



School of Full Stack

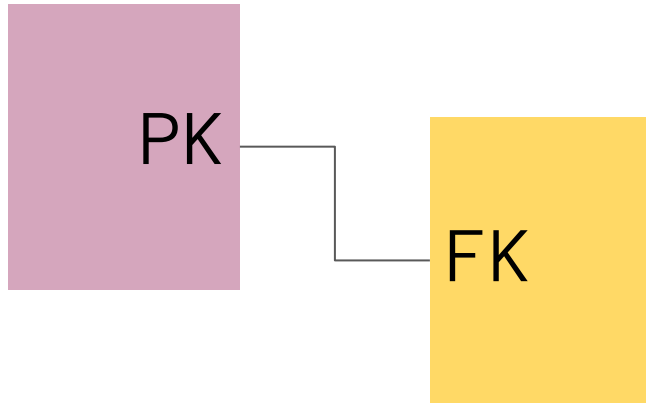
SQL for Data Analysis III

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Why we can join tables?

Table are joined using primary and foreign keys

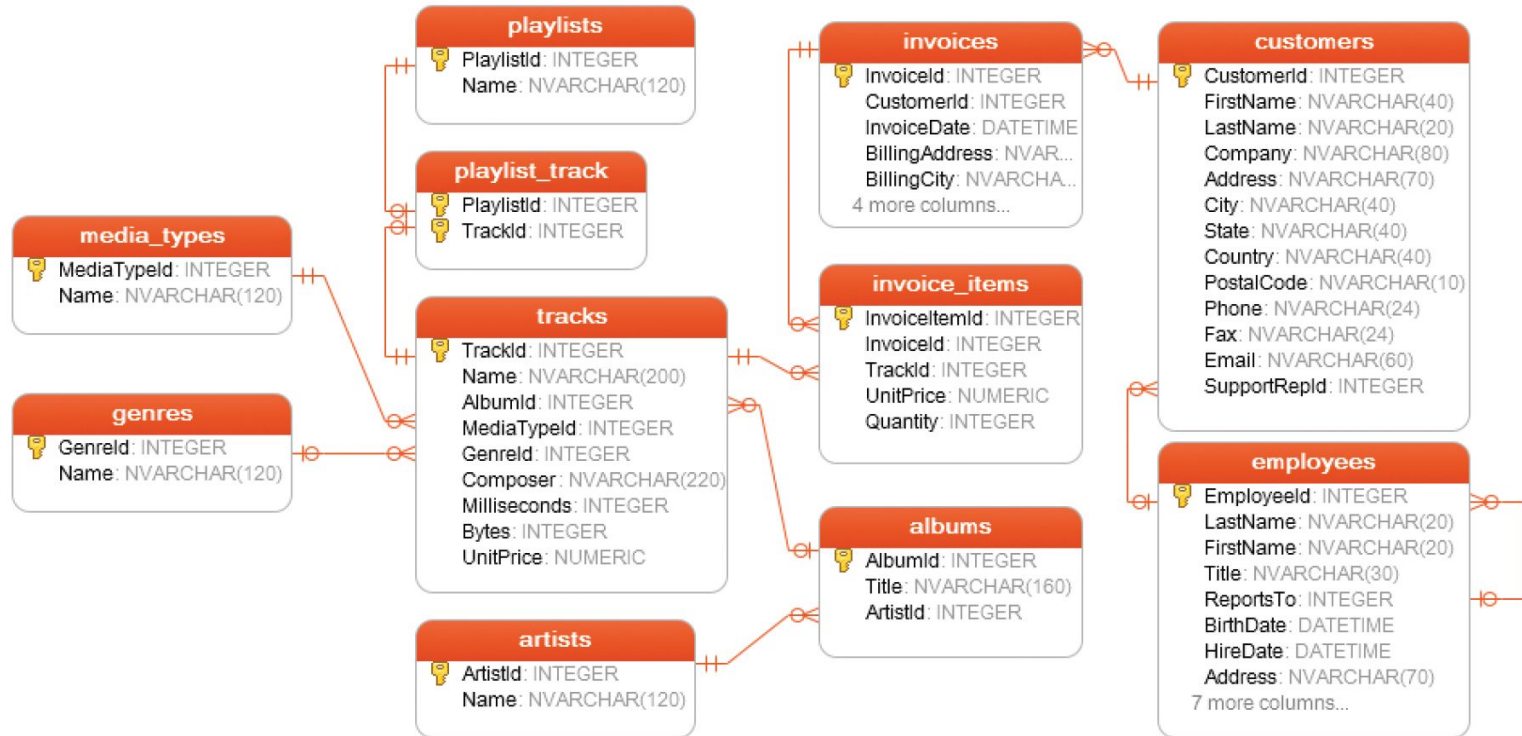


A diagram showing two tables. The first table has a primary key column labeled 'PK_ID' with values 1, 2, 3, and 4. The second table has a foreign key column labeled 'FK_ID' with values 1, 2, 3, and 4. A line with arrows at both ends connects the 'PK_ID' column of the first table to the 'FK_ID' column of the second table, indicating a one-to-one relationship between the two columns.

PK_ID	
1	
2	
3	
4	


FK_ID	
1	
2	
3	
4	

Review ER Diagram



Select data from multiple tables

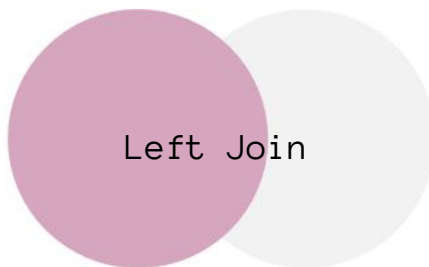
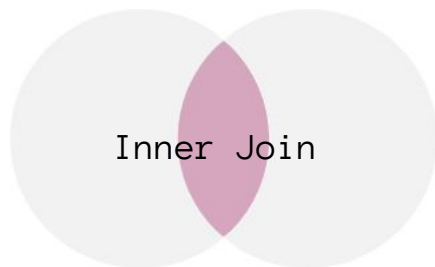
Both queries give the same result.



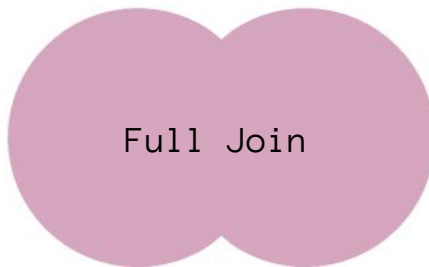
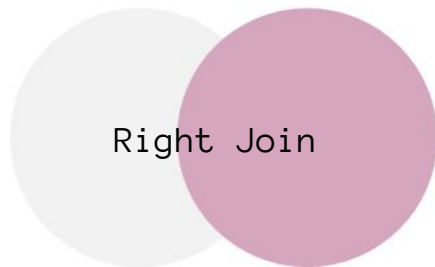
```
SELECT * FROM artists, albums  
WHERE artists.artistid = albums.artistid;
```

```
SELECT * FROM artists  
JOIN albums ON artists.artistid = albums.artistid;
```

Review Join Types



Inner and Left Join contribute around 90-95% of our work



Inner Join

Table 1

PK_ID	Name
1	David
2	John
3	Marry
4	Anna
5	Kevin

+

Table 2

FK_ID	Major
1	Econ
2	Econ
5	Data
12	Engineer
35	Mkt

=

Result Set

PK_ID	Name	Major
1	David	Econ
2	John	Econ
5	Kevin	Data

Left Join

Table 1

PK_ID	Name
1	David
2	John
3	Marry
4	Anna
5	Kevin

+

Table 2

FK_ID	Major
1	Econ
2	Econ
5	Data
12	Engineer
35	Mkt

=

Result Set

PK_ID	Name	Major
1	David	Econ
2	John	Econ
3	Marry	NULL
4	Anna	NULL
5	Kevin	Data

Full Join

Table 1

PK_ID	Name
1	David
2	John
3	Marry
4	Anna
5	Kevin

+

Table 2

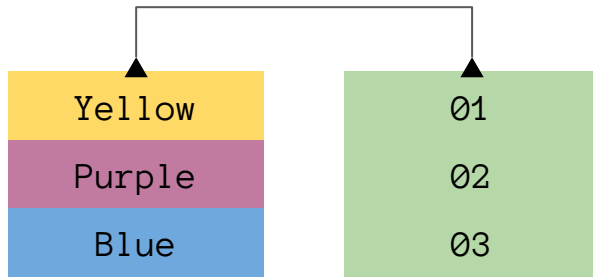
FK_ID	Major
1	Econ
2	Econ
5	Data
12	Engineer
35	Mkt

=

Result Set

PK_ID	Name	Major
1	David	Econ
2	John	Econ
3	Mary	NULL
4	Anna	NULL
5	Kevin	Data
12	NULL	Engineer
35	NULL	Mkt

Cross Join (aka. Cartesian)



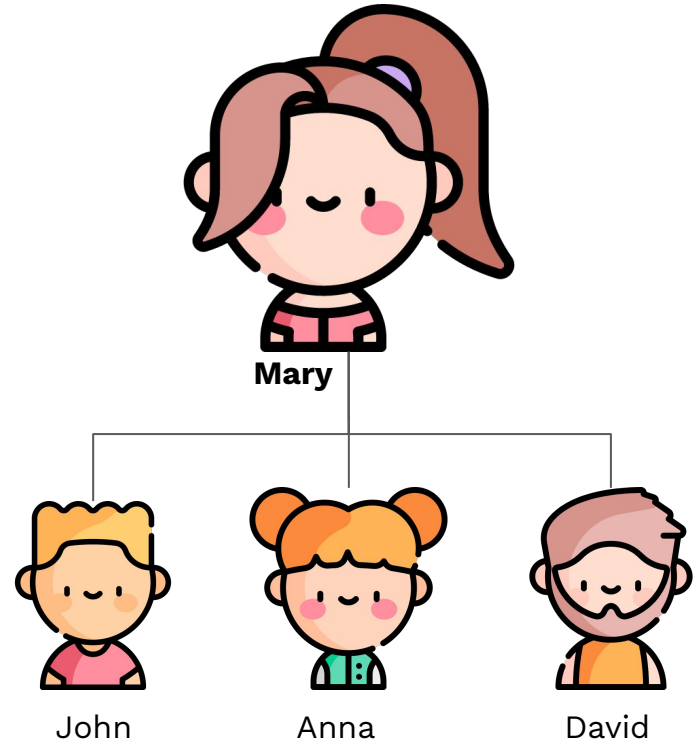
Result Set

Yellow	01
Yellow	02
Yellow	03
Purple	01
Purple	02
Purple	03
Blue	01
Blue	02
Blue	03

Self Join

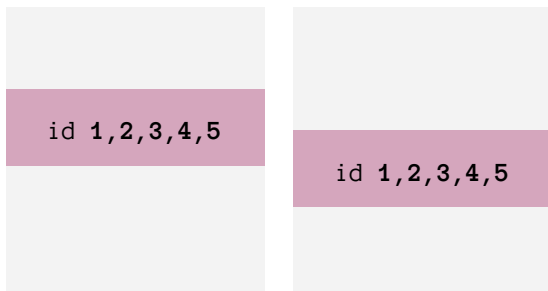
Table can join itself (self-join)

ID	Name	REPORT_TO
1	Mary	
2	John	1
3	Anna	1
4	David	1

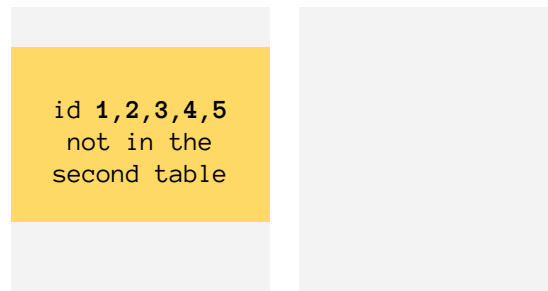


Intersect & Except

- **Intersect** returns *distinct* rows in both tables
- **Except** returns *distinct* rows in the first table, not presented in the second table

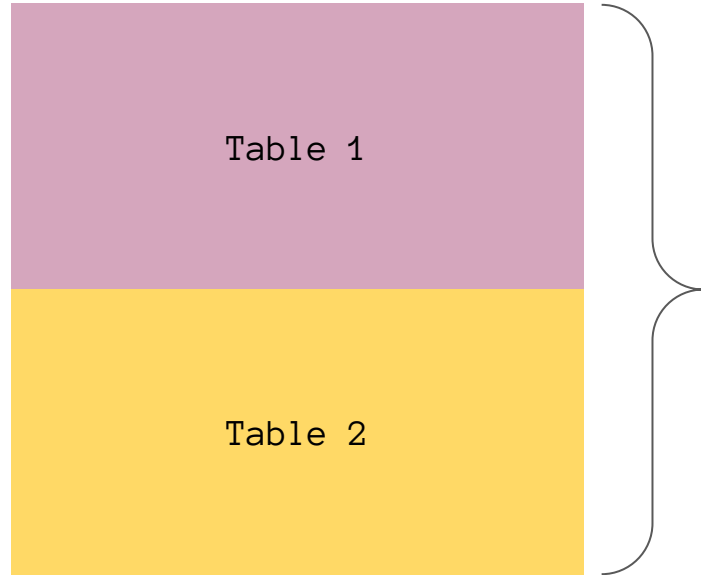


Intersect



Except

Union & Union All



UNION binds two tables remove duplicates

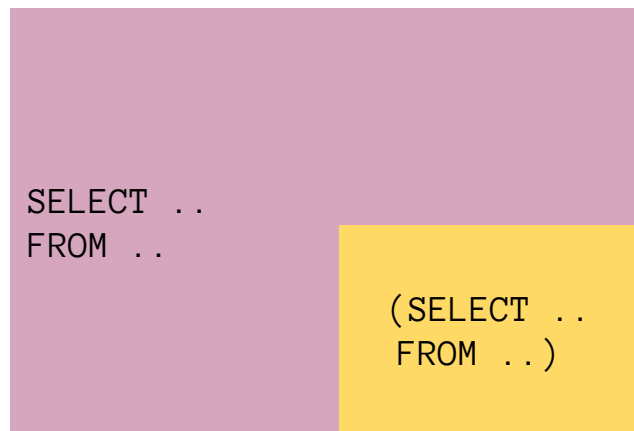
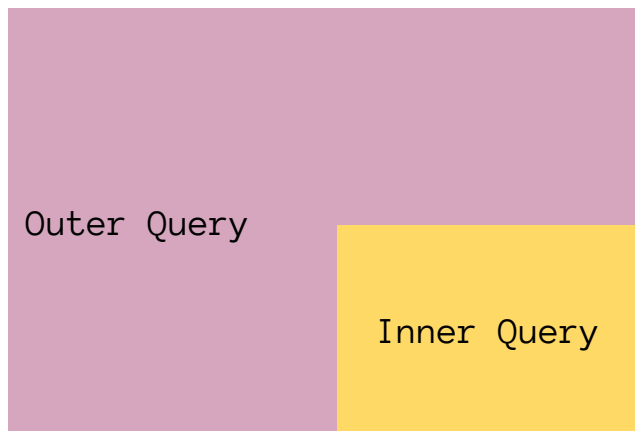
UNION ALL will not remove duplicates

Union & Union All

```
SELECT * FROM table1  
UNION  
SELECT * FROM table2;
```

Intro to Subqueries

Subquery is a technique to write **nested** SELECT





School of Full Stack

<https://datarockie.com>