SQL – Set Operators

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Questions
Q18, Q19

Scenario: Two tables

Partial **train_a**

ID	Name	End_Date
11	Bob	15JUN2012
16	Sam	5JUN2012
14	Pete	21JUN2012

Training class A is completed in a single session. End_Date represents the date of training.

Partial **train_b**

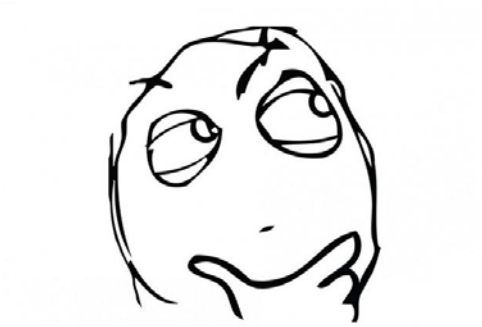
Name	ID	SDate	EDate
Bob	11	9JUL2012	13JUL2012
Pam	15	25JUL2012	27JUL2012
Kyle	19	12JUL2012	20JUL2012
Chris	21	29JUL2012	.

Training class B is a multi-session class. SDate is recorded on the first training day. EDate is recorded when the course is complete.

Questions to be asked

Which employees have completed training A or B?

Which employees have completed training A, but not training B?



Which employees have completed training A and/or B, and on what dates?

Which employees have completed both classes?

Can you answer any of the four questions by querying only one table?

1	Which employees have completed training A or B?
2	Which employees have completed training A and/or B, and on what dates?
3	Which employees have completed training A, but not training B?
4	Which employees have completed both classes?

Partial **train_a**

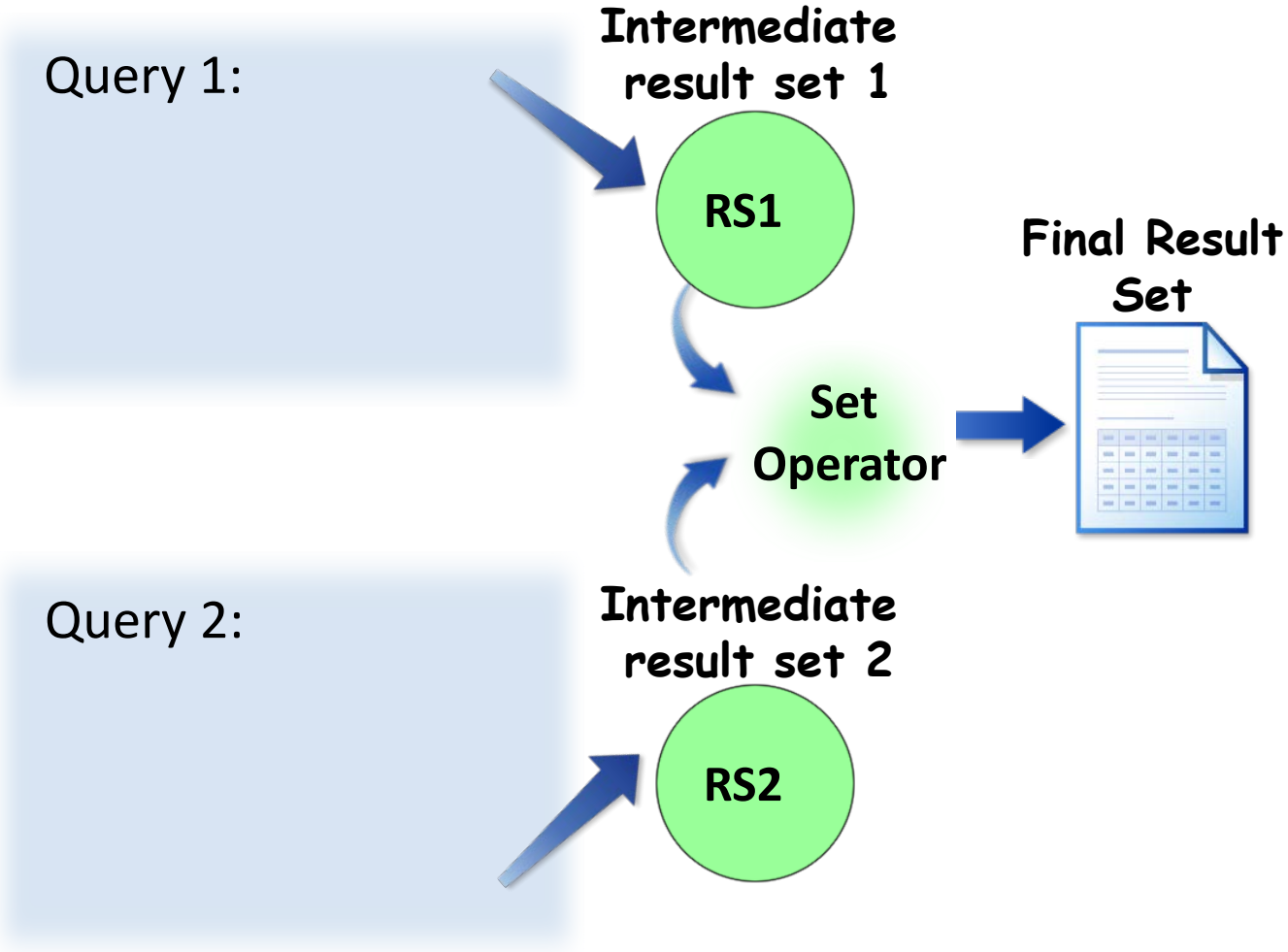
ID	Name	End_Date
11	Bob	15JUN2012
16	Sam	5JUN2012
14	Pete	21JUN2012

Partial **train_b**

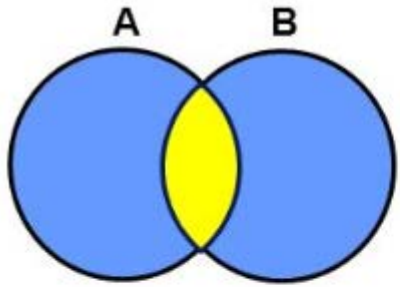
Name	ID	SDate	EDate
Bob	11	9JUL2012	13JUL2012
Pam	15	25JUL2012	27JUL2012
Kyle	19	12JUL2012	20JUL2012
Chris	21	29JUL2012	.

Using Set Operators

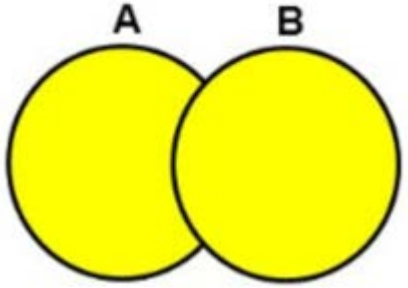
Set operators use the intermediate result sets from two queries to create a final result set.



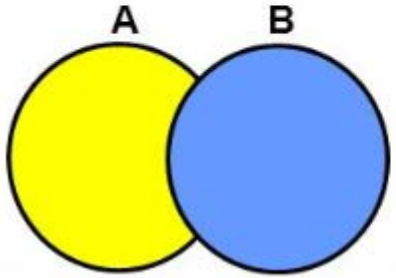
Set Operators



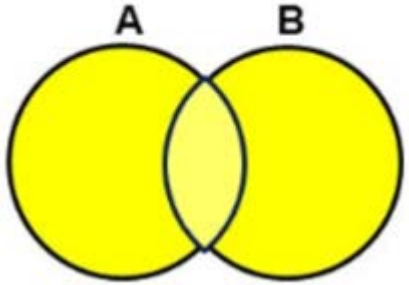
INTERSECT



UNION



EXCEPT
MINUS (Oracle)

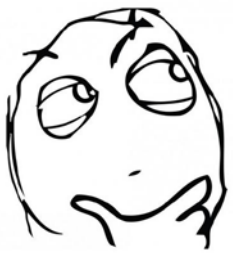


UNION ALL (SQLite)
OUTER UNION (SAS)

The UNION clause removes duplicate rows that exist, while the UNION ALL (or OUTER JOIN) clause does not.

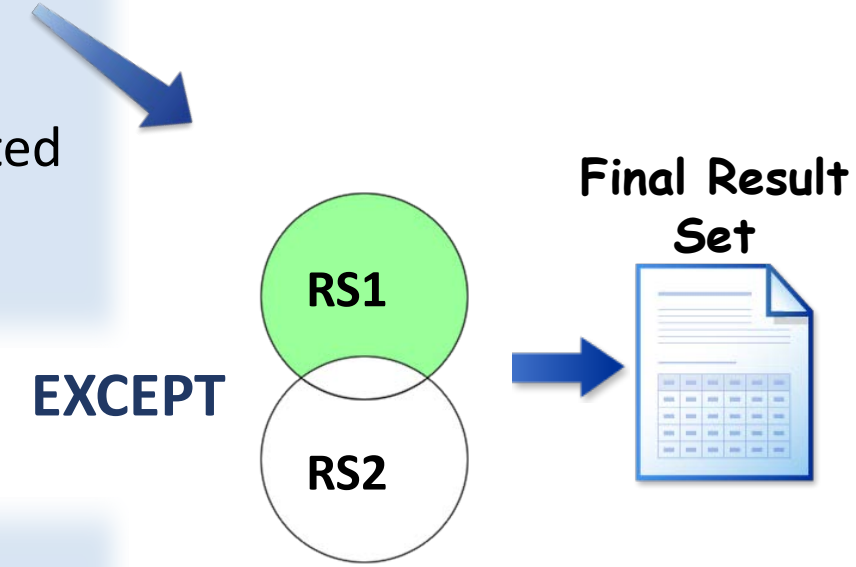
EXCEPT Operator

Which employees have completed training A, but not training B?



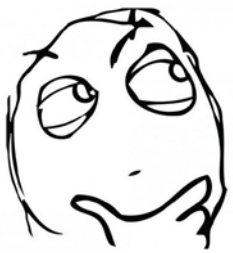
Query 1:
List employees that have completed **train_a**.

Query 2:
List employees that have completed **train_b**.



UNION Operator

Which employees have completed training A or B?



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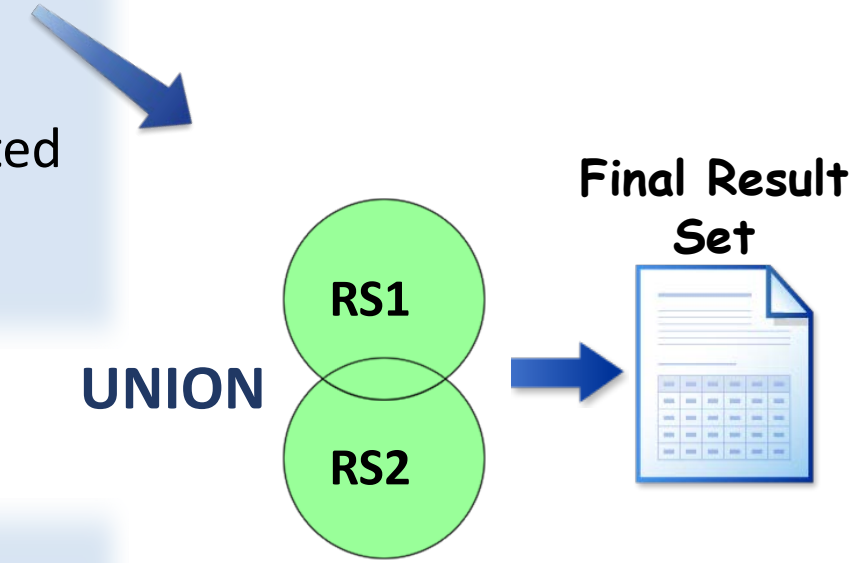
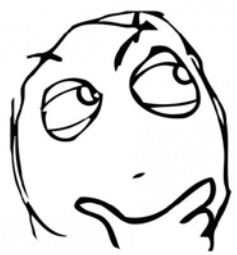


UNION ALL (or OUTER JOIN) Operator

Which employees have completed training A and/or B and on what dates?



Query 1:
List employees that have completed **train_a** and the completion date.

Query 2:
List employees that have completed **train_b** and the completion date.

OUTER UNION

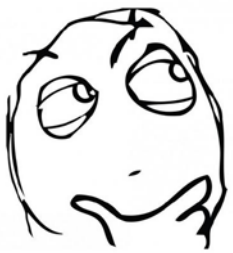
RS1

RS2

Final Result Set

INTERSECT Operator

Which employees have completed both classes?



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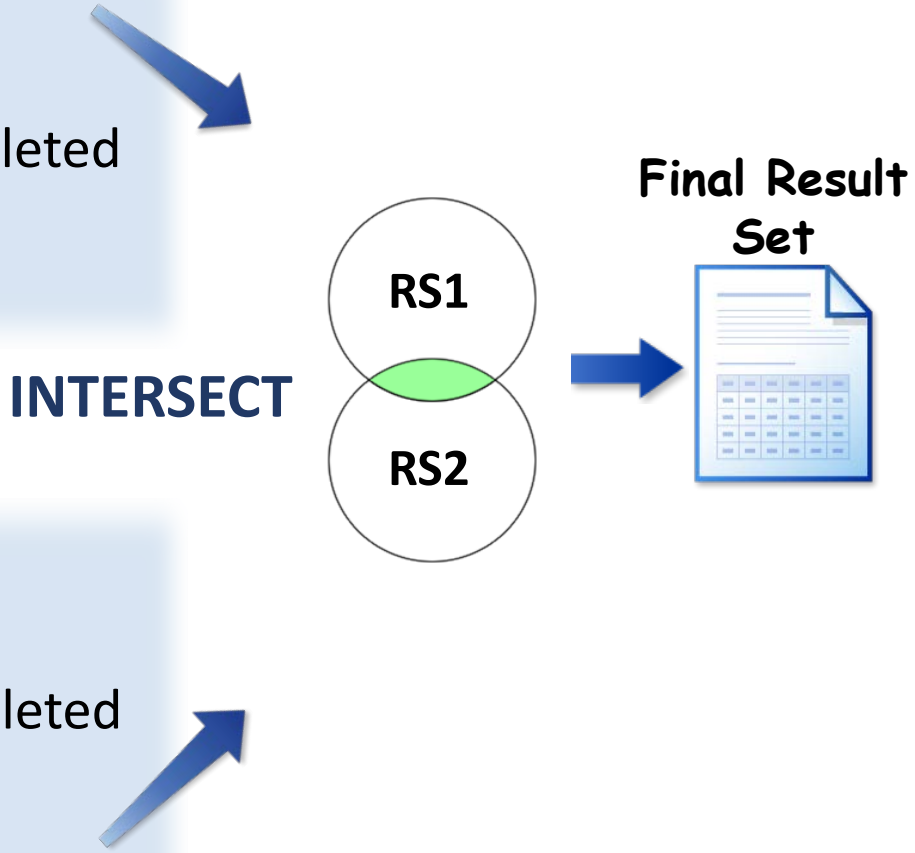

Using Set Operators

```
select …
UNION | UNION ALL | EXCEPT | INTERSECT
select … ;
```

Operator	Returns
UNION	All distinct rows selected by either query
UNION ALL	All rows selected by either query, including all duplicates
INTERSECT	All distinct rows selected by both queries
EXCEPT	All distinct rows selected by the first query but not the second

Tables: **`jupiter.train_a`**, **`jupiter.train_b`**

List the employees who have completed training A, but not training b.

Tables: **`practice.movies`**, **`practice.genres`**

List all movies that start with ‘A’ or all genres that start with ‘B’

Hint: where movie_name like ‘A%’

Adding a Constant Text

```
select 'The Average Company Salary is:',
       avg(salary) as CompAvg
from jupiter.staff;
```

'*constant text*' <**AS** *alias*> <'column *label*'>