MySQL

Part 2: Joins & Constraints

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Section 1

Table Constraints

Creating a Table

```
CREATE TABLE employees (
  id INT,
  first_name VARCHAR(64),
  last_name VARCHAR(64),
  start DATE
);
```

Creating a Table: Unique Constraint

```
CREATE TABLE employees (
  id INT UNIQUE,
  first_name VARCHAR(64),
  last_name VARCHAR(64),
  start DATE
);
```

Creating a Table: Primary Key Constraint

```
CREATE TABLE employees (
  id INT PRIMARY KEY,
  first_name VARCHAR(64),
  last_name VARCHAR(64),
  start DATE
);
```

Creating a Table: Not Null Constraint

```
CREATE TABLE employees (
  id INT PRIMARY KEY,
  first_name VARCHAR(64) NOT NULL,
  last_name VARCHAR(64) NOT NULL,
  start DATE
);
```

Creating a Table: Auto Increment

```
CREATE TABLE employees (
  id INT PRIMARY KEY AUTO_INCREMENT,
  first_name VARCHAR(64) NOT NULL,
  last_name VARCHAR(64) NOT NULL,
  start DATE
);
```

Creating a Table: Table Constraint

```
CREATE TABLE employees (
   email  VARCHAR(64)
   first_name VARCHAR(64) NOT NULL,
   last_name VARCHAR(64) NOT NULL,
   start DATE,
   PRIMARY KEY (email)
);
```

Creating a Table: Foreign Key

```
CREATE TABLE employees (
   email  VARCHAR(64)
   first_name VARCHAR(64) NOT NULL,
   last_name VARCHAR(64) NOT NULL,
   role VARCHAR(32),
   start DATE,
   PRIMARY KEY (email),
   FOREIGN KEY (role) REFERENCES roles(name)
);
```

Altering a Table

```
ALTER table_name
ADD CONSTRAINT constraint_name
FOREIGN KEY (columns)
REFERENCES parent_table(columns)
ON DELETE action
ON UPDATE action;
```

Altering a Table

```
SHOW CREATE TABLE table_name

ALTER table_name
DROP FOREIGN KEY constraint_name
```

Section 2

Data Models

Data Relations: One to One

Country	Capital
Canada	Ottawa
UK	London
USA	Washington D.C.
Brazil	Brasilia

Data Relations: One to Many

Instructors

Id	name	Email
1	Bob Jones	bob@hotmail.com
2	Steve Smith	steve@gmail.com
3	Robin Robertson	robin@hotmail.com
4	Sam Samuels	sam@gmail.com

Class

Id	code	instructor_id
1	math * 1000	1
2	econ * 2500	2
3	bio * 4000	1
4	math * 1000	3

Data Relations: Many to Many

Student

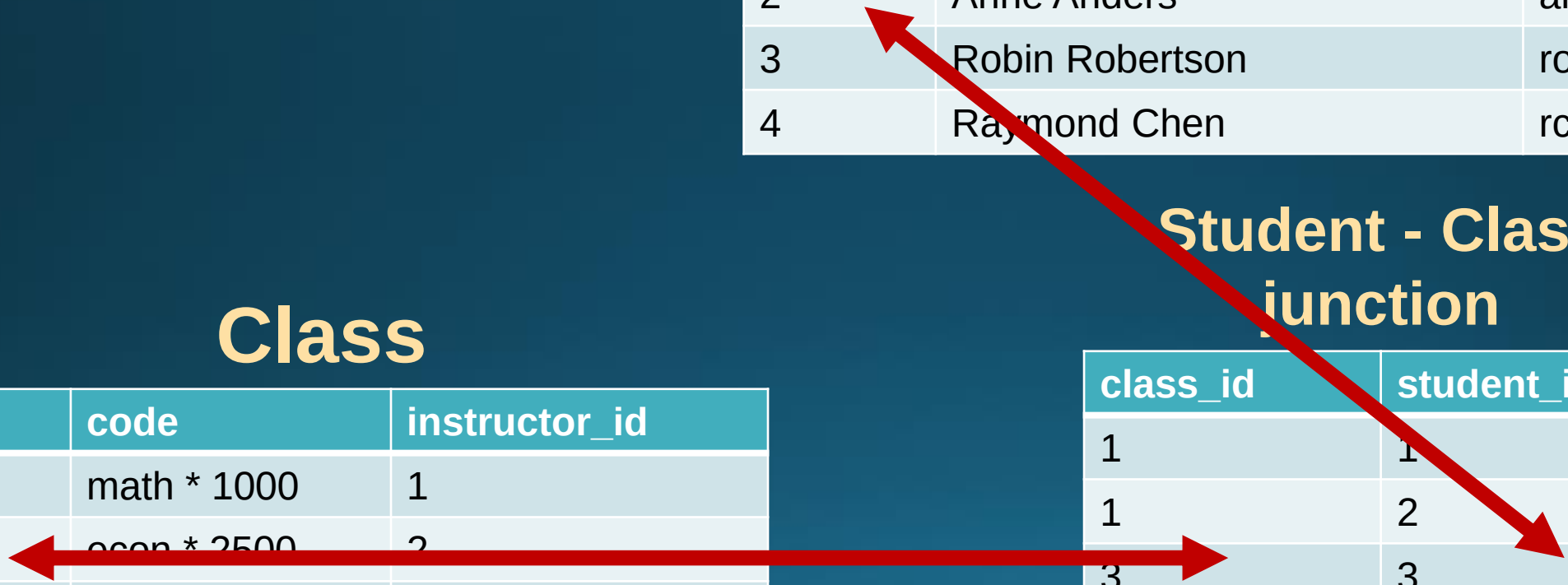
Id	name	Email
1	Tom Thompson	tom@hotmail.com
2	Anne Anders	anne@gmail.com
3	Robin Robertson	robin@hotmail.com
4	Raymond Chen	rchen@gmail.com

Class

Id	code	instructor_id
1	math * 1000	1
2	ocon * 2500	2
3	bio * 4000	1
4	math * 1000	3

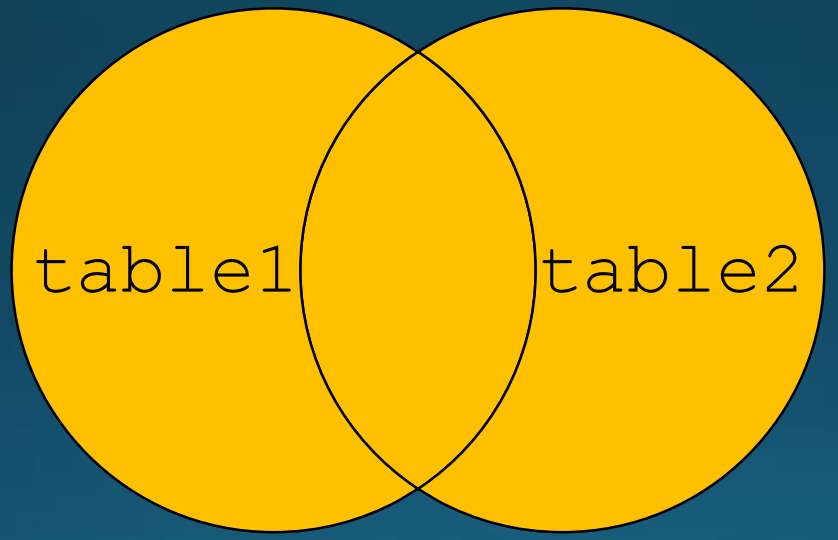
Student - Class junction

class_id	student_id
1	1
1	2
3	3
2	4
4	1



Cross Join

```
(1) select * from table1, table2
(2) select * from table1 join table2
```



Country	Capital
Canada	Ottawa
UK	London
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Brazil	Brasilia

Country	Flag
Canada	Maple Leaf
UK	Union Jack
USA	Old Glory
Brazil	A Auriverde

Country	Capital	Country	Flag
Canada	Ottawa	Canada	Maple Leaf
Canada	Ottawa	UK	Union Jack
Canada	Ottawa	USA	Old Glory
Canada	Ottawa	Brazil	A Auriverde
UK	London	Canada	Maple Leaf
…			

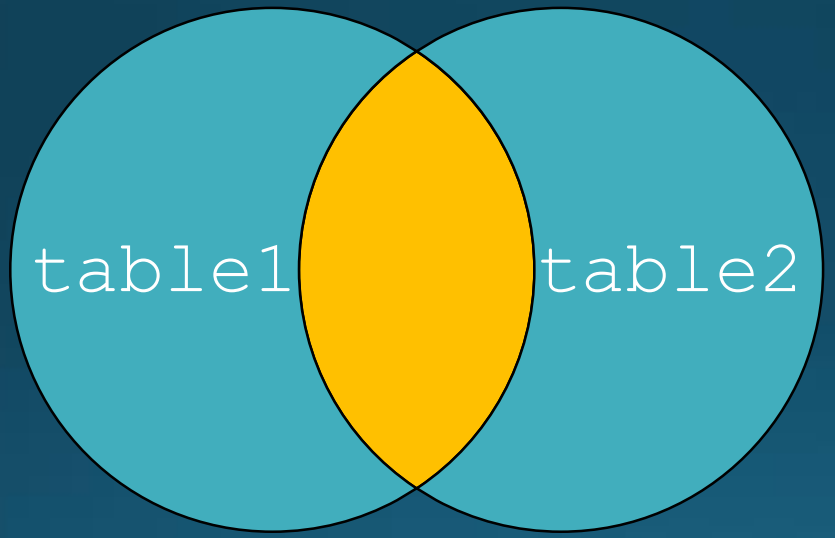
```
select * from table1, table2
```

Inner Join

```
SELECT columns
FROM t1
JOIN t2 ON join_condition1
```

Inner Join

```
select * from table1, table2
```



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UK	Lodon	UK	Union Jack
USA	Washington D.C.	USA	Old Glory
Brazil	Brasilia	Brazil	A Auriverde

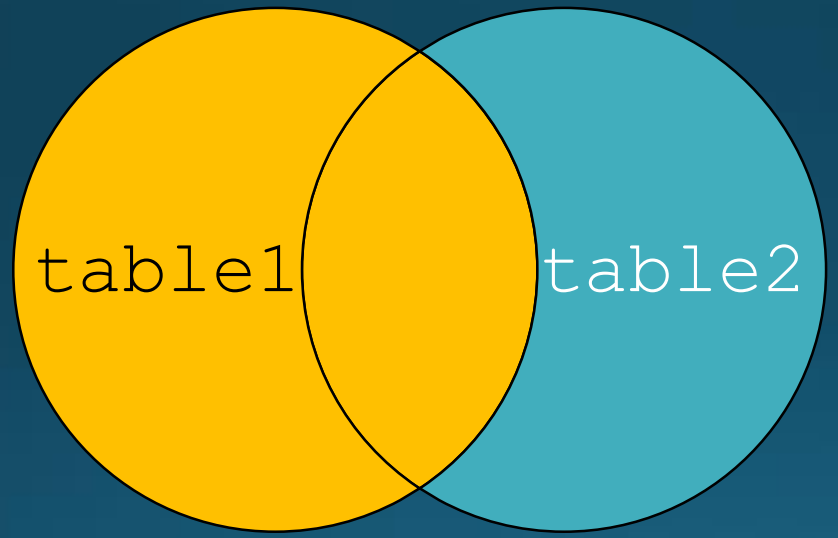
```
select * from table1 join table2
on table1.country = table2.country
```

Left Join

```
SELECT columns
FROM t1
LEFT JOIN t2 ON join_condition1
WHERE conditions;
```

Left Join

```
select * from table1 left join table2
```



Right Join

```
SELECT columns
FROM t1
RIGHT JOIN t2 ON join_condition1
WHERE conditions;
```

Right Join

```
select * from table1 right join table2
```