IPL DATA ANALYTICS USING SQL

-- Creating Table ipl_matches
```
CREATE TABLE ipl_matches (
    id INT PRIMARY KEY,
    season INT,
    city VARCHAR(50),
    date DATE,
    team1 TEXT,
    team2 TEXT,
    toss_winner TEXT,
    toss_decision VARCHAR(10),
    result VARCHAR(20),
    dl_applied BOOLEAN,
    winner TEXT,
    win_by_runs INT,
    win_by_wickets INT,
    player_of_match TEXT,
    venue TEXT,
    umpire1 VARCHAR(100),
    umpire2 VARCHAR(100)
);
```

-- The table was imported manually due to a permission denied error encountered when using the SQL COPY command.
-- Fetching all the datas within the table
```
SELECT * FROM ipl_matches;
```

-- Basic Queries
-- 1. How many total matches were played?
```
SELECT COUNT(*) AS total_matches FROM ipl_matches;
```

-- 2. How many seasons are included in the dataset?
```
SELECT COUNT(DISTINCT season) AS total_seasons FROM ipl_matches;
```

-- 3. How many matches were played in each season?
```
SELECT DISTINCT season, COUNT(*) AS matches_played FROM ipl_matches
GROUP BY season
ORDER BY matches_played;
```

-- 4. How many unique cities hosted IPL matches?
SELECT COUNT(DISTINCT city) as total_cities FROM ipl_matches;

-- 5. Which city hosted the most matches?
SELECT DISTINCT city, COUNT(*) AS matches_hosted FROM ipl_matches
GROUP BY city
ORDER BY matches_hosted DESC;

-- 6. How many unique venues hosted IPL matches?
SELECT COUNT(DISTINCT venue) as total_venues FROM ipl_matches;

-- 7. Which venue has hosted the highest number of matches?
SELECT DISTINCT venue, COUNT(*) AS matches_hosted FROM ipl_matches
GROUP BY venue
ORDER BY matches_hosted DESC
LIMIT 1;

-- 8. How many matches did each team win?
SELECT DISTINCT winner, COUNT(*) as matches_won FROM ipl_matches
GROUP BY winner
ORDER BY matches_won DESC;

-- 9. How many times did each team win the toss?
SELECT DISTINCT toss_winner, COUNT(*) as tosses_won FROM ipl_matches
GROUP BY toss_winner
ORDER BY tosses_won DESC;

-- 10. What is the frequency of each toss decision (bat vs field)?
SELECT toss_decision, COUNT(*) AS toss_count FROM ipl_matches
GROUP BY toss_decision;

-- 11. How many matches were decided by D/L method?
SELECT COUNT(*) AS matches FROM ipl_matches
WHERE dl_applied = TRUE;

-- 12. Which team has won the most matches while chasing?

```sql
SELECT winner, COUNT(*) matches_won FROM ipl_matches
WHERE win_by_wickets>0
GROUP BY winner
ORDER BY matches_won DESC
LIMIT 1;
```

-- 13. Which team has won the most matches while defending?

```sql
SELECT winner, COUNT(*) matches_won FROM ipl_matches
WHERE win_by_runs>0
GROUP BY winner
ORDER BY matches_won DESC
LIMIT 1;
```

-- 14. What are the top 5 matches with highest win margins by runs?

```sql
SELECT team1, team2, winner, win_by_runs FROM ipl_matches
GROUP BY team1, team2, winner, win_by_runs
ORDER BY win_by_runs DESC
LIMIT 5;
```

-- 15. What are the top 5 matches with highest win margins by wickets?

```sql
SELECT team1, team2, winner, win_by_wickets FROM ipl_matches
GROUP BY team1, team2, winner, win_by_wickets
ORDER BY win_by_wickets DESC
LIMIT 5;
```

-- 16. Which players have won the most "Player of the Match" awards?

```sql
SELECT player_of_match, COUNT(*) AS no_of_times FROM ipl_matches
GROUP BY player_of_match
ORDER BY no_of_times DESC
LIMIT 1;
```

-- 17. Which seasons had the most matches?

```sql
SELECT DISTINCT season, COUNT(*) AS total_matches FROM ipl_matches
GROUP BY season
ORDER BY total_matches DESC
LIMIT 1;
```

-- 18. How many matches ended in a tie or no result?

```sql
SELECT COUNT(*) AS total_matches FROM ipl_matches
WHERE result = 'tie' OR result = 'no result';
```

-- 19. Which team appeared in the most matches?

```sql
SELECT team, COUNT(*) AS no_of_appearance
FROM (
    SELECT team1 AS team FROM ipl_matches
    UNION ALL
    SELECT team2 FROM ipl_matches
) AS combined_teams
GROUP BY team
ORDER BY no_of_appearance DESC
LIMIT 1;
```

-- 20. How many different umpires officiated across all matches?

```sql
SELECT COUNT(DISTINCT umpire) AS total_umpires
FROM (
    SELECT umpire1 AS umpire FROM ipl_matches
    UNION ALL
    SELECT umpire2 FROM ipl_matches
) AS all_umpires;
```

-- 21. What are the most frequent team pairings in IPL history (team1 vs team2)?

```sql
SELECT
    LEAST(team1, team2) AS team_a,
    GREATEST(team1, team2) AS team_b,
    COUNT(*) AS total_matches
FROM ipl_matches
GROUP BY LEAST(team1, team2), GREATEST(team1, team2)
ORDER BY total_matches DESC;
```

-- **Advanced Queries**
--- 1. Who was the top "Player of the Match" for each season?

```sql
WITH no_of_times AS (
 SELECT season, player_of_match, COUNT(*) AS total_times,
     RANK() OVER (PARTITION BY season ORDER BY COUNT(*) DESC) AS rnk
 FROM ipl_matches
 GROUP BY season, player_of_match
)
SELECT season, player_of_match, total_times
FROM no_of_times
WHERE rnk = 1
ORDER BY season;
```

-- **2. What is the win percentage of each team (based on total matches they played)?**

```sql
WITH total_matches AS (
    SELECT team, COUNT(*) AS matches_played
    FROM (
        SELECT team1 AS team FROM ipl_matches
        UNION ALL
        SELECT team2 FROM ipl_matches
    ) AS combined
    GROUP BY team
),
total_wins AS (
    SELECT winner AS team, COUNT(*) AS matches_won
    FROM ipl_matches
    WHERE winner IS NOT NULL
    GROUP BY winner
)
SELECT
    tm.team,
    tm.matches_played,
    COALESCE(tw.matches_won, 0) AS matches_won,
    ROUND((COALESCE(tw.matches_won, 0)::DECIMAL / tm.matches_played) * 100, 2) AS
win_percentage
FROM total_matches tm
LEFT JOIN total_wins tw ON tm.team = tw.team
ORDER BY win_percentage DESC;
```

-- **3. Which team had the most finals appearances?**

```sql
WITH finals AS (
 SELECT DISTINCT ON (season) *
 FROM ipl_matches
 ORDER BY season, date DESC
)
SELECT team, COUNT(*) AS final_appearances
FROM (
    SELECT team1 AS team FROM finals
    UNION ALL
    SELECT team2 FROM finals
) AS final_teams
GROUP BY team
ORDER BY final_appearances DESC;
```

-- 4. Which venue has had the most variety of winning teams (i.e., most unique winners)?

SELECT venue, COUNT(DISTINCT winner) AS unique_winners FROM ipl_matches
WHERE winner IS NOT NULL
GROUP BY venue
ORDER BY unique_winners DESC;

-- 5. Which seasons had the highest number of different winning teams?

SELECT season, COUNT(DISTINCT winner) AS unique_winners FROM ipl_matches
WHERE winner IS NOT NULL
GROUP BY season
ORDER BY unique_winners DESC;

-- 6. Which team has the highest average margin of victory while chasing?

SELECT winner, ROUND(AVG(win_by_wickets), 2) AS avg_wickets_margin FROM ipl_matches
WHERE win_by_wickets > 0
GROUP BY winner
ORDER BY avg_wickets_margin DESC;

-- 7. Which team has the highest average margin of victory while defending?

SELECT winner, ROUND(AVG(win_by_runs), 2) AS avg_runs_margin
FROM ipl_matches
WHERE win_by_runs > 0
GROUP BY winner
ORDER BY avg_runs_margin DESC;

-- 8. Which team had the most consistent appearances per season?

SELECT team, COUNT(DISTINCT season) AS seasons_played
FROM (
    SELECT season, team1 AS team FROM ipl_matches
    UNION
    SELECT season, team2 FROM ipl_matches
) AS season_teams
GROUP BY team
ORDER BY seasons_played DESC;

-- 9. Which team lost the most matches after winning the toss?

SELECT toss_winner, COUNT(*) AS losses_after_winning_toss FROM ipl_matches
WHERE toss_winner IS NOT NULL
 AND winner IS NOT NULL
 AND toss_winner <> winner
GROUP BY toss_winner
ORDER BY losses_after_winning_toss DESC;

-- 10. Which season had the highest number of D/L affected matches?
SELECT season, COUNT(*) AS dl_affected_matches FROM ipl_matches
WHERE dl_applied = TRUE
GROUP BY season
ORDER BY dl_affected_matches DESC;

-- 11. Who are the top 3 umpires with most match appearances?
SELECT umpire, COUNT(*) AS matches_officiated
FROM (
   SELECT umpire1 AS umpire FROM ipl_matches
   WHERE umpire1 IS NOT NULL
   UNION ALL
   SELECT umpire2 FROM ipl_matches
   WHERE umpire2 IS NOT NULL
) AS all_umpires
GROUP BY umpire
ORDER BY matches_officiated DESC
LIMIT 3;

-- 12. Find the most dominant season for any team.
WITH season_team_wins AS (
   SELECT
     season,
     winner AS team,
     COUNT(*) AS wins
   FROM ipl_matches
   WHERE winner IS NOT NULL
   GROUP BY season, winner
)
SELECT *
FROM season_team_wins
ORDER BY wins DESC
LIMIT 1;

-- 13. Which toss winner had the highest win conversion rate?
SELECT
  toss_winner AS team,
  COUNT(*) AS tosses_won,
  COUNT(CASE WHEN toss_winner = winner THEN 1 END) AS wins_after_toss,
  ROUND(
    COUNT(CASE WHEN toss_winner = winner THEN 1 END)::DECIMAL

```
      / COUNT(*) * 100, 2
   ) AS win_conversion_rate
FROM ipl_matches
WHERE toss_winner IS NOT NULL AND winner IS NOT NULL
GROUP BY toss_winner
ORDER BY win_conversion_rate DESC;
```

-- 14. Which city has hosted IPL matches for the most number of different seasons?
```
SELECT city, COUNT(DISTINCT season) AS seasons_hosted FROM ipl_matches
WHERE city IS NOT NULL
GROUP BY city
ORDER BY seasons_hosted DESC;
```