ORIE 3120

Lecture 5: SQL #4 [INNER JOIN]
INNER JOIN
Joining Tables in Queries

• Having the capability to select data from multiple tables is one of SQL’s most powerful features.

• The most practical queries are those whose data is acquired from multiple tables within the database.
Joins

• A join combines two or more tables to retrieve data from multiple tables.
• They often join a child’s foreign key on the field it references in the parent.
• We’ll cover a few types of joins
  – Inner joins
  – Left joins
  – Right joins
  – Full Outer joins
Inner Join

- The inner join joins two tables with a common column.
- Let’s look at the Products and Suppliers tables from our previous example.
- I want a list of product names with the name of the company that supplies each product.
Inner Join

- As you can see, the data is in two tables.
- ProductName is in the Products table
- CompanyName is in the Suppliers table

- We can bring them together using an inner join
Inner Join Syntax

```sql
SELECT Suppliers.SupplierID, 
Products.ProductName, 
Suppliers.CompanyName 
FROM Products, Suppliers 
WHERE Products.SupplierID = Suppliers.SupplierID;
```
Example: INNER JOIN

**Products**

<table>
<thead>
<tr>
<th>ProductName</th>
<th>SupplierID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aniseed Syrup</td>
<td>1</td>
</tr>
<tr>
<td>Chai</td>
<td>1</td>
</tr>
<tr>
<td>Chang</td>
<td>1</td>
</tr>
<tr>
<td>Chef Anton's Cajun Seasoning</td>
<td>2</td>
</tr>
<tr>
<td>Tofu</td>
<td>6</td>
</tr>
</tbody>
</table>

**Suppliers**

<table>
<thead>
<tr>
<th>SupplierID</th>
<th>CompanyName</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Exotic Liquids</td>
</tr>
<tr>
<td>2</td>
<td>New Orleans Cajun Delights</td>
</tr>
<tr>
<td>3</td>
<td>Grandma Kelly's Homestead</td>
</tr>
</tbody>
</table>

```
SELECT Suppliers.SupplierID, Products.ProductName, Suppliers.CompanyName FROM Products, Suppliers WHERE Products.SupplierID = Suppliers.SupplierID;
```
Let’s practice (Q1)

```
SELECT T1.id, T1.a, T2.b
FROM T1
INNER JOIN T2
ON T1.id = T2.id
```

How many records are returned?

(a) 3
(b) 4
(c) 5
(d) 6
(e) 7
Let’s practice (Q2)

SELECT T1.id, T1.a, T2.b
FROM T1
INNER JOIN T2
ON T1.a > T2.b

How many records are returned?

(a) 4
(b) 6
(c) 8
(d) 10
(e) 12
Qualify columns to prevent ambiguity

• Each column in this SELECT clause is preceded by the associated table name
• This is called *qualifying the columns* in a query.
• Qualifying the columns is only needed for columns that exist in more than one table referenced by a query.
Did we need to qualify this column?

SELECT Products.ProductName, Suppliers.CompanyName
FROM Products, Suppliers
WHERE Products.SupplierID = Suppliers.SupplierID

(a) Yes  (b) No
Did we need to qualify this column?

SELECT Products.ProductName, Suppliers.CompanyName FROM Products, Suppliers WHERE Products.SupplierID = Suppliers.SupplierID

(a) Yes  
(b) No
Did we need to qualify these columns?

SELECT Products.ProductName, Suppliers.CompanyName
FROM Products, Suppliers
WHERE Products.SupplierID = Suppliers.SupplierID

(a) Yes
(b) No
Alternative Inner Join Syntax

SELECT Products.ProductName,
       Suppliers.CompanyName
FROM   Products
INNER JOIN Suppliers
ON     Products.SupplierID = Suppliers.SupplierID
You can choose which syntax to use

• You can use either syntax
• You should understand both