Joins

Elements of Databases
September 13, 2017
Announcements:

- Reminder: Lab 1 starts on Monday
- Monday: Git and Github Demo
- Monday: Stache Demo
1) What is the most common type of join?

A) INSIDE JOIN
B) JOINED
C) JOINED TABLE
D) INNER JOIN
2) An INNER JOIN can be performed between any two arbitrary tables in the database.

A) True
B) False
3) Does the SQL query return the Result Table shown?

```
SELECT emp_name, dep_name
FROM Employees INNER JOIN Departments on emp_dep = depid;
```

<table>
<thead>
<tr>
<th>Employee</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mike</td>
<td>Sales</td>
</tr>
<tr>
<td>Dave</td>
<td>Product</td>
</tr>
<tr>
<td>Sarah</td>
<td>Research</td>
</tr>
<tr>
<td>Jim</td>
<td>Engineering</td>
</tr>
<tr>
<td>Sunil</td>
<td>Sales</td>
</tr>
<tr>
<td>Morgan</td>
<td>Engineering</td>
</tr>
</tbody>
</table>

A) Yes
B) No
4) Does the SQL query return the Result Table shown?

A) Yes
B) No
5) An INNER JOIN requires one of the joined columns to be a primary key.

A) True
B) False
Instacart Entities with Attributes

**Orders**
- order_id: int
- user_id: int
- eval_set: varchar(?)
- order_number: int
- order_dow: int
- order_hour_of_day: int
- days_since_prior_order: int

**Departments**
- department_id: int
- department_name: varchar(?)

**Aisles**
- aisle_id: int
- aisle_name: varchar(?)

**Products**
- product_id: int
- product_name: varchar(?)
- aisle_id: int
- department_id: int

**Order_Products**
- order_id: int
- product_id: int
- add_to_cart_order: int
- reordered_by_user: boolean
Instacart Entities with PKs

### Departments
- **PK**:部门ID (`department_id`, int)
- **部门名称** (`department_name`, varchar)

### Aisles
- **PK**:走道ID (`aisle_id`, int)
- **走道名称** (`aisle_name`, varchar)

### Orders
- **PK**:订单ID (`order_id`, int)
- **用户ID** (`user_id`, int)
- **评估集** (`eval_set`, varchar)
- **订单编号** (`order_number`, int)
- **订单日** (`order_dow`, int)
- **订单小时** (`order_hour_of_day`, int)
- **距离前一次订单天数** (`days_since_prior_order`, int)

### Order_Products
- **PK**:订单ID (`order_id`, int)
- **产品ID** (`product_id`, int)
- **添加到购物车顺序** (`add_to_cart_order`, int)
- **是否重订购** (`reordered_by_user`, boolean)

### Products
- **PK**:产品ID (`product_id`, int)
- **产品名称** (`product_name`, varchar)
- **走道ID** (`aisle_id`, int)
- **部门ID** (`department_id`, int)
Practice Problem 1: Find the FKs in the schema
Practice Problem 1: Find the FKs in the schema

How many FKs does this schema have?

A. 1  
B. 2  
C. 3  
D. 4  
E. 5
Practice Problem 1: Solution

How many FKS does this schema have?

A. 1   B. 2   C. 3   D. 4   E. 5
Practice Problem 2: Find all customers who have placed large orders with 100+ products. Hint: `add_to_cart_order`.
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How many customers placed large orders?

A. <15 customers  
B. 16-50 customers  
C. 51-100 customers  
D. >100 customers
Practice Problem 2: Find all customers who have placed large orders with 100+ products. Hint: add_to_cart_order.

How many customers placed large orders?

A. <15 customers  
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C. 51-100 customers  
D. >100 customers
Practice Problem 3: Find all products that have the word ‘Cereal’ in their name.
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How many results were returned?

A. 1-100 cereals  
B. 101-300 cereals  
C. 301-500 cereals  
D. 501+ cereals
Practice Problem 3: Find all products that have the word ‘Cereal’ in their name.

How many results were returned?

A. 1-100 cereals  
B. 101-300 cereals  
C. 301-500 cereals  
D. 501+ cereals
Practice Problem 4: Find all customers who have ordered ‘Ice Cream’ between 12am and 2am any day of the week.
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How many customers were returned?

A. ~1000 customers  
B. ~2000 customers  
C. ~3000 customers  
D. 4000+ customers
Practice Problem 4: Find all customers who have ordered ‘Ice Cream’ between 12am and 2am any day of the week.

How many customers were returned?

A.  ~1000 customers  
B.  ~2000 customers  
C.  ~3000 customers  
D.  4000+ customers
Practice Problem 5: Find all the ‘Spaghetti’ products in the ‘frozen meals’ aisle.
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How many products were returned?

A. 1 product  
B. 2-5 products  
C. 6-10 products  
D. > 10 products
Practice Problem 5: Find all the Spaghetti products in the ‘frozen meals’ aisle.

How many products were returned?

A. 1 product  B. 2-5 products  C. 6-10 products  D. > 10 products