



VIZ

DATA SOURCE

Physical Layer

Logical Table

Relationship

Logical Table

Physical Table

JOIN

Physical Table

JOIN

Physical Table

Physical Table

UNION

Physical Table

Logical Table

Logical Table

Logical Table

Physical Table

JOIN

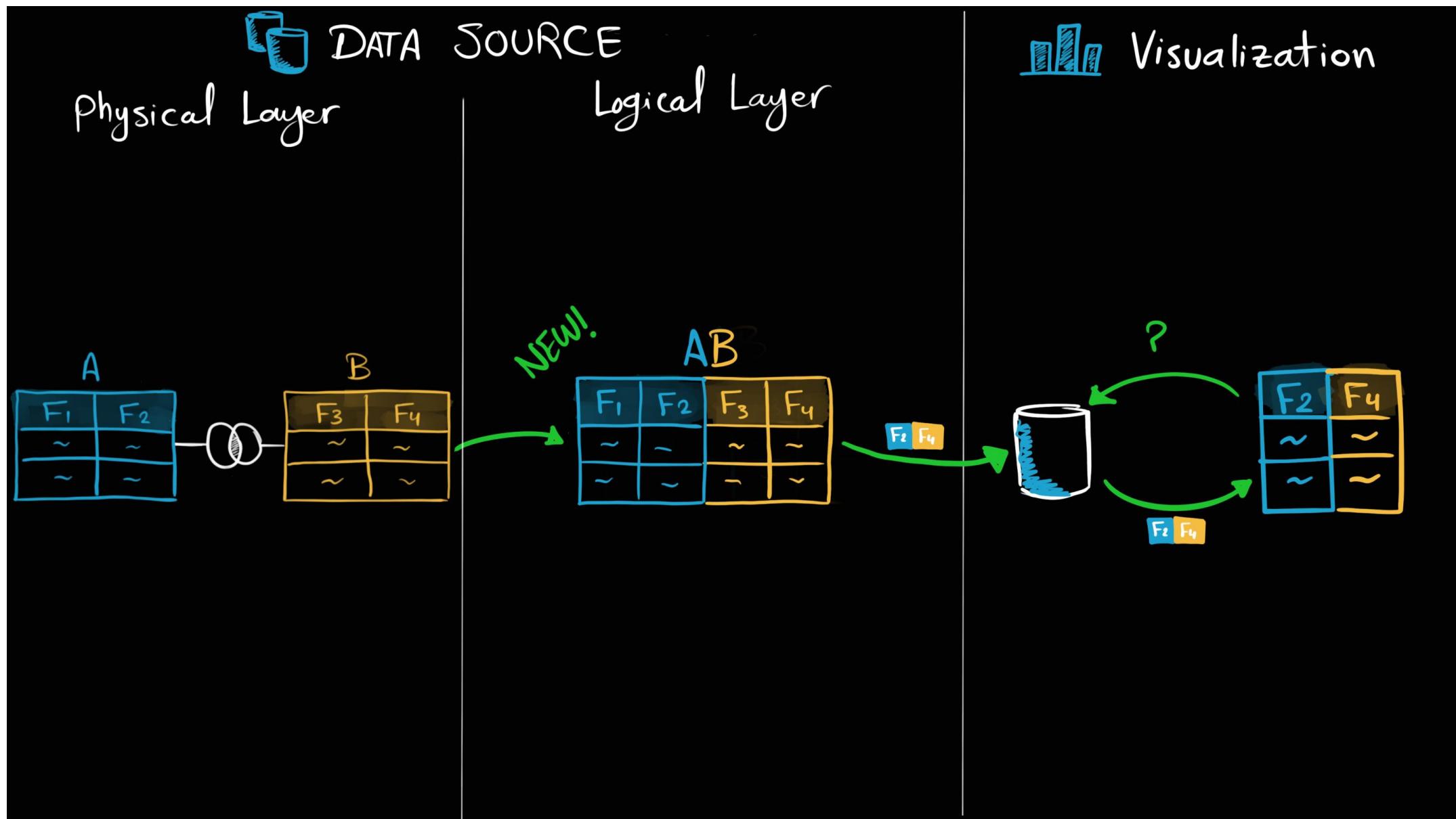
Physical Table

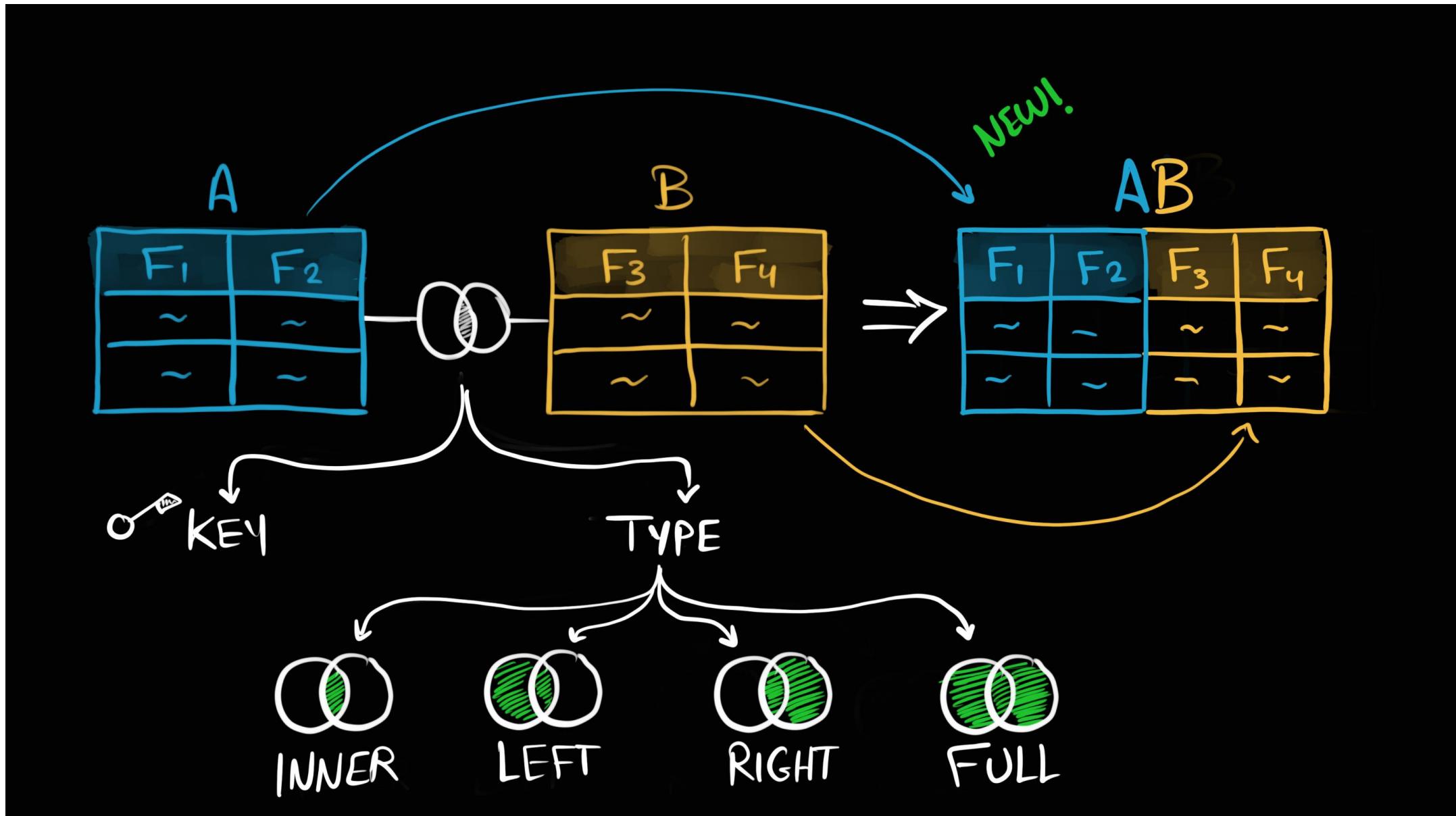


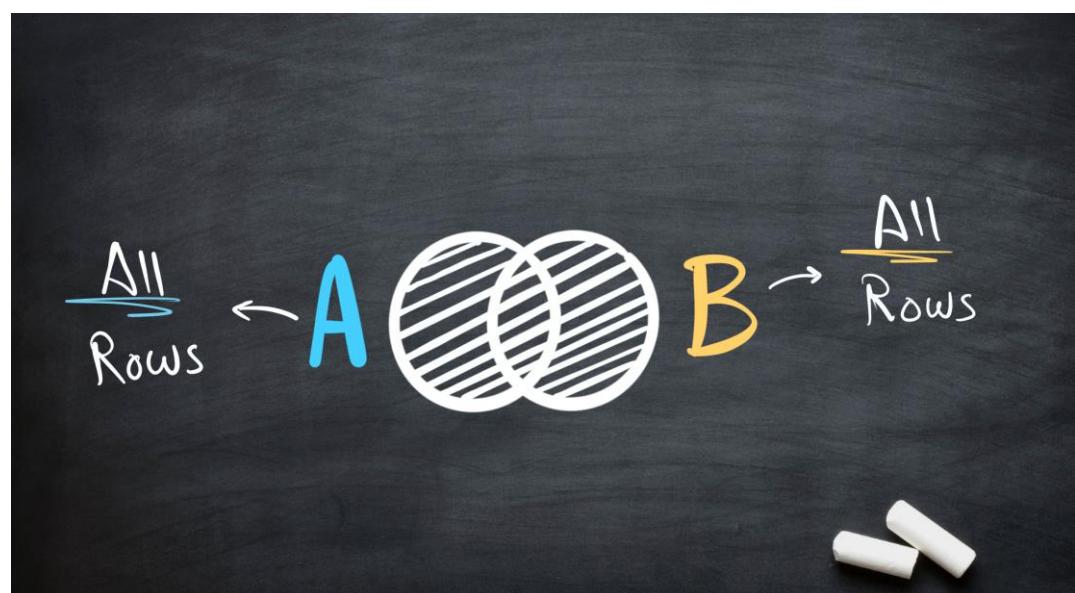
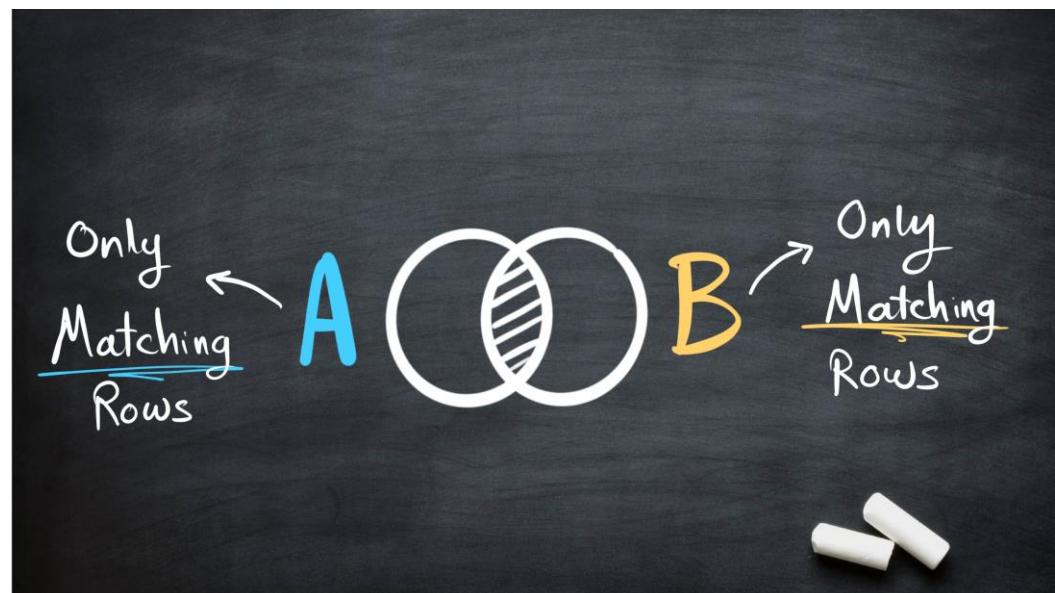
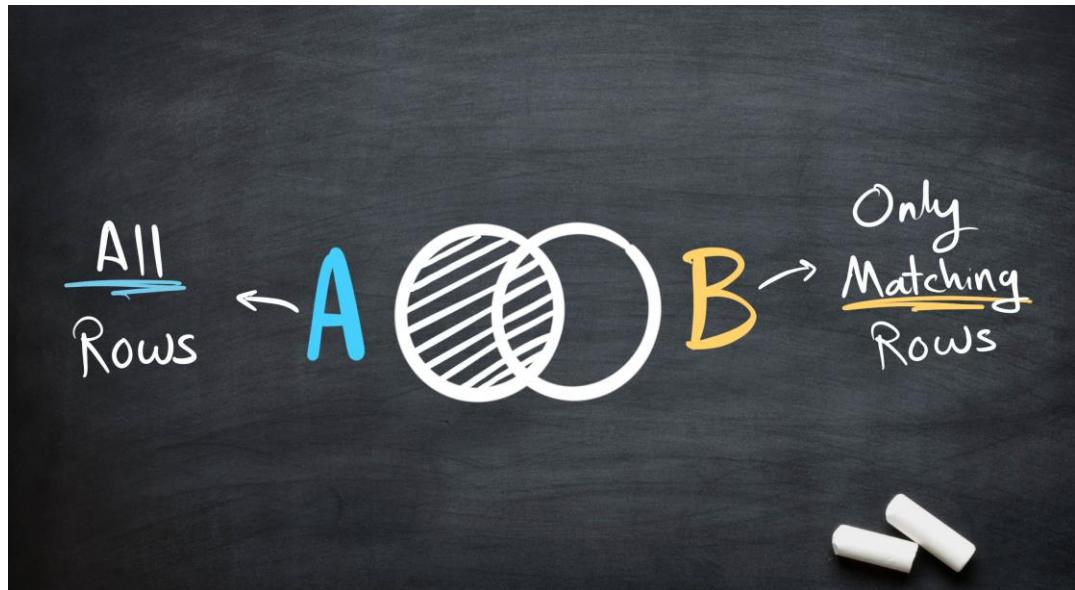
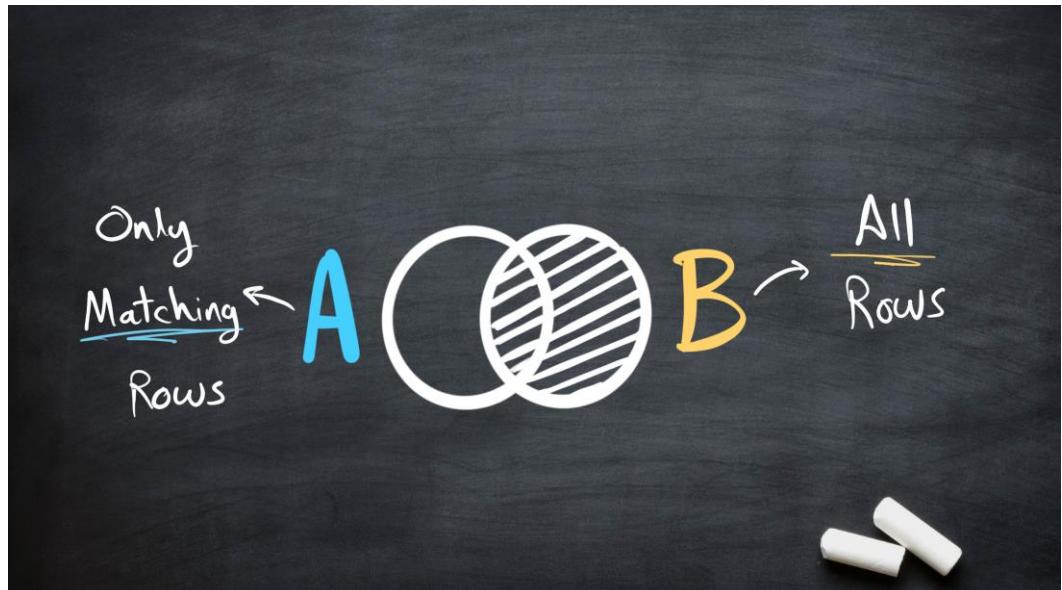
Blending

DATA WITH BARAA











JOIN | How it Works



CustomerNames

ID	Name
1	Maria
2	John



CustomerAges

ID	Age
1	20
3	35



Inner

ID	Name	ID	Age
1	Maria	1	20



Left

ID	Name	ID	Age
1	Maria	1	20
2	John	NULL	NULL



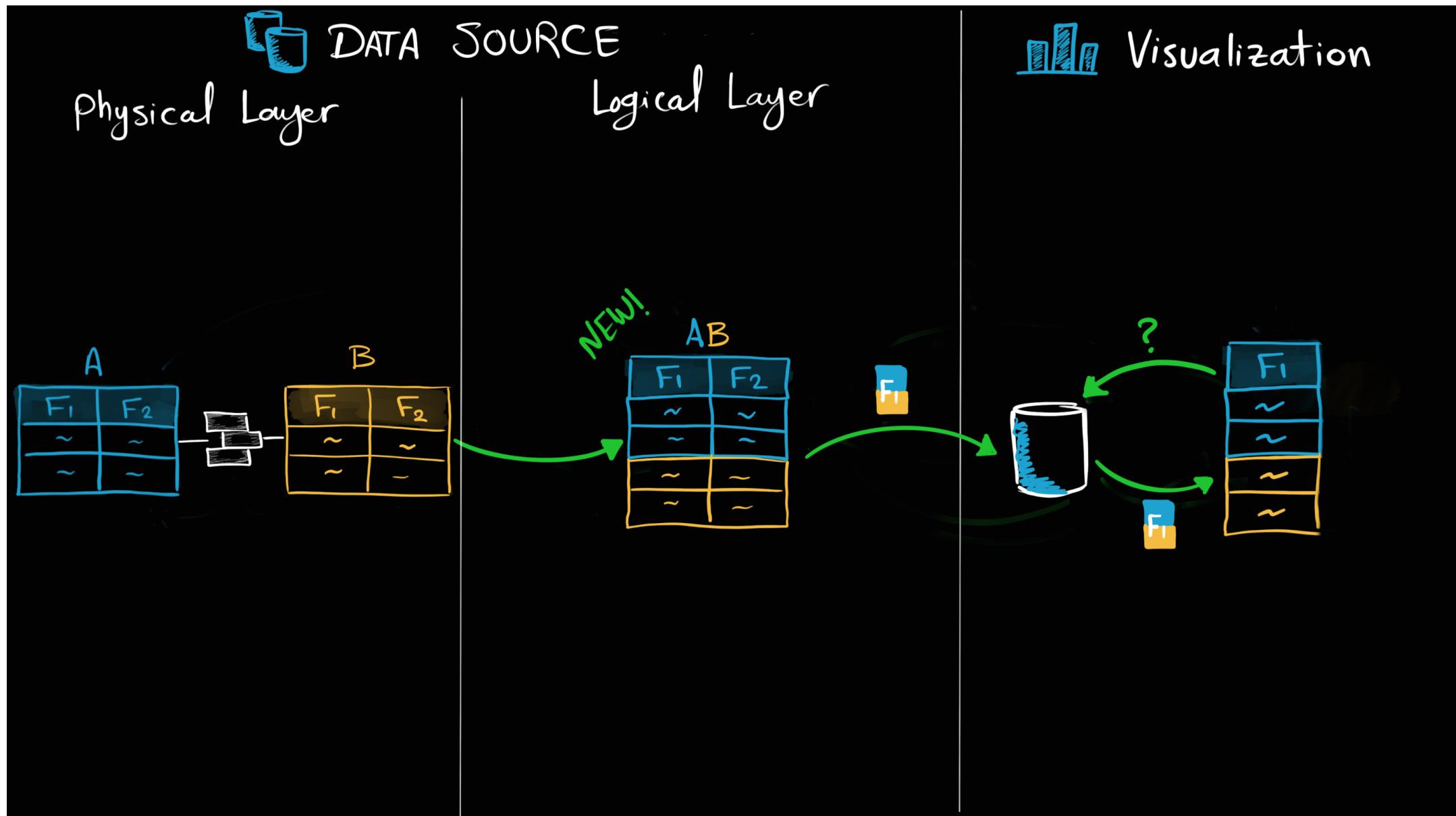
Right

ID	Name	ID	Age
1	Maria	1	20
NULL	NULL	3	35



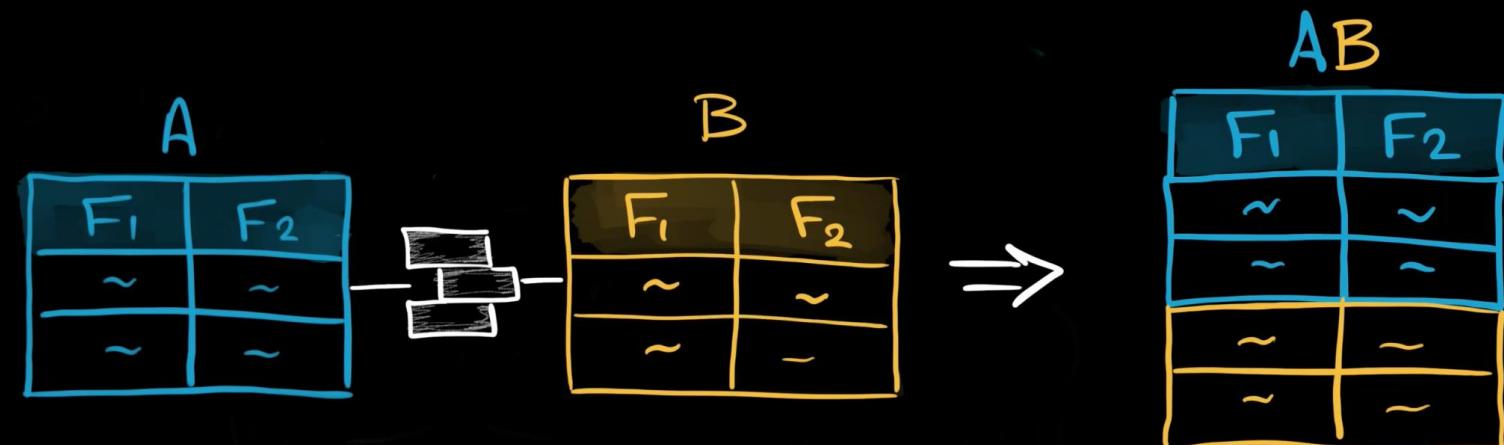
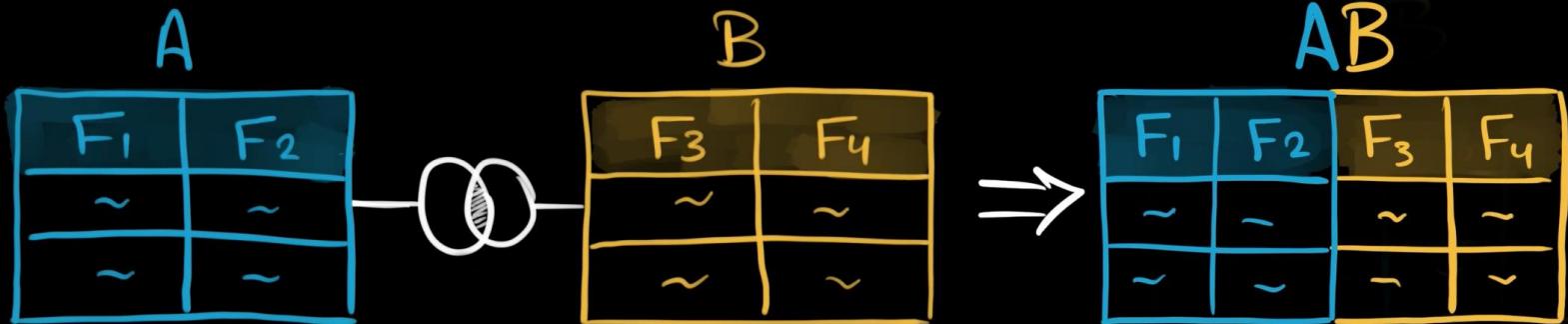
Full

ID	Name	ID	Age
1	Maria	1	20
2	John	NULL	NULL
NULL	NULL	3	35





JOIN Combine the FIELDS of two Tables



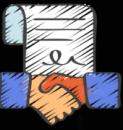
UNION Combine the ROWS of two Tables



DATA SOURCE
Logical Layer

A

F ₁	F ₂
~	~
~	~

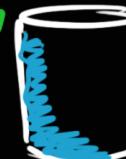


B

F ₃	F ₄
~	~
~	~

F₄F₁

Visualization



?

F₁ F₄

F ₁	F ₄
~	~
~	~



LEFT TABLE

Some Record Match

All Record Match

Some Record Match

All Record Match

RIGHT TABLE

Some Record Match

Some Record Match

All Record Match

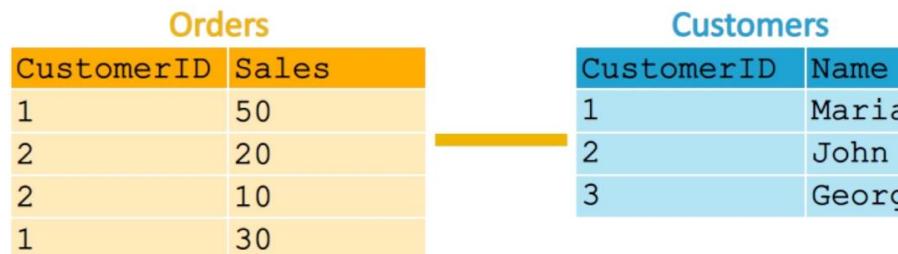
All Record Match

JOIN TYPES





Relationships | How it Works



MANY-MANY

CustomerID	Sum(Sales)	Name
1	80	Maria
2	30	John

MANY-ONE

CustomerID	Sum(Sales)	Name
1	80	Maria
2	30	John

ONE-MANY

CustomerID	Sum(Sales)	Name
1	50	Maria
2	20	John

ONE-ONE

CustomerID	Sum(Sales)	Name
1	50	Maria
2	20	John

Correctness Performance

OK	NOK
----	-----

OK	OK
----	----

NOK	NOK
-----	-----

NOK	OK
-----	----

Cardinality

MANY	MANY
MANY	ONE
ONE	MANY
ONE	ONE



DATA SOURCE
Logical Layer

A

F ₁	F ₂
~	~
~	~
~	~

F₁

B

F ₃	F ₄
~	~
~	~
~	~

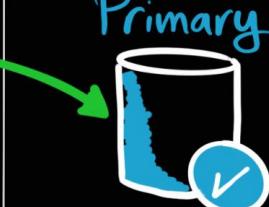
F₄

Visualization



Primary

Secondary



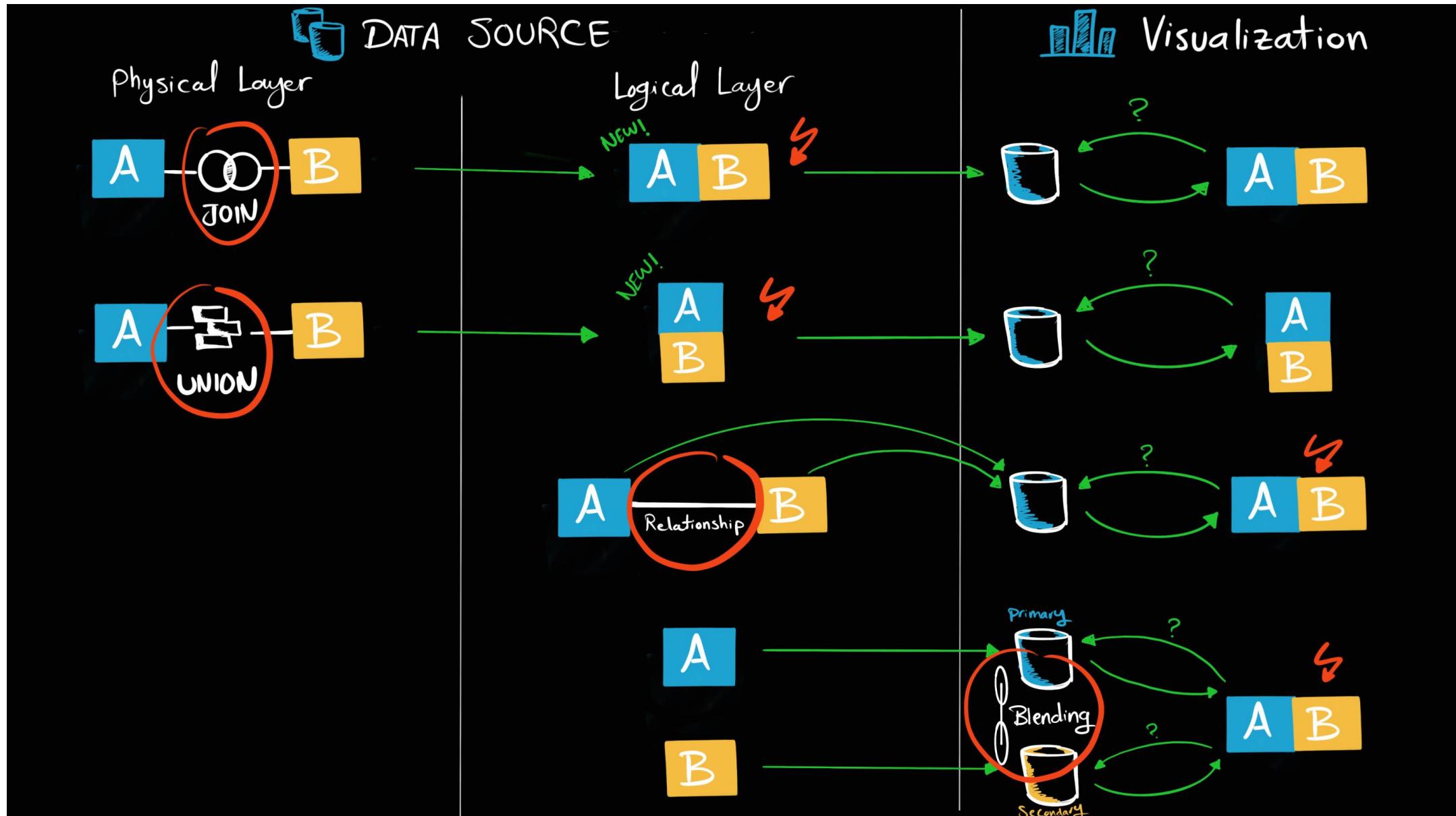
F₁



?

F ₁	F ₄
~	~
~	~
~	~

?





Layer	Physical Layer	Physical Layer	Logical Layer	Visualization Level
Multi-Data Sources	✗	✗	✗	✓
Merge Tables?	✓	✓	✗	✗
Flexibility	Static	Static	Flexible	Very Flexible (Page by Page)
Join Types	n/a	Inner, Left, Right, Full	All	Left
Rank	n/a	3	1 (Default)	2