

CSE 303: Database

Lecture 07

2016

INNER JOINS and OUTER JOINS

Different Types of JOIN



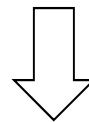
PC

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

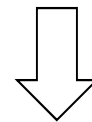
PC

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

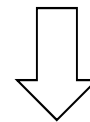
PC

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

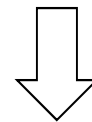
PC

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

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

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

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

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