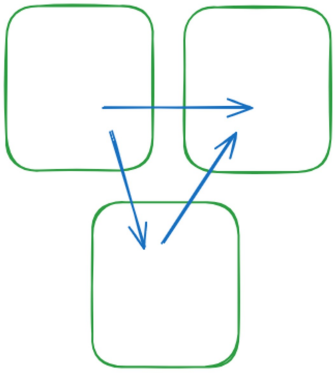
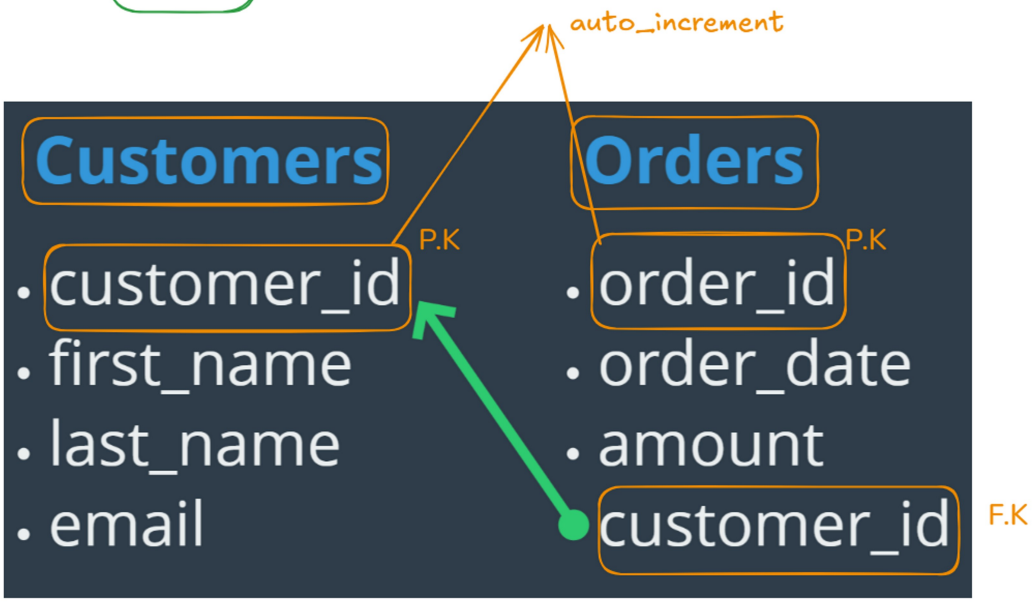
MySQL - Relationships & Joins - Lecture 22

SQL - RDBMS [Relational Database Management System]



This individual Table should merge at some point if there is some relationship exist[with the help of Primary Key & Foreign Key]

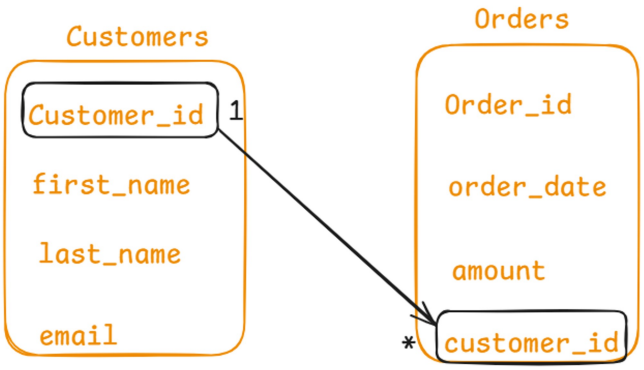



```
CREATE TABLE Customers(
    customer_id int auto_increment,
    first_name varchar(100),
    last_name varchar(100),
    email varchar(100),
    PRIMARY KEY(customer_id)
);
```

```
CREATE TABLE Orders(
        order_id int auto_increment,
    order_date DATE,
    amount Float,
    customer_id int not null,
    PRIMARY KEY(order_id),
    FOREIGN KEY(customer_id) references Customers(customer_id)
);
```

```
mysql> CREATE TABLE Customers(
    ->  customer_id int auto_increment,
    ->     first_name varchar(100),
    ->     last_name varchar(100),
    ->     email varchar(100),
    ->     PRIMARY KEY(customer_id)
    -> );
Query OK, 0 rows affected (0.17 sec)

mysql> DESC Customers;
+-------------+--------------+------+-----+---------+----------------+
| Field       | Type         | Null | Key | Default | Extra          |
+-------------+--------------+------+-----+---------+----------------+
| customer_id | int          | NO   | PRI | NULL    | auto_increment |
| first_name  | varchar(100) | YES  |     | NULL    |                |
| last_name   | varchar(100) | YES  |     | NULL    |                |
| email       | varchar(100) | YES  |     | NULL    |                |
+-------------+--------------+------+-----+---------+----------------+
4 rows in set (0.04 sec)
```

```
mysql> CREATE TABLE Orders(
    ->  order_id int auto_increment,
    ->     order_date DATE,
    ->     amount Float,
    ->     customer_id int not null,
    ->     PRIMARY KEY(order_id),
    ->     FOREIGN KEY(customer_id) references Customers(customer_id)
    -> );
Query OK, 0 rows affected (0.05 sec)

mysql> DESC Orders;
+-------------+-------+------+-----+---------+----------------+
| Field       | Type  | Null | Key | Default | Extra          |
+-------------+-------+------+-----+---------+----------------+
| order_id    | int   | NO   | PRI | NULL    | auto_increment |
| order_date  | date  | YES  |     | NULL    |                |
| amount      | float | YES  |     | NULL    |                |
| customer_id | int   | NO   | MUL | NULL    |                |
+-------------+-------+------+-----+---------+----------------+
4 rows in set (0.01 sec)
```



1:M Relationship Exist here.

CUSTOMERS

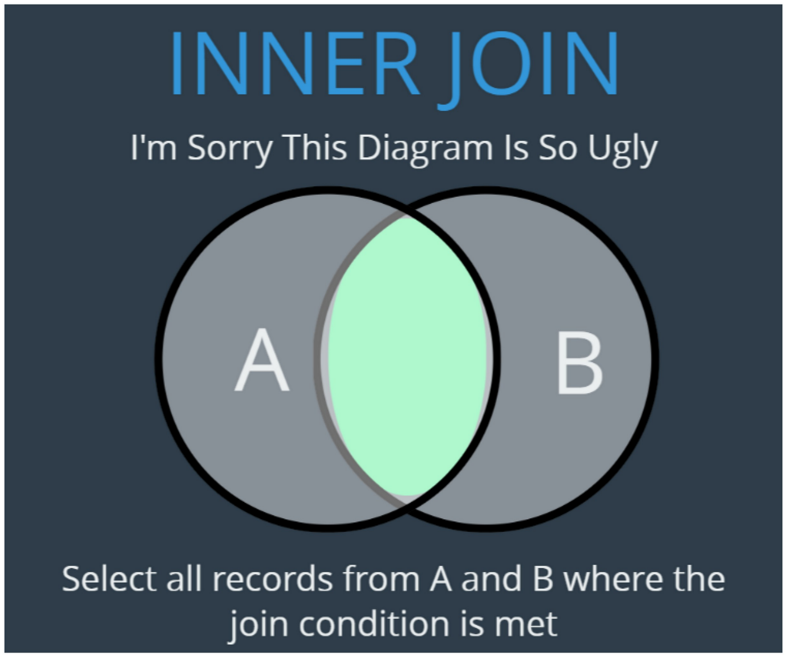
customer_id	first_name	last_name	email
1	Boy	George	george@gmail.com
2	George	Michael	gm@gmail.com
3	David	Bowie	david@gmail.com
4	Blue	Steele	blue@gmail.com

```
mysql> INSERT INTO Customers(first_name, last_name,email)
    -> VALUES("Boy","George","george@gmail.com"),
    -> ("George","Michael","gm@gmail.com"),
    -> ("David", "Bowie", "david@gmail.com"),
    -> ("Blue","Steele","blue@gmail.com");
Query OK, 4 rows affected (0.02 sec)
Records: 4  Duplicates: 0  Warnings: 0

mysql> SELECT * FROM Customers;
+-------------+------------+-----------+------------------+
| customer_id | first_name | last_name | email            |
+-------------+------------+-----------+------------------+
|           1 | Boy        | George    | george@gmail.com |
|           2 | George     | Michael   | gm@gmail.com     |
|           3 | David      | Bowie     | david@gmail.com  |
|           4 | Blue       | Steele    | blue@gmail.com   |
+-------------+------------+-----------+------------------+
4 rows in set (0.00 sec)
```

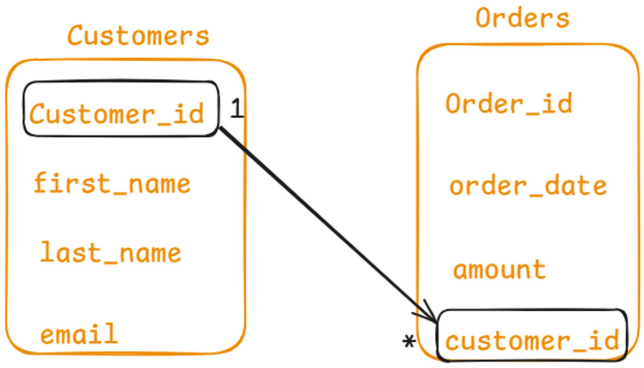
ORDERS

order_id	order_date	amount	customer_id
1	'2016/02/10'	99.99	1
2	'2017/11/11'	35.50	1
3	'2014/12/12'	800.67	2
4	'2015/01/03'	12.50	2

```
mysql> INSERT INTO Orders(order_date, amount, customer_id)
    -> VALUES("2016/02/10",99.99,1),
    -> ("2017/11/11",35.50,1),
    -> ("2014/12/12",800.67,2),
    -> ("2015/01/03",12.50,2);
Query OK, 4 rows affected, 4 warnings (0.02 sec)
Records: 4  Duplicates: 0  Warnings: 4

mysql> SELECT * FROM Orders;
+----------+------------+--------+-------------+
| order_id | order_date | amount | customer_id |
+----------+------------+--------+-------------+
|        1 | 2016-02-10 |  99.99 |           1 |
|        2 | 2017-11-11 |   35.5 |           1 |
|        3 | 2014-12-12 | 800.67 |           2 |
|        4 | 2015-01-03 |   12.5 |           2 |
+----------+------------+--------+-------------+
4 rows in set (0.00 sec)
```




```
SELECT column_name , another_column_name,
FROM LeftTable_name INNER JOIN/JOIN
RightTable_name
ON TableA.primaryKey = TableB.ForeignKey.
```

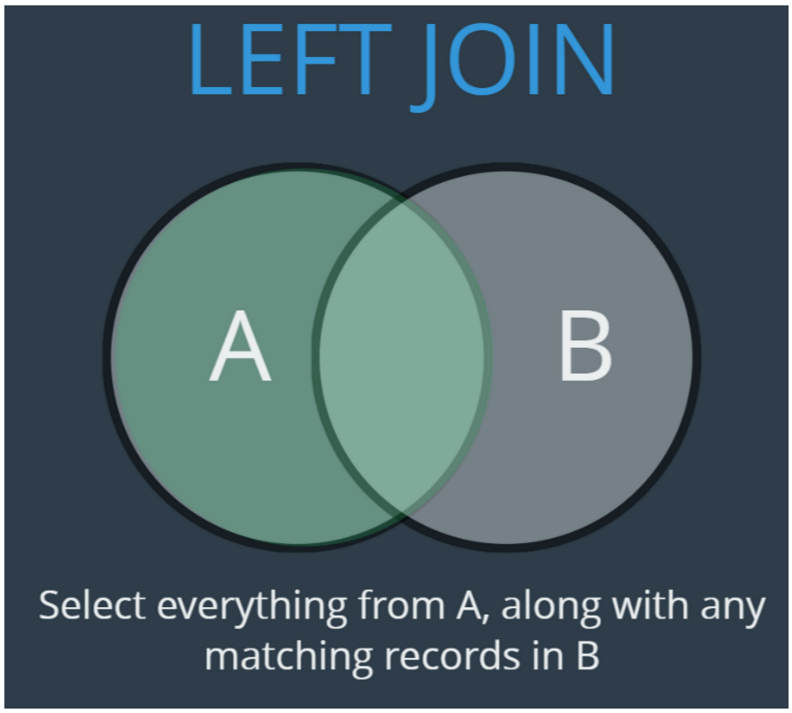



```
Select first_name,amount FROM
Customers INNER JOIN Orders
ON Customers.Customer_id = Orders.customer_id;
```

```
mysql> SELECT first_name,amount
    -> FROM Customers INNER JOIN Orders
    -> ON Customers.customer_id = Orders.customer_id;
+------------+--------+
| first_name | amount |
+------------+--------+
| Boy        |  99.99 |
| Boy        |   35.5 |
| George     | 800.67 |
| George     |   12.5 |
+------------+--------+
4 rows in set (0.00 sec)

mysql> SELECT first_name,last_name,email,amount
    -> FROM Customers INNER JOIN Orders
    -> ON Customers.customer_id = Orders.customer_id;
+------------+-----------+-----------------+--------+
| first_name | last_name | email           | amount |
+------------+-----------+-----------------+--------+
| Boy        | George    | george@gmail.com |  99.99 |
| Boy        | George    | george@gmail.com |   35.5 |
| George     | Michael   | gm@gmail.com     | 800.67 |
| George     | Michael   | gm@gmail.com     |   12.5 |
+------------+-----------+-----------------+--------+
4 rows in set (0.00 sec)
```

Using ON Constraint, you can join P.K & F.K

```
mysql> SELECT first_name,last_name,email,amount
    -> FROM Customers JOIN Orders
    -> ON Customers.customer_id = Orders.customer_id;
+------------+-----------+-----------------+--------+
| first_name | last_name | email           | amount |
+------------+-----------+-----------------+--------+
| Boy        | George    | george@gmail.com |  99.99 |
| Boy        | George    | george@gmail.com |   35.5 |
| George     | Michael   | gm@gmail.com     | 800.67 |
| George     | Michael   | gm@gmail.com     |   12.5 |
+------------+-----------+-----------------+--------+
4 rows in set (0.00 sec)
```




```
SELECT column_name , another_column_name,
FROM LeftTable_name
LEFT JOIN RightTable_name
ON TableA.primaryKey = TableB.ForeignKey.
```

Left Table

```
mysql> SELECT * FROM Customers;
+-------------+------------+-----------+-------------------+
| customer_id | first_name | last_name | email             |
+-------------+------------+-----------+-------------------+
|           1 | Boy        | George    | george@gmail.com  |
|           2 | George     | Michael   | gm@gmail.com      |
|           3 | David      | Bowie     | david@gmail.com   |
|           4 | Blue       | Steele    | blue@gmail.com    |
+-------------+------------+-----------+-------------------+
```

Every data of left table will come,
& Common data of Right table will come

Right Table

```
mysql> SELECT * FROM Orders;
+----------+------------+--------+-------------+
| order_id | order_date | amount | customer_id |
+----------+------------+--------+-------------+
|        1 | 2016-02-10 |  99.99 |           1 |
|        2 | 2017-11-11 |   35.5 |           1 |
|        3 | 2014-12-12 | 800.67 |           2 |
|        4 | 2015-01-03 |   12.5 |           2 |
+----------+------------+--------+-------------+
```

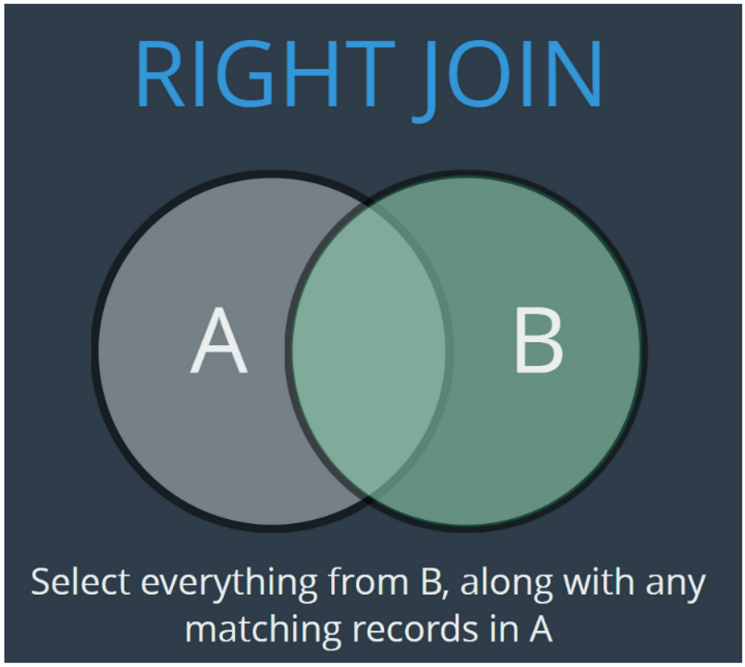
Aggregation needs to perform
based on each customer.

if there is no one exist like
3,4 customer_id it returns null.

```
mysql> SELECT first_name,last_name,
    -> ROUND(SUM(amount),0) AS TotalAmount
    -> FROM Customers LEFT JOIN Orders
    -> ON Customers.customer_id = Orders.customer_id
    -> GROUP BY 1,2;
+------------+-----------+-------------+
| first_name | last_name | TotalAmount |
+------------+-----------+-------------+
| Boy        | George    |         135 |
| George     | Michael   |         813 |
| David      | Bowie     |        NULL |
| Blue       | Steele    |        NULL |
+------------+-----------+-------------+
4 rows in set (0.00 sec)
```

Whenever you apply left join, you will receive Null on right side of resultant table as this null values are coming from Right table.

This 2 people never purchase anything yet.




```
SELECT column_name , another_column_name,
FROM LeftTable_name RIGHT JOIN RightTable_name
ON TableA.primaryKey = TableB.ForeignKey.
```

What if we make Left Join result same like Right join

```
SELECT column_name , another_column_name,
FROM RightTable_name RIGHT JOIN LeftTable_name
ON TableA.primaryKey = TableB.ForeignKey.
```

```
mysql> SELECT first_name,last_name,
    -> ROUND(SUM(amount),0) AS TotalAmount
    -> FROM Orders RIGHT JOIN Customers
    -> ON Customers.customer_id = Orders.customer_id
    -> GROUP BY 1,2;
+------------+-----------+-------------+
| first_name | last_name | TotalAmount |
+------------+-----------+-------------+
| Boy        | George    |         135 |
| George     | Michael   |         813 |
| David      | Bowie     |        NULL |
| Blue       | Steele    |        NULL |
+------------+-----------+-------------+
4 rows in set (0.00 sec)
```

```
mysql> SELECT first_name,last_name,
    -> ROUND(SUM(amount),0) AS TotalAmount
    -> FROM Customers RIGHT JOIN Orders
    -> ON Customers.customer_id = Orders.customer_id
    -> GROUP BY 1,2;
+------------+-----------+-------------+
| first_name | last_name | TotalAmount |
+------------+-----------+-------------+
| Boy        | George    |         135 |
| George     | Michael   |         813 |
+------------+-----------+-------------+
2 rows in set (0.00 sec)
```