint.
- position: Final position.
- positionText: Text for the position.
- positionOrder: Order of position.
- points: Points scored in the sprint.
- laps: Number of laps completed in the sprint.
- time: Finishing time.

- milliseconds: Time in milliseconds.
- fastestLap: Number of the fastest lap.
- fastestLapTime: Time for the fastest lap.
- statusId: Status of the driver.

12. Results.csv:

Detailed race results for each driver, including position, points, and laps.

- resultId: Unique ID for the result.
- raceId: Refers to a specific race.
- driverId: Driver’ s unique identifier.
- constructorId: Constructor’ s unique identifier.
- number: Driver’ s car number.
- grid: Starting grid position.
- position: Finishing position.
- positionText: Text for the position.
- positionOrder: Order of position (numerical).
- points: Points scored in the race.
- laps: Number of laps completed.
- time: Finishing time.
- milliseconds: Time in milliseconds.
- fastestLap: Number of the fastest lap.
- rank: Rank for fastest lap.
- fastestLapTime: Time for the fastest lap.
- fastestLapSpeed: Speed during the fastest lap.
- statusId: Status of the driver (finished, retired, etc.).

13. Seasons.csv:

Seasons data, including year and corresponding URLs.

- year: Season year.
- url: Official URL for the season overview.

14. Status.csv:

Status codes for race outcomes such as "Finished" or "Retired."

- statusId: Unique ID for the status.
- status: Status description (e.g., "Finished," "Retired," etc.).
- Each CSV file covers a different aspect of Formula 1, from circu its and drivers to race results and standings.

2. Application Design

Main idea:

To analyze the performance in the races of drivers and visualize the data on t he website. For the user, especially those who are enthusiastic about F1, to browse t he website and share their own opinion of the races and the players with other users.

Functionality:

Look up information of drivers, races, circuit, sort them based on your prefere nces.

What kind of information will be presented to users:

1. Race data: The details of the race result, including the date, the location of the race and the point of the race
2. Driver data: wins, loss, position, and some personal information
3. Circuit data: The country and city it’ s located, altitude, name of the track, et c.

What kind of interaction will be available:

1. CRUD
2. search and filter
3. share comments
4. download data
5. compare two racer

What will be the scenario when a user use your application:

The user can browse the result of each race and search the specific player’ s performance in the season. Moreover, they can compare two racers in the specific se ason and download the result from the website.

Interface:

Search Bar:

Allows users to quickly find drivers, races, circuits, or constructors by typing keywo rds (e.g., driver name, race year).

Filter Controller Panel:

Offers various filters (e.g., by season, points, position) to customize and refine data views, helping users explore specific subsets.

Download Button:

Enables users to export data, charts, or tables for offline analysis in formats like CS V or PDF.

Racer Comparer:

A tool for comparing two or more drivers' performance across metrics like wins, poi nts, and standings.

Comment Table:

A section for users to leave feedback, insights, or questions about races, drivers, or d ata analysis.

3. Discussion:

DBMS Discussion Record - HackMD

4. Repo:

Chiang-Chen-An/DBMS-Final-Project

5. Trello: https://trello.com/invite/b/671903e1baa77c8f000e6782/ATTI3941be7f36096958e39fc625b0712b97AB5E792A/dbms

6. Work Plan

Deadline	Task	Notes
10/23	Final Project Proposal	
10/30	Organizing the data and designing the sc hema	
11/6	Finishing the basic sql, including create database and the table	
11/13	Finishing the function using on the websi te by mysql, including searching and filte ring	
11/20	Designing the web page interface	
11/27	Finishing the webpage outlook	
12/4	Finishing the function of the website	
12/11	Finishing the final project report	