

# Joins - 1

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Notes

10<sup>th</sup> Hard day challenge :

1. Assignments + Revision
2. Backlog (Assignments of prev. session)
3. Addition Questions



# Joins

- Stitches rows of two tables together.

## Students

id	name	b_id	psp
1	John	1	80
2	Jane	1	90
3	Jack	2	78

## Batches

b_id	name
1	A
2	B

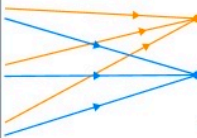
Now let's stitch the student's rows with the batch's rows in order to get the output.

## Students

id	name	b_id	psp
1	John	1	80
2	Jane	1	90
3	Jack	2	78

## Batches

b_id	name
1	A
2	B





We get the following output

Students

Batches

id	name	b_id	psp	b_id	name
1	John	1	80	1	A
1	John	1	80	2	B
2	Jane	1	90	1	A
2	Jane	1	90	2	B
3	Jack	2	78	1	A
3	Jack	2	78	2	B

Since this isn't the desired output and we only want data which matches the b\_id row of students table with the b\_id row of batch table. Hence we filter out the undesired data.

After filtering we get the following final table :

Students

Batches

id	name	b_id	psp	b_id	name
1	John	1	80	1	A
1	John	1	80	2	B
2	Jane	1	90	1	A
2	Jane	1	90	2	B
3	Jack	2	78	1	A
3	Jack	2	78	2	B

Required Output

Students\_table

batch\_table

id	name	b_id	psp	b_id	name
1	John	1	80	1	A
2	Jane	1	90	1	A
3	Jack	2	78	2	B



## &lt; / &gt; Syntax

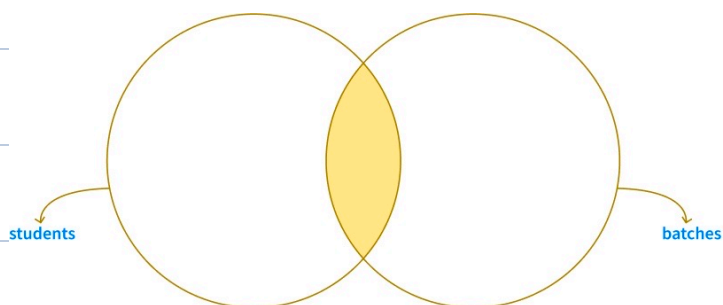
```
SELECT students.name, batches.name
FROM students
JOIN batches
ON students.b_id = batches.b_id
```

## &lt; / &gt; Pseudo-code

```
ans = []
for row1 in students :
    for row2 in batches :
        if row1 [b_id] = row2 [b_id] :
            ans.add( row1 + row2 )

for rows in ans :
    print [rows[name], rows[batch_name]]
```

$$TC = O(N^2)$$





## Self - Joins ( Joining the table with itself )

- Here we join the tables with itself.

Consider the following table :

**Students**

id	name	buddy_id
1	A	2
2	B	3
3	C	1
4	D	1
5	E	4

**Question :** Get name of all the students along with their buddy names.

**Expected Output**

name	buddy_id
A	B
B	C
C	A
D	A
E	D



' But how can we get buddy names? '



' By joining the students table with itself... '



Example

Self join

Students

id	name	buddy_id
1	A	2
2	B	3
3	C	1
4	D	1
5	E	4

Buddy

id	name	buddy_id
1	A	2
2	B	3
3	C	1
4	D	1
5	E	4

Here we will join the given tables i.e students tables buddy\_id with buddy tables buddy\_id.

As shown below.

Students

id	name	buddy_id
1	A	2
2	B	3
3	C	1
4	D	1
5	E	4

Buddy

id	name	buddy_id
1	A	2
2	B	3
3	C	1
4	D	1
5	E	4



Students_table			Buddy_table		
id	name	buddy_id	id	name	buddy_id
1	A	2	2	B	3
2	B	3	3	C	1
3	C	1	1	A	2
4	D	1	1	A	2
5	E	4	4	D	1



## Macros

*< / > Syntax*

```
SELECT S.name, B.name
```

```
FROM Students as S
```

```
JOIN Students as B
```

```
ON S.buddy_id = B.id
```

*< / > Pseudo-code*

```
ans = []  
  
for row1 in students :  
    for row2 in students :  
        if row1 [buddy_id] == row2 [id] :  
            ans.add( row1 + row2 )  
  
print( ans )
```



# Joining multiple tables



'Do you think we will always get answer just  
by joining two tables?'

## Example

### Students

id	name	Instructor_id	b_id
1	Jim	1	2
2	Jenny	1	1

### Instructors

id	name
1	Rahul
2	Prateek

### Batches

b_id	batch_name
1	A
2	B

**Question :** For every student, give their corresponding instructor name and batch name.

name

Jim

Instructor\_name

Rahul

batch\_name

B





- Question :** 1. Is it possible to get this data using just 1 table? or by just joining two tables?
2. What is output of join? Intermediary table?

Let's join student with batches first

< / > Syntax

SELECT \_\_\_\_

FROM students s

JOIN batches b

ON s.b\_id = b.b\_id

### Intermediary table

Students_table				batch_table	
id	name	Instructor_id	b_id	b_id	batch_name
1	Jim	1	2	2	B
2	Jenny	1	1	1	A

} table



- Since this is also a table can we join another table to it?

< / > Syntax

```
SELECT s.name, b.name, l.name
```

```
FROM students s
```

```
JOIN batches b
```

```
ON s.b_id = b.b_id
```

```
JOIN instructors i
```

```
ON s.instructors_id = i.i_id
```

Intermediary table

## Final table

Students_table				batch_table		instructor_table	
id	name	Instructor_id	b_id	b_id	batch_name	id	name
1	Jim	1	2	2	B	1	Rahul
2	Jenny	1	1	1	A	1	Rahul

