# Data Centric RAD

## Lab 2 MySQL Review II

### Part 1

* Get superheroes\_wk2\_part1.sql from Moodle.
* Import it into MySQL as follows using same procedure as in Lab 1.
* use superheroes;
* Insert the following information into the superhero\_table:

name = Penguin

City = Gotham City

Real First Name = Danny

Real Surname = DeVitto

dob = January 14th 1955

powers = 44.57

mysql> insert into superhero\_table

-> values('Penguin','Gotham City','Danny','DeVitto','1955-01-14','44.57');.

* Insert the following information into the superhero\_table:

name = Joker

city = New York

powers = 77.10

mysql> insert into superhero\_table(name,city,powers)

-> values('Joker','New York','77.10')

-> ;

Query OK, 1 row affected (0.01 sec)

* Update the superhero\_table so that everywhere a first name or surname is NULL, it is now UNKNOWN instead.

HINT: When checking for NULL, you can’t say = NULL, you should say is NULL.

mysql> update superhero\_table

-> set real\_first\_name = Null

-> ;

* Display the number of superheroes, whose birthdays are known, as ‘Number of known Birthdays’.

mysql> select count(dob)

-> from superhero\_table;

* Change the birthday of Spiderman from Metropolis to January 28th 1980.

mysql> update superhero\_table

-> set dob = '1980-01-28'

-> where name LIKE 'Spiderman' and city LIKE 'Metropolis'

-> ;

Query OK, 1 row affected (0.07 sec)

Rows matched: 1 Changed: 1 Warnings: 0

* Increase the powers by 1 for each ‘Bat’ related superhero in Gotham City.

mysql> update superhero\_table

-> set powers = powers + 1

-> where name like "%Bat%"

-> ;

Query OK, 3 rows affected (0.09 sec)

Rows matched: 3 Changed: 3 Warnings: 0

* Delete all superheroes whose *dob* is NULL.

HINT: When checking for NULL, you can’t say = NULL, you should say is NULL.

mysql> delete from superhero\_table

-> where dob is NULL

-> ;

* Delete all superheroes whose real first name is *Bruce*, and who live in *Metropolis* and who were born in *January*.

mysql> delete from superhero\_table

-> where real\_first\_name LIKE "Bruce"

-> and city like "Metropolis"

-> and MONTH(dob) = 01

-> ;

Query OK, 1 row affected (0.12 sec)

* Increase the powers of all superheroes who were born in *November* by 1.

mysql> update superhero\_table

-> set powers = powers + 1

-> where MONTH(dob) = 11

-> ;

Query OK, 3 rows affected (0.13 sec)

Rows matched: 3 Changed: 3 Warnings: 0

* Display dob (as *Oldest DOB*) of the *oldest* superhero.

mysql> select min(dob)

-> from superhero\_table

-> ;

+------------+

| min(dob) |

+------------+

| 1960-11-12 |

+------------+

1 row in set (0.03 sec)

* Display the total powers (as *Total Metropolis Powers*) of all superheroes in *Metropolis*.

mysql> select powers

-> from superhero\_table

-> where city LIKE "Metropolis"

-> ;

+--------+

| powers |

+--------+

| 78.88 |

| 100.00 |

+--------+

2 rows in set (0.00 sec)

* Display the city and the total powers (as *Total Powers*) of all superheroes in the city, for each city.

mysql> select city,powers

-> from superhero\_table

-> group by city

-> ;

+-------------+--------+

| city | powers |

+-------------+--------+

| Gotham City | 99.05 |

| Metropolis | 78.88 |

| New York | 76.88 |

| Springfield | 76.88 |

+-------------+--------+

1. rows in set (0.05 sec)

* Display the superhero name, and the number of cities a superhero of that name lives in.

mysql> select name,count(city)

-> from superhero\_table

-> group by name

-> ;

+----------------+-------------+

| name | count(city) |

+----------------+-------------+

| Batgirl | 1 |

| Batman | 2 |

| Radioactiveman | 1 |

| Spiderman | 1 |

| Superman | 1 |

+----------------+-------------+

5 rows in set (0.00 sec)

* Display the year and the number of superheroes born in that year.

mysql> select YEAR(dob),count(dob)

-> from superhero\_table

-> group by YEAR(dob)

-> ;

+-----------+------------+

| YEAR(dob) | count(dob) |

+-----------+------------+

| 1960 | 2 |

| 1980 | 2 |

| 1995 | 1 |

| 2000 | 1 |

+-----------+------------+

4 rows in set (0.00 sec)

* Display the city and the total powers of all superheroes in that city, only for cities whose total superhero powers is greater than 100.

mysql> select city ,sum(powers)

-> from superhero\_table

-> group by city

-> having sum(powers) > 100

-> ;

+-------------+-------------+

| city | sum(powers) |

+-------------+-------------+

| Gotham City | 198.50 |

| Metropolis | 178.88 |

+-------------+------------------+

* Show the minimum, maximum and average powers of the superheroes.

mysql> select min(powers),max(powers),avg(powers)

-> from superhero\_table

-> ;

+-------------+-------------+-------------+

| min(powers) | max(powers) | avg(powers) |

+-------------+-------------+-------------+

| 76.88 | 100.00 | 88.523333 |

+-------------+-------------+-------------+

1. row in set (0.00 sec)

* Show the city and the average powers of all superheroes in that city; for all cities.

mysql> select city,avg(powers

-> from superhero\_table

-> group by city

-> ;

+-------------+-------------+

| city | avg(powers) |

+-------------+-------------+

| Gotham City | 99.250000 |

| Metropolis | 89.440000 |

| New York | 76.880000 |

| Springfield | 76.880000 |

+-------------+-------------+

4 rows in set (0.00 sec)

### Part 2

* Get superheroes\_wk2\_part2.sql from Moodle.
* Import it into MySQL described in Lab 1.
* use superheroes;

mysql> use superheroes

Database changed

* Use the show create table <table name> command to find out the structure of the superhero\_table, and list the Primary Key(s) and Foreign Key(s).

mysql> show create table superhero\_table

-> ;

+-----------------+----------------------------------

-----------------------------------------------------

| Table | Create Table

+-----------------+----------------------------------

-----------------------------------------------------

| superhero\_table | CREATE TABLE `superhero\_table` (

`name` varchar(20) NOT NULL,

`city` varchar(20) NOT NULL,

`real\_first\_name` varchar(20) DEFAULT NULL,

`real\_surname` varchar(20) DEFAULT NULL,

`dob` date DEFAULT NULL,

`powers` double(5,2) DEFAULT '77.88',

PRIMARY KEY (`name`,`city`)

) ENGINE=InnoDB DEFAULT CHARSET=latin1 |

* Use the show create table <table name> command to find out the structure of the superhero\_city\_table, and list the Primary Key(s) and Foreign Key(s).

show create superhero\_no\_pk

;

* Delete *Spiderman* from the superhero\_table.

What happens and why?

delete from superhero\_table

where name like "Spiderman"

;

ERROR 1451 (23000): Cannot delete or update a parent row: a foreign key constraint fails (`superheroes`.`superhero\_city\_table`, CONSTRAINT `fk\_name` FOREIGN KEY (`name`) REFERENCES `superhero\_table` (`name`))

It cant delete the row because its being referenced as a FK in another table

(Use Cascade delete to delete across the whole database)(ensures referential integrity)

* Insert a new superhero in the *superhero\_table* as follows:

Name = ‘Joker’

real\_first\_name = ‘John’

real\_surname = ‘Jones’

dob = 1966-07-12

powers = 22

Insert into superhero\_table

(name,real\_first\_name,real\_surname,dob,powers)

values("Joker","John","Jones","1966-07-12","22")

;

* Delete the superhero *Joker* from the *superhero\_table*.

What happens and why?

delete from superhero\_table

where name like "Joker"

;

It deletes the row from the table because it is only referenced in the current table.

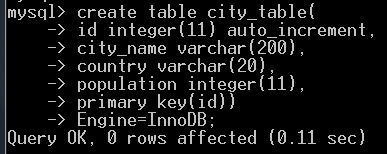
* Delete the *superhero\_city\_table* as follows:



drop table superhero\_city\_table

;

* Create a new table called *city\_table* as follows:



Populate it with the following data:

|  |  |  |
| --- | --- | --- |
| **Name** | **Country** | **Population** |
| Galway | Ireland | 75,000 |
| Gotham City | USA | 15,000,000 |
| Metropolis | USA | 22,250,000 |
| New York | USA | 8,500,000 |
| Springfield | USA | 20,000 |

create table city\_table(

id integer(11) auto\_increment,

city\_name varchar(200),

country varchar(20),

population integer(11),

primary key(id))

Engine = InnoDB

;

INSERT INTO city\_table

(city\_name,country,population)

values('Galway','Ireland','75000'),

('Gotham City','USA','15000000'),

('Metropolis','USA','22250000'),

('New York','USA','8500000'),

('Springfield','USA','20000');

* Recreate the superhero\_city\_table, this time with two columns:
  + *name* which is a Foreign Key referring to the name column in the superhero\_table.
  + *city* which is a Foreign Key referring to the *id* column in the city\_table.

HINT: A Foreign Key is created using the following syntax:

**Foreign Key(***column***) References** *table\_name* **(***column\_in\_referenced\_table***)**.

* + Primary Key is (name, city)

create table superhero\_city\_table

(name varchar(20),

city integer(11),

primary key(name,city) ,

foreign key(name)references superhero\_table(name),

foreign key(city)references city\_table(id))

engine = InnoDB;

* Populate the superhero\_city\_table so that the following are associated:

|  |  |
| --- | --- |
| Spiderman | New York |
| Superman | Metropolis |
| Batman | Gotham City |
| Spiderman | Metropolis |
| Batman | Metropolis |
| Batgirl | Gotham City |
| Radioactiveman | Springfield |

insert into superhero\_city\_table(name,city)

values('Spiderman','9'),

('Superman','8'),

('Batman','7'),

('Spiderman','8'),

('Batman','8'),

('Batgirl','7'),

('Radioactiveman','10');

* Delete *Galway* from city\_table.

What happens and why?

mysql> delete from city\_table

-> where city\_name like "Galway";

Query OK, 1 row affected (0.09 sec)

It deletes because the value is only referenced in the current table

* Delete *Metropolis* from city\_table.

What happens and why?

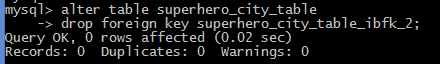
mysql> delete from city\_table where city\_name like "Metropolis";

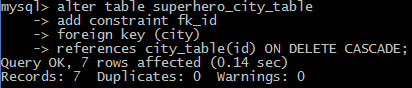
ERROR 1451 (23000): Cannot delete or update a parent row: a foreign key constraint fails (`superheroes`.`superhero\_city\_table`, CONSTRAINT `superhero\_city\_table\_ibfk\_2` FOREIGN KEY

(`city`) REFERENCES `city\_table` (`id`))

city\_name value cannot be deleted from the table because it is being used as a FK to refrence another key in another table.

* Alter the city\_table as follows:





mysql> alter table superhero\_city\_table

-> drop foreign key superhero\_city\_table\_ibfk\_2;

Query OK, 0 rows affected (0.22 sec)

Records: 0 Duplicates: 0 Warnings: 0

mysql> alter table superhero\_city\_table

-> add constraint fk\_id

-> foreign key (city)

-> references city\_table(id) ON DELETE CASCADE;

Query OK, 7 rows affected (1.02 sec)

Records: 7 Duplicates: 0 Warnings: 0

* Delete *Metropolis* from city\_table.

What happens and why?

delete from city\_table

where name like "Metropolis"

;