



JOINS



Joins

- Used to join two or more tables in a database.
- It can be used to fetch data from multiple tables.
- With the help of joins, we can combine multiple tables together based on some common fields.

Types of Joins

- Inner join
- Outer join
 - ◆ Left Outer join
 - ◆ Right Outer join
 - ◆ Full Outer join
- Cross join
- Self join

Student

Student ID	Student First Name
1	Alex
2	Bob
3	Casper

Course

Course ID	Course Name
CS123	Database
CS456	Operating System
CS789	Computer Networks

Registration

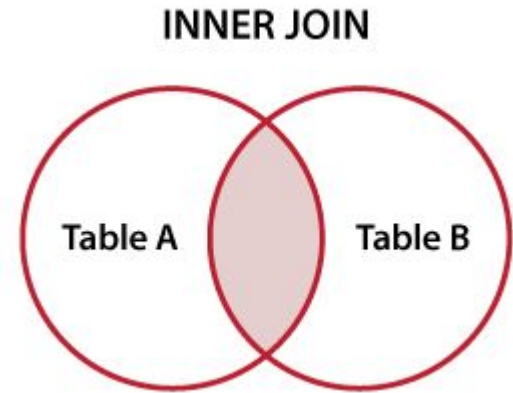
Student ID	Course ID	Grade
1	CS123	80
1	CS456	85
2	CS123	95
1	CS169	90

INNER JOIN

SELECT * FROM Table A

INNER JOIN Table B

ON A.key = B.key



INNER JOIN ON STUDENT AND REGISTRATION

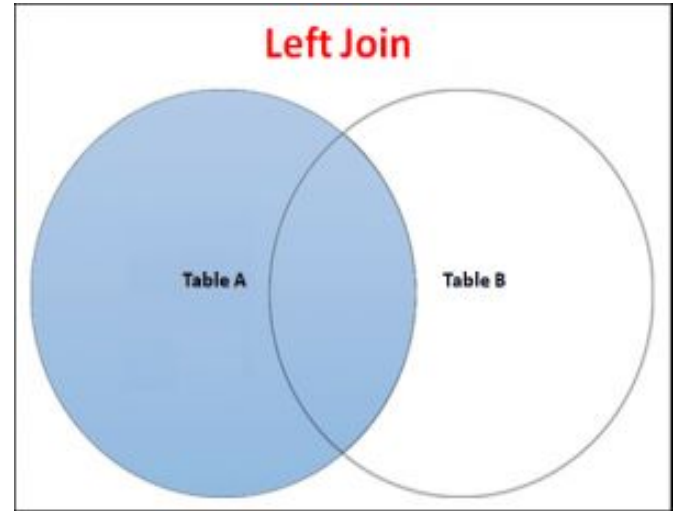
Student ID	Student First Name	Student ID	Course ID	Grade
1	Alex	1	CS123	80
1	Alex	1	CS456	85
2	Bob	2	CS123	95
1	Alex	1	CS169	90

LEFT OUTER JOIN

SELECT * FROM Table A

LEFT JOIN Table B

ON A.key = B.key



LEFT OUTER JOIN ON STUDENT AND REGISTRATION

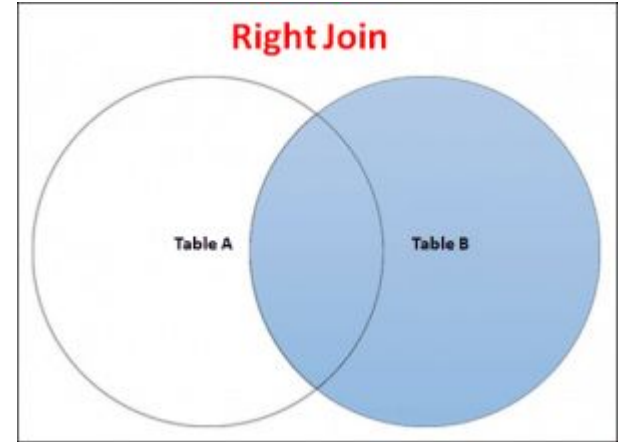
Student ID	Student First Name	Student ID	Course ID	Grade
1	Alex	1	CS123	80
1	Alex	1	CS456	85
2	Bob	2	CS123	95
1	Alex	1	CS169	90
3	Casper	[null]	[null]	[null]

RIGHT OUTER JOIN

SELECT * FROM Table A

RIGHT JOIN Table B

ON A.key = B.key

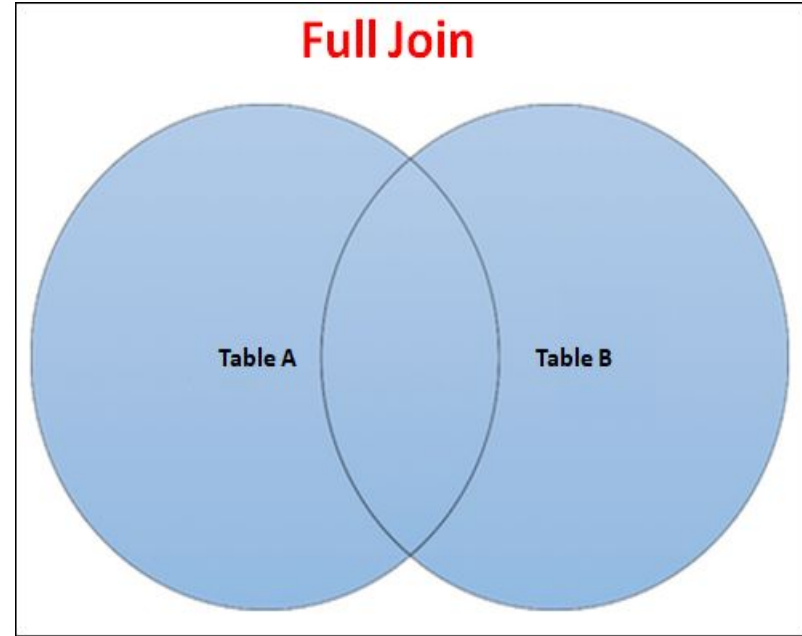


RIGHT OUTER JOIN ON REGISTRATION AND STUDENT

Student ID	Course ID	Grade	Student ID	Student First Name
1	CS123	80	1	Alex
1	CS456	85	1	Alex
2	CS123	95	2	Bob
1	CS169	90	1	Alex
[null]	[null]	[null]	3	Casper

FULL OUTER JOIN

```
SELECT * FROM Table A  
FULL OUTER JOIN Table B  
ON A.key = B.key
```



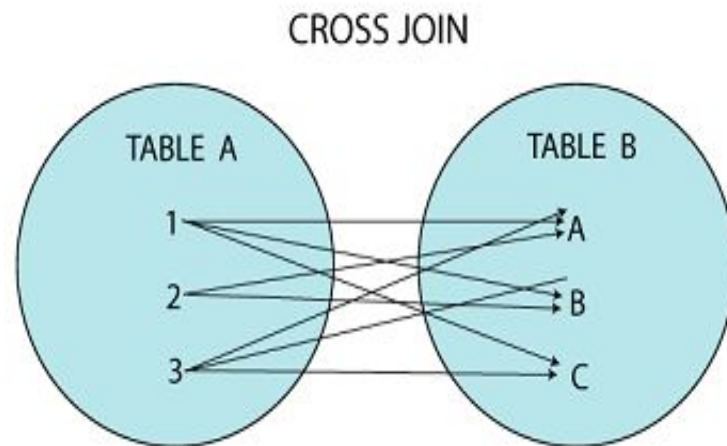
FULL OUTER JOIN ON REGISTRATION AND COURSE

Student ID	Course ID	Grade	Course ID	Course Name
1	CS123	80	CS123	Databases
1	CS456	85	CS456	Operating System
2	CS123	95	CS123	Databases
1	CS169	90	[null]	[null]
[null]	[null]	[null]	CS789	Computer Networks

CROSS JOIN

SELECT * FROM Table A

CROSS JOIN Table B



CROSS JOIN ON STUDENT AND COURSE

Student ID	Student First Name	Course ID	Course Name
1	Alex	CS123	Databases
1	Alex	CS456	Operating System
1	Alex	CS789	Computer Networks
2	Bob	CS123	Databases
2	Bob	CS456	Operating System
2	Bob	CS789	Computer Networks
3	Casper	CS123	Databases
3	Casper	CS456	Operating System
3	Casper	CS789	Computer Networks

SELF JOIN

Customer ID	Customer Name	Customer City
1	Alex	Germany
2	Bob	Berlin
3	Casper	Berlin
4	Anna	Germany

SELF JOIN

```
SELECT * FROM public."Customer" C1 , public."Customer" C2  
WHERE C1."Customer ID" <> C2."Customer ID"  
AND C1."Customer City" = C2."Customer City"
```


Customer ID	Customer Name	Customer City	Customer ID	Customer Name	Customer City
1	Alex	Germany	4	Anna	Germany
2	Bob	Berlin	3	Casper	Berlin
3	Casper	Berlin	2	Bob	Berlin
4	Anna	Germany	1	Alex	Germany