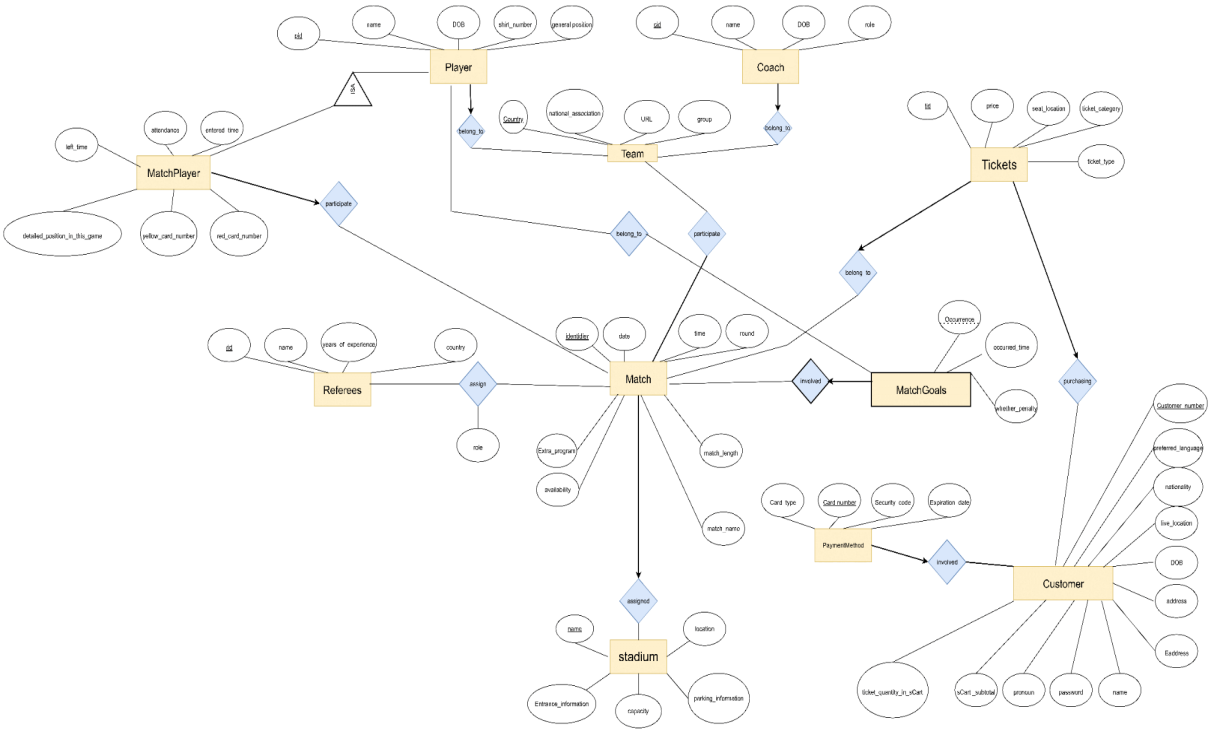
Relational Schema



Pending constraints

1. A match referee group needs 4 common referees and 4 VAR referees. We can't guarantee there are two groups with eight referees.
2. We can't guarantee a maximum number of tickets for each match.
3. It is impossible to guarantee there will be exactly 4 coaches for each team since it is a one to many relation(Every coach belongs to exactly one team but it is possible that one team has more than one coach).
4.We cannot dictate how many tickets a consumer can buy.
5.We cannot specify the upper limit of the players and coaches a team could have.
6.We cannot guarantee there are exactly 11 players playing for each team when the game starts.

5.

a.Write a SQL query that lists all the stadium names and their locations and the match date of matches in which player Christine Sinclair has played and scored at least one goal. You can assume that there is only one player with this particular name (and you can change the actual player name if you have a particular favorite).

```
CS421G216> SELECT s.name, s.location, m.date
           FROM STADIUM s INNER JOIN MATCH m
                                ON s.name = m.stadium
           WHERE m.identidier IN ( SELECT identidier
                                   FROM Player p INNER JOIN MatchGoals
                                   ON p.pid = MatchGoals.who_scored
                                   WHERE p.name = 'Kylian Mbappe' AND MATCHGoals.occurrence >=1)
           AND m.identidier IN ( SELECT ATTENDANCE
                                 FROM Match_Player
                                 WHERE MATCH_PLAYER.ATTENDANCE = true)
[2023-02-26 14:51:16] 2 rows retrieved starting from 1 in 116 ms (execution: 73 ms, fetching: 43 ms)
```

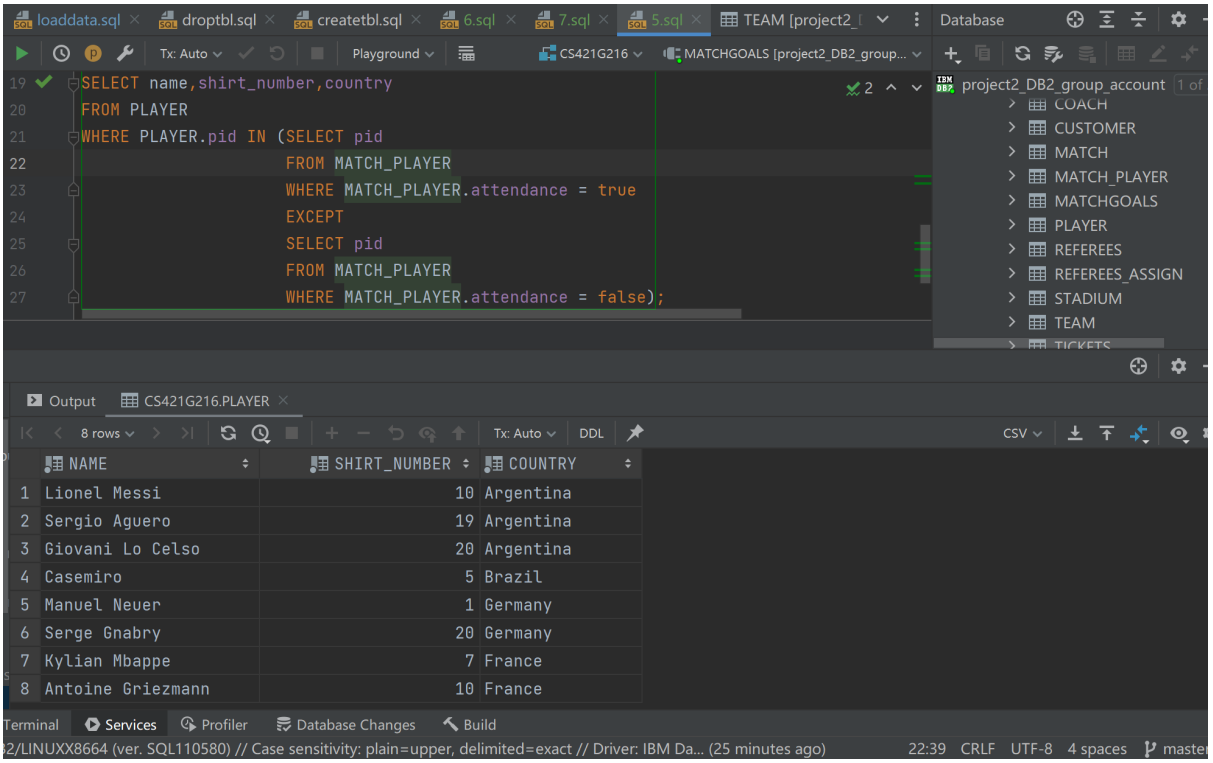
```sql
--a.Write a SQL query that lists all the stadium names and their locations an
--in which player Christine Sinclair has played and scored at least one goal.
-- I will change Christine Sinclair into Kylian Mbappe, whose pid = 9000012
SELECT s.name, s.location, m.date
FROM STADIUM s INNER JOIN MATCH m
                        ON s.name = m.stadium
WHERE m.identidier IN ( SELECT identidier
                        FROM Player p INNER JOIN MatchGoals
                        ON p.pid = MatchGoals.who_scored
                        WHERE p.name = 'Kylian Mbappe' AND MATCHGoals.occurrence >=1)
AND m.identidier IN ( SELECT ATTENDANCE
                      FROM Match_Player
                      WHERE MATCH_PLAYER.ATTENDANCE = true);
```

Output | Result 2 — 2 rows

	NAME	LOCATION	DATE
1	Al-Rayyan Stadium	Al Wakrah, Qatar	2023-06-01
2	Lusail Iconic Stadium	Lusail, Qatar	2023-06-15

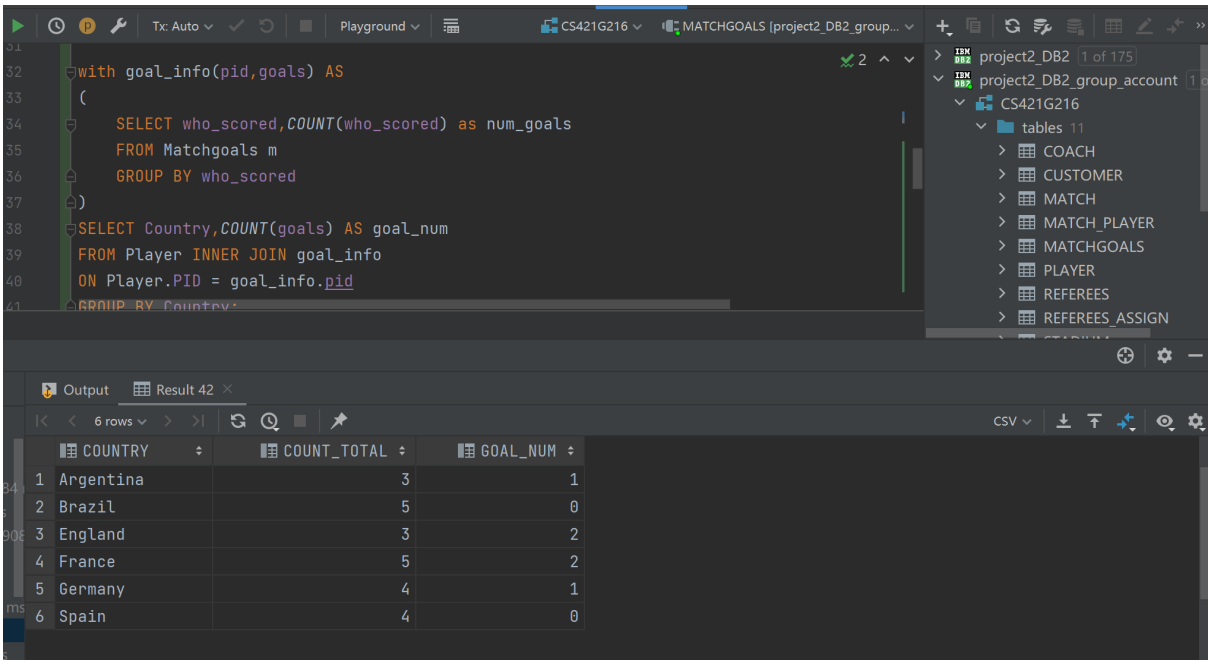
b.Write a SQL query that lists the name, shirt number and country of all players that have played in all matches of their teams.

```sql
CS421G216> SELECT name,shirt_number,country
           FROM PLAYER
           WHERE PLAYER.pid IN (SELECT pid
                                FROM MATCH_PLAYER
                                WHERE MATCH_PLAYER.attendance = true
                                EXCEPT
                                SELECT pid
                                FROM MATCH_PLAYER
                                WHERE MATCH_PLAYER.attendance = false)
[2023-02-26 14:53:48] 8 rows retrieved starting from 1 in 70 ms (execution: 21 ms, fetching: 49 ms)
```



c.Write a SQL query that lists for each team, the country, the number of matches they have played and the total number of goals they have scored during normal play.

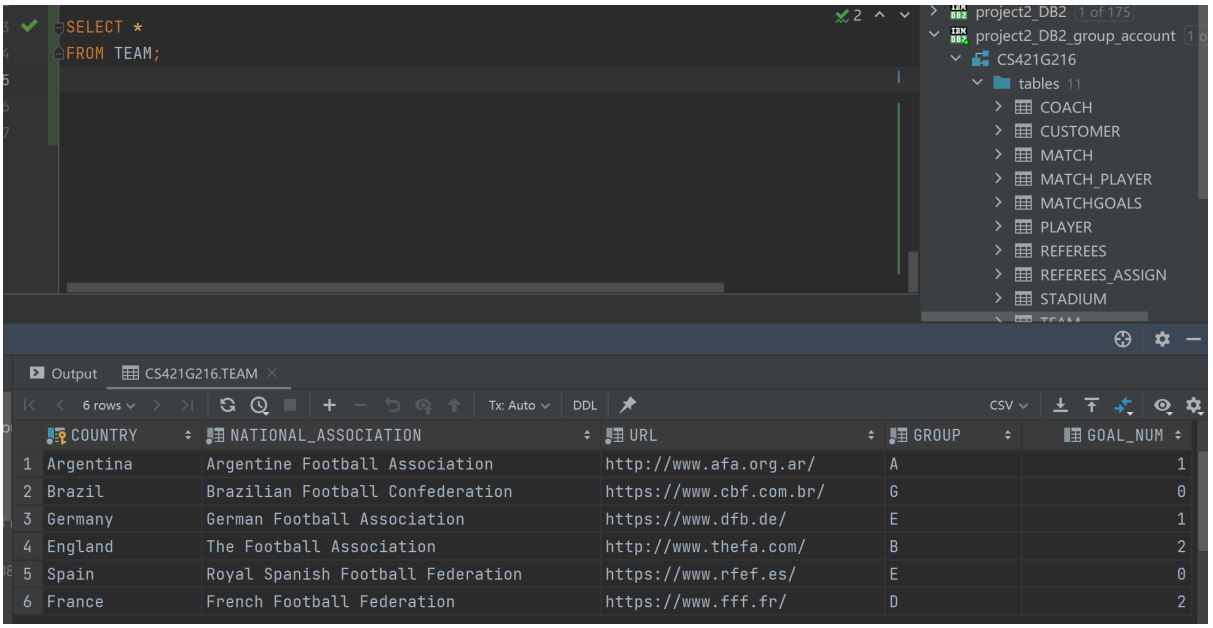
the result:



and the code has been executed successfully

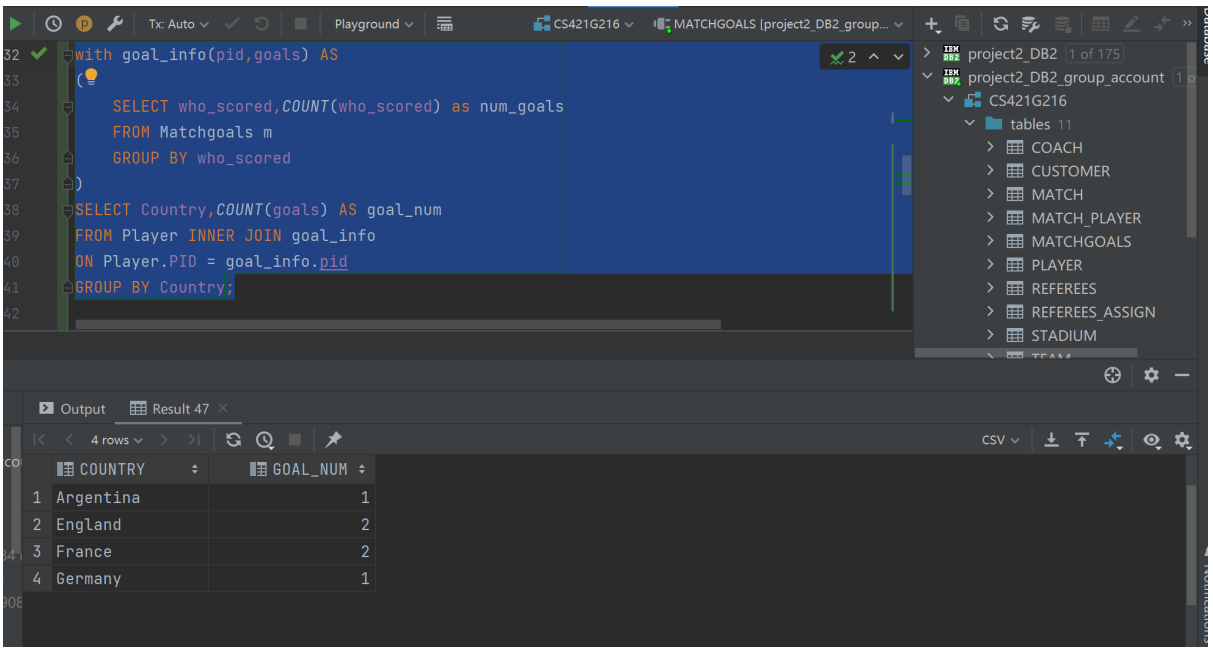
```
CS421G216> with total_info(country,count_total) AS
                    (SELECT Match.country, SUM(Match.COUNTS) AS COUNT_TOTAL
                     FROM (SELECT Match.h_name AS country, COUNT(*) AS COUNTS
                           FROM Match
                           GROUP BY h_name
                           UNION ALL
                           SELECT Match.v_name AS country, COUNT(*) AS COUNTS
                           FROM Match
                           GROUP BY v_name) Match
                     GROUP BY Match.country)
           SELECT TEAM.country,count_total,goal_num
           FROM total_info INNER JOIN TEAM
           ON TEAM.COUNTRY = total_info.country
[2023-02-26 23:37:45] 6 rows retrieved starting from 1 in 102 ms (execution: 39 ms, fetching: 63 ms)
```

I add a attribute,number of goals , in the table Team



	COUNTRY	NATIONAL_ASSOCIATION	URL	GROUP	GOAL_NUM
1	Argentina	Argentine Football Association	http://www.afa.org.ar/	A	1
2	Brazil	Brazilian Football Confederation	https://www.cbf.com.br/	G	0
3	Germany	German Football Association	https://www.dfb.de/	E	1
4	England	The Football Association	http://www.thefa.com/	B	2
5	Spain	Royal Spanish Football Federation	https://www.rfef.es/	E	0
6	France	French Football Federation	https://www.fff.fr/	D	2

by using the query



d.Create an interesting SQL query that extracts some information from tables that refers to purchasing tickets, e.g., some summary information about tickets sold for a particular match, information how many tickets were sold for a match / each match and whether the stadium was sold out, or anything else that might be interesting. The query should not only be a simple query on a single table with only basic selections and projections.

```
select MATCH.IDENTIDIER,MATCH_NAME,PRICE * AVAILABILITY as Profit,TICKET_TYPE
        from TICKETS join MATCH
        on MATCH.IDENTIDIER = TICKETS.IDENTIDIER
order by Profit;
```

Output | Result 25

6 rows

	IDENTIDIER	MATCH_NAME	PROFIT	TICKET_TYPE
1	10001	France vs Argentina	475000	Child
2	10002	England vs Brazil	600000	Child
3	10001	France vs Argentina	602500	Adult
4	10001	France vs Argentina	1000000	VIP
5	10002	England vs Brazil	1125000	Adult
6	10002	England vs Brazil	1875000	VIP

```
CS4216216> select MATCH.IDENTIDIER,MATCH_NAME,PRICE * AVAILABILITY as Profit,TICKET_TYPE
                from TICKETS join MATCH
                on MATCH.IDENTIDIER = TICKETS.IDENTIDIER
           order by Profit
[2023-02-27 00:04:59] 6 rows retrieved starting from 1 in 42 ms (execution: 15 ms, fetching: 27 ms)
```

As shown above, we can know the profits for each type of ticket(child,adult,vip) for each game.

e. Create a further SQL query that is of interest for this soccer world cup database. Maybe it uses some tables that are not used in any of the other queries, or performs some conditions on the date/time attributes of the schema or any other attributes that have not been used in one of the other queries.

```
select NAME
from PLAYER join MATCHGOALS M
    on PLAYER.PID = M.WHO_SCORED
where DOB < '1990-01-01';
```

Output | CS421G216.PLAYER

2 rows

	NAME
1	Lionel Messi
2	Thomas Muller

```
CS421G216> select NAME
           from PLAYER join MATCHGOALS M
               on PLAYER.PID = M.WHO_SCORED
           where DOB < '1990-01-01'
[2023-02-27 00:03:46] 2 rows retrieved starting from 1 in 40 ms (execution: 15 ms, fetching: 25 ms)
```

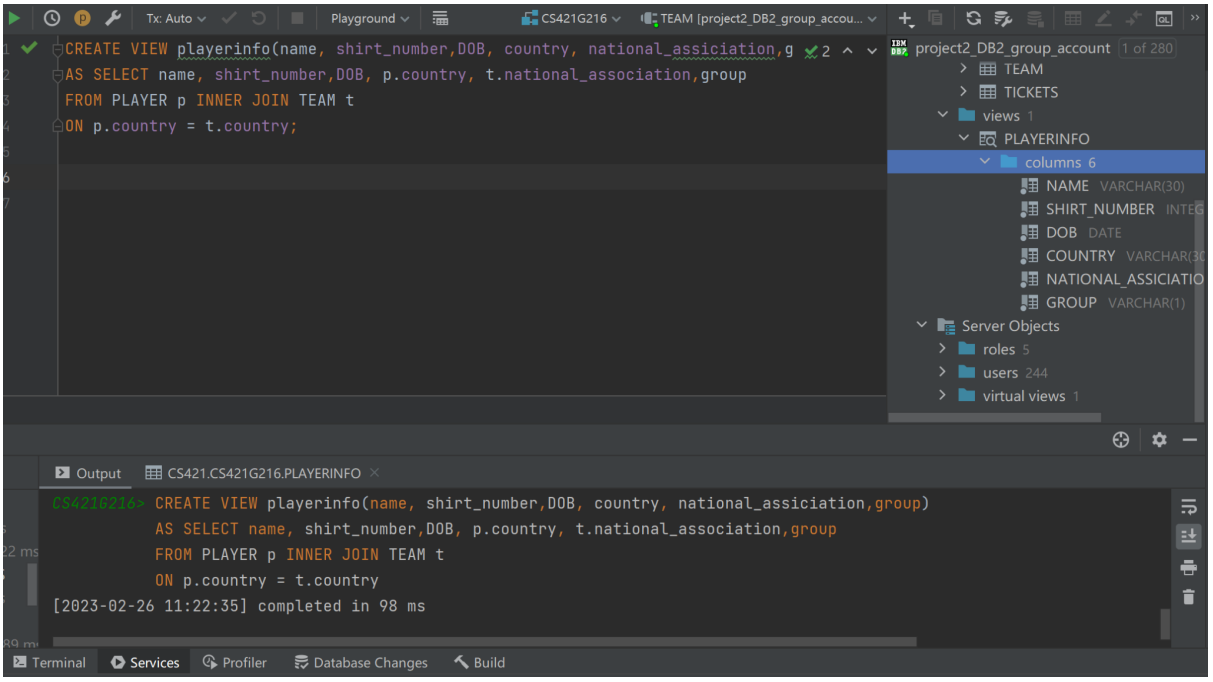
Which “old” player still carries the team? By comparing their ages and whether they have scored we can get such players.

6.

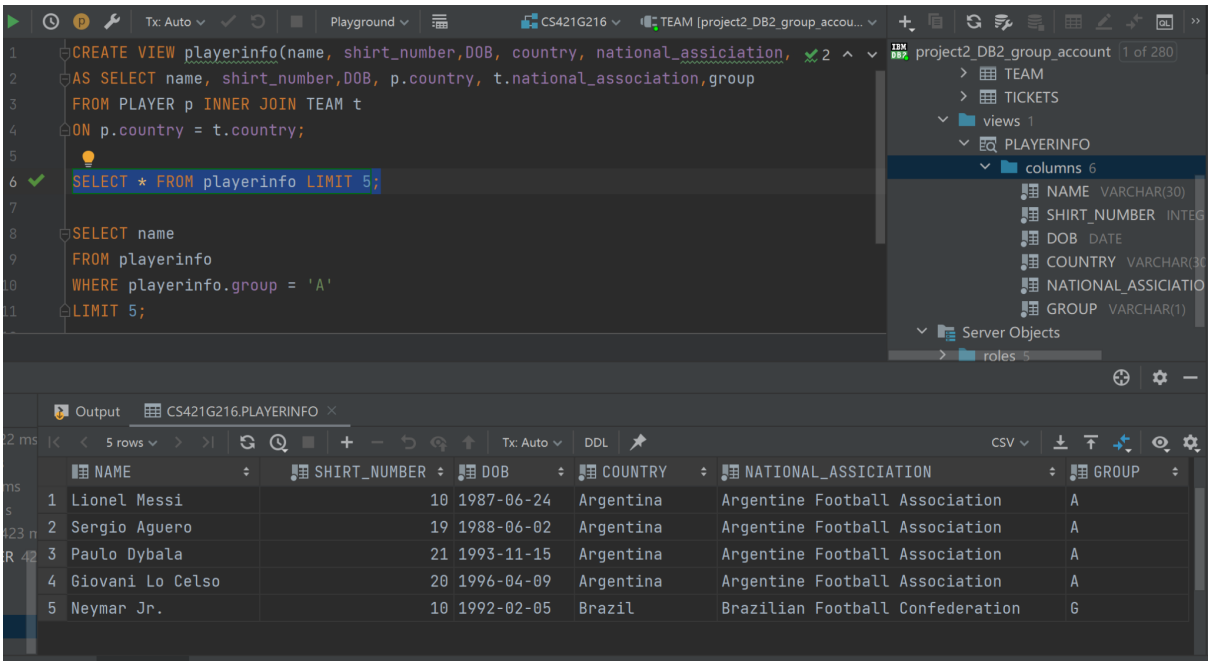
a.Include the view definition SQL query (as plain text).

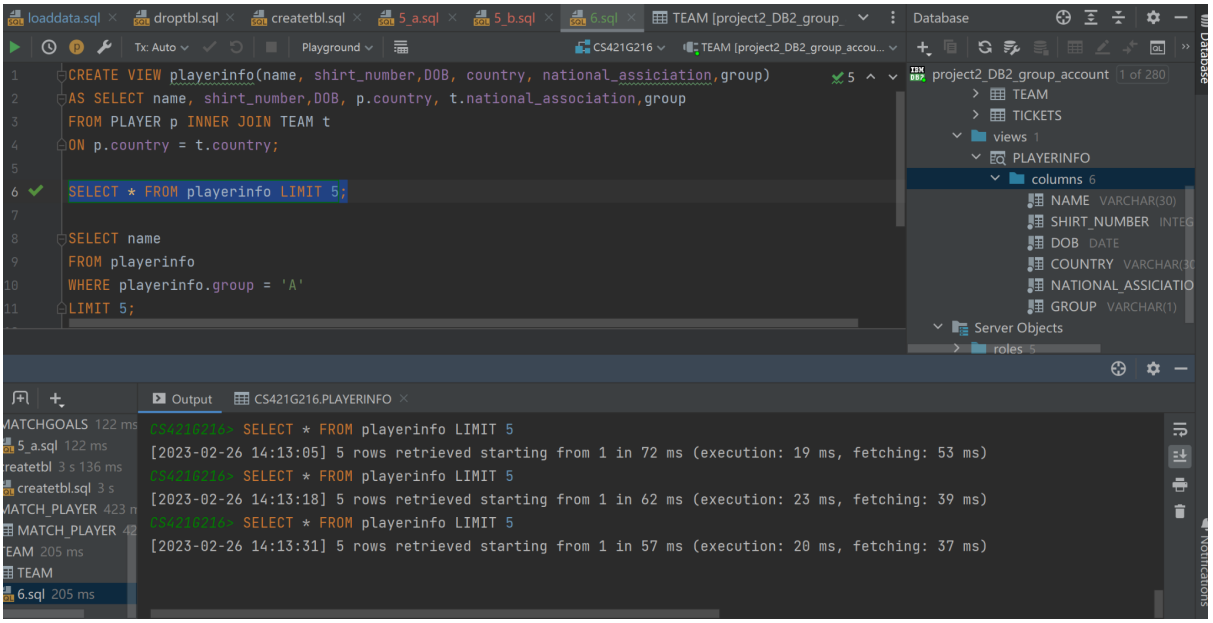
A SQL view is a virtual table that is created from the output of a SQL statement and is similar to a real table in terms of the number of rows and columns it contains. The fields contained in a view correspond to fields in one or more actual tables in the database.

b.Screenshot of the view creation being a success.

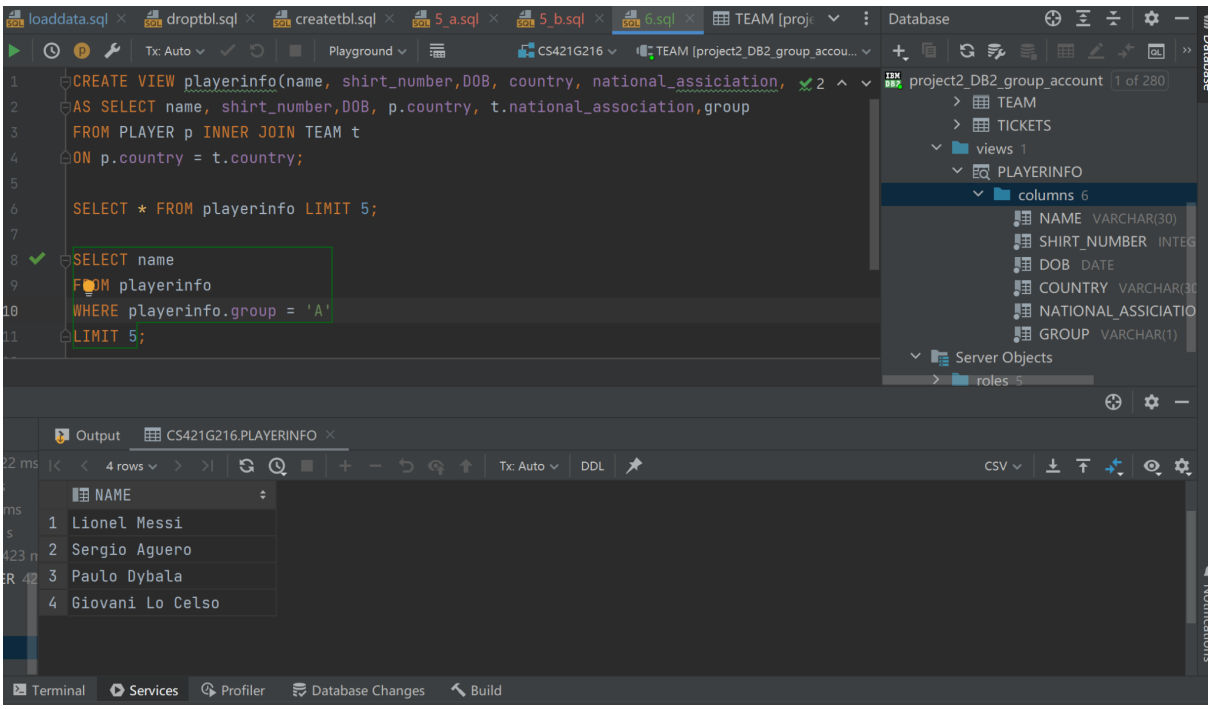


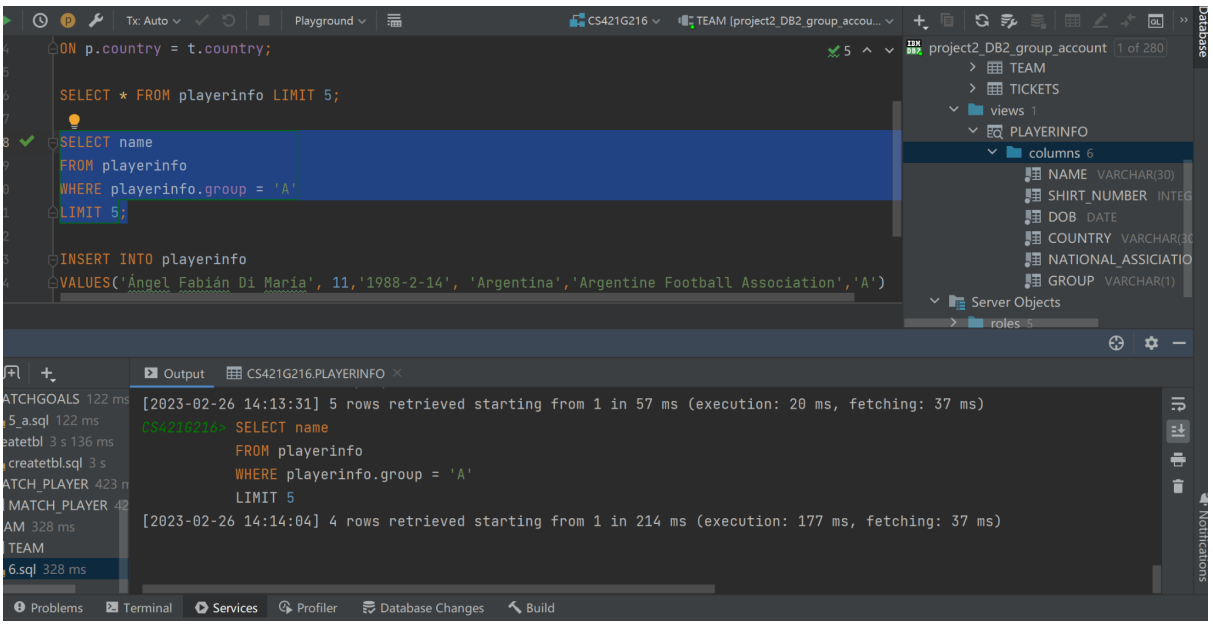
c.Screenshot of a SQL query that selects everything from the view, truncated to just 5 records.



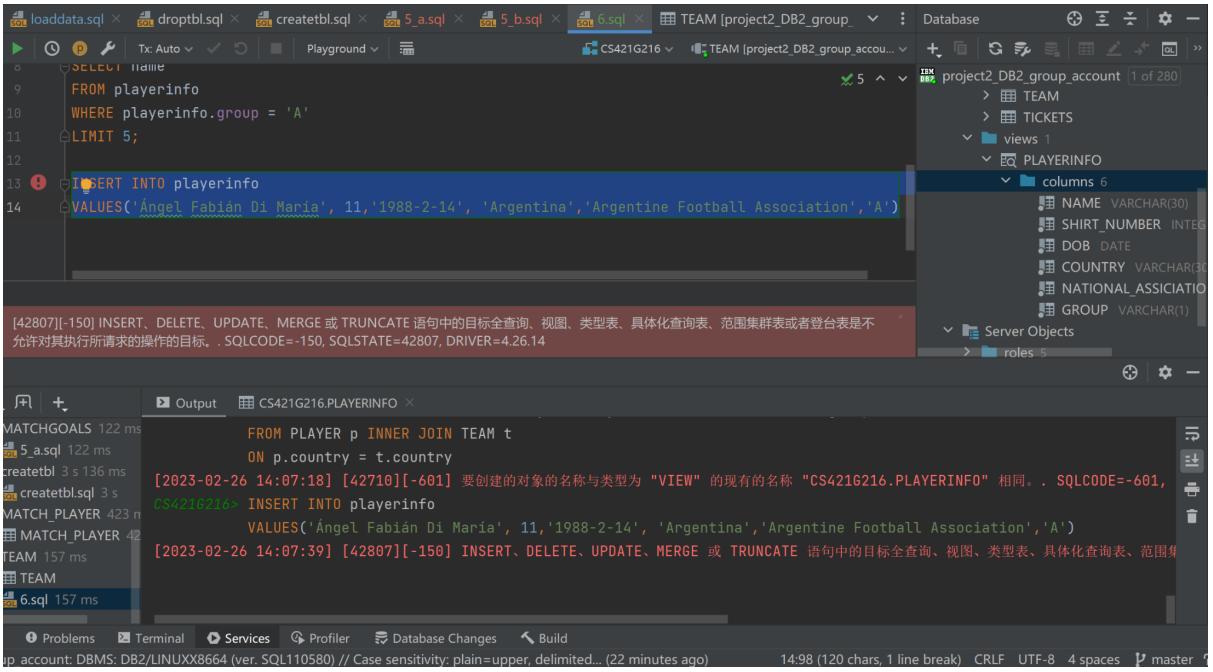


d.Screenshot of a SQL query on the view that limits the previous output to only the players that belong to teams that belong to group ”Group A”. Truncate the output to just 5 records.





e.Now try inserting a record into the view (name, shirt number, DOB, country, etc., i.e., the attributes that are mentioned in the view's output) that has valid domain values for these attributes (e.g. a new name, but an existing group). Observe what happens. Take a screenshot and turn in that along with the explanation of why this happened.



The inserting value is not allowed.We cannot insert into view since view is not creating a table, it is an unmaterialized relation.

7.Check Constraints

```sql
ALTER TABLE Match
ADD CONSTRAINT data_constraint CHECK ( date <= '2023-6-30');

INSERT INTO Match (identidier, date, time, round, extra_program, availability, match_length, match_name, stadium)
VALUES
    (10017, '2023-07-01', '16:00:00', 'Group Round 1', NULL, 5000, 90, 'France vs Argentina', 'Al-Rayyan Stadium')
```

[23513][-545] 因为行不满足检查约束 "CS421G216.MATCH.DATA_CONSTRAINT"，所以不允许所请求的操作。. SQLCODE=-545, SQLSTATE=23513, DRIVER=4.26.14

```
            DROP CONSTRAINT data_constraint
[2023-02-26 14:30:28] completed in 114 ms
CS421G216> ALTER TABLE Match
            ADD CONSTRAINT data_constraint CHECK ( date <= '2023-6-30')
[2023-02-26 14:32:53] completed in 75 ms
CS421G216> INSERT INTO Match (identidier, date, time, round, extra_program, availability, match_length, match_name, stad
            VALUES
                (10017, '2023-07-01', '16:00:00', 'Group Round 1', NULL, 5000, 90, 'France vs Argentina', 'Al-Rayyan Stac
[2023-02-26 14:33:02] [23513][-545] 因为行不满足检查约束 "CS421G216.MATCH.DATA_CONSTRAINT"，所以不允许所请求的操作。. SQLCODE=-5
```

I constraint that the match data should be earlier than 2023-06-30.
I insert a record where the match data is 2023-07-01, which is later than 2023-06-30. So it is not allowed.