Advanced SQL Queries

Author:- Azarudhin Usman   Reference: Youtube- @AnalystAdithya

Introduction:

This document covers SQL topics like Aggregate functions, Joins, Windows
Functions and joins.

Note: Sample output is mentioned under each query.

IPL 2022 - Analysis

```
create table public.ipl2022
(matchnum integer primary key,
team1 character varying(50),
team2 character varying(50),
Winner character varying(50))

INSERT INTO IPL2022 VALUES
(1,'CSK','KKR','KKR'),
(2,'MI','DC','DC'),
(3,'RCB','PBKS','PBKS'),
(4,'LSG','GT','GT'),
(5,'RR','SRH','RR'),
(6,'KKR','RCB','RCB'),
(7,'CSK','LSG','LSG'),
(8,'PBKS','KKR','KKR'),
(9,'RR','MI','RR'),
(10,'GT','DC','GT'),
(11,'PBKS','CSK','PBKS'),
(12,'LSG','SRH','LSG'),
(13,'RR','RCB','RCB'),
(14,'MI','KKR','KKR'),
(15,'DC','LSG','LSG'),
(16,'PBKS','GT','GT'),
(17,'CSK','SRH','SRH'),
(18,'MI','RCB','RCB'),
(19,'DC','KKR','DC'),
(20,'RR','LSG','RR'),
(21,'GT','SRH','SRH'),
(22,'CSK','RCB','CSK'),
(23,'PBKS','MI','PBKS'),
(24,'GT','RR','GT'),
(25,'KKR','SRH','SRH'),
(26,'LSG','MI','LSG'),
(27,'RCB','DC','RCB'),
(28,'PBKS','SRH','SRH'),
```

```
(29,'CSK','GT','GT'),
(30,'RR','KKR','RR'),
(31,'RCB','LSG','RCB'),
(32,'PBKS','DC','DC'),
(33,'MI','CSK','CSK'),
(34,'RR','DC','RR'),
(35,'GT','KKR','GT'),
(36,'RCB','SRH','SRH'),
(37,'LSG','MI','LSG'),
(38,'PBKS','CSK','PBKS'),
(39,'RR','RCB','RR'),
(40,'SRH','GT','GT'),
(41,'KKR','DC','DC'),
(42,'LSG','PBKS','LSG'),
(43,'RCB','GT','GT'),
(44,'RR','MI','MI'),
(45,'LSG','DC','LSG'),
(46,'CSK','SRH','CSK'),
(47,'RR','KKR','KKR'),
(48,'GT','PBKS','PBKS'),
(49,'RCB','CSK','RCB'),
(50,'DC','SRH','DC'),
(51,'MI','GT','MI'),
(52,'PBKS','RR','RR'),
(53,'LSG','KKR','LSG'),
(54,'RCB','SRH','RCB'),
(55,'CSK','DC','CSK'),
(56,'KKR','MI','KKR'),
(57,'GT','LSG','GT'),
(58,'RR','DC','DC'),
(59,'CSK','MI','MI'),
(60,'PBKS','RCB','PBKS'),
(61,'KKR','SRH','KKR'),
(62,'CSK','GT','GT'),
(63,'RR','LSG','RR'),
(64,'DC','PBKS','DC'),
(65,'SRH','MI','SRH'),
(66,'LSG','KKR','LSG'),
(67,'GT','RCB','RCB'),
(68,'CSK','RR','RR'),
(69,'DC','MI','MI'),
(70,'SRH','PBKS','PBKS'),
(71,'RR','GT','GT'),
(72,'RCB','LSG','RCB'),
(73,'RR','RCB','RR'),
(74,'RR','GT','GT')
```

-- List all the matches won by CSK team

```
select matchnum, team1, team2, winner
from ipl2022
```

```
where (team1='CSK' or team2 = 'CSK') and winner ='CSK';
```

Output:

```
1   select matchnum, team1, team2, winner
2   from ipl2022
3   where (team1='CSK' or team2 = 'CSK') and winner ='CSK';
4
```

Data Output   Messages   Notifications

matchnum [PK] integer	team1 character varying (50)	team2 character varying (50)	winner character varying (50)
22	CSK	RCB	CSK
33	MI	CSK	CSK
46	CSK	SRH	CSK
55	CSK	DC	CSK

-- Give 2 points to the winner team and 0 points to the Loser team

```
select matchnum, team1, team2,winner,
case
     when team1=winner then 2
     else 0
     end as Point_Board
from ipl2022
where (team1='CSK' or team2 = 'CSK') and winner ='CSK';
```

Output:

```sql
1   select matchnum, team1, team2,winner,
2   case
3       when team1=winner then 2
4       else 0
5       end as Point_Board
6   from ipl2022
7   where (team1='CSK' or team2 = 'CSK') and winner ='CSK';
8
```

Data Output   Messages   Notifications

matchnum [PK] integer	team1 character varying (50)	team2 character varying (50)	winner character varying (50)	point_board integer
1	22 CSK	RCB	CSK	2
2	33 MI	CSK	CSK	0
3	46 CSK	SRH	CSK	2
4	55 CSK	DC	CSK	2

-- Give 2 points to the winner team from team1 and team2

```sql
select matchnum, team1, team2,winner,
case
      when team1=winner then 2
      when team2=winner then 2
      else 0
      end as Point_Board
from ipl2022
where (team1='CSK' or team2 = 'CSK') and winner ='CSK';
```

Output:

```sql
1   select matchnum, team1, team2,winner,
2   case
3       when team1=winner then 2
4       when team2=winner then 2
5       else 0
6       end as Point_Board
7   from ipl2022
8   where (team1='CSK' or team2 = 'CSK') and winner ='CSK';
```
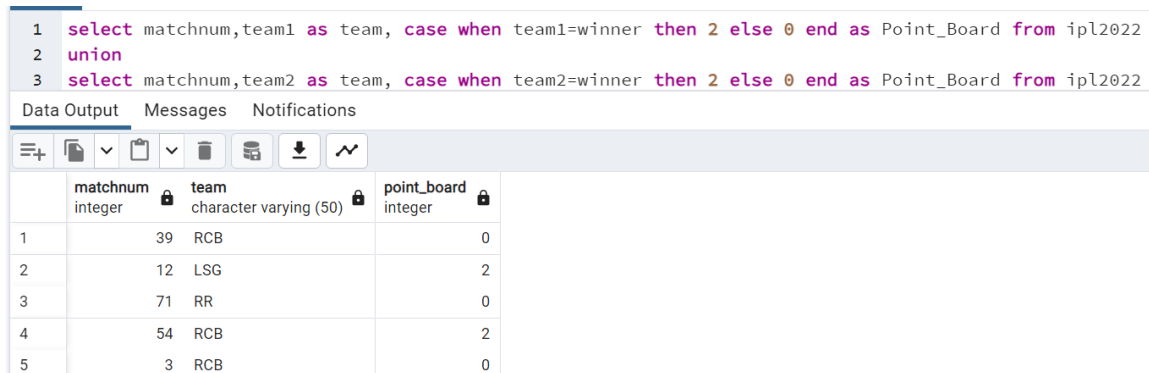
Data Output   Messages   Notifications

matchnum [PK] integer	team1 character varying (50)	team2 character varying (50)	winner character varying (50)	point_board integer
1	22 CSK	RCB	CSK	2
2	33 MI	CSK	CSK	2
3	46 CSK	SRH	CSK	2
4	55 CSK	DC	CSK	2

-- Display both the details of winner and loser with points

```
select matchnum,team1 as team, case when team1=winner then 2 else 0 end
as Point_Board from ipl2022
union
select matchnum,team2 as team, case when team2=winner then 2 else 0 end
as Point_Board from ipl2022
```

Output:

```
1  select matchnum,team1 as team, case when team1=winner then 2 else 0 end as Point_Board from ipl2022
2  union
3  select matchnum,team2 as team, case when team2=winner then 2 else 0 end as Point_Board from ipl2022
```

Data Output   Messages   Notifications

	matchnum integer	team character varying (50)	point_board integer
1	39	RCB	0
2	12	LSG	2
3	71	RR	0
4	54	RCB	2
5	3	RCB	0

-- Display the total points of each team

```
select team, sum(point_board) from (
select matchnum,team1 as team,
case when team1=winner then 2 else 0 end as Point_Board
from ipl2022
union
select matchnum,team2 as team, case when team2=winner then 2 else 0 end
as Point_Board
from ipl2022
) a group by team order by sum(point_board);
```

Output:

```
1  select team, sum(point_board) from (
2  select matchnum,team1 as team,
3  case when team1=winner then 2 else 0 end as Point_Board
4  from ipl2022
5  union
6  select matchnum,team2 as team, case when team2=winner then 2 else 0 end as Point_Board
7  from ipl2022
8  ) a group by team order by sum(point_board);
9
```

Data Output   Messages   Notifications

	team character varying (50)	sum bigint
1	MI	8
2	CSK	8
3	KKR	12
4	SRH	12
5	PBKS	14

-- Display the wins and loss points of each team

```
select team,
sum(case when point_board = 2 then 1 else 0 end) as Wins,
sum(case when point_board = 0 then 1 else 0 end) as loss, sum(point_board)
as totalpoints
from (
select matchnum,team1 as team, case when team1=winner then 2 else 0 end
as Point_Board from ipl2022
union
select matchnum,team2 as team, case when team2=winner then 2 else 0 end
as Point_Board from ipl2022
) a group by team order by sum(point_board);
```

Output:

```
1  select team,
2  sum(case when point_board = 2 then 1 else 0 end) as Wins,
3  sum(case when point_board = 0 then 1 else 0 end) as loss, sum(point_board) as totalpoints
4  from (
5  select matchnum,team1 as team, case when team1=winner then 2 else 0 end as Point_Board from ipl2022
6  union
7  select matchnum,team2 as team, case when team2=winner then 2 else 0 end as Point_Board from ipl2022
8  ) a group by team order by sum(point_board);
```

Data Output   Messages   Notifications

	team character varying (50)	wins bigint	loss bigint	totalpoints bigint
1	MI	4	10	8
2	CSK	4	10	8
3	KKR	6	8	12
4	SRH	6	8	12
5	PBKS	7	7	14
6	DC	7	7	14

-- Display the total wins and loss of each team cummulatively

```
select team, string_agg("Teamstatus", ',') as Status from (
select matchnum, winner as team, 'Win' as "Teamstatus" from ipl2022
union
select matchnum,
(case when team1=Winner then team2 else team1 end) as team,
'Loss' as "Teamstatus" from ipl2022) a group by team
```

Output:

```
1  select team, string_agg("Teamstatus", ',') as Status from (
2  select matchnum, winner as team, 'Win' as "Teamstatus" from ipl2022
3  union
4  select matchnum,
5  (case when team1=Winner then team2 else team1 end) as team,
6  'Loss' as "Teamstatus" from ipl2022) a group by team
7
```

Data Output   Messages   Notifications

	team character varying (50)	status text
1	KKR	Win,Loss,Loss,Loss,Loss,Win,Loss,Win,Loss,Loss,Win,Win,Loss,Win
2	RR	Loss,Loss,Loss,Loss,Win,Win,Win,Win,Win,Loss,Win,Win,Win,Win,Loss,Win,Lo...
3	MI	Win,Loss,Loss,Loss,Loss,Win,Loss,Loss,Loss,Win,Loss,Loss,Loss,Win
4	PBKS	Win,Loss,Win,Win,Loss,Loss,Win,Loss,Win,Loss,Loss,Loss,Win,Win
5	DC	Win,Win,Loss,Win,Loss,Loss,Loss,Win,Win,Loss,Win,Loss,Loss,Win

-- Display the team which has 4 consicutive wins

```
with a as (
select team, string_agg("Teamstatus", ',') as Status from (
select matchnum, winner as team, 'Win' as "Teamstatus" from ipl2022
union
select matchnum,
(case when team1=Winner then team2 else team1 end) as team,
'Loss' as "Teamstatus" from ipl2022) a group by team)

select * from a where status like '%Win,Win,Win,Win%'
```

Output:

```
1    with a as (
2    select team, string_agg("Teamstatus", ',') as Status from (
3    select matchnum, winner as team, 'Win' as "Teamstatus" from ipl2022
4    union
5    select matchnum,
6    (case when team1=Winner then team2 else team1 end) as team,
7    'Loss' as "Teamstatus" from ipl2022) a group by team)
8
9    select * from a where status like '%Win,Win,Win,Win%'
10
```

Data Output   Messages   Notifications

	team character varying (50) 🔒	status text 🔒
1	RR	Loss,Loss,Loss,Loss,Win,Win,Win,Win,Win,Loss,Win,Win,Win,Win,Loss,Win,Lo...
2	GT	Win,Win,Win,Win,Loss,Loss,Win,Loss,Win,Loss,Win,Win,Win,Win,Win,Win
3	RCB	Win,Loss,Loss,Win,Win,Win,Win,Loss,Loss,Win,Loss,Loss,Win,Win,Loss,Win

-- Display the team which has 4 consicutive losses

```
with a as (
select team, string_agg("Teamstatus", ',') as Status from (
select matchnum, winner as team, 'Win' as "Teamstatus" from ipl2022
union
select matchnum,
(case when team1=Winner then team2 else team1 end) as team,
'Loss' as "Teamstatus" from ipl2022) a group by team)

select * from a where status like '%Loss,Loss,Loss,Loss%'
```

Output:

```
1   with a as (
2   select team, string_agg("Teamstatus", ',') as Status from (
3   select matchnum, winner as team, 'Win' as "Teamstatus" from ipl2022
4   union
5   select matchnum,
6   (case when team1=Winner then team2 else team1 end) as team,
7   'Loss' as "Teamstatus" from ipl2022) a group by team)
8
9   select * from a where status like '%Loss,Loss,Loss,Loss%'
10
```

Data Output   Messages   Notifications

team character varying (50) 🔒	status text 🔒
1	KKR	Win,Loss,Loss,Loss,Loss,Win,Loss,Win,Loss,Loss,Win,Win,Loss,Win
2	RR	Loss,Loss,Loss,Loss,Win,Win,Win,Win,Win,Loss,Win,Win,Win,Win,Loss,Win,Lo...
3	MI	Win,Loss,Loss,Loss,Loss,Win,Loss,Loss,Loss,Win,Loss,Loss,Loss,Win
4	CSK	Loss,Loss,Loss,Loss,Win,Loss,Loss,Win,Loss,Loss,Win,Win,Loss,Loss

-- **Display the wins and loss of each team for every match**

```
SELEct matchnum, team1, team2, winner,
case when team1=winner then 2 else 0 end as "Team1_point",
case when team2=winner then 2 else 0 end as "Team2_point"
from ipl2022;
```

Output:

```
1
2   SELEct matchnum, team1, team2, winner,
3   case when team1=winner then 2 else 0 end as "Team1_point",
4   case when team2=winner then 2 else 0 end as "Team2_point"
5   from ipl2022;
6
```

Data Output   Messages   Notifications

	matchnum [PK] integer	team1 character varying (50)	team2 character varying (50)	winner character varying (50)	Team1_point integer 🔒	Team2_point integer 🔒
1	1	CSK	KKR	KKR	0	2
2	2	MI	DC	DC	0	2
3	3	RCB	PBKS	PBKS	0	2
4	4	LSG	GT	GT	0	2
5	5	RR	SRH	RR	2	0
6	6	KKR	RCB	RCB	0	2
7	7	CSK	LSG	LSG	0	2

-- **Display the head to head wins**

```
with a as (
Select a.matchnum as amatchmum, a.team1, a.team2, a.winner as matchwinner,
b.matchnum as bmatchnum, b.team1 as bteam1, b.team2 as bteam2, b.winner
as bmatchwinner,
concat(a.team1,'-', a.team2) as x, concat(b.team2,'-',b.team1) as Y from
ipl2022 a join ipl2022 b
on concat(a.team1,'-', a.team2) = concat(b.team2,'-',b.team1)
and a.matchnum<b.matchnum)

select x, case when matchwinner!=bmatchwinner then '1-1'
when substring(x,split_part(x,'-',1))=matchwinner then '2-0' else '0-2'
end as "head-to-head"
from a;
```

Output:

```
1   with a as (
2   Select a.matchnum as amatchmum, a.team1, a.team2, a.winner as matchwinner,
3   b.matchnum as bmatchnum, b.team1 as bteam1, b.team2 as bteam2, b.winner as bmatchwinner,
4   concat(a.team1,'-', a.team2) as x, concat(b.team2,'-',b.team1) as Y from ipl2022 a join ipl2022 b
5   on concat(a.team1,'-', a.team2) = concat(b.team2,'-',b.team1)
6   and a.matchnum<b.matchnum)
7
8   select x, case when matchwinner!=bmatchwinner then '1-1'
9   when substring(x,split_part(x,'-',1))=matchwinner then '2-0' else '0-2' end as "head-to-head"
10  from a;
11
```

Data Output   Messages   Notifications

	x text	head-to-head text
1	MI-DC	1-1
2	RCB-PBKS	0-2
3	LSG-GT	0-2

-- Display the team which played more matches than any other team.

```
select team, max(plays) from (
    select team, count(*) as plays from (
                select team1 as team from ipl2022
                union all
                select team2 as team from ipl2022) a
        group by team
    ) b
    group by team
    order by max(plays) desc limit 1;
```

Output:

```sql
1   select team, max(plays) from (
2       select team, count(*) as plays from (
3               select team1 as team from ipl2022
4               union all
5               select team2 as team from ipl2022) a
6           group by team
7       ) b
8       group by team
9       order by max(plays) desc limit 1;
10
```

Data Output   Messages   Notifications

	team character varying (50) 🔒	max bigint 🔒
1	RR	17

-- **Display the teams which played more matches than any other team**

```sql
SELECT
    team_pair,
    COUNT(*) AS matches_faced
FROM (
    SELECT
        a.matchnum,
        a.team1,
        a.team2,
        a.winner AS match_winner,
        b.matchnum AS b_matchnum,
        b.team1 AS b_team1,
        b.team2 AS b_team2,
        b.winner AS b_match_winner,
        CONCAT(a.team1, '-', a.team2) AS team_pair
    FROM
        ipl2022 a
    JOIN
        ipl2022 b ON a.matchnum < b.matchnum
            AND (a.team1 = b.team1 OR a.team1 = b.team2 OR a.team2 = b.team1
OR a.team2 = b.team2)
) AS matched_teams
GROUP BY
    team_pair
ORDER BY
    matches_faced DESC;
```

Output:

```sql
1   SELECT
2       team_pair,
3       COUNT(*) AS matches_faced
4   FROM (
5       SELECT
6           a.matchnum,
7           a.team1,
8           a.team2,
9           a.winner AS match_winner,
10          b.matchnum AS b_matchnum,
11          b.team1 AS b_team1,
12          b.team2 AS b_team2,
13          b.winner AS b_match_winner,
14          CONCAT(a.team1, '-', a.team2) AS team_pair
15      FROM ipl2022 a
16      JOIN ipl2022 b ON a.matchnum < b.matchnum
17              AND (a.team1 = b.team1 OR a.team1 = b.team2 OR a.team2 = b.team1 OR a.team2 = b.team2)
18  ) AS matched_teams
19  GROUP BY
20      team_pair
21  ORDER BY
22      matches_faced DESC;
```

	team character varying (50)	max bigint
1	RR	17

-- Display which team won the IPL 2022 trophy
-- Type 1

```sql
with a as(
    SELECT *, row_number() over() as r FROM IPL2022)
select winner from a order by r desc limit 1;
```

Output:

```sql
1   with a as(
2       SELECT *, row_number() over() as r FROM IPL2022)
3   select winner from a order by r desc limit 1;
4
```

Data Output   Messages   Notifications

	winner character varying (50)
1	GT

-- Type 2

```
select winner from (
      select *, row_number() over() as rn from ipl2022
)a order by rn desc limit 1;

-- Display which team won the Runner of IPL 2022 trophy

with a as(
      SELECT *, row_number() over() as r FROM IPL2022)
select winner as "Runner up" from a
order by r desc offset 1 row fetch next row only;
```

Output:

```
2
3   with a as(
4        SELECT *, row_number() over() as r FROM IPL2022)
5   select winner as "Runner up" from a
6   order by r desc offset 1 row fetch next row only;
7
```

Data Output   Messages   Notifications

	Runner up 🔒 character varying (50)
1	RR

*******************************----End----*********************************