

RELATIONSHIPS AND JOINS

Finally.

So Far We've Been
Working With Very
Simple Data

But that's
about to
change

Real World Data
Is *Messy* and
Interrelated

Genres

Orders

Reviews

Books

Customers

Authors

Versions

So Where Do We Start?

Relationship Basics

This is not marriage counseling

1. One to One Relationship
2. One to Many Relationship
3. Many to Many Relationship

Genres

Orders

Reviews

Books

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Versions

1:MANY

The Most Common Relationship

CUSTOMERS & ORDERS

We Want To Store...

- A customer's first and last name
- A customer's email
- The date of the purchase
- The price of the order

We Could Use One Table...

first_name	last_name	email	order_date	amount
Boy	George	george@gmail.com	'2016/02/10'	99.99
Boy	George	george@gmail.com	'2017/11/11'	35.50
George	Michael	gm@gmail.com	'2014/12/12'	800.67
George	Michael	gm@gmail.com	'2015/01/03'	12.50
David	Bowie	david@gmail.com	NULL	NULL
Blue	Steele	blue@gmail.com	NULL	NULL

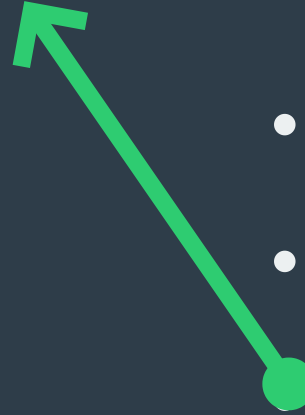
NOT A GOOD IDEA

Customers

- customer_id
- first_name
- last_name
- email

Orders

- order_id
- order_date
- amount
- customer_id



CUSTOMERS

customer_id	first_name	last_name	email
1	Boy	George	george@gmail.com
2	George	Michael	gm@gmail.com
3	David	Bowie	david@gmail.com
4	Blue	Steele	blue@gmail.com

ORDERS

order_id	order_date	amount	customer_id
1	'2016/02/10'	99.99	1
2	'2017/11/11'	35.50	1
3	'2014/12/12'	800.67	2
4	'2015/01/03'	12.50	2

PRIMARY
KEY

CUSTOMERS

customer_id	first_name	last_name	email
1	Boy	George	george@gmail.com
2	George	Michael	gm@gmail.com
3	David	Bowie	david@gmail.com
4	Blue	Steele	blue@gmail.com

ORDERS

order_id	order_date	amount	customer_id
1	'2016/02/10'	99.99	1
2	'2017/11/11'	35.50	1
3	'2014/12/12'	800.67	2
4	'2015/01/03'	12.50	2

FOREIGN
KEY

CUSTOMERS

id	first_name	last_name	email
1	Boy	George	george@gmail.com
2	George	Michael	gm@gmail.com
3	David	Bowie	david@gmail.com
4	Blue	Steele	blue@gmail.com

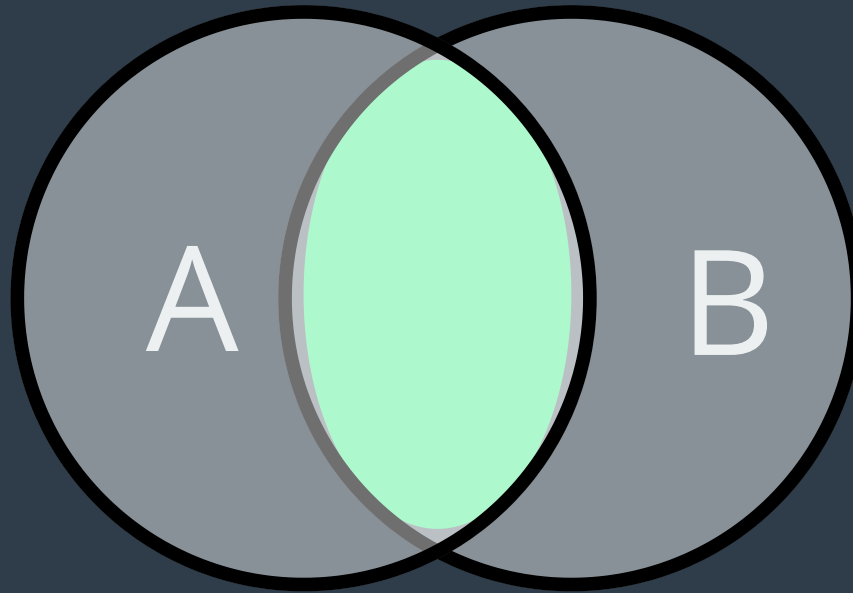
ORDERS

id	order_date	amount	customer_id
1	'2016/02/10'	99.99	1
2	'2017/11/11'	35.50	1
3	'2014/12/12'	800.67	2
4	'2015/01/03'	12.50	2

Let's Get Coding!

INNER JOIN

I'm Sorry This Diagram Is So Ugly

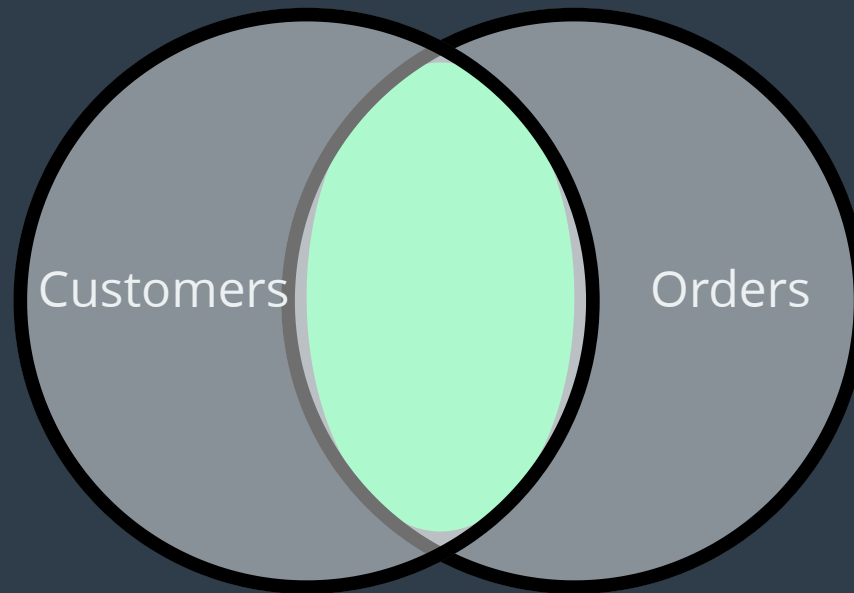


Select all records from A and B where the
join condition is met

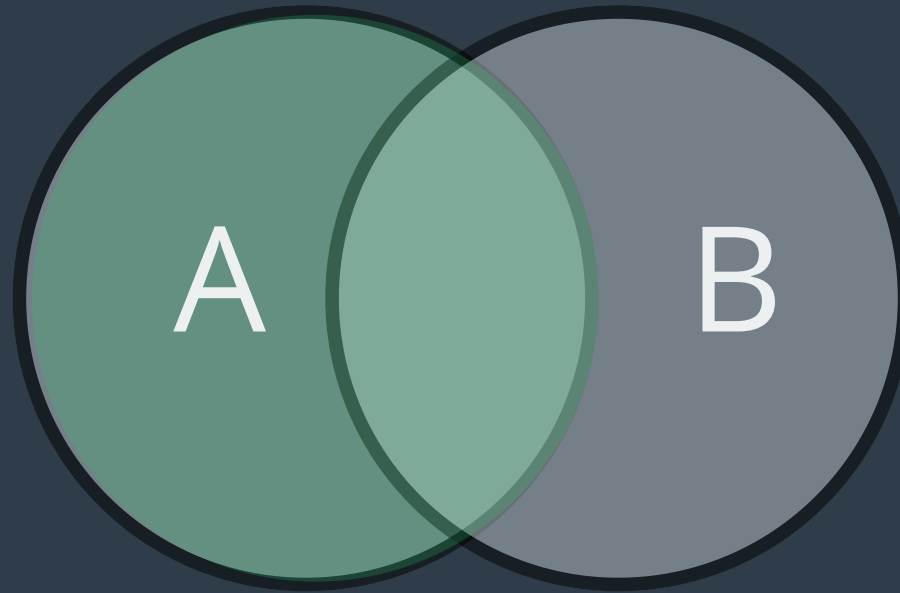
INNER JOIN

```
SELECT * FROM customers  
JOIN orders  
    ON customers.id = orders.customer_id;
```

```
SELECT * FROM customers  
JOIN orders  
    ON customers.id = orders.customer_id;
```

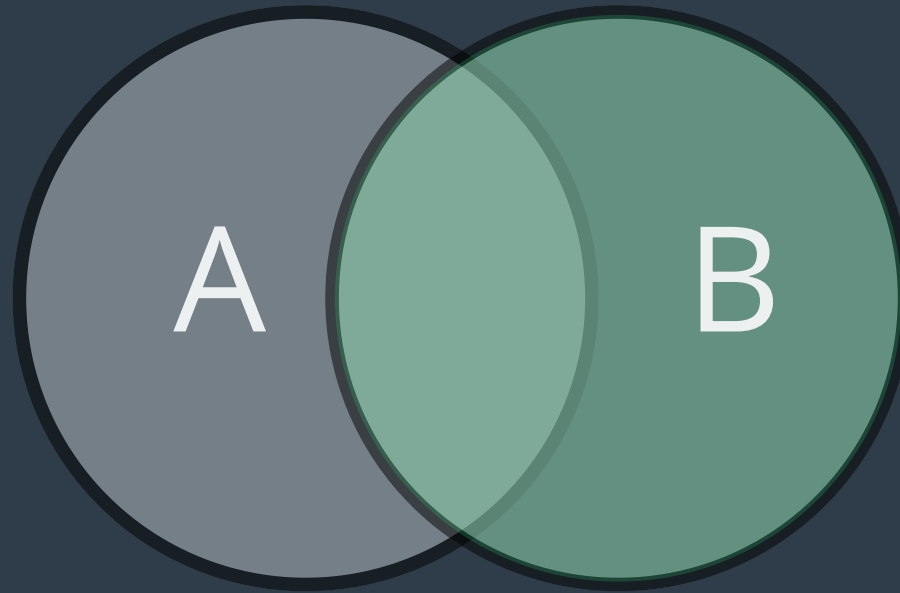


LEFT JOIN



Select everything from A, along with any
matching records in B

RIGHT JOIN



Select everything from B, along with any
matching records in A

YOUR
TURN

WRITE THIS SCHEMA

STUDENTS

- id
- first_name

PAPERS

- title
- grade
- student_id



INSERT THIS DATA

(COPY AND PASTE IT)

```
INSERT INTO students (first_name) VALUES
('Caleb'), ('Samantha'), ('Raj'), ('Carlos'), ('Lisa');

INSERT INTO papers (student_id, title, grade ) VALUES
(1, 'My First Book Report', 60),
(1, 'My Second Book Report', 75),
(2, 'Russian Lit Through The Ages', 94),
(2, 'De Montaigne and The Art of The Essay', 98),
(4, 'Borges and Magical Realism', 89);
```

PRINT THIS

first_name	title	grade
Samantha	De Montaigne and The Art of The Essay	98
Samantha	Russian Lit Through The Ages	94
Carlos	Borges and Magical Realism	89
Caleb	My Second Book Report	75
Caleb	My First Book Report	60

PRINT THIS

first_name	title	grade
Caleb	My First Book Report	60
Caleb	My Second Book Report	75
Samantha	Russian Lit Through The Ages	94
Samantha	De Montaigne and The Art of The Essay	98
Raj	NULL	NULL
Carlos	Borges and Magical Realism	89
Lisa	NULL	NULL

PRINT THIS

first_name	title	grade
Caleb	My First Book Report	60
Caleb	My Second Book Report	75
Samantha	Russian Lit Through The Ages	94
Samantha	De Montaigne and The Art of The Essay	98
Raj	MISSING	0
Carlos	Borges and Magical Realism	89
Lisa	MISSING	0

PRINT THIS

first_name	average
Samantha	96.0000
Carlos	89.0000
Caleb	67.5000
Raj	0
Lisa	0

PRINT THIS

first_name	average	passing_status
Samantha	96.0000	PASSING
Carlos	89.0000	PASSING
Caleb	67.5000	FAILING
Raj	0	FAILING
Lisa	0	FAILING