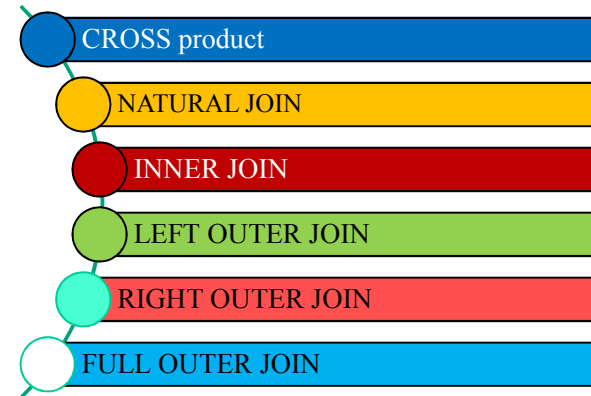


# CSE 303: Database

## Lecture 07

2016  
INNER JOINS and OUTER JOINS

## Different Types of JOIN



PC

model	maker
1001	A
1002	B
1003	C

Laptop

model	maker
2001	A
2002	B
2003	D

PC **INNER JOIN** Laptop **ON** PC.maker = Laptop.maker



PC.model	PC.maker	Laptop.model	Laptop.maker
1001	A	2001	A
1002	B	2002	B

PC

model	maker
1001	A
1002	B
1003	C

Laptop

model	maker
2001	A
2002	B
2003	D

PC **LEFT OUTER JOIN** Laptop **ON** PC.maker = Laptop.maker



**COMMON TUPLES PLUS DANGLING TUPLES FROM LEFT TABLE**

PC.model	PC.maker	Laptop.model	Laptop.maker
1001	A	2001	A
1002	B	2002	B
1003	C	NULL	NULL

**PC**

model	maker
1001	A
1002	B
1003	C

**Laptop**

model	maker
2001	A
2002	B
2003	D

**PC RIGHT OUTER JOIN Laptop ON PC.maker = Laptop.maker**

↓

**COMMON TUPLES PLUS DANGLING TUPLES FROM RIGHT TABLE**

PC.model	PC.maker	Laptop.model	Laptop.maker
1001	A	2001	A
1002	B	2002	B
NULL	NULL	2003	D

CSE 303: Ashikur Rahman 5

**PC**

model	maker
1001	A
1002	B
1003	C

**Laptop**

model	maker
2001	A
2002	B
2003	D

**PC FULL OUTER JOIN Laptop ON PC.maker = Laptop.maker**

↓

**COMMON TUPLES PLUS DANGLING TUPLES FROM BOTH TABLES**

PC.model	PC.maker	Laptop.model	Laptop.maker
1001	A	2001	A
1002	B	2002	B
1003	C	NULL	NULL
NULL	NULL	2003	D

6

**Find all manufacturers that sell both PC and Laptop**

**PC**

model	maker
1001	A
1002	B
1003	C

**Laptop**

model	maker
2001	A
2002	B
2003	D

**SELECT DISTINCT PC.maker FROM PC INNER JOIN Laptop ON PC.maker = Laptop.maker**

maker
A
B

CSE 303: Ashikur Rahman 7

**Find all manufacturers that make PCs but not Laptops**

**PC**

model	maker
1001	A
1002	B
1003	C

**Laptop**

model	maker
2001	A
2002	B
2003	D

**SELECT DISTINCT PC.maker FROM PC LEFT OUTER JOIN Laptop ON PC.maker = Laptop.maker WHERE PC.maker IS NOT NULL AND Laptop.maker IS NULL**

maker
C

8

Find all manufacturers that make Laptops but not PCs

PC

model	maker
1001	A
1002	B
1003	C

Laptop

model	maker
2001	A
2002	B
2003	D

```
SELECT DISTINCT PC.maker
FROM PC RIGHT OUTER JOIN Laptop
ON PC.maker = Laptop.maker
WHERE PC.maker IS NULL
AND Laptop.maker IS NOT NULL
```

maker
D

9

Find all manufacturers that make either Laptop or PC or both

PC

model	maker
1001	A
1002	B
1003	C

Laptop

model	maker
2001	A
2002	B
2003	D

```
SELECT PC.maker
FROM PC FULL OUTER JOIN Laptop
ON PC.maker = Laptop.maker
WHERE PC.maker IS NOT NULL
UNION
SELECT Laptop.maker
FROM PC FULL OUTER JOIN Laptop
ON PC.maker = Laptop.maker
WHERE Laptop.maker IS NOT NULL
```

maker
A
B

10