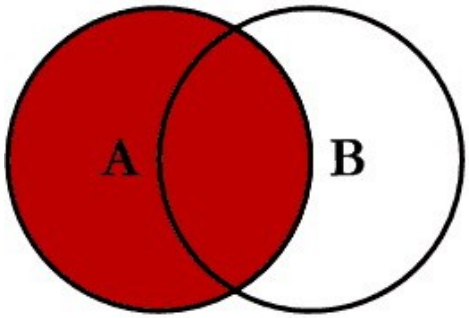
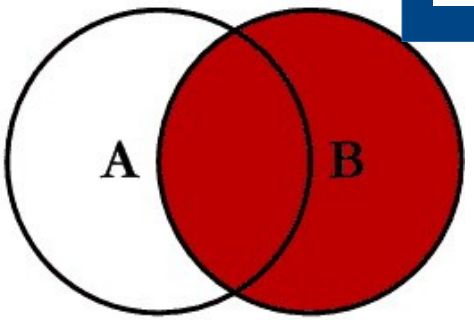
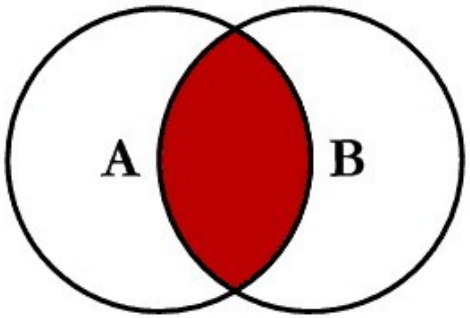
SQL JOINS



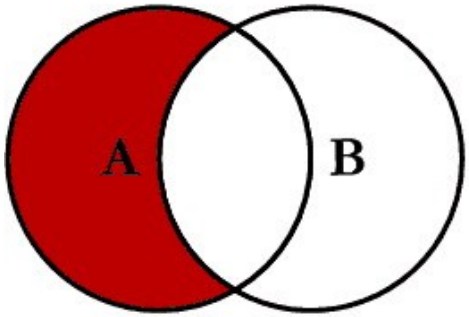

```
SELECT <select_list>
FROM TableA A
LEFT JOIN TableB B
ON A.Key = B.Key
```



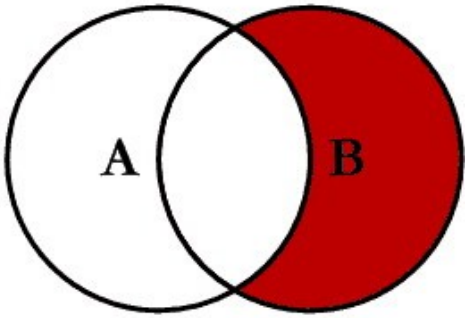

```
SELECT <select_list>
FROM TableA A
RIGHT JOIN TableB B
ON A.Key = B.Key
```



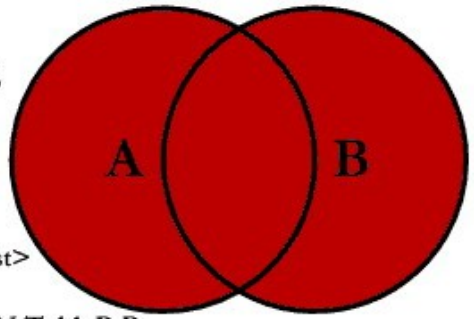

```
SELECT <select_list>
FROM TableA A
INNER JOIN TableB B
ON A.Key = B.Key
```



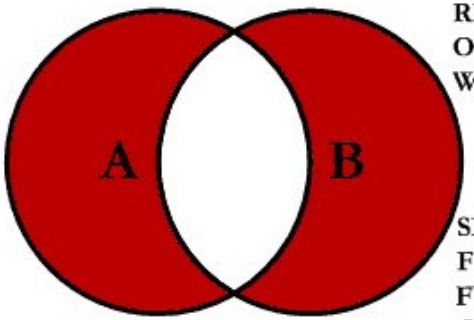

```
SELECT <select_list>
FROM TableA A
LEFT JOIN TableB B
ON A.Key = B.Key
WHERE B.Key IS NULL
```




```
SELECT <select_list>
FROM TableA A
RIGHT JOIN TableB B
ON A.Key = B.Key
WHERE A.Key IS NULL
```



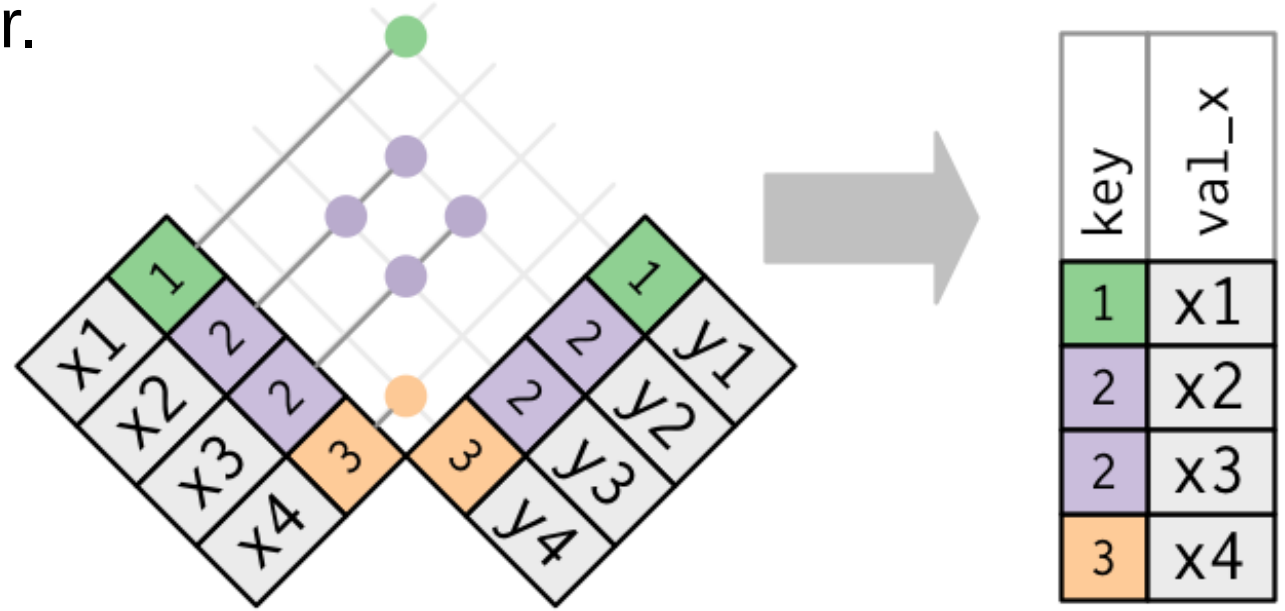

```
SELECT <select_list>
FROM TableA A
FULL OUTER JOIN TableB B
ON A.Key = B.Key
```




```
SELECT <select_list>
FROM TableA A
FULL OUTER JOIN TableB B
ON A.Key = B.Key
WHERE A.Key IS NULL
OR B.Key IS NULL
```

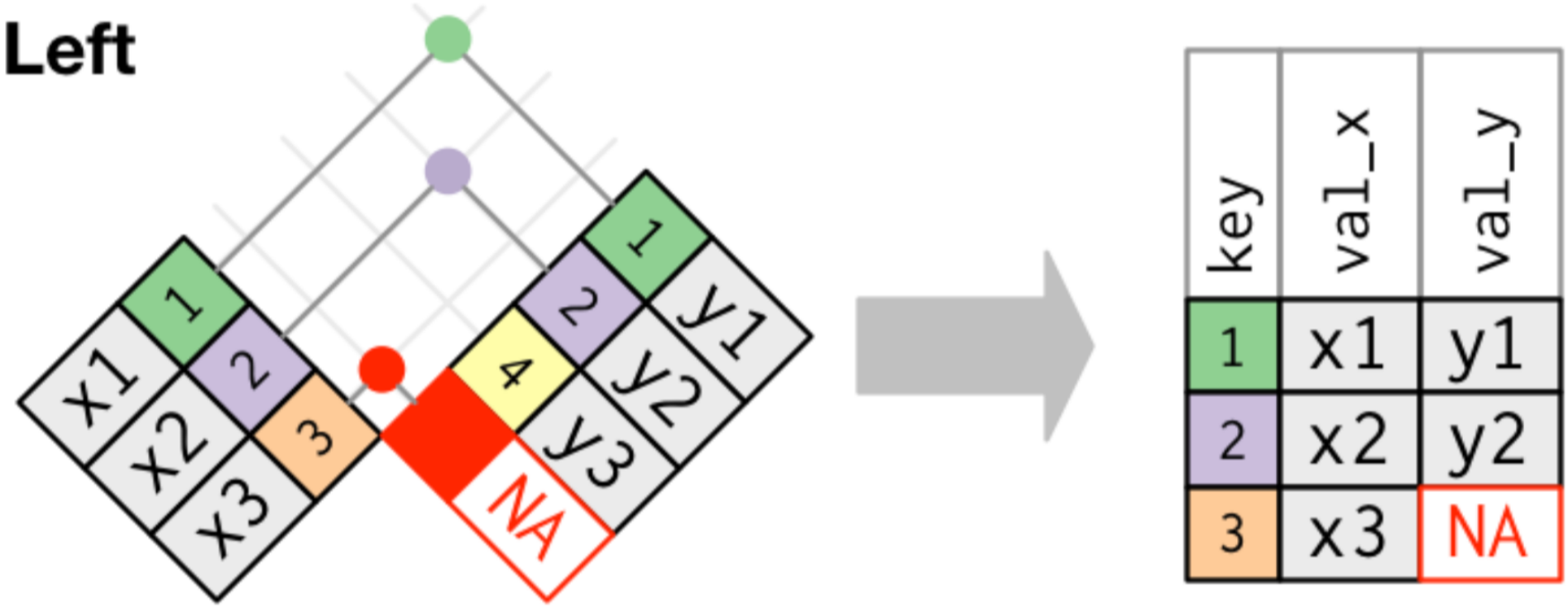
Mutating Joins

- A *mutating join* allows to combine variables from two tables (into one).
- How works:
  - Matches observations by particular keys
  - Copies entries across variables from one table to the other.



Left Join

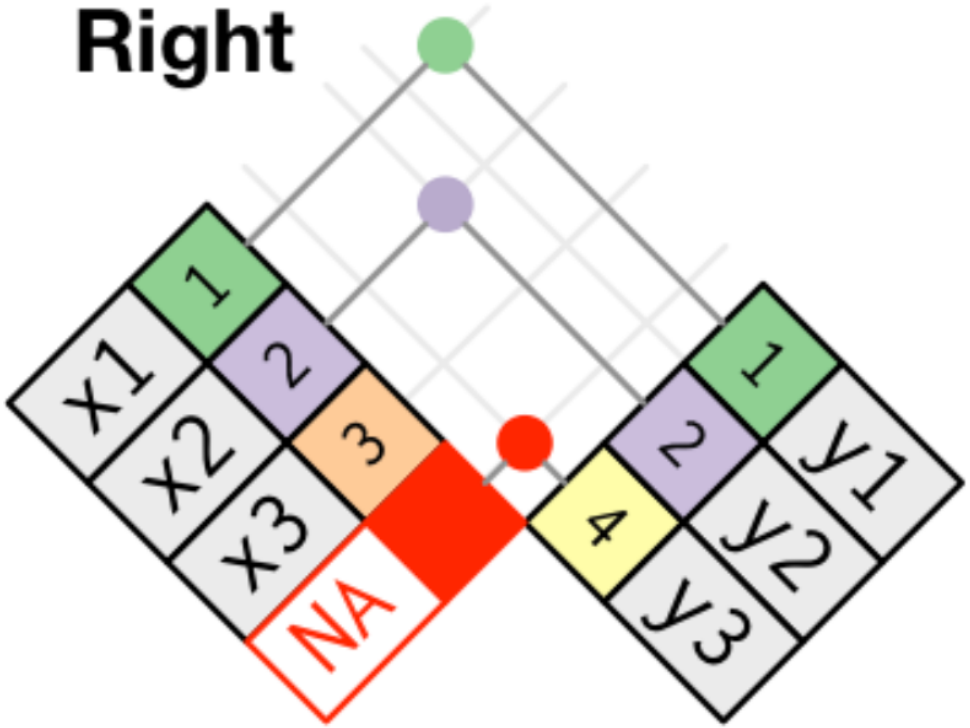
- The ***left*** side with the ***x***'s is used to determine a column.
- Missing data (***y***3) from the right-side is shown to be missing.



key	val_x	val_y
1	x1	y1
2	x2	y2
3	x3	NA

Right Join

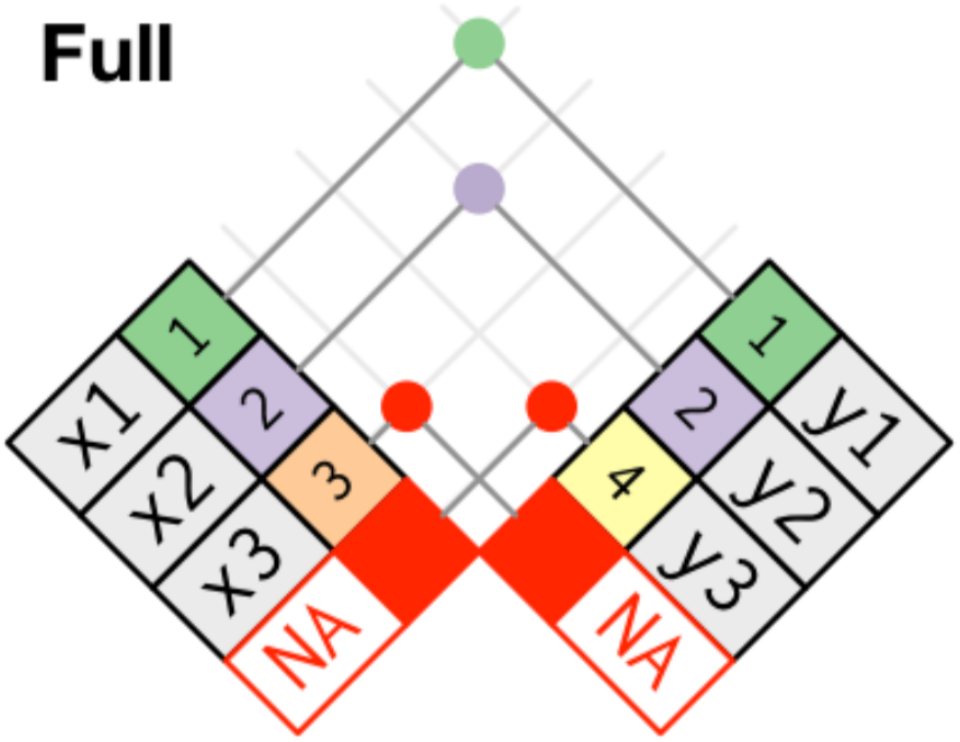
- The ***right*** side with the ***y***'s is used to determine a column.
- Missing data (***x***3) from the left-side is shown to be missing.



key	val_x	val_y
1	x1	y1
2	x2	y2
4	NA	y3

Full Join

- The ***left and right*** sides are used to determine a column.
- Missing data from either the left-side or the right-side is shown to be missing.



key	val_x	val_y
1	x1	y1
2	x2	y2
3	x3	NA
4	NA	y3