

# INFO90002 Assignment 2 S2 2020

## SQL & Relational Algebra

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### 1. The Relational Algebra Tasks

**Q1.1.** List the team names and points of any team to have scored more than 50 points in any game in any season.

$\rho_{\text{Team1Score} \rightarrow \text{Points}}(\pi_{\text{TeamName}, \text{Team1Score}}(\sigma_{\text{Team1Score} > 50}(\text{game} \bowtie_{\text{Team1}=\text{TeamID}} \text{team})))$

U

$\rho_{\text{Team2Score} \rightarrow \text{Points}}(\pi_{\text{TeamName}, \text{Team2Score}}(\sigma_{\text{Team2Score} > 50}(\text{game} \bowtie_{\text{Team2}=\text{TeamID}} \text{team})))$

```
SELECT TeamName, Team1Score AS Points
FROM game
INNER JOIN team ON Team1 = TeamID
WHERE Team1Score > 50

UNION ALL

SELECT TeamName, Team2Score AS Points
FROM game
INNER JOIN team ON Team2 = TeamID
WHERE Team2Score > 50;
```

**Q1.2.** List the club name that Robert Menzies plays for.

$\pi_{\text{ClubName}}(\sigma_{\text{FirstName} = \text{'Robert'} \wedge \text{LastName} = \text{'Menzies'}}(\text{player} \bowtie \text{clubplayer} \bowtie \text{club}))$

**SELECT** ClubName

**FROM** player **NATURAL JOIN** clubplayer **NATURAL JOIN** club

**WHERE** FirstName = 'Robert' **AND** LastName = 'Menzies';

## 2. The SQL Tasks

**Q2.1.** For each letter of the alphabet, print how many player's last name begins with that letter. (You can skip letters with a count of zero.)

```
SELECT LEFT(LastName, 1) AS BeginningLetter,  
       COUNT(LEFT(LastName, 1)) AS CountNum  
FROM player  
  
GROUP BY BeginningLetter  
  
ORDER BY BeginningLetter;
```

	BeginningLetter	CountNum
▶	A	9
	B	26
	C	14
	D	22
	E	6
	F	16
	G	10
	H	17
	I	1
	J	3

23 Rows returned

**Q2.2.** Name any player, and their club who has never played a game in any season in any competition.

```
SELECT CONCAT(FirstName, ' ', LastName) AS PlayerName, ClubName
FROM player NATURAL JOIN clubplayer NATURAL JOIN club
WHERE PlayerID NOT IN
    (SELECT PlayerID
     FROM playerteam);
```

PlayerName	ClubName
Michael Gillard	Harlequin Rugby Club

1 Row returned

**Q2.3.** Count the number of walkovers in each year. Order your result in chronological order.

```
SELECT YEAR(GameDate) AS SeasonYear,  
  
       SUM(CASE WHEN Team1Score IS NULL OR Team2Score IS NULL THEN 1  
  
              ELSE 0  
  
            END) AS NumOfWalkover  
  
FROM game  
  
GROUP BY SeasonYear  
  
ORDER BY SeasonYear;
```

	SeasonYear	NumOfWalkover
▶	2013	2
	2014	0
	2015	2
	2016	2
	2017	3
	2018	1

6 Rows returned

**Q2.4.** List the full name, game count for all players who have played more than 50 games for the same club.

```
SELECT PlayerID, ClubID,  
  
       CONCAT(FirstName, ' ', LastName) AS FullName,  
  
       COUNT(GameID) AS GameCount,  
  
       ClubName  
  
FROM player NATURAL JOIN playerteam NATURAL JOIN clubplayer NATURAL JOIN  
club  
  
GROUP BY PlayerID, ClubID  
  
HAVING GameCount > 50;
```

	PlayerID	ClubID	FullName	GameCount	ClubName
▶	10018	100	Edward Dunlop	52	Melbourne University Rugby Club
	10025	100	Donna Reed	60	Melbourne University Rugby Club
	10018	200	Edward Dunlop	52	Melbourne City
	20023	200	Francesca Angelou	60	Melbourne City
	40021	400	Katarina Waves	54	Footscray Rugby Club
	40022	400	Margaret Guilfoyle	54	Footscray Rugby Club
	60001	600	Angelo Santori	72	Monash University Rugby Club
	60018	600	Shirley Temple	60	Monash University Rugby Club
	70019	700	Enid Lyon	60	Geelong Rugby Club
	70024	700	Fran Bailey	66	Geelong Rugby Club

11 Rows returned

**Q2.5.** List all players who have played for two or more different clubs. List the player's name, the club name and month and years they started and finished playing with each club. Order the result by Player, then oldest start date.

```
SELECT CONCAT(FirstName, ' ', LastName) AS PlayerName,
        ClubName,
        DATE_FORMAT(FromDate, '%M %Y') AS StartDate,
        DATE_FORMAT(ToDate, '%M %Y') AS FinishDate
FROM player NATURAL JOIN clubplayer NATURAL JOIN club
WHERE PlayerID IN
        (SELECT PlayerID
        FROM clubplayer
        GROUP BY PlayerID
        HAVING COUNT(DISTINCT ClubID) >= 2)
ORDER BY PlayerName, FromDate;
```

	PlayerName	ClubName	StartDate	FinishDate
►	Douglas Mawson	Geelong Rugby Club	May 2013	May 2017
	Douglas Mawson	Harlequin Rugby Club	May 2017	October 2017
	Douglas Mawson	Footscray Rugby Club	July 2018	NULL
	Edward Dunlop	Melbourne University Rugby Club	March 2013	January 2015
	Edward Dunlop	Melbourne City	January 2015	NULL
	Elizabeth Blackburn	Powerhouse Rugby	April 2013	February 2015
	Elizabeth Blackburn	Melbourne City	March 2015	December 2017
	Elizabeth Blackburn	Melbourne University Rugby Club	December 2017	NULL

8 Rows returned

**Q2.6.** List the team name and game date when a Mixed Touch rugby team fielded more than four women for their game. Order the result by the most recent to oldest date.

```
SELECT TeamID, GameID, TeamName, GameDate
FROM playerteam NATURAL JOIN team NATURAL JOIN player NATURAL JOIN game
WHERE TeamType = 'Mixed' AND Sex = 'F'
GROUP BY TeamID, GameID
HAVING COUNT(PlayerID) > 4
ORDER BY GameDate DESC;
```

	TeamID	GameID	TeamName	GameDate
▶	17	641	Melbourne Uni Mixed	2018-10-14
	17	637	Melbourne Uni Mixed	2018-10-07

2 Rows returned



**Q2.7.** Has any male player played in the Mens, Senior Mens, and Mixed teams for the same club?  
List the full name of the player and the club.

Assumption 1: The male player belongs to the three teams for the same club and field for all these three teams.

```
SELECT PlayerID, ClubID,  
        CONCAT(FirstName, ' ', LastName) AS FullName,  
        ClubName  
FROM playerteam NATURAL JOIN player NATURAL JOIN team NATURAL JOIN club  
WHERE Sex = 'M' AND TeamType NOT IN ('Womens')  
GROUP BY PlayerID, ClubID  
HAVING COUNT(DISTINCT TeamID) = 3;
```

	PlayerID	ClubID	FullName	ClubName
►	10018	200	Edward Dunlop	Melbourne City

1 Row returned

**Q2.7.** Has any male player played in the Mens, Senior Mens, and Mixed teams for the same club?  
List the full name of the player and the club.

Assumption 2: The male player just belongs to the three teams for the same club but may not field for all.

```
SELECT PlayerID, ClubID,  
  
       CONCAT(FirstName, ' ', LastName) AS FullName,  
  
       ClubName  
  
FROM player NATURAL JOIN clubplayer NATURAL JOIN club NATURAL JOIN team  
  
WHERE Sex = 'M' AND TeamType NOT IN ('Womens')  
  
GROUP BY PlayerID, ClubID  
  
HAVING COUNT(TeamID) = 3;
```

	PlayerID	ClubID	FullName	ClubName
▶	10001	100	Arthur Dayley	Melbourne University Rugby Club
	10002	100	Bruce Banner	Melbourne University Rugby Club
	10003	100	Cory Feldman	Melbourne University Rugby Club
	10004	100	Dave Ganey	Melbourne University Rugby Club
	10005	100	Ernie Moffat	Melbourne University Rugby Club
	10006	100	Forrest Watson	Melbourne University Rugby Club
	10007	100	Graham Greene	Melbourne University Rugby Club
	10008	100	Simon Webster	Melbourne University Rugby Club
	10009	100	Steven Spelling	Melbourne University Rugby Club
	10010	100	John Cain Sr	Melbourne University Rugby Club

142 Rows returned

**Q2.8.** Name any player who played in 2016 and 2018 but did not play in 2017.

```
SELECT PlayerID, CONCAT(FirstName, ' ', LastName) AS FullName
FROM player
WHERE PlayerID IN
    (SELECT PlayerID
     FROM playerteam NATURAL JOIN game
     WHERE YEAR(GameDate) IN (2016, 2018))
AND PlayerID NOT IN
    (SELECT PlayerID
     FROM playerteam NATURAL JOIN game
     WHERE YEAR(GameDate) IN (2017))
GROUP BY PlayerID;
```

	PlayerID	FullName
▶	30025	Diana Rigg

1 Row returned

**Q2.9.** List the for and against totals for all teams in the 2017 Mixed Rugby division. For is the sum of all points a team score. Against is the sum of all points scored against that team. Order the result by the highest derived percentage (for / against as a percentage).

```
SELECT TeamID, TeamName,

       SUM(CASE WHEN TeamID = Team1 THEN Team1Score ELSE Team2Score END)

       AS ForTotal,

       SUM(CASE WHEN TeamID = Team2 THEN Team1Score ELSE Team2Score END)

       AS AgainstTotal,

       CONCAT( ROUND(

       SUM(CASE WHEN TeamID = Team1 THEN Team1Score ELSE Team2Score END) /

       SUM(CASE WHEN TeamID = Team2 THEN Team1Score ELSE Team2Score END) *

       100, 2), '%')

       AS Percentage

FROM game INNER JOIN team ON TeamID = Team1 OR TeamID = Team2

WHERE YEAR(GameDate) = 2017 AND TeamType = 'Mixed'

GROUP BY TeamID

ORDER BY ForTotal / AgainstTotal DESC;
```

	TeamID	TeamName	ForTotal	AgainstTotal	Percentage
►	18	Melbourne City Mixed	146	84	173.81%
	21	Moorabbin Mixed	179	132	135.61%
	17	Melbourne Uni Mixed	138	114	121.05%
	20	Footscray Mixed	123	108	113.89%
	23	Geelong Rugby Mixeds	147	148	99.32%
	22	Monash Uni Mixed	130	133	97.74%
	19	Powerhouse Mixed	119	186	63.98%
	24	Harlequin Mixed	24	101	23.76%

8 Rows returned