

The Art of Solving SQL Questions

Case Study 1:

```
CREATE TABLE Mars_Rover_Missions (
```

```
    Mission_ID INT,
```

```
    Rover_Name VARCHAR(50),
```

```
    Launch_Date DATE,
```

```
    Distance_Traveled DECIMAL(5, 2),
```

```
    Samples_Collected INT,
```

```
    Performance_Rating INT,
```

```
    Agency VARCHAR(20)
```

```
);
```

```
INSERT INTO Mars_Rover_Missions VALUES
```

```
(1, 'Spirit', '2004-01-03', 7.5, 10, 85, 'NASA'),
```

```
(2, 'Opportunity', '2004-01-25', 45, 15, 90, 'NASA'),
```

```
(3, 'Curiosity', '2011-11-26', 25, 25, 95, 'NASA'),
```

```
(4, 'Perseverance', '2020-07-30', 10, 30, 98, 'NASA'),
```

```
(5, 'Pragyan', '2019-07-22', 3.5, 5, 75, 'ISRO'),
```

```
(6, 'Chandrayaan', '2019-07-22', 0, 0, 70, 'ISRO'),
```

```
(7, 'Rosalind', '2022-07-01', 15, 20, 85, 'ESA'),
```

```
(8, 'MarsExpress', '2003-06-02', 5, 8, 80, 'ESA'),
```

```
(9, 'Viking', '1975-08-20', 0, 0, 50, 'NASA'),
```

```
(10, 'Galileo', '1989-10-18', 12, 5, 78, 'NASA'),
```

```
(11, 'Luna', '1959-09-12', 2.5, 2, 60, 'USSR'),
```

```
(12, 'Venera', '1961-02-12', 0, 0, 55, 'USSR'),
```

```
(13, 'Sojourner', '1997-07-04', 1.5, 3, 70, 'NASA'),
```

```
(14, 'ExoMars', '2016-03-14', 10, 18, 88, 'ESA'),
```

```
(15, 'BepiColombo', '2018-10-20', 0, 0, 75, 'ESA');
```

Case Study 2:

```
CREATE TABLE Player_Performance (
```

```
    Player_ID INT PRIMARY KEY,
```

```
    Player_Name VARCHAR(50),
```

```
    Country VARCHAR(50),
```

```
    Match_Date DATE,
```

```
    Points_Scored INT,
```

```
    Match_Duration INT,
```

```
    Win_Flag SMALLINT
```

```
);
```

```
INSERT INTO Player_Performance (Player_ID, Player_Name, Country, Match_Date, Points_Scored, Match_Duration, Win_Flag) VALUES
```

```
(1, 'Novak Djokovic', 'Serbia', '2021-01-01', 100, 120, 1),
```

```
(2, 'Rafael Nadal', 'Spain', '2021-01-02', 80, 90, 1),
```

```
(3, 'Roger Federer', 'Switzerland', '2021-01-03', 95, 110, 1),
```

```
(4, 'Andy Murray', 'UK', '2021-02-01', 60, 150, 0),
```

```
(5, 'Novak Djokovic', 'Serbia', '2021-02-15', 120, 130, 1),
```

```
(6, 'Rafael Nadal', 'Spain', '2021-03-01', 75, 95, 1),
```

```
(7, 'Novak Djokovic', 'Serbia', '2021-03-05', 85, 110, 1),
```

```
(8, 'Andy Murray', 'UK', '2021-03-10', 70, 160, 0),
```

```
(9, 'Roger Federer', 'Switzerland', '2021-03-15', 65, 100, 1),
```

```
(10, 'Rafael Nadal', 'Spain', '2021-04-01', 90, 120, 1),
```

```
(11, 'Novak Djokovic', 'Serbia', '2021-04-20', 110, 125, 1),
```

```
(12, 'Rafael Nadal', 'Spain', '2021-05-01', 85, 105, 1),
```

```
(13, 'Roger Federer', 'Switzerland', '2021-06-01', 70, 100, 1),
```

```
(14, 'Andy Murray', 'UK', '2021-06-10', 75, 140, 1),
```

```
(15, 'Novak Djokovic', 'Serbia', '2021-06-15', 90, 115, 1);
```

Case Study 3:

```
CREATE TABLE Drivers (
```

```
    Driver_ID INT PRIMARY KEY,
```

```
    Driver_Name VARCHAR(50),
```

```
    City VARCHAR(50),
```

```
    Join_Date DATE
```

```
);
```

```
INSERT INTO Drivers (Driver_ID, Driver_Name, City, Join_Date) VALUES
```

```
(1, 'Rahul Singh', 'Mumbai', '2021-01-01'),
```

```
(2, 'Priya Sharma', 'Delhi', '2021-02-15'),
```

```
(3, 'Rajesh Gupta', 'Bangalore', '2021-01-20'),
```

```
(4, 'Anita Desai', 'Mumbai', '2021-03-01'),
```

```
(5, 'Mohit Verma', 'Delhi', '2021-02-01'),
```

```
(6, 'Sneha Iyer', 'Bangalore', '2021-02-20');
```

```
CREATE TABLE Rides (
```

```
    Ride_ID INT PRIMARY KEY,
```

```
    Driver_ID INT,
```

```
    Ride_Date DATE,
```

```
    Ride_Distance INT,
```

```
    Rating INT,
```

```
    Earnings INT,
```

```
    FOREIGN KEY (Driver_ID) REFERENCES Drivers(Driver_ID)
```

```
);
```

```
INSERT INTO Rides (Ride_ID, Driver_ID, Ride_Date, Ride_Distance, Rating, Earnings) VALUES
```

```
(1, 1, '2021-03-01', 10, 4, 500),
```

```
(2, 1, '2021-03-02', 8, 5, 400),
```

```
(3, 1, '2021-03-03', 9, 3, 300),
```

```
(4, 1, '2021-03-05', 7, 4, 450),
```

(5, 1, '2021-03-06', 6, 4, 400),
(6, 2, '2021-03-01', 15, 4, 700),
(7, 2, '2021-03-02', 14, 5, 600),
(8, 2, '2021-03-03', 12, 4, 550),
(9, 2, '2021-03-04', 10, 5, 600),
(10, 2, '2021-03-05', 8, 2, 300),
(11, 3, '2021-03-01', 12, 5, 900),
(12, 3, '2021-03-02', 18, 5, 850),
(13, 3, '2021-03-03', 14, 5, 750),
(14, 3, '2021-03-04', 20, 3, 400),
(15, 4, '2021-03-01', 7, 4, 350),
(16, 4, '2021-03-03', 8, 4, 400),
(17, 4, '2021-03-04', 10, 4, 450),
(18, 4, '2021-03-05', 11, 3, 500),
(19, 5, '2021-03-01', 10, 5, 500),
(20, 5, '2021-03-02', 15, 5, 600),
(21, 5, '2021-03-03', 9, 5, 700),
(22, 5, '2021-03-05', 8, 3, 300),
(23, 6, '2021-03-01', 15, 4, 750),
(24, 6, '2021-03-02', 18, 5, 800),
(25, 6, '2021-03-03', 12, 4, 600),
(26, 6, '2021-03-04', 20, 4, 850);

Window Function Discussion

```
CREATE TABLE Players (
```

```
    Player_ID INT PRIMARY KEY,
```

```
    Player_Name VARCHAR(50),
```

```
    Team VARCHAR(10),
```

```
    Season INT,
```

```
    Matches_Played INT,
```

```
    Runs INT,
```

```
    Wickets INT,
```

```
    Strike_Rate FLOAT,
```

```
    Economy FLOAT,
```

```
    Man_of_the_Match INT,
```

```
    Points INT
```

```
);
```

```
INSERT INTO Players (Player_ID, Player_Name, Team, Season, Matches_Played, Runs, Wickets, Strike_Rate, Economy, Man_of_the_Match, Points)
```

```
VALUES
```

```
(1, 'Virat Kohli', 'RCB', 2016, 16, 973, 0, 152.03, NULL, 4, 2100),
```

```
(2, 'MS Dhoni', 'CSK', 2018, 16, 455, 0, 138.41, NULL, 3, 1800),
```

```
(3, 'Rohit Sharma', 'MI', 2019, 15, 405, 0, 130.82, NULL, 2, 1600),
```

```
(4, 'David Warner', 'SRH', 2017, 14, 641, 0, 147.56, NULL, 3, 1900),
```

```
(5, 'Jasprit Bumrah', 'MI', 2020, 15, 50, 27, NULL, 6.73, 2, 1700),
```

```
(6, 'KL Rahul', 'PBKS', 2021, 13, 626, 0, 138.8, NULL, 3, 1850),
```

```
(7, 'AB de Villiers', 'RCB', 2016, 16, 687, 0, 168.12, NULL, 4, 2000),
```

```
(8, 'Hardik Pandya', 'GT', 2022, 15, 487, 8, 131.27, 7.28, 2, 1750),
```

```
(9, 'Andre Russell', 'KKR', 2019, 14, 510, 11, 204.81, 9.00, 3, 1850),
```

```
(10, 'Shikhar Dhawan', 'DC', 2020, 17, 618, 0, 144.73, NULL, 2, 1900),
```

```
(11, 'Kagiso Rabada', 'DC', 2020, 17, 35, 30, NULL, 8.34, 1, 1800),
```

```
(12, 'Sunil Narine', 'KKR', 2018, 16, 357, 17, 180.56, 8.12, 1, 1750),
```

```
(13, 'Ravindra Jadeja', 'CSK', 2021, 16, 227, 13, 145.51, 7.06, 3, 1650),
```

(14, 'Chris Gayle', 'PBKS', 2015, 15, 733, 0, 153.32, NULL, 3, 2000),
(15, 'Suresh Raina', 'CSK', 2014, 16, 523, 2, 146.68, NULL, 2, 1700),
(16, 'Rashid Khan', 'SRH', 2019, 15, 34, 19, NULL, 6.12, 1, 1850),
(17, 'Bhuvneshwar Kumar', 'SRH', 2016, 14, 23, 23, NULL, 7.42, 0, 1800),
(18, 'Glenn Maxwell', 'RCB', 2021, 15, 513, 3, 144.23, NULL, 2, 1750),
(19, 'Yuzvendra Chahal', 'RR', 2022, 17, 12, 27, NULL, 7.75, 1, 1850),
(20, 'Chris Morris', 'RR', 2021, 13, 95, 15, NULL, 8.02, 1, 1600),
(21, 'Faf du Plessis', 'RCB', 2022, 16, 468, 0, 127.62, NULL, 1, 1700),
(22, 'Shubman Gill', 'GT', 2022, 16, 483, 0, 132.32, NULL, 2, 1650),
(23, 'Dwayne Bravo', 'CSK', 2013, 18, 80, 32, NULL, 8.45, 1, 1900),
(24, 'Mohammed Shami', 'GT', 2022, 16, 10, 20, NULL, 7.9, 1, 1750),
(25, 'Parthiv Patel', 'MI', 2018, 14, 395, 0, 130.82, NULL, 1, 1500);

Rows Between

```
CREATE TABLE Sales_Transactions (  
    Transaction_ID INT PRIMARY KEY,  
    Salesperson_Name VARCHAR(50),  
    Region VARCHAR(50),  
    Transaction_Date DATE,  
    Sales_Amount INT  
);
```

```
INSERT INTO Sales_Transactions (Transaction_ID, Salesperson_Name, Region, Transaction_Date, Sales_Amount)  
VALUES  
(1, 'Priya', 'North', '2023-01-01', 500),  
(2, 'Priya', 'North', '2023-01-02', 700),  
(3, 'Priya', 'North', '2023-01-03', 800),  
(4, 'Priya', 'North', '2023-01-04', 300),  
(5, 'Priya', 'North', '2023-01-05', 1000),  
(6, 'Priya', 'North', '2023-01-06', 1200),
```

(7, 'Priya', 'North', '2023-01-07', 1400),
(8, 'Rahul', 'South', '2023-01-01', 400),
(9, 'Rahul', 'South', '2023-01-02', 600),
(10, 'Rahul', 'South', '2023-01-03', 700),
(11, 'Rahul', 'South', '2023-01-04', 900),
(12, 'Rahul', 'South', '2023-01-05', 1100),
(13, 'Rahul', 'South', '2023-01-06', 1300),
(14, 'Sneha', 'East', '2023-01-01', 300),
(15, 'Sneha', 'East', '2023-01-02', 400),
(16, 'Sneha', 'East', '2023-01-03', 500),
(17, 'Sneha', 'East', '2023-01-04', 600),
(18, 'Sneha', 'East', '2023-01-05', 700),
(19, 'Sneha', 'East', '2023-01-06', 800),
(20, 'Karan', 'West', '2023-01-01', 200),
(21, 'Karan', 'West', '2023-01-02', 300),
(22, 'Karan', 'West', '2023-01-03', 400),
(23, 'Karan', 'West', '2023-01-04', 500),
(24, 'Karan', 'West', '2023-01-05', 600),
(25, 'Karan', 'West', '2023-01-06', 700);

Range Between

```
CREATE TABLE Sales_Transactions (  
    Transaction_ID INT PRIMARY KEY,  
    Salesperson_Name VARCHAR(50),  
    Region VARCHAR(50),  
    Transaction_Date DATE,  
    Sales_Amount INT  
);
```

```
INSERT INTO Sales_Transactions (Transaction_ID, Salesperson_Name, Region, Transaction_Date, Sales_Amount)
```

VALUES

(1, 'Priya', 'North', '2023-01-01', 500),
(2, 'Rahul', 'South', '2023-01-01', 700),
(3, 'Sneha', 'East', '2023-01-01', 1000),
(4, 'Karan', 'West', '2023-01-01', 1300),
(5, 'Priya', 'North', '2023-01-02', 1300),
(6, 'Rahul', 'South', '2023-01-02', 1000),
(7, 'Sneha', 'East', '2023-01-02', 1300),
(8, 'Karan', 'West', '2023-01-02', 700),
(9, 'Priya', 'North', '2023-01-03', 500),
(10, 'Rahul', 'South', '2023-01-03', 400),
(11, 'Sneha', 'East', '2023-01-03', 900),
(12, 'Karan', 'West', '2023-01-03', 1600),
(13, 'Priya', 'North', '2023-01-04', 1000),
(14, 'Rahul', 'South', '2023-01-04', 1300),
(15, 'Sneha', 'East', '2023-01-04', 800),
(16, 'Karan', 'West', '2023-01-04', 1400),
(17, 'Priya', 'North', '2023-01-05', 900),
(18, 'Rahul', 'South', '2023-01-05', 600),
(19, 'Sneha', 'East', '2023-01-05', 500),
(20, 'Karan', 'West', '2023-01-05', 1200),
(21, 'Priya', 'North', '2023-01-06', 400),
(22, 'Rahul', 'South', '2023-01-06', 1100),
(23, 'Sneha', 'East', '2023-01-06', 800),
(24, 'Karan', 'West', '2023-01-06', 1500),
(25, 'Priya', 'North', '2023-01-07', 700);

Lead/Lag

```
CREATE TABLE cricket (
```

```
    Player_ID INT,
```

```
    Player_Name VARCHAR(50),
```

```
    Team VARCHAR(50),
```

```
    Season INT,
```

```
    Runs INT,
```

```
    Wickets INT,
```

```
    Points INT
```

```
);
```

```
INSERT INTO cricket (Player_ID, Player_Name, Team, Season, Runs, Wickets, Points)
```

```
VALUES
```

```
(1, 'Virat Kohli', 'RCB', 2016, 900, 0, 2100),
```

```
(1, 'Virat Kohli', 'RCB', 2017, 950, 1, 2200),
```

```
(1, 'Virat Kohli', 'RCB', 2018, 870, 0, 2000),
```

```
(2, 'MS Dhoni', 'CSK', 2016, 450, 0, 1800),
```

```
(2, 'MS Dhoni', 'CSK', 2017, 480, 1, 1900),
```

```
(2, 'MS Dhoni', 'CSK', 2018, 500, 0, 2000),
```

```
(3, 'Jasprit Bumrah', 'MI', 2019, 20, 25, 1700),
```

```
(3, 'Jasprit Bumrah', 'MI', 2020, 30, 30, 1800),
```

```
(3, 'Jasprit Bumrah', 'MI', 2021, 15, 28, 1750),
```

```
(4, 'Ravindra Jadeja', 'CSK', 2019, 200, 10, 1600),
```

```
(4, 'Ravindra Jadeja', 'CSK', 2020, 220, 15, 1700),
```

```
(4, 'Ravindra Jadeja', 'CSK', 2021, 240, 18, 1800),
```

```
(5, 'Hardik Pandya', 'GT', 2020, 500, 8, 1800),
```

```
(5, 'Hardik Pandya', 'GT', 2021, 550, 10, 1900),
```

```
(5, 'Hardik Pandya', 'GT', 2022, 600, 12, 2000);
```