SQL

JOINS

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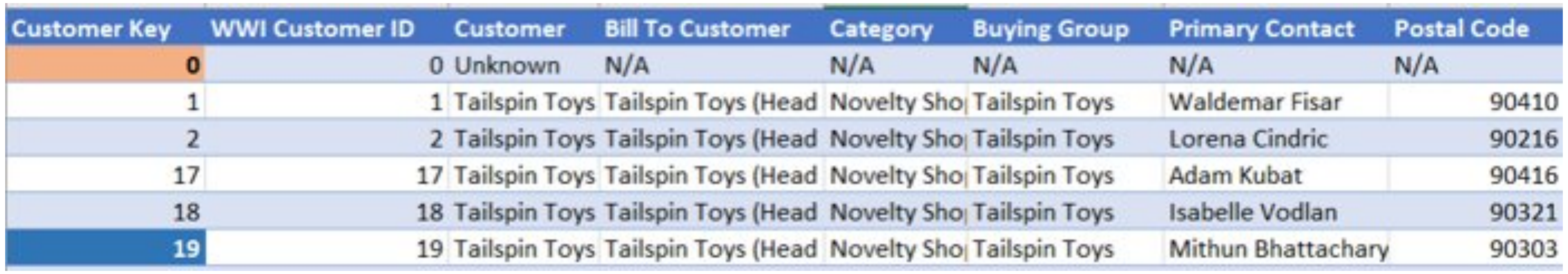
Relationship Recap

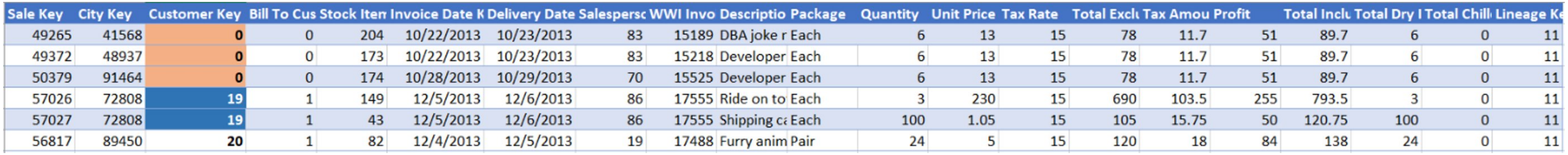
Relationships

The JOINt Family

- Tables link with each other with common keys (stored in fields)
- ***Common Relationships***: One-to-Many, Many-to-One
- ***Rare Relationships***: One-to-One, Many-to-Many



Customer Key	WWI Customer ID	Customer	Bill To Customer	Category	Buying Group	Primary Contact	Postal Code
0	0	Unknown	N/A	N/A	N/A	N/A	N/A
1	1	Tailspin Toys	Tailspin Toys (Head	Novelty Sho	Tailspin Toys	Waldemar Fisar	90410
2	2	Tailspin Toys	Tailspin Toys (Head	Novelty Sho	Tailspin Toys	Lorena Cindric	90216
17	17	Tailspin Toys	Tailspin Toys (Head	Novelty Sho	Tailspin Toys	Adam Kubat	90416
18	18	Tailspin Toys	Tailspin Toys (Head	Novelty Sho	Tailspin Toys	Isabelle Vodlan	90321
19	19	Tailspin Toys	Tailspin Toys (Head	Novelty Sho	Tailspin Toys	Mithun Bhattachary	90303



Sale Key	City Key	Customer Key	Bill To Cus	Stock Iten	Invoice Date K	Delivery Date	Salespersc	WWI Invo	Descriptio	Package	Quantity	Unit Price	Tax Rate	Total Exclu	Tax Amou	Profit	Total Inclu	Total Dry I	Total Chill	Lineage Ke
49265	41568	0	0	204	10/22/2013	10/23/2013	83	15189	DBA joke r	Each	6	13	15	78	11.7	51	89.7	6	0	11
49372	48937	0	0	173	10/22/2013	10/23/2013	83	15218	Developer	Each	6	13	15	78	11.7	51	89.7	6	0	11
50379	91464	0	0	174	10/28/2013	10/29/2013	70	15525	Developer	Each	6	13	15	78	11.7	51	89.7	6	0	11
57026	72808	19	1	149	12/5/2013	12/6/2013	86	17555	Ride on to	Each	3	230	15	690	103.5	255	793.5	3	0	11
57027	72808	19	1	43	12/5/2013	12/6/2013	86	17555	Shipping ca	Each	100	1.05	15	105	15.75	50	120.75	100	0	11
56817	89450	20	1	82	12/4/2013	12/5/2013	19	17488	Furry anim	Pair	24	5	15	120	18	84	138	24	0	11

JOINS

Types of JOINs

Is It Simple? Or Is It Complicated?

JOIN intersects two dissimilar tables on matching column values

- **Four Basic Joins**
  - Inner Join
  - Left Join
  - Right Join
  - Full Join

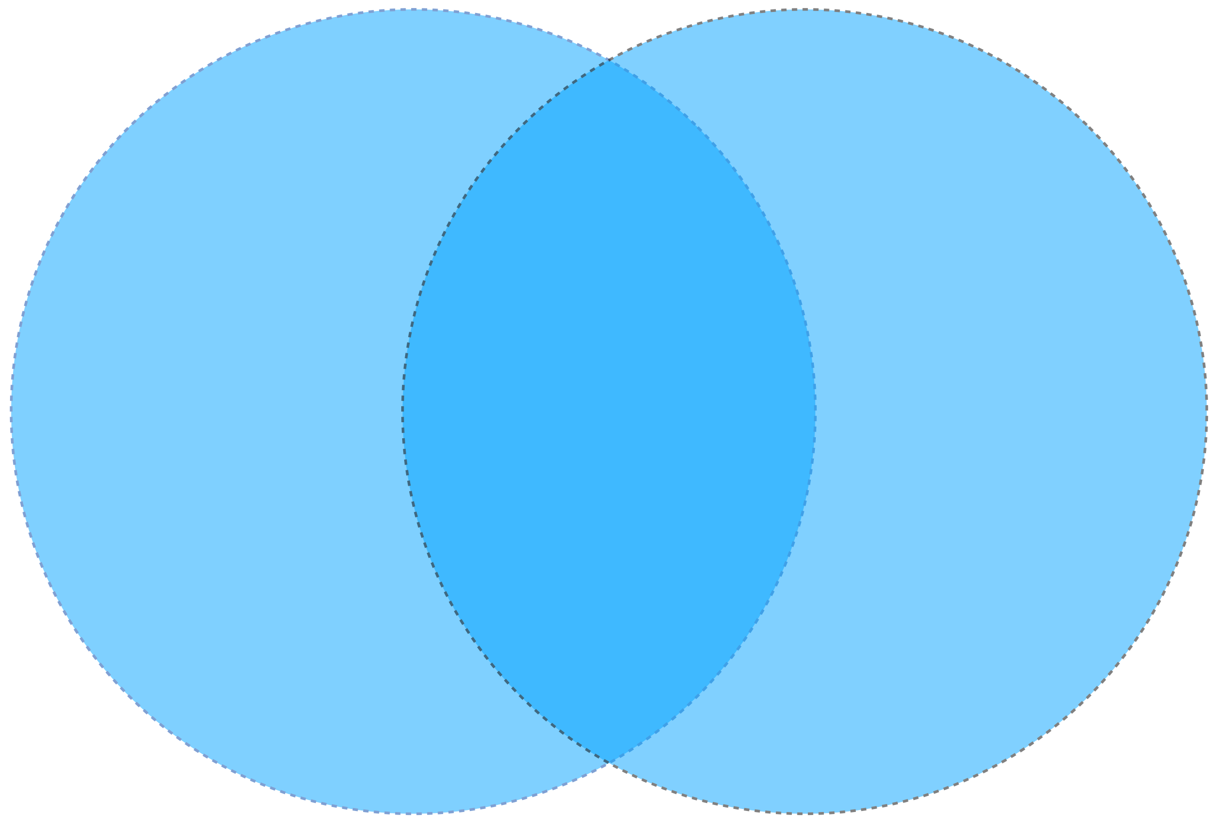
- **Special Joins**
  - Cross Join
  - Self Join

INNER JOIN

INNER JOIN

It’s Between Us

- Look for a match on given field(s)
- Only records that match on **both** tables



SELECT * FROM left_table l INNER JOIN right_table r ON l.id = r.id

id	left_value
1	L1
2	L2
3	L3
4	L4

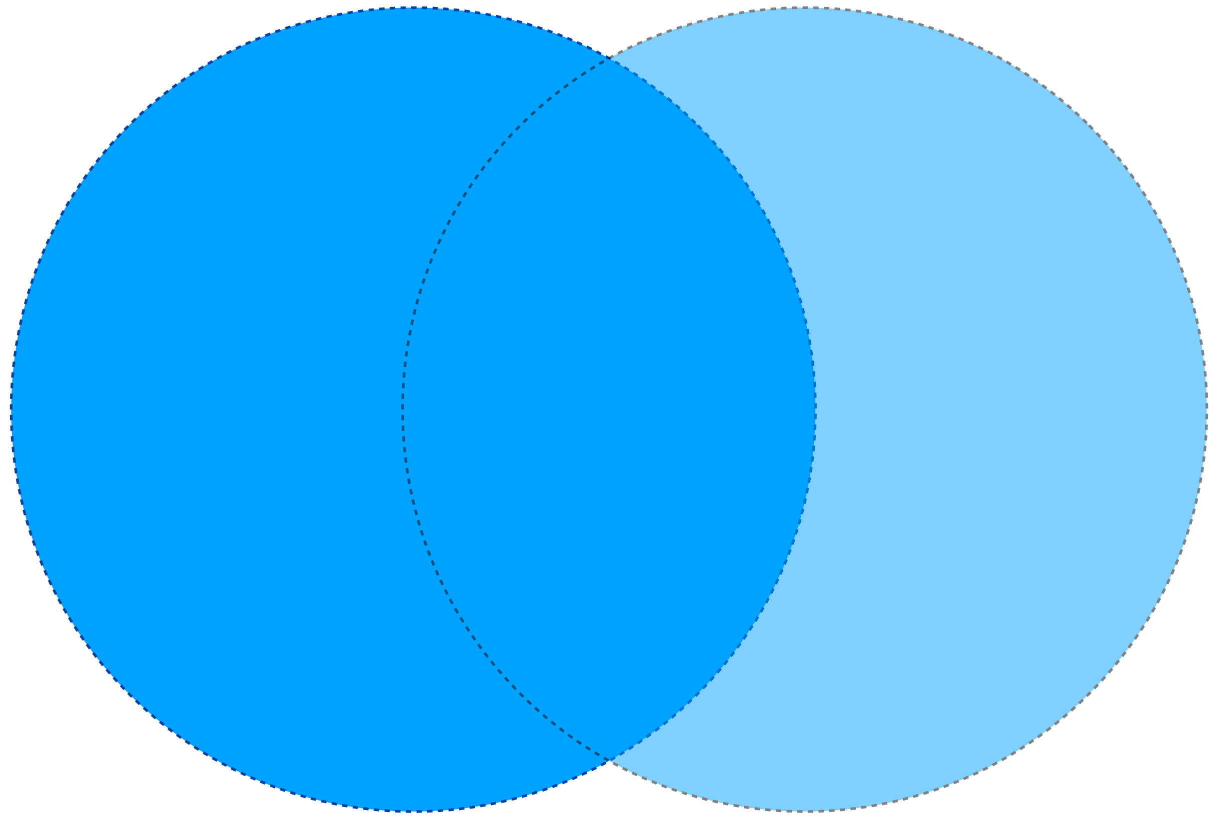
id	right_value
1	R1
3	R2
7	R3
9	R4

id	left_value	right_value
1	L1	R1
3	L3	R2

LEFT JOIN

LEFT JOIN

No-one LEFT Behind From LEFT



- **All** records from **left**, **matched** records from **right** (*NULLs* for unmatched left records)

SELECT * FROM left_table l LEFT JOIN right_table r ON l.id = r.id

id	left_value
1	L1
2	L2
3	L3
4	L4

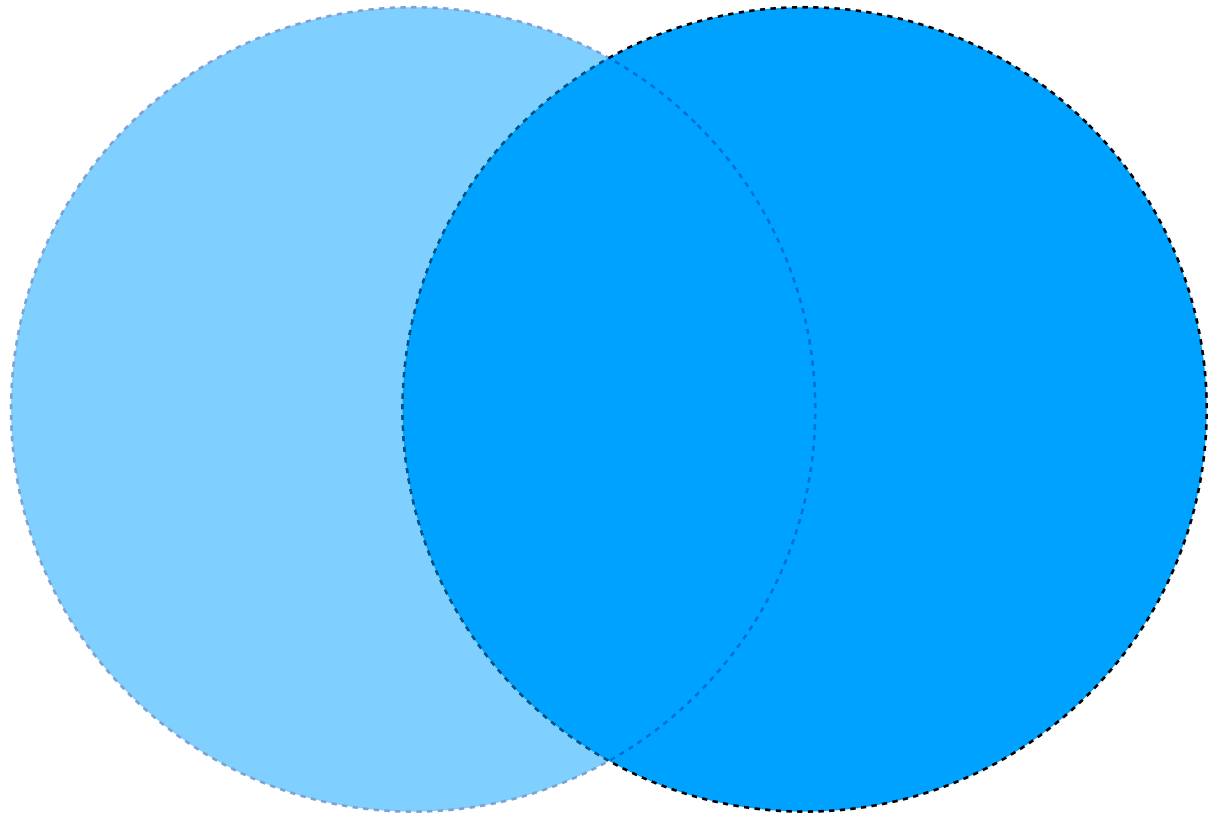
id	right_value
1	R1
3	R2
7	R3
9	R4

id	left_value	right_value
1	L1	R1
2	L2	
3	L3	R2
4	L4	

RIGHT JOIN

RIGHT JOIN

The RIGHT Side Is Always RIGHT



- **All** records from **right**, **matched** records from **left** (*NULLs* for unmatched right records)

SELECT * FROM left_table l RIGHT JOIN right_table r ON l.id = r.id

id	left_value
1	L1
2	L2
3	L3
4	L4

id	right_value
1	R1
3	R2
7	R3
9	R4

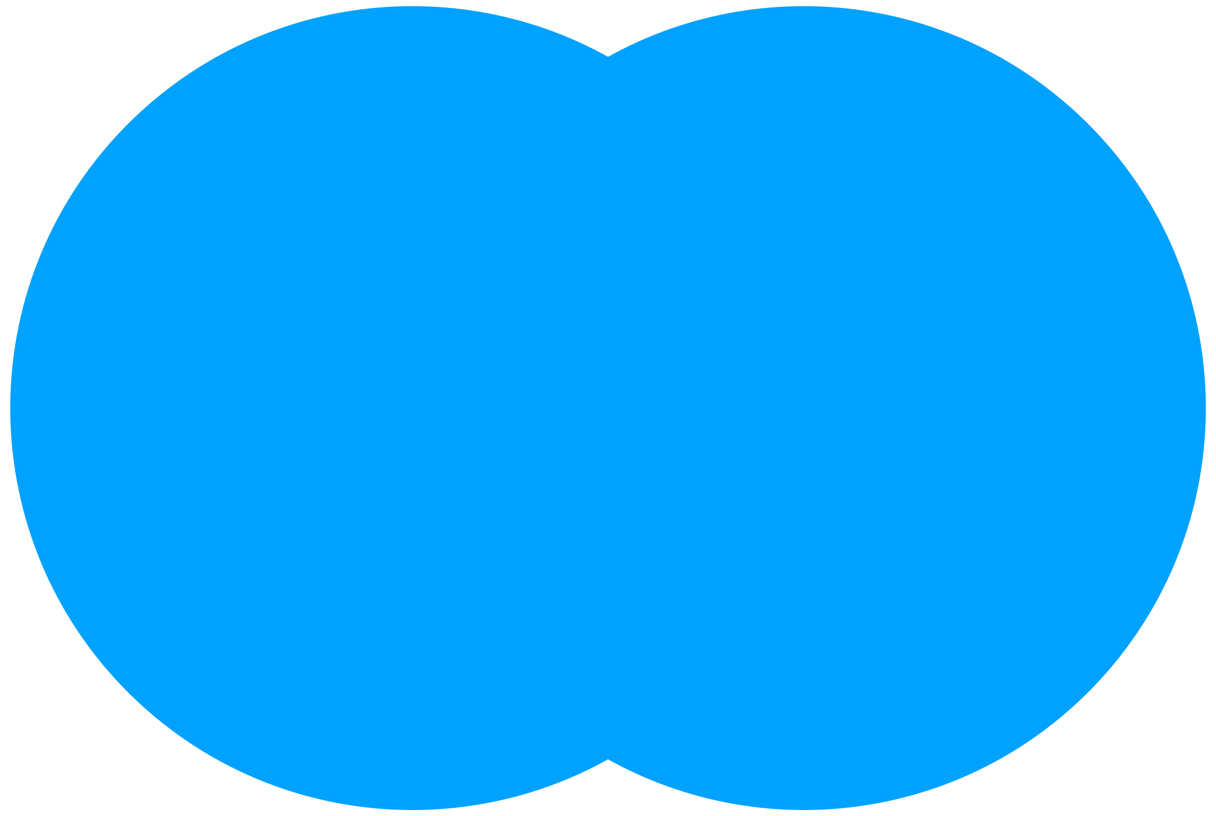
id	left_value	right_value
1	L1	R1
3	L3	R2
7		R3
9		R4

FULL JOIN

FULL JOIN

The FULL Picture

- **All** records from **both** tables (NULLs filled in where matches don’t exist on either side)



```
SELECT * FROM left_table l FULL JOIN right_table r ON l.id = r.id
```

id	left_value
1	L1
2	L2
3	L3
4	L4

id	right_value
1	R1
3	R2
7	R3
9	R4

id	left_value	right_value
1	L1	R1
2	L2	
3	L3	R2
4	L4	
7		R3
9		R4

CROSS JOIN

CROSS JOIN

Speed Dating The Data

- All possible combinations by pairing every row from one table with every row from another
- **Use Cases**
  - Product Catalog Combinations: Colors table x Sizes table = All Product combination
  - Scheduling Time Slots: Employees tables x Time_Slots table = All possible shift combinations

SELF JOIN

SELF JOIN

I Alone Am The Honored One

- Table joined with the copy of itself to compare different rows within the same table
- **Use Cases**
    - Find employees and their managers both in the same employees table
    - Find products with same price or features
    - Find mutual friends on a platform