University at Buffalo
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Project on Formula 1 Database

Objective and Introduction

Formula 1 is one of the most popular and technologically advanced sports in the world. It is the pinnacle of motorsport/automobile technology. It is the biggest and highest degree of international racing for single-seater formula racing cars. Grand Prix is a race that is conducted all over the globe. A Grand Prix race week comprises a practice day, qualifying race day, and final race day. Together all these races are called the F1 season, governed and sanctioned by the Fédération Internationale de l'Automobile (FIA). In the race, FIA evaluates the performance of the driver and the constructor. A constructor is a group of people who design the key components of the car. At the end of a season, the FIA combines the scores made by each and awards two annual World Championships: F1 Driver Championship and Constructor Championship.

Formula1 cars consist of various mechanical, electrical, electronics, and aerodynamic parts that are mapped using about 200 sensors. Depending on the length of a circuit, on an average, F1 cars generate around 3TB of data over a race weekend, stored, processed, and used for further real-time performance analytics.

One of the major components for winning an F1 race is optimizing the car design. Constructors rely heavily upon data for optimising their design. For every race, huge data is generated and analysed for driver and design performance. Accordingly, the databases needed for storing such a huge amount of data must be fast and efficient.

A typical database design for this purpose will boil down to different components that make up F1 Racing. Data is collected for various categories, for instance, driver's details such as full name, date of birth, nationality, driver's jersey number, team's data such as team name, drivers, car engine manufacturer, car chassis manufacturer, sponsors.

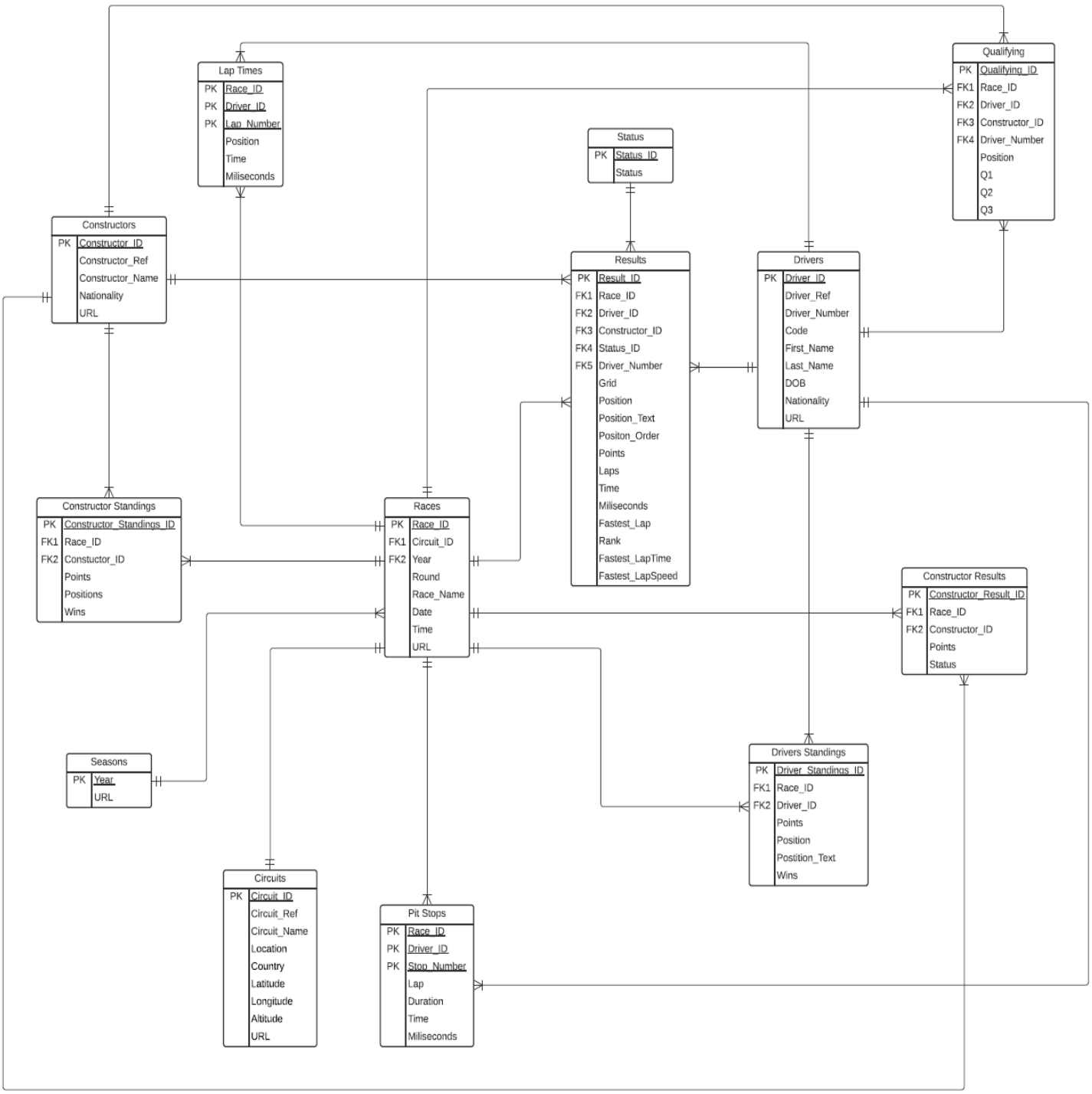
On the other hand, race data is tracked in terms of lap times, pitstops, qualifying race details, flags, race results, race schedule. Additionally, yearlong data on driver season standings, constructor championship, and Grand Prix results are also recorded. Moreover, each financial year data for the organization such as viewership, tickets sold, profits, sponsor data, driver's transfer fees, team budgets are noted. This data is made public for the fans to follow teams and drivers which ultimately enhances fans engagement.

Efficient database systems are essential for F1 teams to record every single race, week after week to perform real-time analysis on it. The data on the database is utilized to take advantage of predictive analytics to prepare for the races, season, and championships. Essentially, an interconnected network of data flow is utilized by each team, where a data-driven decision-making pipeline is worked around with the data recorded at each second.

The aim of this project is to build a database which consists of information about various aspects related to Formula 1, so that data about F1 can be managed and maintained at one place and various analytical questions can be effectively and efficiently answered without any discrepancies. Using historical data available for each parameter under consideration, we will create a database and compare parameters on a foundational basis to help visualize a favourable constructor for certain circuits. The scope of the project incorporates data tables with information about various drivers, constructors, and Formula 1 seasons.

This database can be utilized for several applications such as TV channels or websites for increasing user engagement by providing statistical information in real time during a race. The designed database can be accessed by all, specifically F1 fans; furthermore, we will be focussing on creating business rules, ER diagrams and database schemas with the available data; maintenance and addition of the new data; providing useful insights and visions utilizing the available data.

Entity Relationship Diagram



Business Rules

1. A race can have one or many results, a result must have exactly one race.
2. A race can have one or many constructor results, a constructor result must have exactly one race.
3. A race can have one or many driver standings, a driver standing must be generated exactly after one race.
4. A race can have one or many pit stops, a pit stop must be completed at a race.
5. A race can have one or many constructor standings, a constructor standing must have exactly one race.
6. A race can have one or many qualifying, a qualifying must be completed in one race.
7. A race can have one or many lap times, a lap time must be completed in a race.
8. A race must be a part of exactly one season, a season can have one or many races.
9. A race must be conducted at one circuit, a circuit must have exactly one race.
10. A driver can have one or many results, a result must consist of exactly one driver.
11. A driver can have one or many qualifying, a qualifying position must be awarded to exactly one driver.
12. A driver can do one or many pit stops, a pit stop must be done by one driver.
13. A driver can have one or many driver standings, a driver standing must be attributed to exactly one driver.
14. A driver can drive one or many lap times, a lap time must be posted by exactly one driver.
15. A constructor can have one or many results, a result must have exactly one constructor.
16. A constructor can have one or many constructor results, a constructor result must have exactly one constructor.
17. A constructor can have one or many constructor standings, a constructor standing must have exactly one constructor.
18. A constructor can compete in one or many qualifying, a qualifying position must be awarded to one constructor.
19. A status can have one or many results, a result must have exactly one status.

Relational Schema

Lap_Times

LapNumber	DriverID	Race_ID	Position	LapTime	Milliseconds

Races

RaceID	CircuitID	Year	Round	Race_name	Date	RaceTime

Drivers

DriverID	Driver_Ref	Driver_Number	Code	First_Name	Last_Name	DOB	Nationality

Seasons

Year	URL

Drivers_Standings

Driver_Standings_ID	Race_ID	Driver_ID	Points	Position	Position_Text	Wins

Constructor_Results

Constructor_Result_ID	Race_ID	Constructor_ID	Points	Status

Qualifying

Qualifying_ID	Race_ID	Driver_ID	Constructor_ID	Driver_Number	Position	Q1	Q2	Q3

Pit_Stops

Stop_Number	Race_ID	Driver_ID	Lap	Duration	Time	Milliseconds

Results

Result_ID	Race_ID	Driver_ID	Constructor_ID	Status_ID
Driver_Number	Position	Position_Text	Position_Order	Points
Laps	Time	Fastest_Lap	Rank	Fastest_LapTime
Grid	Milliseconds	Fastest_LapSpeed		

Status

Status_ID	Status

Constructors

Constructor_ID	Constructor_Ref	Constructor_Name	Nationality	URL

Constructor_Standings

Constructor_Standings_ID	Race_ID	Constructor_ID	Points	Positions	Wins

Circuits

Circuit_ID	Circuit_Ref	Circuit_Name	Location	Country	Latitude	Longitude	Altitude	URL

Note:

- Primary Keys are denoted in Bold and Underlined.
- Foreign Keys are denoted by Dash Underline.

Create and Insert Statements Script

```
/* Constructor Table */
Create Table Constructor_DB
(Constructor_ID Number(8) not null,
Constructor_Ref Varchar2(50),
Constructor_Name Varchar2(100),
Nationality Varchar2(100),
Constructor_URL varchar2(100),
Constraint Constructor_pk Primary Key(Constructor_ID));

---------insert data to constructor_db
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 1, 'mclaren', 'McLaren', 'British', 'http://en.wikipedia.org/wiki/McLaren');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 2, 'bmw_sauber', 'BMW Sauber', 'German', 'http://en.wikipedia.org/wiki/BMW_Sauber');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 3, 'williams', 'Williams', 'British', 'http://en.wikipedia.org/wiki/Williams_Grand_Prix_Engineering');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 4, 'renault', 'Renault', 'French', 'http://en.wikipedia.org/wiki/Renault_in_Formula_One');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 5, 'toro_rosso', 'Toro Rosso', 'Italian', 'http://en.wikipedia.org/wiki/Scuderia_Toro_Rosso');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 6, 'ferrari', 'Ferrari', 'Italian', 'http://en.wikipedia.org/wiki/Scuderia_Ferrari');
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INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 7, 'toyota', 'Toyota', 'Japanese', 'http://en.wikipedia.org/wiki/Toyota_Racing');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 8, 'super_aguri', 'Super Aguri', 'Japanese', 'http://en.wikipedia.org/wiki/Super_Aguri_F1');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 9, 'red_bull', 'Red Bull', 'Austrian', 'http://en.wikipedia.org/wiki/Red_Bull_Racing');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 10, 'force_india', 'Force India', 'Indian', 'http://en.wikipedia.org/wiki/Racing_Point_Force_India');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 11, 'honda', 'Honda', 'Japanese', 'http://en.wikipedia.org/wiki/Honda_Racing_F1');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 12, 'spyker', 'Spyker', 'Dutch', 'http://en.wikipedia.org/wiki/Spyker_F1');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 13, 'mf1', 'MF1', 'Russian', 'http://en.wikipedia.org/wiki/Midland_F1_Racing');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 14, 'spyker_mf1', 'Spyker MF1', 'Dutch', 'http://en.wikipedia.org/wiki/Midland_F1_Racing');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 15, 'sauber', 'Sauber', 'Swiss', 'http://en.wikipedia.org/wiki/Sauber');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 16, 'bar', 'BAR', 'British', 'http://en.wikipedia.org/wiki/British_American_Racing');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 17, 'jordan', 'Jordan', 'Irish', 'http://en.wikipedia.org/wiki/Jordan_Grand_Prix');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 18, 'minardi', 'Minardi', 'Italian', 'http://en.wikipedia.org/wiki/Minardi');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 19, 'jaguar', 'Jaguar', 'British', 'http://en.wikipedia.org/wiki/Jaguar_Racing');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 20, 'prost', 'Prost', 'French', 'http://en.wikipedia.org/wiki/Prost_Grand_Prix');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 21, 'arrows', 'Arrows', 'British', 'http://en.wikipedia.org/wiki/Arrows_Grand_Prix_International');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 22, 'benetton', 'Benetton', 'Italian', 'http://en.wikipedia.org/wiki/Benetton_Formula');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 23, 'brawn', 'Brawn', 'British', 'http://en.wikipedia.org/wiki/Brawn_GP');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 24, 'stewart', 'Stewart', 'British', 'http://en.wikipedia.org/wiki/Stewart_Grand_Prix');
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INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 25, 'tyrrell', 'Tyrrell', 'British', 'http://en.wikipedia.org/wiki/Tyrrell_Racing');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 26, 'lola', 'Lola', 'British', 'http://en.wikipedia.org/wiki/MasterCard_Lola');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 27, 'ligier', 'Ligier', 'French', 'http://en.wikipedia.org/wiki/Ligier');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 28, 'forti', 'Forti', 'Italian', 'http://en.wikipedia.org/wiki/Forti');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 29, 'footwork', 'Footwork', 'British', 'http://en.wikipedia.org/wiki/Footwork_Arrows');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 30, 'pacific', 'Pacific', 'British', 'http://en.wikipedia.org/wiki/Pacific_Racing');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 31, 'simtek', 'Simtek', 'British', 'http://en.wikipedia.org/wiki/Simtek');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 32, 'team_lotus', 'Team Lotus', 'British', 'http://en.wikipedia.org/wiki/Team_Lotus');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 33, 'larrousse', 'Larrousse', 'French', 'http://en.wikipedia.org/wiki/Larrousse');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 34, 'brabham', 'Brabham', 'British', 'http://en.wikipedia.org/wiki/Brabham');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 35, 'dallara', 'Dallara', 'Italian', 'http://en.wikipedia.org/wiki/Dallara');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 36, 'fondmetal', 'Fondmetal', 'Italian', 'http://en.wikipedia.org/wiki/Fondmetal');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 37, 'march', 'March', 'British', 'http://en.wikipedia.org/wiki/March_Engineering');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 38, 'moda', 'Andrea Moda', 'Italian', 'http://en.wikipedia.org/wiki/Andrea_Moda_Formula');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 39, 'ags', 'AGS', 'French', 'http://en.wikipedia.org/wiki/Automobiles_Gonfaronnaises_Sportives');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 40, 'lambo', 'Lambo', 'Italian', 'http://en.wikipedia.org/wiki/Modena_(racing_team)');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 41, 'leyton', 'Leyton House', 'British', 'http://en.wikipedia.org/wiki/Leyton_House');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 42, 'coloni', 'Coloni', 'Italian', 'http://en.wikipedia.org/wiki/Enzo_Coloni_Racing_Car_Systems');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 44, 'eurobrun', 'Euro Brun', 'Italian', 'http://en.wikipedia.org/wiki/Euro_Brun');
```

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INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 45, 'osella', 'Osella', 'Italian', 'http://en.wikipedia.org/wiki/Osella');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 46, 'onyx', 'Onyx', 'British', 'http://en.wikipedia.org/wiki/Onyx_(racing_team)');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 47, 'life', 'Life', 'Italian', 'http://en.wikipedia.org/wiki/Life_(Racing_Team)');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 48, 'rial', 'Rial', 'German', 'http://en.wikipedia.org/wiki/Rial_%28racing_team%29');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 49, 'zakspeed', 'Zakspeed', 'German', 'http://en.wikipedia.org/wiki/Zakspeed');
INSERT INTO Constructor_DB (Constructor_ID, Constructor_Ref, Constructor_Name, Nationality, Constructor_URL) VALUES ( 50, 'ram', 'RAM', 'British', 'http://en.wikipedia.org/wiki/RAM_Racing');

/* Drivers Table */
CREATE TABLE Drivers_DB
( Driver_ID NUMBER(8) NOT NULL,
  Driver_Ref VARCHAR2(100),
  Driver_Number NUMBER(10),
  Code VARCHAR2(200),
  First_Name VARCHAR2(200),
  Last_Name VARCHAR2(200),
  Nationality VARCHAR2(200),
  CONSTRAINT DRIVERS_DB_PK PRIMARY KEY (Driver_ID)
  );

  ------insert data into drivers_db
INSERT INTO Drivers_DB (Driver_ID, Driver_Ref, Driver_Number, Code, First_Name, Last_Name, Nationality) VALUES ( 1, 'hamilton', 44, 'HAM', 'Lewis', 'Hamilton', 'British');
INSERT INTO Drivers_DB (Driver_ID, Driver_Ref, Driver_Number, Code, First_Name, Last_Name, Nationality) VALUES ( 2, 'heidfeld', NULL, 'HEI', 'Nick', 'Heidfeld', 'German');
INSERT INTO Drivers_DB (Driver_ID, Driver_Ref, Driver_Number, Code, First_Name, Last_Name, Nationality) VALUES ( 3, 'rosberg',NULL , 'ROS', 'Nico', 'Rosberg', 'German');
INSERT INTO Drivers_DB (Driver_ID, Driver_Ref, Driver_Number, Code, First_Name, Last_Name, Nationality) VALUES ( 4, 'alonso', NULL, 'ALO', 'Fernando', 'Alonso', 'Spanish');
INSERT INTO Drivers_DB (Driver_ID, Driver_Ref, Driver_Number, Code, First_Name, Last_Name, Nationality) VALUES ( 5, 'kovalainen', NULL, 'KOV', 'Heikki', 'Kovalainen', 'Finnish');
INSERT INTO Drivers_DB (Driver_ID, Driver_Ref, Driver_Number, Code, First_Name, Last_Name, Nationality) VALUES ( 6, 'nakajima', NULL, 'NAK', 'Kazuki', 'Nakajima', 'Japanese');
INSERT INTO Drivers_DB (Driver_ID, Driver_Ref, Driver_Number, Code, First_Name, Last_Name, Nationality) VALUES ( 7, 'bourdais', NULL, 'BOU', 'Sébastien', 'Bourdais', 'French');
INSERT INTO Drivers_DB (Driver_ID, Driver_Ref, Driver_Number, Code, First_Name, Last_Name, Nationality) VALUES ( 8, 'raikkonen', 7, 'RAI', 'Kimi', 'Räikkönen', 'Finnish');
INSERT INTO Drivers_DB (Driver_ID, Driver_Ref, Driver_Number, Code, First_Name, Last_Name, Nationality) VALUES ( 9, 'kubica', 88, 'KUB', 'Robert', 'Kubica', 'Polish');
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INSERT INTO Drivers_DB (Driver_ID, Driver_Ref, Driver_Number, Code, First_Name, Last_Name, Nationality) VALUES ( 10, 'glock', NULL, 'GLO', 'Timo', 'Glock', 'German');
INSERT INTO Drivers_DB (Driver_ID, Driver_Ref, Driver_Number, Code, First_Name, Last_Name, Nationality) VALUES ( 11, 'sato', NULL, 'SAT', 'Takuma', 'Sato', 'Japanese');
INSERT INTO Drivers_DB (Driver_ID, Driver_Ref, Driver_Number, Code, First_Name, Last_Name, Nationality) VALUES ( 12, 'piquet_jr', NULL, 'PIQ', 'Nelson', 'Piquet Jr.', 'Brazilian');
INSERT INTO Drivers_DB (Driver_ID, Driver_Ref, Driver_Number, Code, First_Name, Last_Name, Nationality) VALUES ( 13, 'massa', 19, 'MAS', 'Felipe', 'Massa', 'Brazilian');
INSERT INTO Drivers_DB (Driver_ID, Driver_Ref, Driver_Number, Code, First_Name, Last_Name, Nationality) VALUES ( 14, 'coulthard', NULL, 'COU', 'David', 'Coulthard', 'British');
INSERT INTO Drivers_DB (Driver_ID, Driver_Ref, Driver_Number, Code, First_Name, Last_Name, Nationality) VALUES ( 15, 'trulli', NULL, 'TRU', 'Jarno', 'Trulli', 'Italian');
INSERT INTO Drivers_DB (Driver_ID, Driver_Ref, Driver_Number, Code, First_Name, Last_Name, Nationality) VALUES ( 16, 'sutil', 99, 'SUT', 'Adrian', 'Sutil', 'German');
INSERT INTO Drivers_DB (Driver_ID, Driver_Ref, Driver_Number, Code, First_Name, Last_Name, Nationality) VALUES ( 17, 'webber', NULL, 'WEB', 'Mark', 'Webber', 'Australian');
INSERT INTO Drivers_DB (Driver_ID, Driver_Ref, Driver_Number, Code, First_Name, Last_Name, Nationality) VALUES ( 18, 'button', 22, 'BUT', 'Jenson', 'Button', 'British');
INSERT INTO Drivers_DB (Driver_ID, Driver_Ref, Driver_Number, Code, First_Name, Last_Name, Nationality) VALUES ( 19, 'davidson', NULL, 'DAV', 'Anthony', 'Davidson', 'British');
INSERT INTO Drivers_DB (Driver_ID, Driver_Ref, Driver_Number, Code, First_Name, Last_Name, Nationality) VALUES ( 20, 'vettel', 5, 'VET', 'Sebastian', 'Vettel', 'German');

/* Circuits Table */
create table Circuits_DB (
   Circuit_ID number not null constraint circuits_db_pk primary key,
   Circuit_Ref varchar2(100),
   Circuit_Name varchar2(100),
   Circuit_Location varchar2(100),
   Country varchar2(100),
   Altitude_URL varchar2(100)
);

-------insert data into circuits_db
INSERT INTO Circuits_DB (Circuit_ID, Circuit_Ref, Circuit_Name, Circuit_Location, Country, Altitude_URL)
VALUES (1, 'albert_park', 'Albert Park Grand Prix Circuit', 'Melbourne', 'Australia',  '10');
INSERT INTO Circuits_DB (Circuit_ID, Circuit_Ref, Circuit_Name, Circuit_Location, Country, Altitude_URL)
VALUES (2, 'sepang', 'Sepang International Circuit', 'Kuala Lumpur', 'Malaysia',  '18');
INSERT INTO Circuits_DB (Circuit_ID, Circuit_Ref, Circuit_Name, Circuit_Location, Country, Altitude_URL)
VALUES (3, 'bahrain', 'Bahrain International Circuit', 'Sakhir', 'Bahrain',  '7');
INSERT INTO Circuits_DB (Circuit_ID, Circuit_Ref, Circuit_Name, Circuit_Location, Country, Altitude_URL)
VALUES (4, 'catalunya', 'Circuit de Barcelona-Catalunya', 'Montmeló', 'Spain',  '109');
INSERT INTO Circuits_DB (Circuit_ID, Circuit_Ref, Circuit_Name, Circuit_Location, Country, Altitude_URL)
VALUES (5, 'istanbul', 'Istanbul Park', 'Istanbul', 'Turkey',  '130');
INSERT INTO Circuits_DB (Circuit_ID, Circuit_Ref, Circuit_Name, Circuit_Location, Country, Altitude_URL)
VALUES (6, 'monaco', 'Circuit de Monaco', 'Monte-Carlo', 'Monaco',  '7');
INSERT INTO Circuits_DB (Circuit_ID, Circuit_Ref, Circuit_Name, Circuit_Location, Country, Altitude_URL)
VALUES (7, 'villeneuve', 'Circuit Gilles Villeneuve', 'Montreal', 'Canada',  '13');
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INSERT INTO Circuits_DB (Circuit_ID, Circuit_Ref, Circuit_Name, Circuit_Location, Country, Altitude_URL)
VALUES (8, 'magny_cours', 'Circuit de Nevers Magny-Cours', 'Magny Cours', 'France',  '228');
INSERT INTO Circuits_DB (Circuit_ID, Circuit_Ref, Circuit_Name, Circuit_Location, Country, Altitude_URL)
VALUES (9, 'silverstone', 'Silverstone Circuit', 'Silverstone', 'UK',  '153');
INSERT INTO Circuits_DB (Circuit_ID, Circuit_Ref, Circuit_Name, Circuit_Location, Country, Altitude_URL)
VALUES (10, 'hockenheimring', 'Hockenheimring', 'Hockenheim', 'Germany',  '103');
INSERT INTO Circuits_DB (Circuit_ID, Circuit_Ref, Circuit_Name, Circuit_Location, Country, Altitude_URL)
VALUES (11, 'hungaroring', 'Hungaroring', 'Budapest', 'Hungary',  '264');
INSERT INTO Circuits_DB (Circuit_ID, Circuit_Ref, Circuit_Name, Circuit_Location, Country, Altitude_URL)
VALUES (12, 'valencia', 'Valencia Street Circuit', 'Valencia', 'Spain',  '4');
INSERT INTO Circuits_DB (Circuit_ID, Circuit_Ref, Circuit_Name, Circuit_Location, Country, Altitude_URL)
VALUES (13, 'spa', 'Circuit de Spa-Francorchamps', 'Spa', 'Belgium',  '401');
INSERT INTO Circuits_DB (Circuit_ID, Circuit_Ref, Circuit_Name, Circuit_Location, Country, Altitude_URL)
VALUES (14, 'monza', 'Autodromo Nazionale di Monza', 'Monza', 'Italy',  '162');
INSERT INTO Circuits_DB (Circuit_ID, Circuit_Ref, Circuit_Name, Circuit_Location, Country, Altitude_URL)
VALUES (15, 'marina_bay', 'Marina Bay Street Circuit', 'Marina Bay', 'Singapore',  '18');
INSERT INTO Circuits_DB (Circuit_ID, Circuit_Ref, Circuit_Name, Circuit_Location, Country, Altitude_URL)
VALUES (16, 'fuji', 'Fuji Speedway', 'Oyama', 'Japan',  '583');
INSERT INTO Circuits_DB (Circuit_ID, Circuit_Ref, Circuit_Name, Circuit_Location, Country, Altitude_URL)
VALUES (17, 'shanghai', 'Shanghai International Circuit', 'Shanghai', 'China',  '5');
INSERT INTO Circuits_DB (Circuit_ID, Circuit_Ref, Circuit_Name, Circuit_Location, Country, Altitude_URL)
VALUES (18, 'interlagos', 'Autódromo José Carlos Pace', 'São Paulo', 'Brazil',  '785');
INSERT INTO Circuits_DB (Circuit_ID, Circuit_Ref, Circuit_Name, Circuit_Location, Country, Altitude_URL)
VALUES (19, 'indianapolis', 'Indianapolis Motor Speedway', 'Indianapolis', 'USA',  '223');
INSERT INTO Circuits_DB (Circuit_ID, Circuit_Ref, Circuit_Name, Circuit_Location, Country, Altitude_URL)
VALUES (20, 'nurburgring', 'Nürburgring', 'Nürburg', 'Germany',  '578');
INSERT INTO Circuits_DB (Circuit_ID, Circuit_Ref, Circuit_Name, Circuit_Location, Country, Altitude_URL)
VALUES (21, 'imola', 'Autodromo Enzo e Dino Ferrari', 'Imola', 'Italy',  '37');


/* Status Table */
CREATE TABLE Status_DB
( Status_ID        NUMBER(8)       NOT NULL,
  Status_Status    VARCHAR2(200) ,
  CONSTRAINT status_pk PRIMARY KEY (Status_ID));

  -----insert data into status_db
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (1, 'Finished');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (2, 'Disqualified');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (3, 'Accident');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (4, 'Collision');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (5, 'Engine');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (6, 'Gearbox');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (7, 'Transmission');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (8, 'Clutch');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (9, 'Hydraulics');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (10, 'Electrical');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (11, '+1 Lap');
```

```
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (12, '+2 Laps');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (13, '+3 Laps');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (14, '+4 Laps');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (15, '+5 Laps');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (16, '+6 Laps');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (17, '+7 Laps');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (18, '+8 Laps');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (19, '+9 Laps');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (20, 'Spun off');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (21, 'Radiator');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (22, 'Suspension');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (23, 'Brakes');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (24, 'Differential');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (25, 'Overheating');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (26, 'Mechanical');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (27, 'Tyre');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (28, 'Driver Seat');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (29, 'Puncture');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (30, 'Driveshaft');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (31, 'Retired');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (32, 'Fuel pressure');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (33, 'Front wing');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (34, 'Water pressure');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (35, 'Refuelling');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (36, 'Wheel');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (37, 'Throttle');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (38, 'Steering');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (39, 'Technical');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (40, 'Electronics');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (41, 'Broken wing');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (42, 'Heat shield fire');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (43, 'Exhaust');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (44, 'Oil leak');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (45, '+11 Laps');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (46, 'Wheel rim');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (47, 'Water leak');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (48, 'Fuel pump');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (49, 'Track rod');
INSERT INTO Status_DB (Status_ID,Status_Status) VALUES (50, '+17 Laps');

/* Seasons Table */
CREATE TABLE Seasons_DB
( Seasons_Year   NUMBER(8)      NOT NULL,
  Seasons_URL    VARCHAR2(200) ,
  CONSTRAINT seasons_pk PRIMARY KEY (Seasons_Year));

  --------Insert data into seasons_db
```

```
INSERT INTO Seasons_DB (Seasons_Year, Seasons_URL) VALUES (2009,
'https://en.wikipedia.org/wiki/2009_Formula_One_season');
INSERT INTO Seasons_DB (Seasons_Year, Seasons_URL) VALUES (2008,
'https://en.wikipedia.org/wiki/2008_Formula_One_season');
INSERT INTO Seasons_DB (Seasons_Year, Seasons_URL) VALUES (2007,
'https://en.wikipedia.org/wiki/2007_Formula_One_season');
INSERT INTO Seasons_DB (Seasons_Year, Seasons_URL) VALUES (2006,
'https://en.wikipedia.org/wiki/2006_Formula_One_season');
INSERT INTO Seasons_DB (Seasons_Year, Seasons_URL) VALUES (2005,
'https://en.wikipedia.org/wiki/2005_Formula_One_season');
INSERT INTO Seasons_DB (Seasons_Year, Seasons_URL) VALUES (2004,
'https://en.wikipedia.org/wiki/2004_Formula_One_season');
INSERT INTO Seasons_DB (Seasons_Year, Seasons_URL) VALUES (2003,
'https://en.wikipedia.org/wiki/2003_Formula_One_season');
INSERT INTO Seasons_DB (Seasons_Year, Seasons_URL) VALUES (2002,
'https://en.wikipedia.org/wiki/2002_Formula_One_season');
INSERT INTO Seasons_DB (Seasons_Year, Seasons_URL) VALUES (2001,
'https://en.wikipedia.org/wiki/2001_Formula_One_season');
INSERT INTO Seasons_DB (Seasons_Year, Seasons_URL) VALUES (2000,
'https://en.wikipedia.org/wiki/2000_Formula_One_season');
INSERT INTO Seasons_DB (Seasons_Year, Seasons_URL) VALUES (1999,
'https://en.wikipedia.org/wiki/1999_Formula_One_season');
INSERT INTO Seasons_DB (Seasons_Year, Seasons_URL) VALUES (1998,
'https://en.wikipedia.org/wiki/1998_Formula_One_season');
INSERT INTO Seasons_DB (Seasons_Year, Seasons_URL) VALUES (1997,
'https://en.wikipedia.org/wiki/1997_Formula_One_season');
INSERT INTO Seasons_DB (Seasons_Year, Seasons_URL) VALUES (1996,
'https://en.wikipedia.org/wiki/1996_Formula_One_season');
INSERT INTO Seasons_DB (Seasons_Year, Seasons_URL) VALUES (1995,
'https://en.wikipedia.org/wiki/1995_Formula_One_season');
INSERT INTO Seasons_DB (Seasons_Year, Seasons_URL) VALUES (1994,
'https://en.wikipedia.org/wiki/1994_Formula_One_season');
INSERT INTO Seasons_DB (Seasons_Year, Seasons_URL) VALUES (1993,
'https://en.wikipedia.org/wiki/1993_Formula_One_season');
INSERT INTO Seasons_DB (Seasons_Year, Seasons_URL) VALUES (1992,
'https://en.wikipedia.org/wiki/1992_Formula_One_season');
INSERT INTO Seasons_DB (Seasons_Year, Seasons_URL) VALUES (1991,
'https://en.wikipedia.org/wiki/1991_Formula_One_season');
INSERT INTO Seasons_DB (Seasons_Year, Seasons_URL) VALUES (1990,
'https://en.wikipedia.org/wiki/1990_Formula_One_season');
INSERT INTO Seasons_DB (Seasons_Year, Seasons_URL) VALUES (2010,
'https://en.wikipedia.org/wiki/2010_Formula_One_season');
INSERT INTO Seasons_DB (Seasons_Year, Seasons_URL) VALUES (1989,
'https://en.wikipedia.org/wiki/1989_Formula_One_season');
INSERT INTO Seasons_DB (Seasons_Year, Seasons_URL) VALUES (1988,
'https://en.wikipedia.org/wiki/1988_Formula_One_season');
INSERT INTO Seasons_DB (Seasons_Year, Seasons_URL) VALUES (1987,
'https://en.wikipedia.org/wiki/1987_Formula_One_season');
```

```
INSERT INTO Seasons_DB (Seasons_Year, Seasons_URL) VALUES (1986, 'https://en.wikipedia.org/wiki/1986_Formula_One_season');
INSERT INTO Seasons_DB (Seasons_Year, Seasons_URL) VALUES (1985, 'https://en.wikipedia.org/wiki/1985_Formula_One_season');
INSERT INTO Seasons_DB (Seasons_Year, Seasons_URL) VALUES (1984, 'https://en.wikipedia.org/wiki/1984_Formula_One_season');
INSERT INTO Seasons_DB (Seasons_Year, Seasons_URL) VALUES (1983, 'https://en.wikipedia.org/wiki/1983_Formula_One_season');

/* Races Table */
create table Races_DB (
   Race_ID number not null constraint Races_db_pk primary key,
   Circuit_ID number ,
   Seasons_Year number  ,
   Races_Round number,
   Race_Name varchar2(200),
   FOREIGN KEY (Circuit_ID) References Circuits_DB (Circuit_ID),
   FOREIGN KEY (Seasons_Year) References Seasons_DB (Seasons_Year)
);
----------insert data into races_db
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (1, 1, 2009, 1, 'Australian Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (2, 2, 2009, 2, 'Malaysian Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (3, 17, 2009, 3, 'Chinese Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (4, 3, 2009, 4, 'Bahrain Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (5, 4, 2009, 5, 'Spanish Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (6, 6, 2009, 6, 'Monaco Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (7, 5, 2009, 7, 'Turkish Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (8, 9, 2009, 8, 'British Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (9, 20, 2009, 9, 'German Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (10, 11, 2009, 10, 'Hungarian Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (11, 12, 2009, 11, 'European Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (12, 13, 2009, 12, 'Belgian Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (13, 14, 2009, 13, 'Italian Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (14, 15, 2009, 14, 'Singapore Grand Prix');
```

```
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (15, 19, 2009, 15, 'Japanese Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (16, 18, 2009, 16, 'Brazilian Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (17, 20, 2009, 17, 'Abu Dhabi Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (18, 1, 2008, 1, 'Australian Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (19, 2, 2008, 2, 'Malaysian Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (20, 3, 2008, 3, 'Bahrain Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (21, 4, 2008, 4, 'Spanish Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (22, 5, 2008, 5, 'Turkish Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (23, 6, 2008, 6, 'Monaco Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (24, 7, 2008, 7, 'Canadian Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (25, 8, 2008, 8, 'French Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (26, 9, 2008, 9, 'British Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (27, 10, 2008, 10, 'German Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (28, 11, 2008, 11, 'Hungarian Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (29, 12, 2008, 12, 'European Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (30, 13, 2008, 13, 'Belgian Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (31, 14, 2008, 14, 'Italian Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (32, 15, 2008, 15, 'Singapore Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (33, 16, 2008, 16, 'Japanese Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (34, 17, 2008, 17, 'Chinese Grand Prix');
INSERT INTO Races_DB (Race_ID, Circuit_ID, Seasons_Year, Races_Round, Race_Name ) VALUES (35, 18, 2008, 18, 'Brazilian Grand Prix');


/* Qualifying Table */
Create Table Qualifying_DB
(Qualifying_ID   Number(8) not null,
Race_ID          Number(8),
```

```
Driver_ID       Number(8),
Constructor_ID Number(8),
Driver_Number Number(8),
Qualifying_Position     Number(8),
Constraint Qualifying_pk Primary Key(Qualifying_ID),
Foreign Key (Race_ID) References Races_DB (Race_ID),
Foreign Key (Driver_ID) References Drivers_DB (Driver_ID),
Foreign Key (Constructor_ID) References Constructor_DB (Constructor_ID));

----------insert data into qualifying table
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (1, 18, 1, 1, 22, 1);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (2, 18, 9, 2, 4, 2);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (3, 18, 5, 1, 23, 3);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (4, 18, 13, 6, 2, 4);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (5, 18, 2, 2, 3, 5);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (6, 18, 15, 7, 11, 6);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (7, 18, 3, 3, 7, 7);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (8, 18, 14, 9, 9, 8);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (9, 18, 10, 7, 12, 9);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (10, 18, 20, 5, 15, 10);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (11, 18, 20, 11, 17, 11);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (12, 18, 4, 4, 5, 12);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (13, 18, 18, 11, 16, 13);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (14, 18, 6, 3, 8, 14);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (15, 18, 17, 9, 10, 15);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (16, 18, 8, 6, 1, 16);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (17, 18, 20, 10, 21, 17);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (18, 18, 7, 5, 14, 18);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (19, 18, 16, 10, 20, 19);
```

```
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (20, 18, 11, 8, 18, 20);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (21, 18, 12, 4, 6, 21);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (22, 18, 19, 8, 19, 22);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (23, 19, 13, 6, 2, 1);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (24, 19, 8, 6, 1, 2);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (25, 19, 5, 1, 23, 3);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (26, 19, 1, 1, 22, 4);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (27, 19, 15, 7, 11, 5);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (28, 19, 9, 2, 4, 6);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (29, 19, 2, 2, 3, 7);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (30, 19, 17, 9, 10, 8);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (31, 19, 4, 4, 5, 9);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (32, 19, 10, 7, 12, 10);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (33, 19, 18, 11, 16, 11);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (34, 19, 14, 9, 9, 12);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (35, 19, 12, 4, 6, 13);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (36, 19, 20, 11, 17, 14);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (37, 19, 20, 5, 15, 15);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (38, 19, 3, 3, 7, 16);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (39, 19, 20, 10, 21, 17);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (40, 19, 6, 3, 8, 18);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (41, 19, 7, 5, 14, 19);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (42, 19, 11, 8, 18, 20);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (43, 19, 16, 10, 20, 21);
```

```
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (44, 19, 19, 8, 19, 22);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (45, 20, 9, 2, 4, 1);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (46, 20, 13, 6, 2, 2);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (47, 20, 1, 1, 22, 3);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (48, 20, 8, 6, 1, 4);
INSERT INTO Qualifying_DB (Qualifying_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Qualifying_Position ) VALUES (49, 20, 5, 1, 23, 5);


/* Pit_Stops Table */
Create Table Pit_Stops_DB
(Stop_Number  Number(8) not null,
Race_ID          Number(8),
Driver_ID        Number(8),
Lap      Number(8),
Pit_Stops_Duration                Varchar2(50),
Milliseconds Varchar2(50),
Foreign Key (Race_ID) References Races_DB (Race_ID),
Foreign Key (Driver_ID) References Drivers_DB (Driver_ID));

----------insert data into pit_stops_db
INSERT INTO Pit_Stops_DB (Stop_Number, Race_ID, Driver_ID, Lap, Pit_Stops_Duration, Milliseconds ) VALUES (1, 1, 3, 1, '26.898','26898');
INSERT INTO Pit_Stops_DB (Stop_Number, Race_ID, Driver_ID, Lap, Pit_Stops_Duration, Milliseconds ) VALUES (1, 10, 10, 1, '25.021','25021');
INSERT INTO Pit_Stops_DB (Stop_Number, Race_ID, Driver_ID, Lap, Pit_Stops_Duration, Milliseconds ) VALUES (1, 11, 17, 11, '23.426','23426');
INSERT INTO Pit_Stops_DB (Stop_Number, Race_ID, Driver_ID, Lap, Pit_Stops_Duration, Milliseconds ) VALUES (1, 12, 4, 12, '23.251','23251');
INSERT INTO Pit_Stops_DB (Stop_Number, Race_ID, Driver_ID, Lap, Pit_Stops_Duration, Milliseconds ) VALUES (1, 13, 13, 13, '23.842','23842');
INSERT INTO Pit_Stops_DB (Stop_Number, Race_ID, Driver_ID, Lap, Pit_Stops_Duration, Milliseconds ) VALUES (1, 14, 20, 13, '23.643','23643');
INSERT INTO Pit_Stops_DB (Stop_Number, Race_ID, Driver_ID, Lap, Pit_Stops_Duration, Milliseconds ) VALUES (1, 15, 19, 14, '22.603','22603');
INSERT INTO Pit_Stops_DB (Stop_Number, Race_ID, Driver_ID, Lap, Pit_Stops_Duration, Milliseconds ) VALUES (1, 16, 20, 14, '24.863','24863');
INSERT INTO Pit_Stops_DB (Stop_Number, Race_ID, Driver_ID, Lap, Pit_Stops_Duration, Milliseconds ) VALUES (1, 17, 15, 14, '25.259','25259');
INSERT INTO Pit_Stops_DB (Stop_Number, Race_ID, Driver_ID, Lap, Pit_Stops_Duration, Milliseconds ) VALUES (2, 14, 18, 11, '25.342','25342');
```

```
 /* Constructor_Standings Table */
Create Table Constructor_Standings_DB
(
Constructor_Standings_ID         Number(8) not null,
Race_ID            Number(8),
Constructor_ID   Number(8),
Positions          Number(8),
Wins             Number(8),
Constraint Constructor_Standings_pk Primary Key (Constructor_Standings_ID),
Foreign Key (Race_ID) References Races_DB (Race_ID),
Foreign Key (Constructor_ID) References Constructor_DB (Constructor_ID)
);
----------------insert data into Constructor_Standings_DB
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions,
Wins) VALUES (1, 18, 1, 1,1);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions,
Wins) VALUES (2, 18, 2, 3,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions,
Wins) VALUES (3, 18, 3, 2,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions,
Wins) VALUES (4, 18, 4, 4,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions,
Wins) VALUES (5, 18, 5, 5,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions,
Wins) VALUES (6, 18, 6, 6,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions,
Wins) VALUES (7, 19, 1, 1,1);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions,
Wins) VALUES (8, 19, 2, 2,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions,
Wins) VALUES (9, 19, 3, 4,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions,
Wins) VALUES (10, 19, 4, 5,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions,
Wins) VALUES (11, 19, 5, 8,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions,
Wins) VALUES (12, 19, 6, 3,1);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions,
Wins) VALUES (13, 19, 7, 6,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions,
Wins) VALUES (14, 19, 9, 7,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions,
Wins) VALUES (15, 19, 11, 9,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions,
Wins) VALUES (16, 19, 10, 10,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions,
Wins) VALUES (17, 19, 8, 11,0);
```

```
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (18, 20, 1, 3,1);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (19, 20, 2, 1,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (20, 20, 3, 4,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (21, 20, 4, 6,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (22, 20, 5, 8,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (23, 20, 6, 2,2);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (24, 20, 7, 5,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (25, 20, 9, 7,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (26, 20, 11, 9,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (27, 20, 10, 10,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (28, 20, 8, 11,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (29, 21, 1, 3,1);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (30, 21, 2, 2,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (31, 21, 3, 4,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (32, 21, 4, 7,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (33, 21, 5, 9,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (34, 21, 6, 1,3);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (35, 21, 7, 5,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (36, 21, 9, 6,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (37, 21, 11, 8,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (38, 21, 10, 10,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (39, 21, 8, 11,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (40, 22, 1, 3,1);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (41, 22, 2, 2,0);
```

```
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (42, 22, 3, 4,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (43, 22, 4, 7,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (44, 22, 5, 9,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (45, 22, 6, 1,4);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (46, 22, 7, 6,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (47, 22, 9, 5,0);
INSERT INTO Constructor_Standings_DB ( Constructor_Standings_ID, Race_ID, Constructor_ID, Positions, Wins) VALUES (48, 22, 11, 8,0);


/* Driver_Standings table */
CREATE TABLE Driver_Standings_DB
( Driver_Standings_ID                NUMBER(8)       NOT NULL,
  Race_ID    NUMBER(8) ,
  Driver_ID     NUMBER(8) ,
  Points              NUMBER(8),
  Driver_Standings_Position       NUMBER(8),
  Position_Text               NUMBER(8) ,
  Wins    NUMBER(8),
  CONSTRAINT driver_standings_pk PRIMARY KEY (Driver_Standings_ID),
 FOREIGN KEY (Race_ID) REFERENCES   Races_DB (Race_ID),
FOREIGN KEY (Driver_ID) REFERENCES   Drivers_DB (Driver_ID));

--------insert data into Driver_Standings_DB
INSERT INTO Driver_Standings_DB ( Driver_Standings_ID, Race_ID, Driver_ID, Points , Driver_Standings_Position, Position_Text, Wins) VALUES (1, 18, 1, 10,1, 1, 1 );
INSERT INTO Driver_Standings_DB ( Driver_Standings_ID, Race_ID, Driver_ID, Points , Driver_Standings_Position, Position_Text, Wins) VALUES (2, 18, 2, 8,2, 2, 0 );
INSERT INTO Driver_Standings_DB ( Driver_Standings_ID, Race_ID, Driver_ID, Points , Driver_Standings_Position, Position_Text, Wins) VALUES (3, 18, 3, 6,3, 3, 0 );
INSERT INTO Driver_Standings_DB ( Driver_Standings_ID, Race_ID, Driver_ID, Points , Driver_Standings_Position, Position_Text, Wins) VALUES (4, 18, 4, 5,4, 4, 0 );
INSERT INTO Driver_Standings_DB ( Driver_Standings_ID, Race_ID, Driver_ID, Points , Driver_Standings_Position, Position_Text, Wins) VALUES (5, 18, 5, 4,5, 5, 0 );
INSERT INTO Driver_Standings_DB ( Driver_Standings_ID, Race_ID, Driver_ID, Points , Driver_Standings_Position, Position_Text, Wins) VALUES (6, 18, 6, 3,6, 6, 0 );
INSERT INTO Driver_Standings_DB ( Driver_Standings_ID, Race_ID, Driver_ID, Points , Driver_Standings_Position, Position_Text, Wins) VALUES (7, 18, 7, 2,7, 7, 0 );
INSERT INTO Driver_Standings_DB ( Driver_Standings_ID, Race_ID, Driver_ID, Points , Driver_Standings_Position, Position_Text, Wins) VALUES (8, 18, 8, 1,8, 8, 0 );
INSERT INTO Driver_Standings_DB ( Driver_Standings_ID, Race_ID, Driver_ID, Points , Driver_Standings_Position, Position_Text, Wins) VALUES (9, 19, 1, 14,1, 1, 1 );
```

```
INSERT INTO Driver_Standings_DB ( Driver_Standings_ID, Race_ID, Driver_ID, Points , Driver_Standings_Position, Position_Text, Wins) VALUES (10, 19, 2, 11,3, 3, 0 );
INSERT INTO Driver_Standings_DB ( Driver_Standings_ID, Race_ID, Driver_ID, Points , Driver_Standings_Position, Position_Text, Wins) VALUES (11, 19, 3, 6,6, 6, 0 );
INSERT INTO Driver_Standings_DB ( Driver_Standings_ID, Race_ID, Driver_ID, Points , Driver_Standings_Position, Position_Text, Wins) VALUES (12, 19, 4, 6,7, 7, 0 );
INSERT INTO Driver_Standings_DB ( Driver_Standings_ID, Race_ID, Driver_ID, Points , Driver_Standings_Position, Position_Text, Wins) VALUES (13, 19, 5, 10,4, 4, 0 );
INSERT INTO Driver_Standings_DB ( Driver_Standings_ID, Race_ID, Driver_ID, Points , Driver_Standings_Position, Position_Text, Wins) VALUES (14, 19, 6, 3,9, 9, 0 );
INSERT INTO Driver_Standings_DB ( Driver_Standings_ID, Race_ID, Driver_ID, Points , Driver_Standings_Position, Position_Text, Wins) VALUES (15, 19, 7, 2,10, 10, 0 );
INSERT INTO Driver_Standings_DB ( Driver_Standings_ID, Race_ID, Driver_ID, Points , Driver_Standings_Position, Position_Text, Wins) VALUES (16, 19, 8, 11,2, 2, 1 );
INSERT INTO Driver_Standings_DB ( Driver_Standings_ID, Race_ID, Driver_ID, Points , Driver_Standings_Position, Position_Text, Wins) VALUES (17, 19, 9, 8,5, 5, 0 );
INSERT INTO Driver_Standings_DB ( Driver_Standings_ID, Race_ID, Driver_ID, Points , Driver_Standings_Position, Position_Text, Wins) VALUES (18, 19, 15, 5,8, 8, 0 );
INSERT INTO Driver_Standings_DB ( Driver_Standings_ID, Race_ID, Driver_ID, Points , Driver_Standings_Position, Position_Text, Wins) VALUES (19, 19, 17, 2,11, 11, 0 );
INSERT INTO Driver_Standings_DB ( Driver_Standings_ID, Race_ID, Driver_ID, Points , Driver_Standings_Position, Position_Text, Wins) VALUES (20, 19, 14, 0,12, 12, 0 );
INSERT INTO Driver_Standings_DB ( Driver_Standings_ID, Race_ID, Driver_ID, Points , Driver_Standings_Position, Position_Text, Wins) VALUES (21, 19, 18, 0,13, 13, 0 );
INSERT INTO Driver_Standings_DB ( Driver_Standings_ID, Race_ID, Driver_ID, Points , Driver_Standings_Position, Position_Text, Wins) VALUES (22, 19, 12, 0,14, 14, 0 );
INSERT INTO Driver_Standings_DB ( Driver_Standings_ID, Race_ID, Driver_ID, Points , Driver_Standings_Position, Position_Text, Wins) VALUES (23, 19, 20, 0,15, 15, 0 );
INSERT INTO Driver_Standings_DB ( Driver_Standings_ID, Race_ID, Driver_ID, Points , Driver_Standings_Position, Position_Text, Wins) VALUES (24, 19, 20, 0,16, 16, 0 );
INSERT INTO Driver_Standings_DB ( Driver_Standings_ID, Race_ID, Driver_ID, Points , Driver_Standings_Position, Position_Text, Wins) VALUES (25, 19, 19, 0,17, 17, 0 );
INSERT INTO Driver_Standings_DB ( Driver_Standings_ID, Race_ID, Driver_ID, Points , Driver_Standings_Position, Position_Text, Wins) VALUES (26, 19, 11, 0,18, 18, 0 );
INSERT INTO Driver_Standings_DB ( Driver_Standings_ID, Race_ID, Driver_ID, Points , Driver_Standings_Position, Position_Text, Wins) VALUES (27, 20, 1, 14,3, 3, 1 );
INSERT INTO Driver_Standings_DB ( Driver_Standings_ID, Race_ID, Driver_ID, Points , Driver_Standings_Position, Position_Text, Wins) VALUES (28, 20, 2, 16,2, 2, 0 );

/* Constructor_Results table */
CREATE TABLE Constructor_Results_DB
( Constructor_Result_ID          NUMBER(8)      NOT NULL,
  Race_ID    NUMBER(8) ,
  Constructor_ID          NUMBER(8) ,
  Points          NUMBER(8),
  Constructor_Results_Status      VARCHAR2(10),
 CONSTRAINT constructor_results_pk PRIMARY KEY (Constructor_Result_ID),
 FOREIGN KEY (Race_ID) REFERENCES   Races_DB (Race_ID),
```

FOREIGN KEY (Constructor_ID) REFERENCES Constructor_DB (Constructor_ID));

----------insert data into Constructor_Results_DB

```
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (1, 18, 1, 14,'\N' );
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (2, 18, 2, 8,'\N' );
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (3, 18, 3, 9,'\N' );
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (4, 18, 4, 5,'\N' );
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (5, 18, 5, 2,'\N' );
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (6, 18, 6, 1,'\N' );
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (7, 18, 7, 0,'\N' );
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (8, 18, 8, 0,'\N' );
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (9, 18, 9, 0,'\N' );
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (10, 18, 10, 0,'\N' );
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (11, 18, 11, 0,'\N' );
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (12, 19, 6, 10,'\N' );
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (13, 19, 2, 11,'\N' );
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (14, 19, 1, 10,'\N' );
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (15, 19, 7, 5,'\N' );
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (16, 19, 9, 2,'\N' );
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (17, 19, 4, 1,'\N' );
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (18, 19, 11, 0,'\N' );
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (19, 19, 10, 0,'\N' );
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (20, 19, 3, 0,'\N' );
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (21, 19, 8, 0,'\N' );
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (22, 19, 5, 0,'\N' );
```

```
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (23, 20, 6, 18,'\N' );
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (24, 20, 2, 11,'\N' );
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (25, 20, 1, 4,'\N' );
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (26, 20, 7, 3,'\N' );
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (27, 20, 9, 2,'\N' );
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (28, 20, 3, 1,'\N' );
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (29, 20, 4, 0,'\N' );
INSERT INTO Constructor_Results_DB ( Constructor_Result_ID, Race_ID, Constructor_ID, Points, Constructor_Results_Status) VALUES (30, 20, 11, 0,'\N' );


/* Results Table */
CREATE TABLE Results_DB
( Results_ID       NUMBER(8)       NOT NULL,
  Race_ID    NUMBER(8) ,
 Driver_ID    NUMBER(8),
Constructor_ID  NUMBER(8),
Driver_Number NUMBER(8),
Results_Position NUMBER(8),
Results_Position_Text VARCHAR2(50),
Position_Order NUMBER(8),
Results_Points NUMBER(8),
Results_Laps NUMBER(8),
CONSTRAINT results_pk PRIMARY KEY (Results_ID),
FOREIGN KEY (Race_ID) REFERENCES   Races_DB (Race_ID),
FOREIGN KEY (Driver_ID) REFERENCES   Drivers_DB (Driver_ID),
FOREIGN KEY (Constructor_ID) REFERENCES   Constructor_DB (Constructor_ID));

--------insert data into Results_DB
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID,     Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (1, 18, 1, 1,22, 1, '1', 1, 10, 58 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID,     Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (2, 18, 2, 2,3, 2, '2', 2, 8, 58 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID,     Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (3, 18, 3, 3,7, 3, '3', 3, 6, 58 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID,     Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (4, 18, 4, 4,5, 4, '4', 4, 5, 58 );
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```
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (5, 18, 5, 1,23, 5, '5', 5, 4, 58 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (6, 18, 6, 3,8, 6, '6', 6, 3, 57 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (7, 18, 7, 5,14, 7, '7', 7, 2, 55 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (8, 18, 8, 6,1, 8, '8', 8, 1, 53 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (9, 18, 9, 2,4, NULL, 'R', 9, 0, 47 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (10, 18, 10, 7,12, NULL, 'R', 10, 0, 43 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (11, 18, 11, 8,18, NULL, 'R', 11, 0, 32 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (12, 18, 12, 4,6, NULL, 'R', 12, 0, 30 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (13, 18, 13, 6,2, NULL, 'R', 13, 0, 29 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (14, 18, 14, 9,9, NULL, 'R', 14, 0, 25 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (15, 18, 15, 7,11, NULL, 'R', 15, 0, 19 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (16, 18, 16, 10,20, NULL, 'R', 16, 0, 8 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (17, 18, 17, 9,10, NULL, 'R', 17, 0, 0 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (18, 18, 18, 11,16, NULL, 'R', 18, 0, 0 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (19, 18, 19, 8,19, NULL, 'R', 19, 0, 0 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (20, 18, 20, 5,15, NULL, 'R', 20, 0, 0 );
```

```
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (21, 18, 20, 10,21, NULL, 'R', 21, 0, 0 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (22, 18, 20, 11,17, NULL, 'D', 22, 0, 58 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (23, 19, 8, 6,1, 1, '1', 1, 10, 56 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (24, 19, 9, 2,4, 2, '2', 2, 8, 56 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (25, 19, 5, 1,23, 3, '3', 3, 6, 56 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (26, 19, 15, 7,11, 4, '4', 4, 5, 56 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (27, 19, 1, 1,22, 5, '5', 5, 4, 56 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (28, 19, 2, 2,3, 6, '6', 6, 3, 56 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (29, 19, 17, 9,10, 7, '7', 7, 2, 56 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (30, 19, 4, 4,5, 8, '8', 8, 1, 56 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (31, 19, 14, 9,9, 9, '9', 9, 0, 56 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (32, 19, 18, 11,16, 10, '10', 10, 0, 56 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (33, 19, 12, 4,6, 11, '11', 11, 0, 56 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (34, 19, 20, 10,21, 12, '12', 12, 0, 55 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (35, 19, 20, 11,17, 13, '13', 13, 0, 55 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (36, 19, 3, 3,7, 14, '14', 14, 0, 55 );
```

```
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (37, 19, 19, 8,19, 15, '15', 15, 0, 55 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (38, 19, 11, 8,18, 16, '16', 16, 0, 54 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (39, 19, 6, 3,8, 17, '17', 17, 0, 54 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (40, 19, 20, 5,15, NULL, 'R', 18, 0, 39 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (41, 19, 13, 6,2, NULL, 'R', 19, 0, 30 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (42, 19, 16, 10,20, NULL, 'R', 20, 0, 5 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (43, 19, 10, 7,12, NULL, 'R', 21, 0, 1 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (44, 19, 7, 5,14, NULL, 'R', 22, 0, 0 );
INSERT INTO Results_DB ( Results_ID, Race_ID, Driver_ID, Constructor_ID, Driver_Number, Results_Position, Results_Position_Text, Position_Order, Results_Points, Results_Laps) VALUES (45, 20, 13, 6,2, 1, '1', 1, 10, 57 );
```

```
/* Lap Times Table */
CREATE TABLE Lap_Times
( Lap_Number       NUMBER(8)   NOT NULL,
  Driver_ID        NUMBER(8),
  Race_ID          NUMBER(8),
  Lap_Position     NUMBER(8),
  CONSTRAINT LAP_TIMES_DB_PK PRIMARY KEY (Lap_Number),
  FOREIGN KEY (Driver_ID) References Drivers_DB (Driver_ID),
  FOREIGN KEY (Race_ID) References Races_DB (Race_ID)
  );

  --------insert data into lap_times
INSERT INTO Lap_Times ( Lap_Number, Driver_ID, Race_ID, Lap_Position) VALUES (1, 20, 1, 1 );
INSERT INTO Lap_Times ( Lap_Number, Driver_ID, Race_ID, Lap_Position) VALUES (2, 20, 2, 1 );
INSERT INTO Lap_Times ( Lap_Number, Driver_ID, Race_ID, Lap_Position) VALUES (3, 20, 3, 1 );
INSERT INTO Lap_Times ( Lap_Number, Driver_ID, Race_ID, Lap_Position) VALUES (4, 20, 4, 1 );
INSERT INTO Lap_Times ( Lap_Number, Driver_ID, Race_ID, Lap_Position) VALUES (5, 20, 5, 1 );
INSERT INTO Lap_Times ( Lap_Number, Driver_ID, Race_ID, Lap_Position) VALUES (6, 20, 6, 1 );
```

INSERT INTO Lap_Times (Lap_Number, Driver_ID, Race_ID, Lap_Position) VALUES (7, 20, 7, 1);
INSERT INTO Lap_Times (Lap_Number, Driver_ID, Race_ID, Lap_Position) VALUES (8, 20, 8, 1);
INSERT INTO Lap_Times (Lap_Number, Driver_ID, Race_ID, Lap_Position) VALUES (9, 20, 9, 1);
INSERT INTO Lap_Times (Lap_Number, Driver_ID, Race_ID, Lap_Position) VALUES (10, 20, 10, 1);

There are 13 tables in this database: Results, races, drivers, driver_standings, constructor, constructor_standings, Seasons, status, pitstops, lap_times, qualifying, constructor_results, circuits

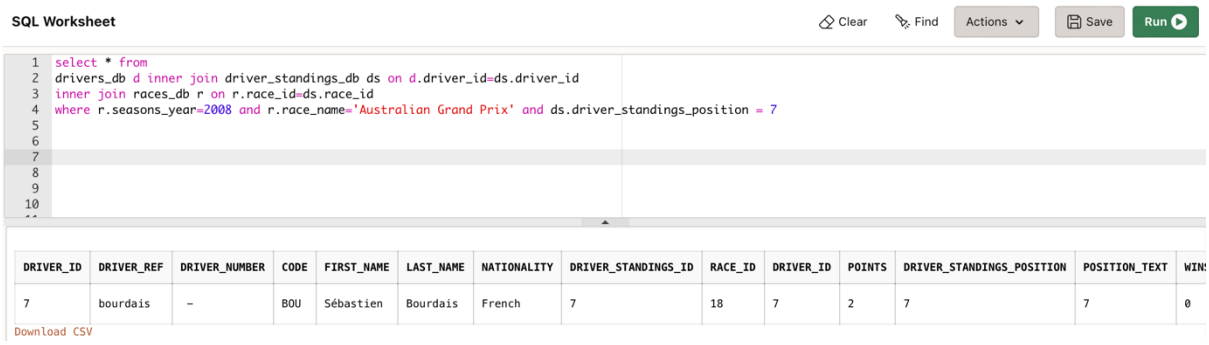
SQL Queries:

1. Display the driver who stood first in the 2008 season

```
select * from
drivers_db where driver_id =
(
select * from
(
select d.driver_id from
drivers_db d inner join driver_standings_db ds on d.driver_id=ds.driver_id
inner join races_db r on r.race_id=ds.race_id
where r.seasons_year=2008
group by d.driver_id
order by sum(ds.points) desc
) where rownum<=1
);
```

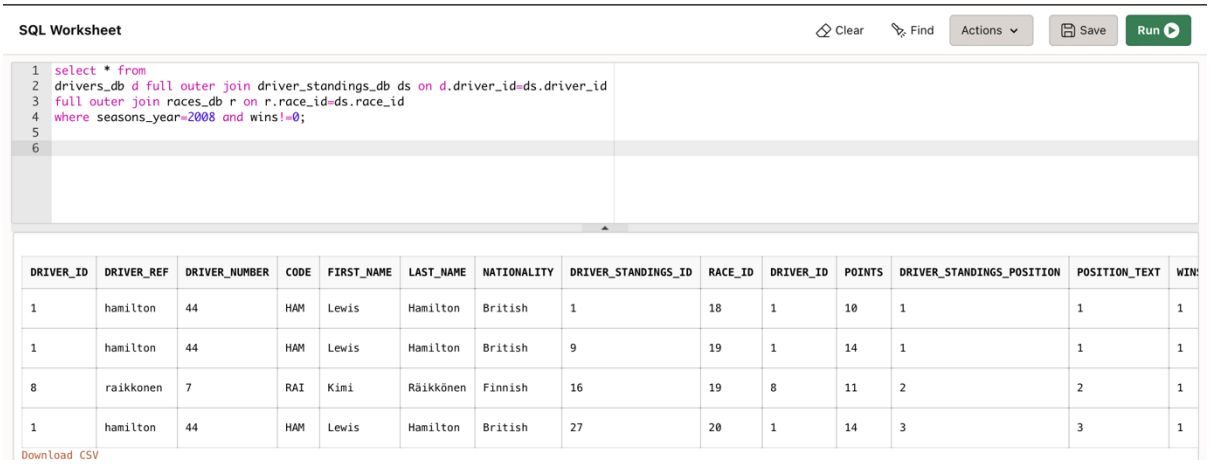
2. Display the details of the driver who qualified at 7th position at the Australian Grand Prix in 2008

```
select * from
drivers_db d inner join driver_standings_db ds on d.driver_id=ds.driver_id
inner join races_db r on r.race_id=ds.race_id
where r.seasons_year=2008 and r.race_name='Australian Grand Prix' and ds.driver_standings_position = 7;
```



3. List the drivers who won in the 2008 season

```
select * from
drivers_db d full outer join driver_standings_db ds on d.driver_id=ds.driver_id
full outer join races_db r on r.race_id=ds.race_id
where seasons_year=2008 and wins!=0;
```



4. List all the drivers who took part in the 2008 season

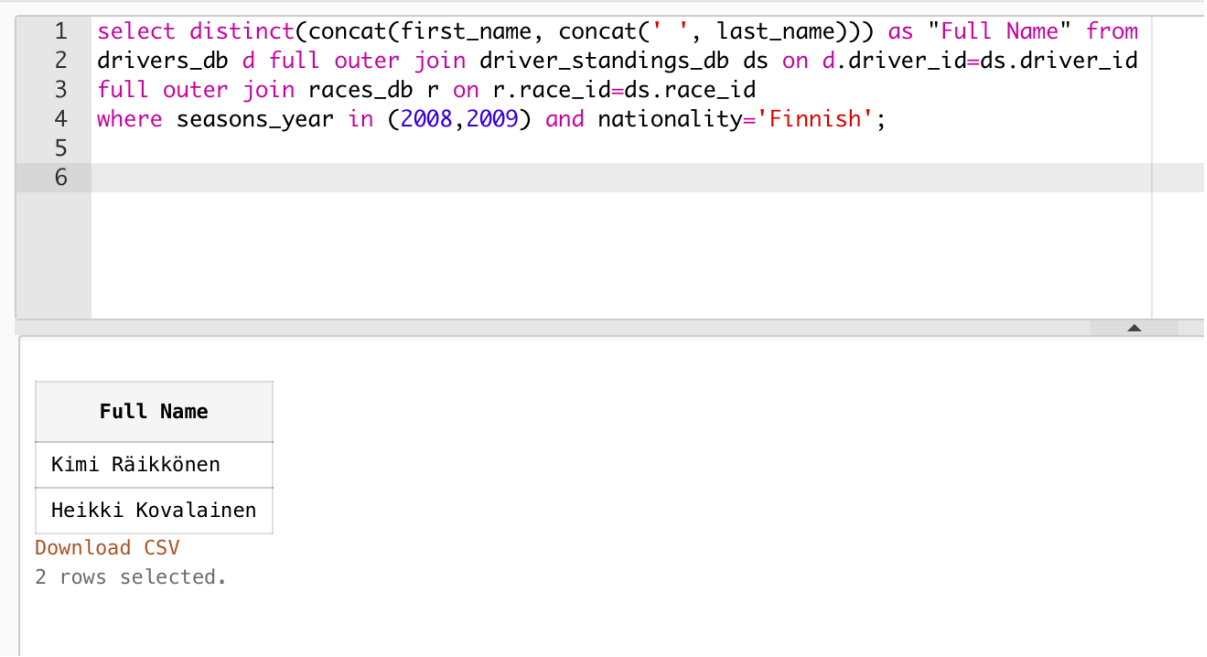
```
select * from
drivers_db where driver_id in
(
select distinct(d.driver_id) from
drivers_db d inner join driver_standings_db ds on d.driver_id=ds.driver_id
inner join races_db r on r.race_id=ds.race_id
where r.seasons_year=2008
);
```

DRIVER_ID	DRIVER_REF	DRIVER_NUMBER	CODE	FIRST_NAME	LAST_NAME	NATIONALITY
1	hamilton	44	HAM	Lewis	Hamilton	British
2	heidfeld	-	HEI	Nick	Heidfeld	German
3	rosberg	-	ROS	Nico	Rosberg	German
4	alonso	-	ALO	Fernando	Alonso	Spanish
5	kovalainen	-	KOV	Heikki	Kovalainen	Finnish
6	nakajima	-	NAK	Kazuki	Nakajima	Japanese
7	bourdais	-	BOU	Sébastien	Bourdais	French
8	raikkonen	7	RAI	Kimi	Räikkönen	Finnish
9	kubica	88	KUB	Robert	Kubica	Polish
11	sato	-	SAT	Takuma	Sato	Japanese
12	piquet_jr	-	PIQ	Nelson	Piquet Jr.	Brazilian
14	coulthard	-	COU	David	Coulthard	British
15	trulli	-	TRU	Jarno	Trulli	Italian
17	webber	-	WEB	Mark	Webber	Australian
18	button	22	BUT	Jenson	Button	British
19	davidson	-	DAV	Anthony	Davidson	British
20	vettel	5	VET	Sebastian	Vettel	German

5. Display full name of Finnish drivers in the 2008 and 2009 seasons

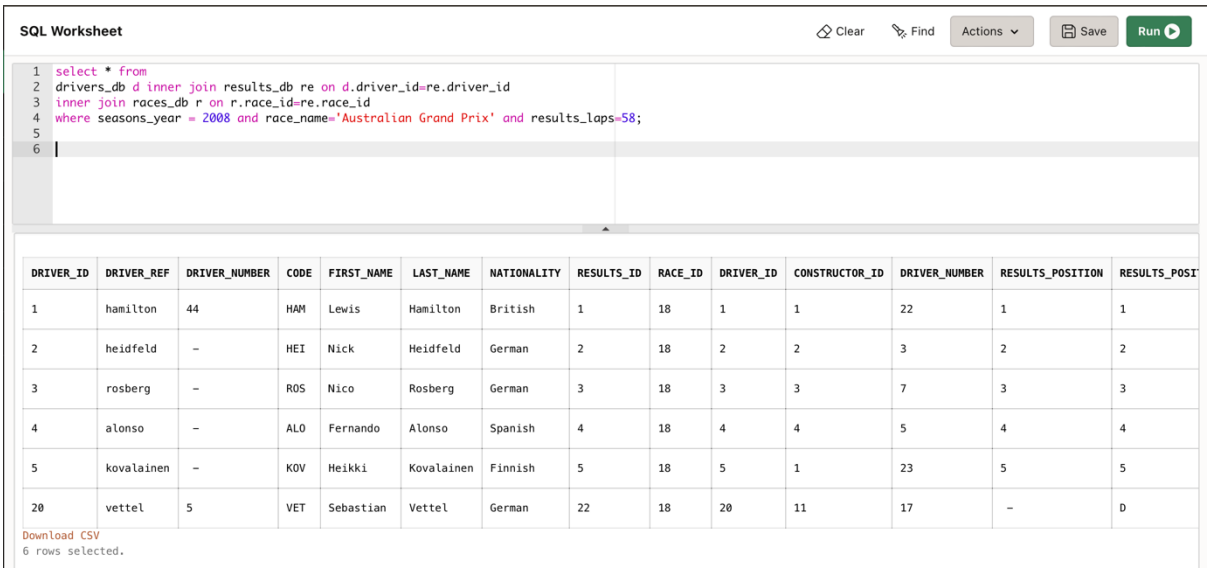
```
select distinct(concat(first_name, concat(' ', last_name))) as "Full Name" from
drivers_db d full outer join driver_standings_db ds on d.driver_id=ds.driver_id
full outer join races_db r on r.race_id=ds.race_id
where seasons_year in (2008,2009) and nationality='Finnish';
```

SQL Worksheet



6. List drivers who completed all 58 laps at the 2008 Australian GP

```
select * from
drivers_db d inner join results_db re on d.driver_id=re.driver_id
inner join races_db r on r.race_id=re.race_id
where seasons_year = 2008 and race_name='Australian Grand Prix' and results_laps=58;
```



SQL Worksheet

Clear Find Actions Save Run

```
1  select * from
2  drivers_db d inner join results_db re on d.driver_id=re.driver_id
3  inner join races_db r on r.race_id=re.race_id
4  where seasons_year = 2008 and race_name='Australian Grand Prix' and results_laps=58;
5
6
```

DRIVER_ID	DRIVER_REF	DRIVER_NUMBER	CODE	FIRST_NAME	LAST_NAME	NATIONALITY	RESULTS_ID	RACE_ID	DRIVER_ID	CONSTRUCTOR_ID	DRIVER_NUMBER	RESULTS_POSITION	RESULTS_POSI
1	hamilton	44	HAM	Lewis	Hamilton	British	1	18	1	1	22	1	1
2	heidfeld	-	HEI	Nick	Heidfeld	German	2	18	2	2	3	2	2
3	rosberg	-	ROS	Nico	Rosberg	German	3	18	3	3	7	3	3
4	alonso	-	ALO	Fernando	Alonso	Spanish	4	18	4	4	5	4	4
5	kovalainen	-	KOV	Heikki	Kovalainen	Finnish	5	18	5	1	23	5	5
20	vettel	5	VET	Sebastian	Vettel	German	22	18	20	11	17	-	D

Download CSV

6 rows selected.

7. List all constructors that took part in the 2008 season

```
select * from
constructor_db where constructor_id in
(
select distinct(cs.constructor_id) from
constructor_db c inner join constructor_standings_db cs
on c.constructor_id=cs.constructor_id
inner join races_db r on r.race_id=cs.race_id
where seasons_year=2008);
```

SQL Worksheet

Clear

```
1  select * from
2  constructor_db where constructor_id in
3  (
4  select distinct(cs.constructor_id) from
5  constructor_db c inner join constructor_standings_db cs
6  on c.constructor_id=cs.constructor_id
7  inner join races_db r on r.race_id=cs.race_id
8  where seasons_year=2008);
9
```

CONSTRUCTOR_ID	CONSTRUCTOR_REF	CONSTRUCTOR_NAME	NATIONALITY	CONSTRUCTOR_URL
1	mclaren	McLaren	British	http://en.wikipedia.org/wiki/McLaren
2	bmw_sauber	BMW Sauber	German	http://en.wikipedia.org/wiki/BMW_Sauber
3	williams	Williams	British	http://en.wikipedia.org/wiki/Williams_Grand_Prix_Engineering
4	renault	Renault	French	http://en.wikipedia.org/wiki/Renault_in_Formula_One
5	toro_rosso	Toro Rosso	Italian	http://en.wikipedia.org/wiki/Scuderia_Toro_Rosso
6	ferrari	Ferrari	Italian	http://en.wikipedia.org/wiki/Scuderia_Ferrari
7	toyota	Toyota	Japanese	http://en.wikipedia.org/wiki/Toyota_Racing
8	super_aguri	Super Aguri	Japanese	http://en.wikipedia.org/wiki/Super_Aguri_F1
9	red_bull	Red Bull	Austrian	http://en.wikipedia.org/wiki/Red_Bull_Racing
10	force_india	Force India	Indian	http://en.wikipedia.org/wiki/Racing_Point_Force_India
11	honda	Honda	Japanese	http://en.wikipedia.org/wiki/Honda_Racing_F1

Download CSV

11 rows selected.

8. Give the details of the driver and rank their qualifying positions at each race.

```
select b.driver_id, d.first_name, d.last_name, b.*
from drivers_db d
inner join (
select qualifying_db.*, rank() over(partition by driver_id order by qualifying_position) as "RANK"
from qualifying_db
)b on d.driver_id=b.driver_id
order by b.driver_id;
```

SQL Worksheet

Clear

```
select b.driver_id, d.first_name, d.last_name, b.*
from drivers_db d
inner join (
select qualifying_db.*, rank() over(partition by driver_id order by qualifying_position) as "RANK"
from qualifying_db
)b on d.driver_id=b.driver_id
order by b.driver_id;
```

DRIVER_ID	FIRST_NAME	LAST_NAME	QUALIFYING_ID	RACE_ID	DRIVER_ID	CONSTRUCTOR_ID	DRIVER_NUMBER	QUALIFYING_POSITION	RANK
1	Lewis	Hamilton	1	18	1	1	22	1	1
1	Lewis	Hamilton	47	20	1	1	22	3	2
1	Lewis	Hamilton	26	19	1	1	22	4	3
2	Nick	Heidfeld	5	18	2	2	3	5	1
2	Nick	Heidfeld	29	19	2	2	3	7	2
3	Nico	Rosberg	7	18	3	3	7	7	1
3	Nico	Rosberg	38	19	3	3	7	16	2
4	Fernando	Alonso	31	19	4	4	5	9	1
4	Fernando	Alonso	12	18	4	4	5	12	2
5	Heikki	Kovalainen	25	19	5	1	23	3	1
5	Heikki	Kovalainen	3	18	5	1	23	3	1
5	Heikki	Kovalainen	49	20	5	1	23	5	3
6	Kazuki	Nakajima	14	18	6	3	8	14	1
6	Kazuki	Nakajima	40	19	6	3	8	18	2
7	Sébastien	Bourdais	18	18	7	5	14	18	1
7	Sébastien	Bourdais	41	19	7	5	14	19	2

9. How many constructors scored more than 5 points in 2008?

```
select * from
constructor_db c inner join
(
select constructor_id, sum(results_points) as points
from results_db
group by constructor_id
having sum(results_points) > 5
)d on c.constructor_id=d.constructor_id
order by points desc;
```

```
select * from
constructor_db c inner join
(
select constructor_id, sum(results_points) as points
from results_db
group by constructor_id
having sum(results_points) > 5
)d on c.constructor_id=d.constructor_id
order by points desc;
```

CONSTRUCTOR_ID	CONSTRUCTOR_REF	CONSTRUCTOR_NAME	NATIONALITY	CONSTRUCTOR_URL	CONSTRUCTOR_ID	POINTS
1	mclaren	McLaren	British	http://en.wikipedia.org/wiki/McLaren	1	24
6	ferrari	Ferrari	Italian	http://en.wikipedia.org/wiki/Scuderia_Ferrari	6	21
2	bmw_sauber	BMW Sauber	German	http://en.wikipedia.org/wiki/BMW_Sauber	2	19
3	williams	Williams	British	http://en.wikipedia.org/wiki/Williams_Grand_Prix_Engineering	3	9
4	renault	Renault	French	http://en.wikipedia.org/wiki/Renault_in_Formula_One	4	6

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5 rows selected.

10. How many wins did Hamilton achieve in 2008?

select d.driver_id, d.first_name, d.last_name, sum(ds.wins) as total_wins

from drivers_db d inner join driver_standings_db ds on d.driver_id=ds.driver_id

where ds.driver_id=1

group by d.driver_id, d.first_name, d.last_name

order by sum(ds.wins) desc;

SQL Worksheet

```
select d.driver_id, d.first_name, d.last_name, sum(ds.wins) as total_wins
from drivers_db d inner join driver_standings_db ds on d.driver_id=ds.driver_id
where ds.driver_id=1
group by d.driver_id, d.first_name, d.last_name
order by sum(ds.wins) desc;
```

DRIVER_ID	FIRST_NAME	LAST_NAME	TOTAL_WINS
1	Lewis	Hamilton	3

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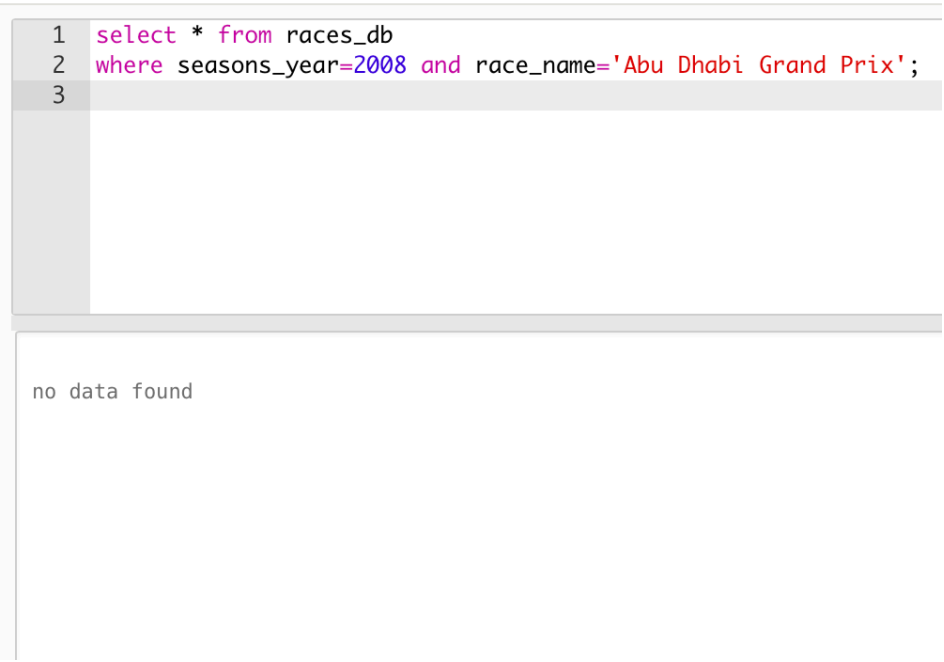
11. Did Abu Dhabi Grand Prix take place in 2008?

```
select * from races_db
where seasons_year=2008 and race_name='Abu Dhabi Grand Prix';
```

SQL Worksheet



12. Display details of the drivers with top 3 pitstops without using rownum.

```
select *
from drivers_db d
inner join (
select pit_stops_db.*, rank() over(order by PIT_STOPS_DURATION) as "RANK"
from pit_stops_db
)b on d.driver_id=b.driver_id
where RANK<=3;
```

SQL Worksheet

Clear Find Actions Sav

```
1  select *
2  from drivers_db d
3  inner join (
4  select pit_stops_db.*, rank() over(order by PIT_STOPS_DURATION) as "RANK"
5  from pit_stops_db
6  )b on d.driver_id=b.driver_id
7  where RANK<=3;
8
```

DRIVER_ID	DRIVER_REF	DRIVER_NUMBER	CODE	FIRST_NAME	LAST_NAME	NATIONALITY	STOP_NUMBER	RACE_ID	DRIVER_ID	LAP	PIT_STOPS_DURATION	MILLISECONDS	RANK
19	davidson	-	DAV	Anthony	Davidson	British	1	15	19	14	22.603	22603	1
4	alonso	-	ALO	Fernando	Alonso	Spanish	1	12	4	12	23.251	23251	2
17	webber	-	WEB	Mark	Webber	Australian	1	11	17	11	23.426	23426	3

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3 rows selected.

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