

Database Systems & Information Modelling

COMP90002

Assignment 2

Student Name : Sakshi Chandel

Login username : schandel@student.unimelb.edu.au (SCHANDEL)

Student ID: 1124298

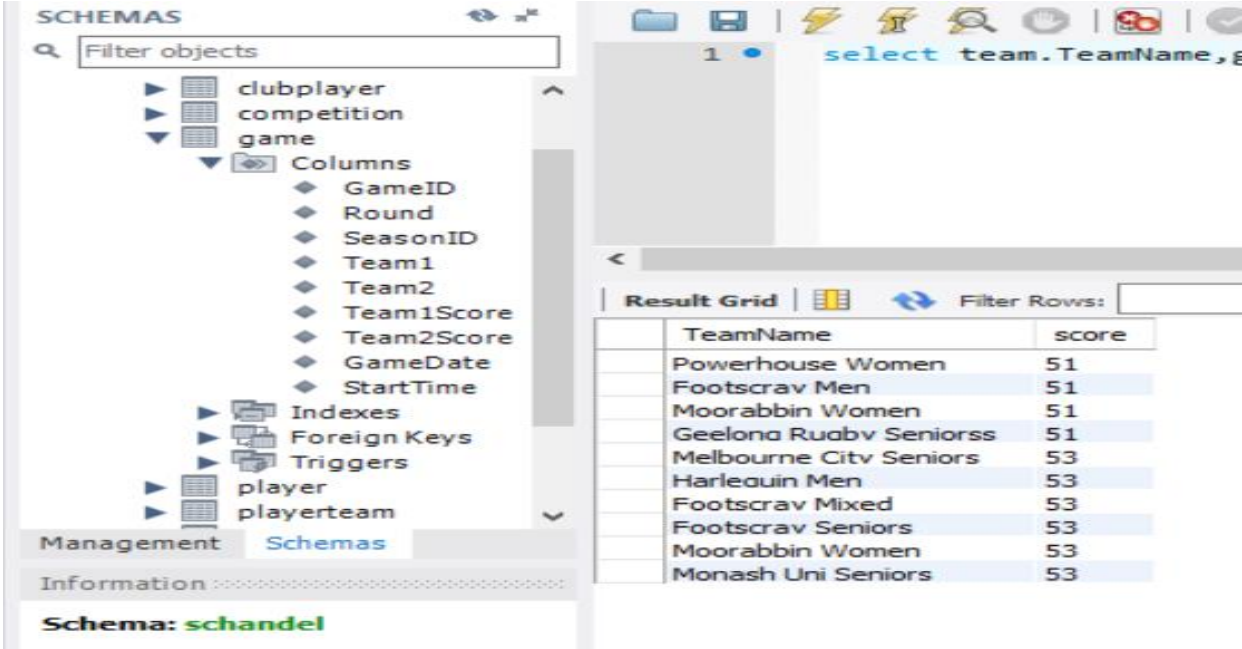
Question 1.1:

Relational Algebra :

$$(\pi_{team.TeamName, game.Team1Score \rightarrow score} (game \bowtie (game.Team1Score > 50 \wedge game.Team1 = team.TeamID) team)) \cup$$
$$(\pi_{team.TeamName, game.Team2Score \rightarrow score} (game \bowtie (game.Team2Score > 50 \wedge game.Team2 = team.TeamID) team))$$

Query :

```
SELECT team.TeamName, game.Team1Score as score
FROM game INNER JOIN team
ON team.TeamID=game.Team1 and game.Team1Score>50
UNION
SELECT team.TeamName, game.Team2Score as score
FROM game INNER JOIN team
ON team.TeamID=game.Team2 and game.Team2Score>50;
```



The screenshot displays a database management interface. On the left, the 'SCHEMAS' pane shows the 'game' table with columns: GameID, Round, SeasonID, Team1, Team2, Team1Score, Team2Score, GameDate, StartTime, Indexes, Foreign Keys, Triggers, player, and playerteam. The 'Management' tab is selected, and the 'Schema: schandel' is shown. On the right, the 'Result Grid' shows the output of the query, displaying 10 rows of team names and their scores.

TeamName	score
Powerhouse Women	51
Footscrav Men	51
Moorabbin Women	51
Geelong Rugby Seniorss	51
Melbourne City Seniors	53
Harlequin Men	53
Footscrav Mixed	53
Footscrav Seniors	53
Moorabbin Women	53
Monash Uni Seniors	53

10 rows returned

Question 1.2):

Relational Algebra :

```

$$\pi \text{ club.ClubName}(\text{clubplayer} \bowtie (\text{clubplayer.PlayerID}=\text{player.PlayerID} \wedge \text{player.FirstName}=\text{'Robert'} \wedge \text{player.LastName}=\text{'Menzies'}) \\ \text{player} \bowtie \text{club})$$

```

Query :

```
SELECT club.ClubName
```

```
FROM clubplayer
```

```
INNER JOIN player on clubplayer.PlayerID=player.PlayerID and  
player.FirstName='Robert' and player.LastName='Menzies'
```

```
NATURAL JOIN club
```

The screenshot shows a database query tool interface. On the left is a 'Navigator' pane with a tree view of schemas. The 'clubplayer' schema is expanded, showing columns: GameID, Round, SeasonID, Team1, Team2, Team1Score, Team2Score, GameDate, and StartTime. Below these are 'Indexes', 'Foreign Keys', and 'Triggers'. The 'player' and 'playerteam' schemas are also visible. The main query editor shows a query named 'Query 1' with the following SQL:

```
select club.ClubName from club where club.ClubID In
```

 The 'Result Grid' pane at the bottom shows a single row with the value 'Powerhouse Rudbv' under the column 'ClubName'. The 'Schema: schandel' is displayed at the bottom left.

ClubName
Powerhouse Rudbv

1 row returned

Question 2.1:

Query 2.1:

```
SELECT SUBSTR(player.LastName,1,1) as  
LastNameWithAlphabet, COUNT(player.LastName) as  
NumberOfPlayerNames
```

```
FROM player
```

```
WHERE
```

```
SUBSTR(player.LastName,1,1)=SUBSTR(player.LastName,1,1)
```

```
GROUP BY LastNameWithAlphabet
```

```
ORDER BY LastNameWithAlphabet ASC;
```

The screenshot shows a database management tool interface. On the left, the 'Navigator' pane displays the 'schandel' database schema, including tables like 'clubplayer', 'competition', 'game', 'player', 'playerteam', and 'season'. The 'clubplayer' table is selected, showing its columns: ClubID, PlayerID, FromDate, and ToDate. The 'Schemas' tab is active. The main query editor shows the following SQL query:

```
1 SELECT SUBSTR(player.LastName,1,1) as LastNameWithAlphabet, COUNT(player.LastName) as NumberOfPlayerNames
2 FROM player
3 WHERE SUBSTR(player.LastName,1,1)=SUBSTR(player.LastName,1,1)
4 GROUP BY LastNameWithAlphabet
5 ORDER BY LastNameWithAlphabet ASC;
6
```

The 'Result Grid' pane displays the query results, showing 26 rows of data. The columns are 'LastNameWithAlphabet' and 'NumberOfPlayerNames'.

LastNameWithAlphabet	NumberOfPlayerNames
A	9
B	26
C	14
D	22
E	6
F	16
G	10
H	17
I	1
J	3
K	5
L	7
M	17
N	1
O	3
P	12
R	6
S	15
T	6
U	1
W	10
Y	3
Z	1

26 rows returned

Question2.2

Query 2.2:

```
SELECT concat(player.FirstName, ' ',player.LastName) as  
Name,club.ClubName
```

```
FROM player NATURAL JOIN clubplayer NATURAL JOIN club
```

```
WHERE player.PlayerID
```

```
NOT IN
```

```
(SELECT DISTINCT(playerteam.PlayerID)
```

```
FROM playerteam NATURAL JOIN game)
```

The screenshot shows a database management tool interface. On the left, the 'SCHEMAS' pane displays a tree view of the 'schandel' database, including tables like Bonus, club, clubplayer, competition, game, player, playerteam, season, team, and Title. The 'player' table is expanded, showing its columns, indexes, foreign keys, and triggers. The main query editor on the right contains the following SQL query:

```
1 SELECT concat(player.FirstName, ' ',player.LastName) as  
2 FROM player natural join cl  
3 NOT IN  
4 (SELECT DISTINCT(playerteam  
5 FROM playerteam natural joi  
6  
7
```

Below the query editor, the 'Result Grid' tab is active, showing a single row of results:

Name	ClubName
Michael Gillard	Harlequin Ruabv Club

1 row returned

Question 2.3

Query 2.3:

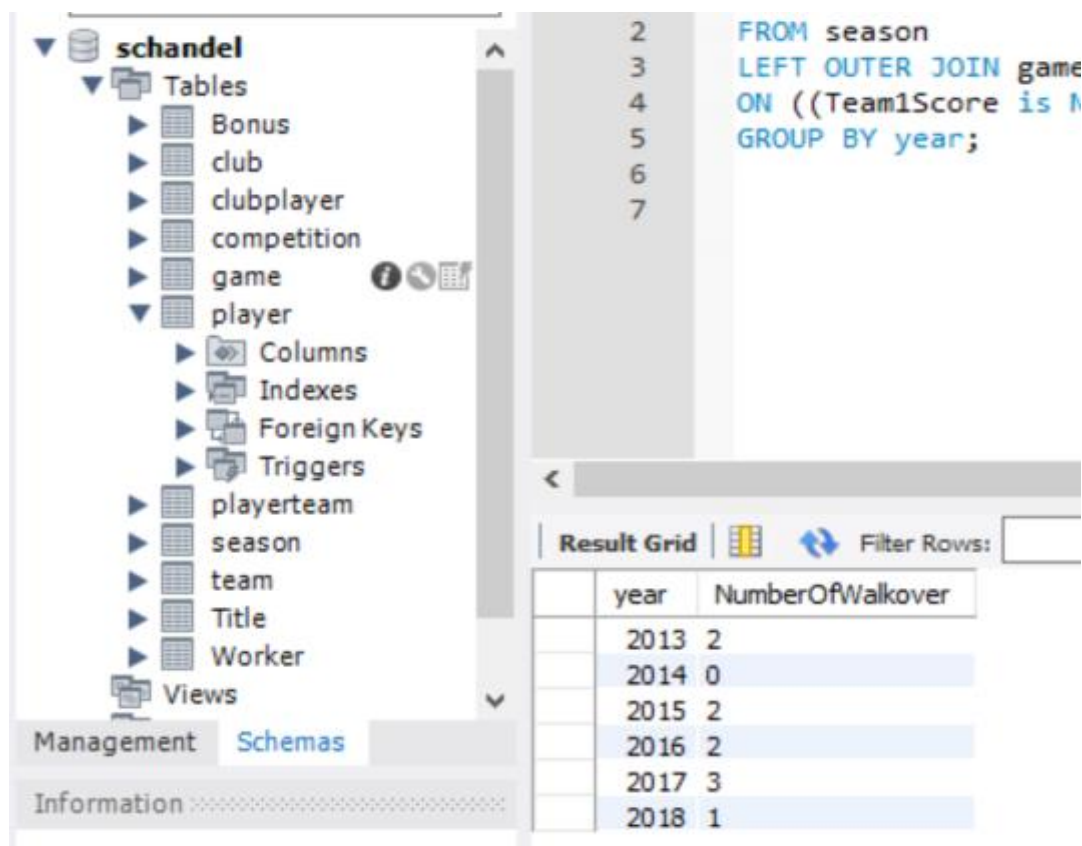
```
SELECT  season.SeasonYear as
year,count(distinct(game.GameID)) as NumberOfWalkover

FROM season

LEFT OUTER JOIN game

ON ((Team1Score is NULL and game.Team2Score=28) or
(Team2Score is NULL and game.Team1Score=28)) and
year(game.GameDate)=season.SeasonYear

GROUP BY year;
```



The screenshot shows a database management interface. On the left, a tree view displays the database structure for 'schandel', including tables like Bonus, club, clubplayer, competition, game, player, playerteam, season, team, Title, and Worker, as well as Views. The 'game' table is selected. On the right, a query window shows the SQL query. Below the query, a 'Result Grid' tab is active, displaying the results of the query. The results are as follows:

year	NumberOfWalkover
2013	2
2014	0
2015	2
2016	2
2017	3
2018	1

6 rows returned

Question 2.4:

Query 2.4 :

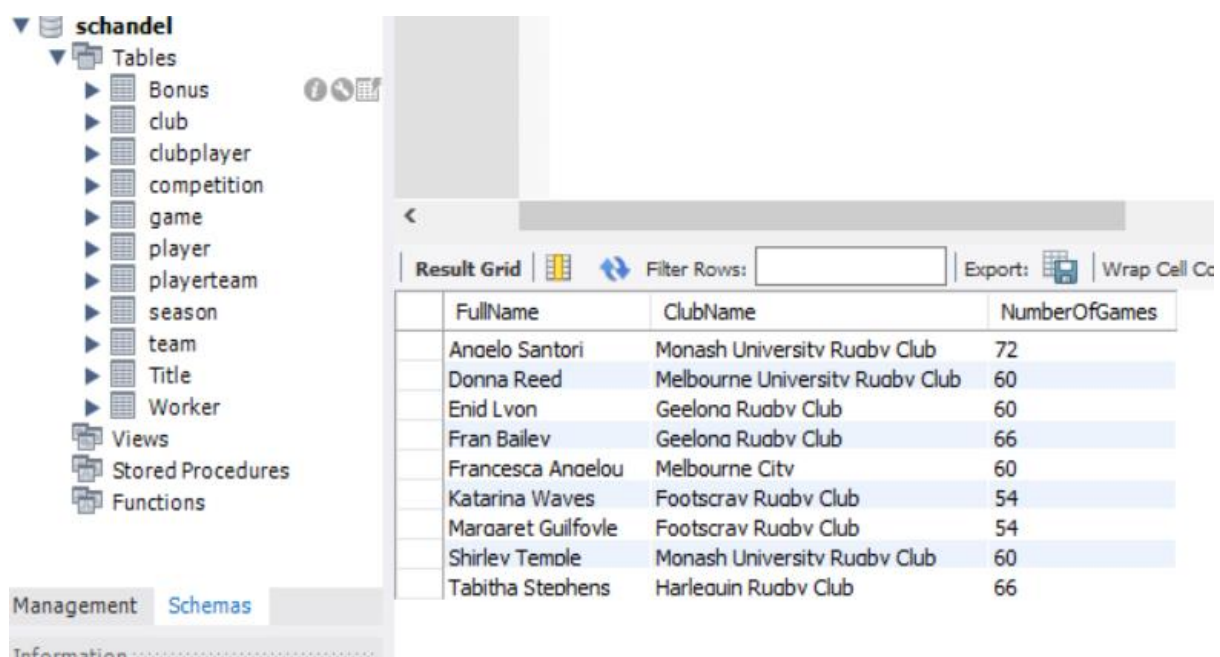
```
SELECT concat(player.FirstName, ' ',player.LastName) as  
FullName,club.ClubName,count(playerteam.GameID) as  
NumberOfGames
```

```
FROM playerteam natural join team natural join club  
natural join player
```

```
GROUP BY FullName,club.ClubName
```

```
HAVING count(playerteam.GameID)>50
```

```
ORDER BY FullName ASC ;
```



The screenshot shows a database management interface. On the left, a tree view displays the database structure under the name 'schandel'. The 'Tables' folder is expanded, showing a list of tables: Bonus, club, clubplayer, competition, game, player, playerteam, season, team, Title, and Worker. Below the tables, there are sections for Views, Stored Procedures, and Functions. At the bottom, there are tabs for 'Management', 'Schemas', and 'Information'. The main area on the right displays a 'Result Grid' with the following data:

FullName	ClubName	NumberOfGames
Anelo Santori	Monash University Ruabv Club	72
Donna Reed	Melbourne University Ruabv Club	60
Enid Lvon	Geelong Ruabv Club	60
Fran Bailey	Geelong Ruabv Club	66
Francesca Anelou	Melbourne City	60
Katarina Waves	Footscray Ruabv Club	54
Margaret Guilfoyle	Footscray Ruabv Club	54
Shirley Temple	Monash University Ruabv Club	60
Tabitha Stephens	Harlequin Ruabv Club	66

9 rows returned

Question 2.5:

Query 2.5:

```
SELECT concat(player.FirstName, '', player.LastName) as
PlayerName, club.ClubName, monthname(clubplayer.FromDate) as
startMonth, year(clubplayer.FromDate) as
startYear, monthname(clubplayer.ToDate) as
endMonth, year(clubplayer.ToDate) as endYear

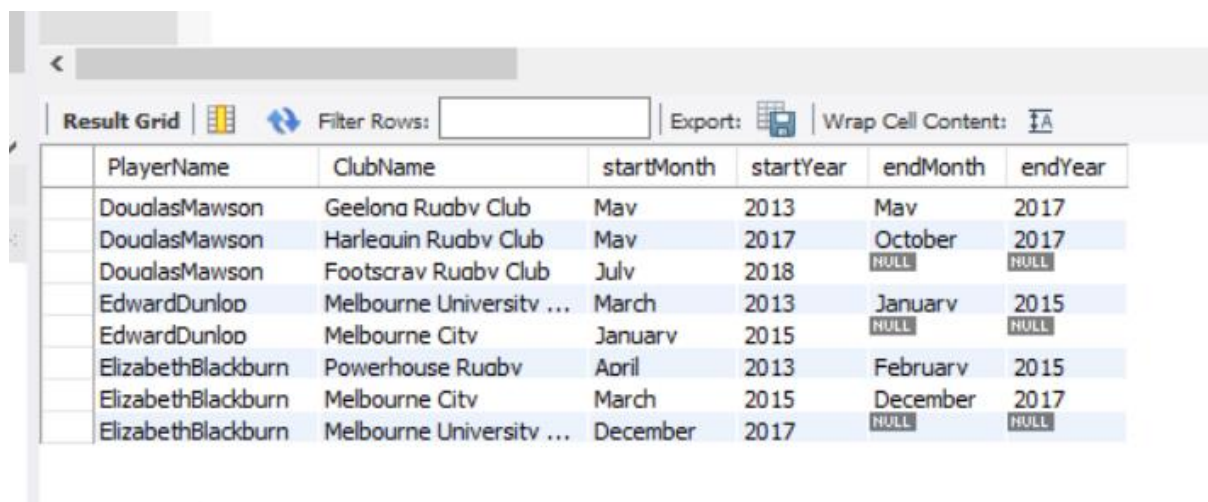
FROM clubplayer natural join club natural join player

WHERE clubplayer.PlayerID

IN ( select PlayerID FROM clubplayer GROUP BY PlayerID

HAVING count(*) >=2 ORDER BY PlayerID ASC )

ORDER BY PlayerName ASC, clubplayer.FromDate ASC;
```



The screenshot shows a database query result grid with 8 rows. The columns are PlayerName, ClubName, startMonth, startYear, endMonth, and endYear. The data is as follows:

	PlayerName	ClubName	startMonth	startYear	endMonth	endYear
	DouglasMawson	Geelong Ruabv Club	May	2013	May	2017
	DouglasMawson	Harlequin Ruabv Club	May	2017	October	2017
	DouglasMawson	Footscray Ruabv Club	July	2018	NULL	NULL
	EdwardDunlop	Melbourne University ...	March	2013	January	2015
	EdwardDunlop	Melbourne City	January	2015	NULL	NULL
	ElizabethBlackburn	Powerhouse Ruabv	April	2013	February	2015
	ElizabethBlackburn	Melbourne City	March	2015	December	2017
	ElizabethBlackburn	Melbourne University ...	December	2017	NULL	NULL

8 rows returned

Question 2.6:

Query: 2.6

```
SELECT team.TeamName ,game.GameDate,count(playerteam.PlayerID) as  
FemalesFielded
```

```
FROM team natural join playerteam natural join game inner join  
player on playerteam.PlayerID=player.PlayerID and player.Sex LIKE  
'F%'
```

```
WHERE team.TeamType='Mixed'
```

```
GROUP BY team.TeamName,game.GameDate
```

```
HAVING count(*)>4
```

```
ORDER BY game.GameDate DESC;
```

The screenshot shows a database management interface. On the left is a 'Navigator' pane with a tree view of the 'schandel' database schema, including tables like Bonus, club, clubplayer, competition, game, player, playerteam, season, team, Title, and Worker. The 'game' table is selected. The main pane displays 'Query 1' with the following SQL code:

```
1 SELECT team.TeamName ,game.GameDate,  
2  
3 FROM team natural join playerteam na  
4  
5 WHERE team.TeamType='Mixed'  
6  
7 GROUP BY team.TeamName,game.GameDate  
8  
9 HAVING count(*)>4  
10  
11 ORDER BY game.GameDate DESC;  
12
```

Below the query editor is a 'Result Grid' showing the results of the query. It has columns for TeamName, GameDate, and FemalesFielded. Two rows are displayed:

TeamName	GameDate	FemalesFielded
Melbourne Uni Mixed	2018-10-14	5
Melbourne Uni Mixed	2018-10-07	5

2 rows returned

Question 2.7

Query 2.7:

```
SELECT distinct(concat(player.FirstName, ' ',player.LastName)) as  
FullName ,club.ClubName
```

```
FROM playerteam NATURAL JOIN team NATURAL JOIN player NATURAL JOIN  
club
```

```
WHERE team.TeamType='Seniors' and  
playerteam.PlayerID=player.PlayerID and player.Sex='M' and  
playerteam.PlayerID
```

```
IN (SELECT distinct(playerteam.PlayerID) FROM playerteam NATURAL  
JOIN team NATURAL JOIN player WHERE team.TeamType='Mixed' and  
player.Sex='M') and playerteam.PlayerID
```

```
IN (SELECT distinct(playerteam.PlayerID) FROM playerteam NATURAL  
JOIN team NATURAL JOIN player WHERE team.TeamType='Mens' and  
player.Sex='M');
```

The screenshot shows a database query editor interface. On the left, a tree view displays the database structure for 'schandel', including tables like Bonus, club, clubplayer, competition, game, player, playerteam, season, team, Title, and Worker. The main area shows a SQL query with line numbers 2 through 9. The query is a complex SELECT statement with multiple JOINs and filters. Below the query, there is a 'Result Grid' tab and a 'Filter Rows' input field. The result grid displays one row of data with columns 'FullName' and 'ClubName'.

FullName	ClubName
Edward Dunlop	Melbourne City

1 row returned

Question 2.8:

Query 2.8:

```
SELECT player.PlayerID, concat(player.FirstName, ' ',player.LastName)  
as FullName
```

```
FROM player where player.PlayerID In (select  
distinct(playerteam.PlayerID) from playerteam INNER JOIN game  
ON playerteam.GameID=game.GameID  
and year(game.GameDate)=2016) and player.PlayerID
```

```
IN (select distinct(playerteam.PlayerID) FROM playerteam INNER JOIN  
game ON playerteam.GameID=game.GameID and year(game.GameDate)=2018)  
And player.PlayerID
```

```
NOT IN (select distinct(playerteam.PlayerID) from playerteam INNER  
JOIN game ON playerteam.GameID=game.GameID and  
year(game.GameDate)=2017);
```

The screenshot shows a SQL IDE interface. On the left, the 'Navigator' pane displays a schema named 'schandel'. The main editor area shows a query titled 'Query 1' with the following SQL code:

```
select table5.PlayerID, concat
```

Below the query editor, the 'Result Grid' is visible, showing a single row of results:

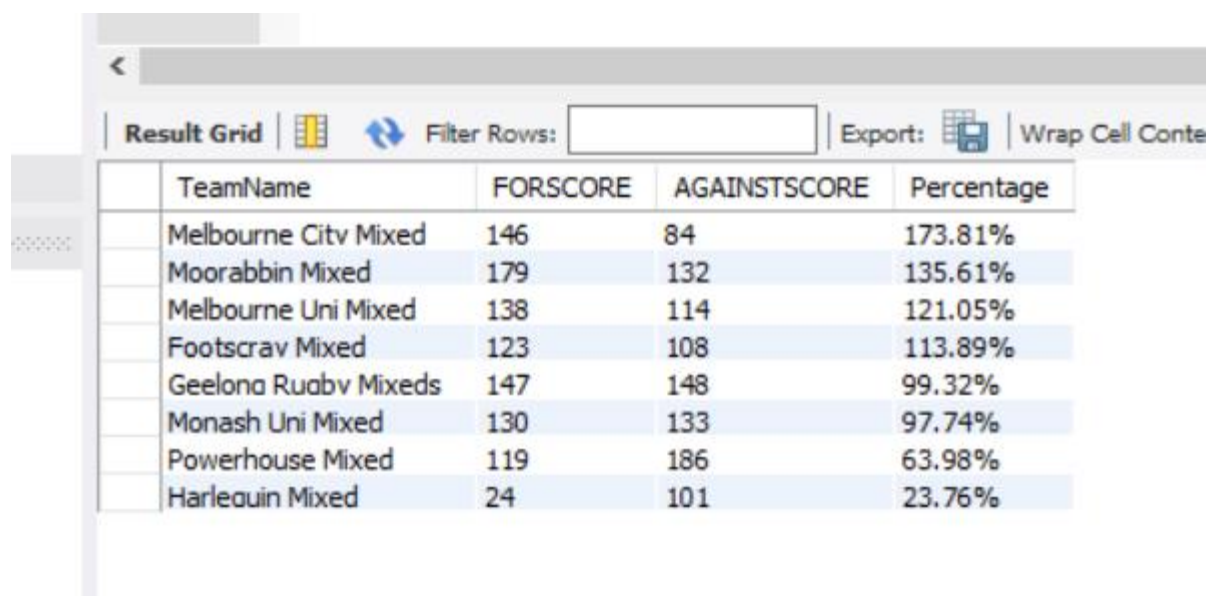
PlayerID	FullName
30025	Diana Rios

1 row returned

Question 2.9 :

Query 2.9:

```
SELECT team.TeamName,  
SUM(CASE  
    When team.TeamID=game.Team1 Then game.Team1Score  
    Else game.Team2Score  
    END) as FORSCORE,  
SUM(CASE  
    WHEN team.TeamID=game.Team1 Then game.Team2Score  
    Else game.Team1Score  
    END) as AGAINSTSCORE,concat(ROUND((SUM(CASE When  
team.TeamID=game.Team1 Then game.Team1Score Else game.Team2Score  
END)*100.0/SUM(CASE When team.TeamID=game.Team1 Then game.Team2Score  
Else game.Team1Score END)) ,2),'%') as Percentage  
  
FROM team INNER JOIN game  
  
ON (team.TeamID=game.Team1 or team.TeamID=game.Team2) and  
team.TeamType='Mixed' and year(game.GameDate)=2017  
GROUP BY team.TeamID  
  
ORDER BY ROUND((SUM(CASE When team.TeamID=game.Team1 Then  
game.Team1Score Else game.Team2Score  END)*100.0/SUM(CASE When  
team.TeamID=game.Team1 Then game.Team2Score Else game.Team1Score  
END)) ,2) DESC;
```



The screenshot shows a database query result grid with the following columns: TeamName, FORSCORE, AGAINSTSCORE, and Percentage. The results are ordered by Percentage in descending order. The data is as follows:

TeamName	FORSCORE	AGAINSTSCORE	Percentage
Melbourne Citv Mixed	146	84	173.81%
Moorabbin Mixed	179	132	135.61%
Melbourne Uni Mixed	138	114	121.05%
Footscrav Mixed	123	108	113.89%
Geelong Ruabv Mixeds	147	148	99.32%
Monash Uni Mixed	130	133	97.74%
Powerhouse Mixed	119	186	63.98%
Harlequin Mixed	24	101	23.76%

8 rows returned

