Olympic Game Case Study Using MySQL

Dataset - https://www.kaggle.com/datasets/heesoo37/120-years-of-olympic-history-athletes-and-results

1. How many Olympic games have been held?

```sql
-- 1. How many Olympic games have been held?
SELECT COUNT(DISTINCT(Games)) AS 'Total_Number_Of_Games'
FROM athlete events;
```

Total_Number_Of_Games
51

2. List down all Olympic games held so far.

```sql
-- 2. List down all Olympic games held so far.
SELECT DISTINCT(Games),Year,City
FROM athlete_events
ORDER BY Year ;
```

Games	Year	City
1896 Summer	1896	Athina
1900 Summer	1900	Paris
1904 Summer	1904	St. Louis
1906 Summer	1906	Athina
1908 Summer	1908	London
1912 Summer	1912	Stockholm
1920 Summer	1920	Antwerpen
1924 Summer	1924	Paris
1924 Winter	1924	Chamonix
1928 Summer	1928	Amsterdam
1928 Winter	1928	Sankt Moritz
1932 Summer	1932	Los Angeles

3. Mention the total number of nations that participated in each Olympic game.

```
14      -- 3. Mention the total number of nations that participated in each Olympic game.
15 •    SELECT Games,COUNT(DISTINCT region) AS 'Total_Participated_Regions'
16      FROM athlete_events t1
17      JOIN noc_regions t2
18      ON t1.NOC=t2.NOC
19      GROUP BY Games
20      ORDER BY Games;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Games	Total_Participated_Regions
1896 Summer	3
1900 Summer	11
1904 Summer	4
1906 Summer	14
1908 Summer	16
1912 Summer	21
1920 Summer	22

4. Which year saw the highest and lowest number of countries participating in the Olympics?

```
22      -- 4. Which year saw the highest and lowest number of countries participating in the Olympics?
23
24      -- Using Set Operation Function
25 •    (SELECT Games,COUNT(DISTINCT region) AS 'Total_Participated_Regions'
26      FROM athlete_events t1
27      JOIN noc_regions t2 ON t1.NOC=t2.NOC
28      GROUP BY Games ORDER BY Games ASC LIMIT 1)
29      UNION
30      (SELECT Games,COUNT(DISTINCT region) AS 'Total_Participated_Regions'
31      FROM athlete_events t1
32      JOIN noc_regions t2 ON t1.NOC=t2.NOC
33      GROUP BY Games ORDER BY Games DESC LIMIT 1);
34
35      -- Using Window Function
36 •    WITH ParticipationCounts AS (
37      SELECT Games,COUNT(DISTINCT region) AS Total_Participated_Regions,
38      RANK() OVER (ORDER BY COUNT(DISTINCT region) DESC) AS Participation_Rank_Desc,
39      RANK() OVER (ORDER BY COUNT(DISTINCT region) ASC) AS Participation_Rank_Asc
40      FROM athlete_events t1
41      JOIN noc_regions t2 ON t1.NOC = t2.NOC
42      GROUP BY Games)
43      SELECT Games,Total_Participated_Regions
44      FROM ParticipationCounts
45      WHERE Participation_Rank_Desc = 1 OR Participation_Rank_Asc = 1;
46
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Games	Total_Participated_Regions
1896 Summer	3
2016 Summer	152

5. Which nation has participated in all of the Olympic games?

```sql
-- 5. Which nation has participated in all of the Olympic games?
WITH CTE AS (SELECT region,COUNT(DISTINCT Games) AS 'Total_Games_Participation' FROM noc_regions t1
JOIN athlete_events t2
ON t1.NOC=t2.NOC
GROUP BY region
ORDER BY region)
SELECT * FROM CTE
WHERE Total_Games_Participation=(SELECT MAX(Total_Games_Participation) FROM CTE);
```

region	Total_Games_Participation
USA	50

6. Identify the sport played in all Summer Olympics.

```sql
-- 6. Identify the sport played in all Summer Olympics.
SELECT Games,Sport FROM athlete_events
WHERE Season='Summer'
ORDER BY Games;
```

Games	Sport
1896 Summer	Tennis
1896 Summer	Athletics
1896 Summer	Gymnastics
1896 Summer	Gymnastics
1896 Summer	Gymnastics
1896 Summer	Athletics
1896 Summer	Tennis
1896 Summer	Gymnastics
1896 Summer	Gymnastics
1896 Summer	Gymnastics
1896 Summer	Gymnastics
1900 Summer	Athletics
1900 Summer	Swimming
1900 Summer	Fencing
1900 Summer	Fencing
1900 Summer	Sailing

7. Which sports were played only once in the Olympics?

```sql
-- 7. Which sports were played only once in the Olympics?
SELECT Sport,COUNT(Sport) AS 'Game_Played' FROM athlete_events
GROUP BY Sport
HAVING COUNT(Sport)<2;
```

Sport	Game_Played
Jeu De Paume	1

8. Fetch the total number of sports played in each Olympic game.

```sql
66    -- 8. Fetch the total number of sports played in each Olympic game.
67    SELECT Games,Sport,COUNT(Sport) AS 'Total_Sports_Played' FROM athlete_event
68    GROUP BY Games,Sport
69    ORDER BY Games,Sport;
```

Games	Sport	Total_Sports_Played
1896 Summer	Athletics	2
1896 Summer	Gymnastics	7
1896 Summer	Tennis	2
1900 Summer	Athletics	17
1900 Summer	Cricket	3
1900 Summer	Croquet	2
1900 Summer	Cycling	4
1900 Summer	Fencing	20
1900 Summer	Football	2
1900 Summer	Golf	2
1900 Summer	Gymnastics	2
1900 Summer	Polo	1
1900 Summer	Rowing	8
1900 Summer	Rugby	5
1900 Summer	Sailing	16
1900 Summer	Shooting	15
1900 Summer	Swimming	4
1900 Summer	Tug-Of-War	1

9. Fetch details of the oldest athletes to win a gold medal.

```sql
71    -- 9. Fetch details of the oldest athletes to win a gold medal.
72
73    -- Using WHERE Clause
74    SELECT * FROM athlete_events
75    WHERE Medal='Gold'
76    ORDER BY AGE DESC ;
77
78    -- Using Subquery
79    SELECT * FROM athlete_events
80    WHERE AGE = (SELECT MAX(AGE) FROM athlete_events WHERE Medal="Gold") AND Medal="Gold";
81
```

ID	Name	Sex	Age	Height	Weight	Team	NOC	Games	Year	Season	City	Sport	Event	Medal
4404	Johan August Anker	M	56	NA	NA	Norna	NOR	1928 Summer	1928	Summer	Amsterdam	Sailing	Sailing Mixed 6 metres	Gold
7272	Nikolaus "Klaus"" Balkenhol"	M	56	178	83	Germany	GER	1996 Summer	1996	Summer	Atlanta	Equestrianism	Equestrianism Mixed Dressage, Team	Gold

10. Find the ratio of male and female athletes participating in all Olympic games.

```sql
82        -- 10. Find the ratio of male and female athletes participating in all Olympic games
83   ⊖ SELECT CONCAT("1:",
84       (SELECT COUNT(Sex) FROM athlete_events WHERE Sex='M')/
85       (SELECT COUNT(Sex) FROM athlete_events WHERE Sex='F') )
86       AS 'male_to_female_ratio';
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: ‡A

male_to_female_ratio
1:2.8705

11. Fetch the top 5 athletes who have won the most gold medals.

```sql
88        -- 11. Fetch the top 5 athletes who have won the most gold medals.
89
90        -- Using CASE
91   ⊖ WITH CTE AS (SELECT Name,Team,
92       SUM(CASE WHEN Medal = 'Gold' THEN 1 ELSE 0 END) AS Gold_Medal_Count,
93       DENSE_RANK() OVER (ORDER BY SUM(CASE WHEN Medal = 'Gold' THEN 1 ELSE 0 END) DESC) AS rnk
94       FROM athlete_events
95       WHERE Medal = 'Gold'
96       GROUP BY Name, Team)
97       SELECT * FROM CTE
98       WHERE rnk < 6;
99
100       -- Using CTE
101  ⊖ WITH CTE AS (SELECT Name,Team,COUNT(Medal),
102       DENSE_RANK() OVER(ORDER BY COUNT(Medal) DESC) AS 'rnk'
103       FROM athlete_events
104       WHERE Medal='Gold'
105       GROUP BY Name,Team
106       )
107       SELECT*FROM CTE
108       WHERE rnk < 6 ;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: ‡A

Name	Team	COUNT(Medal)	rnk
Matthew Nicholas "Matt"" Biondi"	United States	8	1
Ole Einar Bjrndalen	Norway	8	1
Usain St. Leo Bolt	Jamaica	8	1
Nikolay Yefimovich Andrianov	Soviet Union	7	2
Marit Bjrgen	Norway	6	3
Nathan Ghar-Jun Adrian	United States	5	4
Thomas Alsgaard (Alsgrd-)	Norway	5	4
Polina Hryhorivna Astakhova	Soviet Union	5	4
Bonnie Kathleen Blair (-Cruikshank)	United States	5	4
Kjetil Andr Aamodt	Norway	4	5
Charles Benedict "Ben"" Ainslie"	Great Britain	4	5
Simon Ammann	Switzerland	4	5

12. Fetch the top 5 athletes who have won the most medals (gold/silver/bronze).

```sql
110     -- 12. Fetch the top 5 athletes who have won the most medals (gold/silver/bronze)?
111 • ⊖ WITH CTE AS (SELECT name,Team,COUNT(Medal) AS 'Wons_Medal',
112     DENSE_RANK() OVER(ORDER BY COUNT(Medal) DESC) AS 'Ranking'
113     FROM athlete_events
114     WHERE Medal ='Gold' OR 'Silver' OR 'Bronze'
115   ⌐ GROUP BY name,Team)
116     SELECT * FROM CTE
117     WHERE Ranking<6;
```

name	Team	Wons_Medal	Ranking
Matthew Nicholas "Matt"" Biondi"	United States	8	1
Ole Einar Bjrndalen	Norway	8	1
Usain St. Leo Bolt	Jamaica	8	1
Nikolay Yefimovich Andrianov	Soviet Union	7	2
Marit Bjrgen	Norway	6	3
Nathan Ghar-Jun Adrian	United States	5	4
Thomas Alsgaard (Alsgrd-)	Norway	5	4
Polina Hryhorivna Astakhova	Soviet Union	5	4
Bonnie Kathleen Blair (-Cruikshank)	United States	5	4
Kjetil Andr Aamodt	Norway	4	5
Charles Benedict "Ben"" Ainslie"	Great Britain	4	5
Simon Ammann	Switzerland	4	5
Vladimir Nikolayevich Artyomov	Soviet Union	4	5
Evelyn Ashford (-Washington)	United States	4	5
Ivar Eugen Ballangrud (Eriksen-)	Norway	4	5
Simone Arianne Biles	United States	4	5
Suzanne Brigit "Sue"" Bird"	United States	4	5
Francina Elsje "Fanny"" Blankers-K...	Netherlands	4	5
Kathrin Boron (-Kppen)	Germany	4	5

13. Fetch the top 5 most successful countries in the Olympics based on the number of medals won.

```sql
119     -- 13. Fetch the top 5 most successful countries in the Olympics based on the number of medals won.
120 • ⊖ WITH CTE AS (SELECT Region,COUNT(Medal) AS 'Total_Medals',
121     DENSE_RANK() OVER(ORDER BY COUNT(Medal) DESC) AS 'Top_5_Ranking'
122     FROM athlete_events t1
123     JOIN noc_regions t2
124     ON t1.NOC=t2.NOC
125     WHERE Medal IN (SELECT Medal FROM athlete_events WHERE Medal NOT LIKE 'NA' )
126   ⌐ GROUP BY Region)
127     SELECT * FROM CTE
128     WHERE Top_5_Ranking<6;
```

Region	Total_Medals	Top_5_Ranking
USA	514	1
Russia	432	2
Germany	347	3
France	227	4
Italy	227	4
Sweden	211	5

14. List down total gold, silver, and bronze medals won by each country.

```
130        -- 14. List down total gold, silver, and bronze medals won by each country.
131  •     SELECT Region,
132        COUNT(CASE WHEN Medal='Gold' THEN 1 END ) AS 'Gold_Medals',
133        COUNT(CASE WHEN Medal='Silver' THEN 1 END ) AS 'Silver_Medals',
134        COUNT(CASE WHEN Medal='Bronze' THEN 1 END) AS 'Bronze_Medals',
135        COUNT(CASE WHEN Medal='NA' THEN 1 END) AS 'No_Medals',
136        COUNT(*) AS 'Total_Medal'
137        FROM athlete_events t1
138        JOIN noc_regions t2
139        ON t1.NOC=t2.NOC |
140        GROUP BY Region
141        ORDER BY Gold_Medals DESC, Silver_Medals DESC, Bronze_Medals DESC;
142
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: |

Region	Gold_Medals	Silver_Medals	Bronze_Medals	No_Medals	Total_Medal
USA	252	155	107	1248	1762
Russia	172	115	145	860	1292
Germany	118	127	102	1200	1547
Italy	87	71	69	1046	1273
France	74	69	84	1386	1613
Norway	72	51	41	548	712
UK	70	64	56	1009	1199
Sweden	51	79	81	944	1155
Canada	45	42	42	873	1002
Hungary	36	31	33	607	707
Denmark	25	23	18	298	364
Australia	24	41	44	661	770
Netherl...	21	43	35	432	531
Romania	18	18	26	398	460
Spain	16	32	15	635	698
Pakistan	16	12	7	111	146
Switzerl...	15	26	28	557	626
Serbia	15	23	8	198	244

15. List down total gold, silver, and bronze medals won by each country corresponding to each Olympic game.

```
143     -- 15. List down total gold, silver, and bronze medals won by each country corresponding to each Olympic game.
144  ⊖ WITH CTE AS (SELECT t2.Region,t1.Games,t1.Medal,COUNT(*) AS 'Total_Medals',
145     DENSE_RANK() OVER(PARTITION BY t1.Medal,t1.Games ORDER BY COUNT(*) DESC) AS 'Ranking'
146     FROM athlete_events t1
147     JOIN noc_regions t2
148     ON t1.NOC=t2.NOC
149     WHERE t1.Medal IN ('Gold','Silver','Bronze')
150     GROUP BY t2.Region,t1.Games,t1.Medal)
151     SELECT Games,
152     MAX(CASE WHEN Medal='Gold' AND Ranking=1 THEN CONCAT(Region,' ',CAST(Total_Medals AS CHAR)) END ) AS Max_Gold,
153     MAX(CASE WHEN Medal='Silver' AND Ranking=1 THEN CONCAT(Region, ' ',CAST( Total_Medals AS CHAR)) END ) AS Max_Silver,
154     MAX(CASE WHEN Medal='Bronze' AND Ranking = 1 THEN CONCAT(Region, ' ', CAST(Total_Medals AS CHAR)) END ) AS Max_Bronze
155     FROM CTE
156     GROUP BY Games
157     ORDER BY Games;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Games	Max_Gold	Max_Silver	Max_Bronze
1896 Summer	UK 2	USA 1	NULL
1900 Summer	France 13	France 5	France 4
1904 Summer	USA 4	USA 12	USA 8
1906 Summer	Denmark 2	Italy 2	France 2
1908 Summer	UK 13	UK 7	UK 6
1912 Summer	Sweden 13	Sweden 13	Sweden 6
1920 Summer	Italy 9	Norway 9	Sweden 13
1924 Summer	USA 5	France 7	Sweden 6
1924 Winter	Switzerland 1	USA 1	France 2
1928 Summer	USA 7	Netherlands 6	Italy 6
1928 Winter	Norway 2	Sweden 2	Switzerland 3
1932 Summer	USA 10	Italy 7	USA 3
1932 Winter	NULL	USA 3	Germany 1
1936 Summer	Germany 11	Germany 6	Switzerland 3
1936 Winter	Norway 3	Switzerland 2	Sweden 1
1948 Summer	USA 8	UK 6	Finland 5
1948 Winter	Italy 1	USA 1	Switzerland 3

16.Identify which country won the most gold, silver, and bronze medals in each Olympic game.

```sql
159    -- 16. Identify which country won the most gold, silver, and bronze medals in each Olympic game.
160    WITH CTE AS (SELECT
161    t2.Region,t1.Games,
162    SUM(CASE WHEN t1.Medal = 'Gold' THEN 1 ELSE 0 END) AS Gold_Medals,
163    SUM(CASE WHEN t1.Medal = 'Silver' THEN 1 ELSE 0 END) AS Silver_Medals,
164    SUM(CASE WHEN t1.Medal = 'Bronze' THEN 1 ELSE 0 END) AS Bronze_Medals
165    FROM athlete_events t1
166    JOIN noc_regions t2 ON t1.NOC = t2.NOC
167    WHERE t1.Medal IN ('Gold', 'Silver', 'Bronze')
168    GROUP BY t2.Region, t1.Games)
169    SELECT Games,Region AS Gold_Medal_Winner,
170    Gold_Medals AS Gold_Medal_Count,
171    Region AS Silver_Medal_Winner,
172    Silver_Medals AS Silver_Medal_Count,
173    Region AS Bronze_Medal_Winner,
174    Bronze_Medals AS Bronze_Medal_Count
175    FROM CTE
176    WHERE (Gold_Medals, Silver_Medals, Bronze_Medals) IN (
177    SELECT MAX(Gold_Medals),MAX(Silver_Medals),MAX(Bronze_Medals)
178    FROM CTE AS innerCTE
179    WHERE innerCTE.Games = CTE.Games)
180    ORDER BY Games;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Games	Gold_Medal_Winner	Gold_Medal_Count	Silver_Medal_Winner	Silver_Medal_Count	Bronze_Medal_Winner	Bronze_Medal_Count
1900 Summer	France	13	France	5	France	4
1904 Summer	USA	4	USA	12	USA	8
1908 Summer	UK	13	UK	7	UK	6
1912 Summer	Sweden	13	Sweden	13	Sweden	6
1936 Summer	Germany	11	Germany	6	Germany	3
1956 Summer	Russia	10	Russia	5	Russia	5
1980 Summer	Russia	23	Russia	14	Russia	14
2008 Summer	USA	10	USA	10	USA	7

17. Identify which country won the most gold, silver, bronze medals, and the most medals in each Olympic game.

```sql
182    -- 17. Identify which country won the most gold, silver, bronze medals, and the most medals in each Olympic game.
183  • ⊖ WITH cte AS (SELECT
184      oh.Games,onc.Region,oh.Medal,COUNT(*) AS medal_count,
185      DENSE_RANK() OVER (PARTITION BY oh.Games, oh.Medal ORDER BY COUNT(*) DESC) AS Ranking
186      FROM athlete_events oh
187      JOIN noc_regions onc ON oh.NOC = onc.NOC
188      WHERE oh.Medal IN ('Gold', 'Silver', 'Bronze')
189    ⌐ GROUP BY oh.Games, onc.Region, oh.Medal)
190      SELECT Games,
191      MAX(CASE WHEN Medal = 'Gold' AND Ranking = 1 THEN CONCAT(Region, ' ', CAST(medal_count AS CHAR)) END) AS max_gold,
192      MAX(CASE WHEN Medal = 'Silver' AND Ranking = 1 THEN CONCAT(Region, ' ', CAST(medal_count AS CHAR)) END) AS max_silver,
193      MAX(CASE WHEN Medal = 'Bronze' AND Ranking = 1 THEN CONCAT(Region, ' ', CAST(medal_count AS CHAR)) END) AS max_bronze,
194  ⊖ (SELECT CONCAT(Region, ' ', CAST(SUM(medal_count) AS CHAR))
195      FROM cte c
196      WHERE c.Games = cte.Games
197      GROUP BY Games, Region
198      ORDER BY SUM(medal_count) DESC
199    ⌐ LIMIT 1) AS region_max_medal
200      FROM cte
201      GROUP BY Games
202      ORDER BY Games;
```

Result Grid | ▦ | Filter Rows: [   ] | Export: ▦ | Wrap Cell Content: ⊼A

Games	max_gold	max_silver	max_bronze	region_max_medal
1896 Summer	UK 2	USA 1	NULL	Germany 2
1900 Summer	France 13	France 5	France 4	France 22
1904 Summer	USA 4	USA 12	USA 8	USA 24
1906 Summer	Denmark 2	Italy 2	France 2	Denmark 5
1908 Summer	UK 13	UK 7	UK 6	UK 26
1912 Summer	Sweden 13	Sweden 13	Sweden 6	Sweden 32
1920 Summer	Italy 9	Norway 9	Sweden 13	Sweden 25
1924 Summer	USA 5	France 7	Sweden 6	France 12
1924 Winter	Switzerland 1	USA 1	France 2	France 2
1928 Summer	USA 7	Netherlands 6	Italy 6	Italy 12
1928 Winter	Norway 2	Sweden 2	Switzerland 3	Switzerland 3
1932 Summer	USA 10	Italy 7	USA 3	USA 16

18. Which countries have never won a gold medal but have won silver/bronze medals?

```
204      -- 18. Which countries have never won a gold medal but have won silver/bronze medals?
205  •   SELECT DISTINCT(Region) FROM athlete_events t1
206      JOIN noc_regions t2
207      ON t1.NOC=t2.NOC
208      WHERE Medal IN ('Silver','Bronze') AND  Medal <> 'Gold' OR 'NA';
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Region
Finland
Norway
Netherlands
Italy
Spain
Azerbaijan
Russia
France
USA
Hungary
Australia
Iran
Canada
Pakistan
Tajikistan
Ethiopia
Switzerland
Germany
Sweden
South Africa
Turkey
Egypt
UK
Japan
Romania
Puerto Rico
Mexico
Ghana
Morocco
Cuba

19. In which Sport/event did India win the highest number of medals?

```sql
210    -- 19. In which Sport/event did India win the highest number of medals?
211    WITH CTE AS (SELECT Sport,Event,COUNT(Medal) AS 'Total_Medal' ,
212    DENSE_RANK() OVER(ORDER BY COUNT(Medal) DESC) AS 'Ranking'
213    FROM athlete_events t1
214    JOIN noc_regions t2
215    ON t1.NOC=t2.NOC
216    WHERE Team="India" AND Medal <> 'NA'
217    GROUP BY Sport,Event)
218    SELECT * FROM CTE
219    WHERE Ranking=1;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Sport	Event	Total_Medal	Ranking
Hockey	Hockey Men's Hockey	9	1

20. Break down all Olympic games where India won a medal for Hockey and the number of medals in each Olympic game.

```sql
221    -- 20. Break down all Olympic games where India won a medal for Hockey and the number of medals in each Olympic game.
222    WITH CTE AS (SELECT Sport,Games,COUNT(Medal) AS 'Total_Medal' ,
223    DENSE_RANK() OVER(PARTITION BY Games ORDER BY COUNT(Medal) DESC) AS 'Ranking'
224    FROM athlete_events t1
225    JOIN noc_regions t2
226    ON t1.NOC=t2.NOC
227    WHERE Team="India" AND Medal <> 'NA' AND Sport='Hockey'
228    GROUP BY Sport,Games)
229    SELECT * FROM CTE
230    WHERE Ranking=1;
231
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Sport	Games	Total_Medal	Ranking
Hockey	1928 Summer	2	1
Hockey	1932 Summer	2	1
Hockey	1936 Summer	1	1
Hockey	1960 Summer	1	1
Hockey	1964 Summer	1	1
Hockey	1972 Summer	1	1
Hockey	1980 Summer	1	1