ORIE 3120

Lecture 5: SQL #4 [INNER JOIN]

INNER JOIN

Joining Tables in Queries

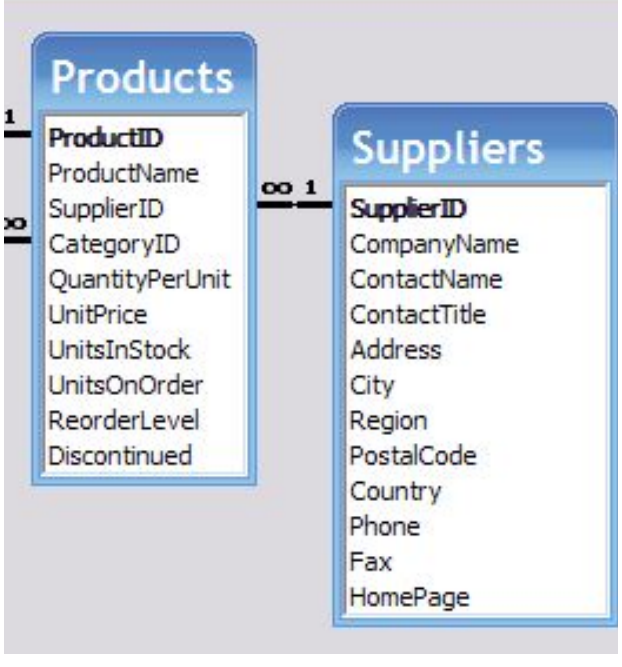
- Having the capability to select data from multiple tables is one of SQL's most powerful features.
- The most practical queries are those whose data is acquired from multiple tables within the database.

Joins

- A join combines two or more tables to retrieve data from multiple tables.
- We'll cover a few types of joins
  - Inner joins
  - Left joins
  - Right joins
  - Full Outer joins

Inner Join

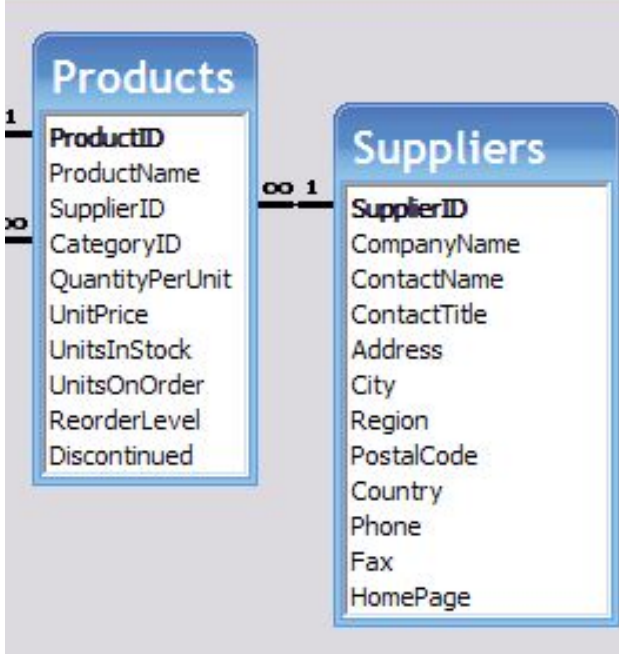
- The inner join joins two tables with a common column.
- Let's look at the Products and Suppliers tables from our previous example
- I want a list of product names with the name of the company that supplies each product



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

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

Example: INNER JOIN

Products

ProductName	SupplierID
Aniseed Syrup	1
Chai	1
Chang	1
Chef Anton's Cajun Seasoning	2
Tofu	6

Suppliers

SupplierID	CompanyName
1	Exotic Liquids
2	New Orleans Cajun Delights
3	Grandma Kelly's Homestead

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

SupplierID	ProductName	CompanyName
1	Chai	Exotic Liquids
1	Chang	Exotic Liquids
1	Aniseed Syrup	Exotic Liquids
2	Chef Anton's Cajun Seasoning	New Orleans Cajun Delights

Let’s practice (Q1)

T1

id	a
1	57
2	23
3	9

T2

id	b
1	2
3	11
4	42
5	30
5	56
2	12
1	70

```
SELECT T1.id, T1.a, T2.b
FROM T1, T2
WHERE T1.id = T2.id
```

How many records are returned?

(a) 3
(b) 4
(c) 5
(d) 6
(e) 7

Let's practice (Q2)

T1

id	a
1	57
2	23
3	9

T2

id	b
1	2
3	11
4	42
5	30
5	56
2	12
1	70

```
SELECT T1.id, T1.a, T2.b
FROM T1, T2
WHERE T1.a > T2.b
```

How many records are returned?

(a) 4
(b) 6
(c) 8
(d) 10
(e) 12

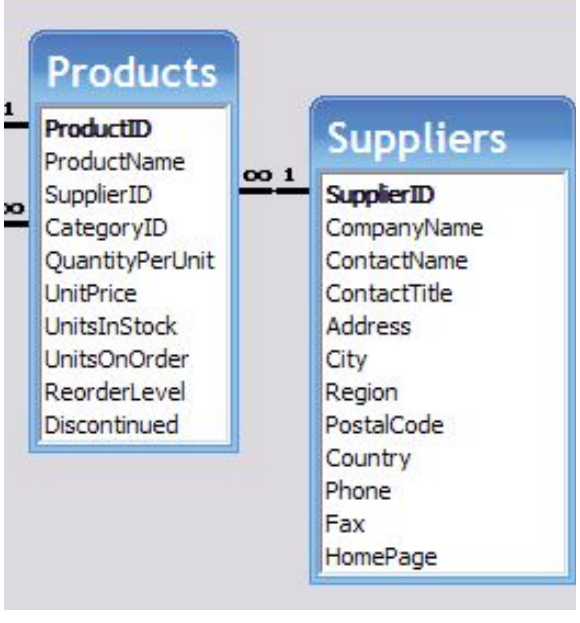
Qualify columns to prevent ambiguity

- 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.

Q3: Did we need to qualify this column?

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

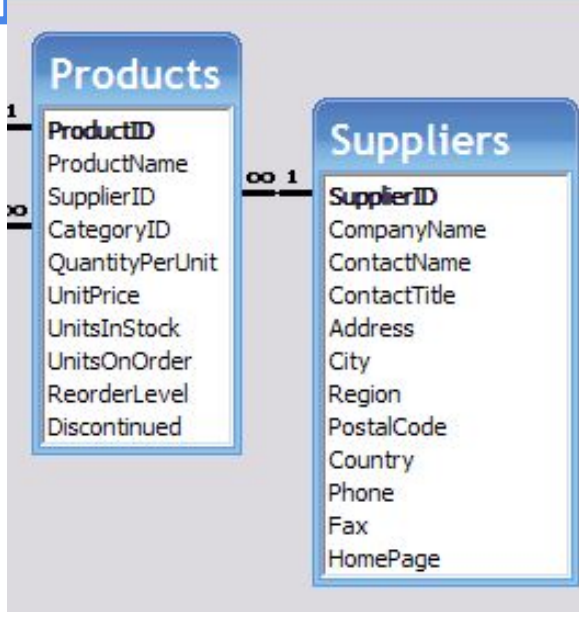
(a) Yes
(b) No



Q4: Did we need to qualify this column?

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

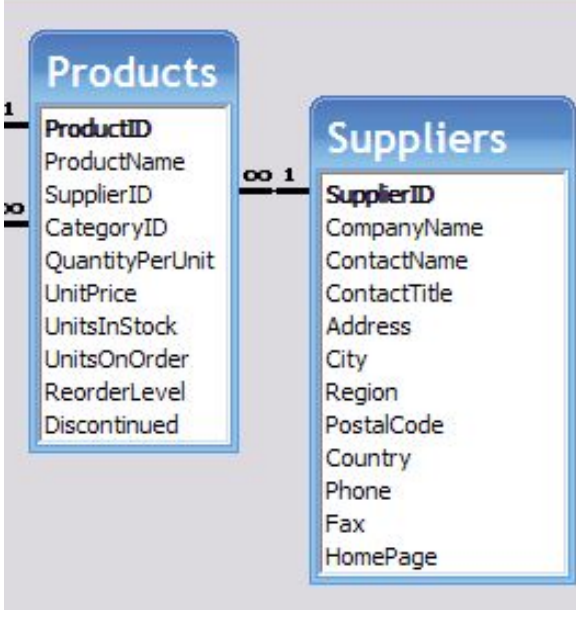
(a) Yes
(b) No



Q5: 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
- Understand both