Simon Abhijet Biswas

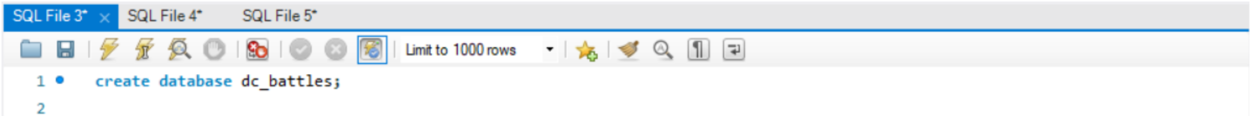
CSE370: Database Systems

Brac University

Lab 07: Database Challenge 02

- **Create and use the database “DC_Battles”**

create database dc_battles;



```
create database dc_battles;

```

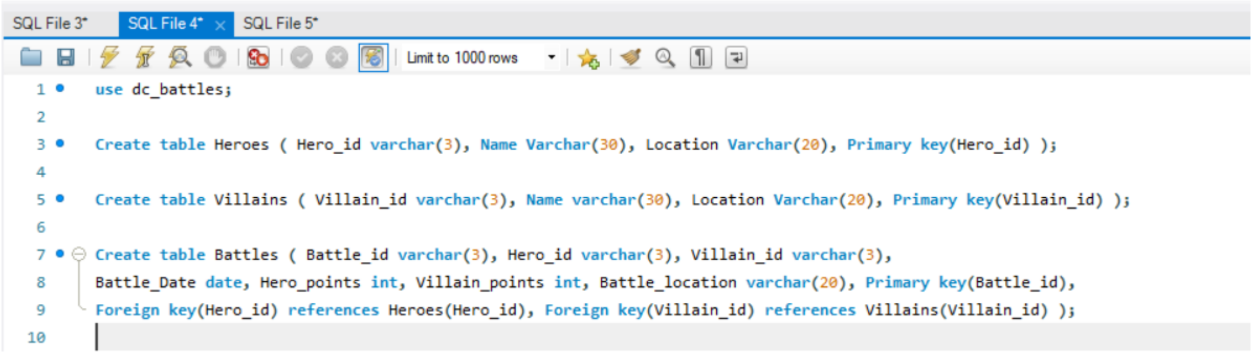
- **Create Hero, Villain, and Battles tables**

use dc_battles;

Create table Heroes (Hero_id varchar(3), Name Varchar(30), Location Varchar(20), Primary key(Hero_id));

Create table Villains (Villain_id varchar(3), Name varchar(30), Location Varchar(20), Primary key(Villain_id));

Create table Battles (Battle_id varchar(3), Hero_id varchar(3), Villain_id varchar(3), Battle_Date date, Hero_points int, Villain_points int, Battle_location varchar(20), Primary key(Battle_id), Foreign key(Hero_id) references Heroes(Hero_id), Foreign key(Villain_id) references Villains(Villain_id));



```
use dc_battles;

Create table Heroes ( Hero_id varchar(3), Name Varchar(30), Location Varchar(20), Primary key(Hero_id) );

Create table Villains ( Villain_id varchar(3), Name varchar(30), Location Varchar(20), Primary key(Villain_id) );

Create table Battles ( Battle_id varchar(3), Hero_id varchar(3), Villain_id varchar(3),
Battle_Date date, Hero_points int, Villain_points int, Battle_location varchar(20), Primary key(Battle_id),
Foreign key(Hero_id) references Heroes(Hero_id), Foreign key(Villain_id) references Villains(Villain_id) );

```

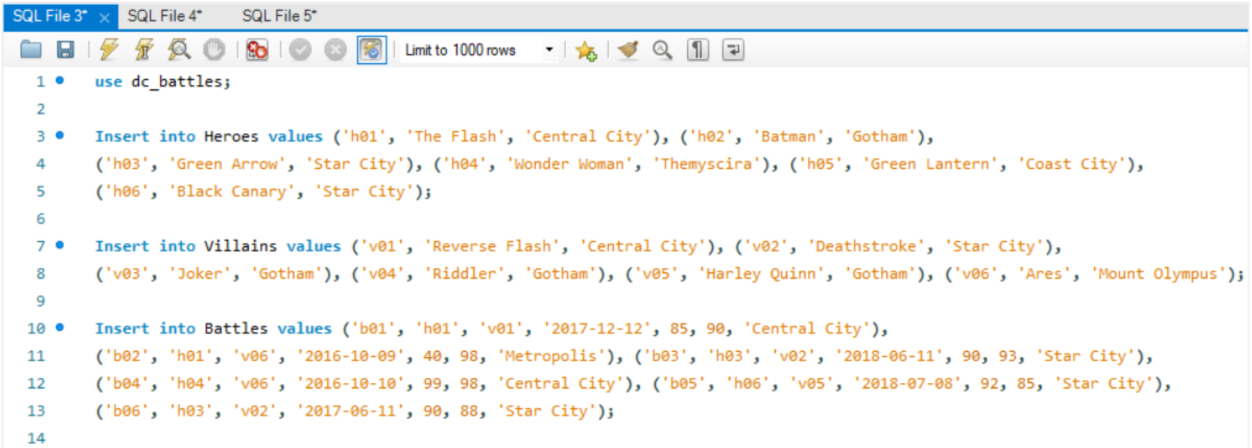
- **Insert Data into the Tables**

use dc_battles;

Insert into Heroes values ('h01', 'The Flash', 'Central City'), ('h02', 'Batman', 'Gotham'), ('h03', 'Green Arrow', 'Star City'), ('h04', 'Wonder Woman', 'Themyscira'), ('h05', 'Green Lantern', 'Coast City'), ('h06', 'Black Canary', 'Star City');

Insert into Villains values ('v01', 'Reverse Flash', 'Central City'), ('v02', 'Deathstroke', 'Star City'), *('v03', 'Joker', 'Gotham'), ('v04', 'Riddler', 'Gotham'), ('v05', 'Harley Quinn', 'Gotham'), ('v06', 'Ares', 'Mount Olympus');*

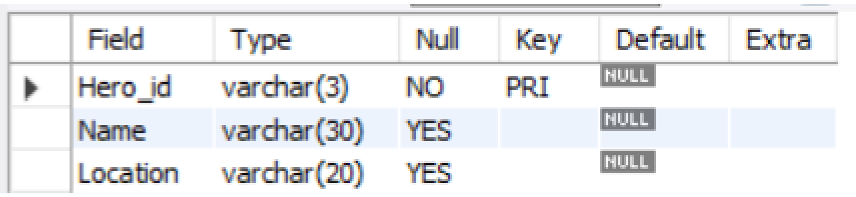
Insert into Battles values ('b01', 'h01', 'v01', '2017-12-12', 85, 90, 'Central City'), ('b02', 'h01', 'v06', '2016-10-09', 40, 98, 'Metropolis'), ('b03', 'h03', 'v02', '2018-06-11', 90, 93, 'Star City'), ('b04', 'h04', 'v06', '2016-10-10', 99, 98, 'Central City'), ('b05', 'h06', 'v05', '2018-07-08', 92, 85, 'Star City'), ('b06', 'h03', 'v02', '2017-06-11', 90, 88, 'Star City');



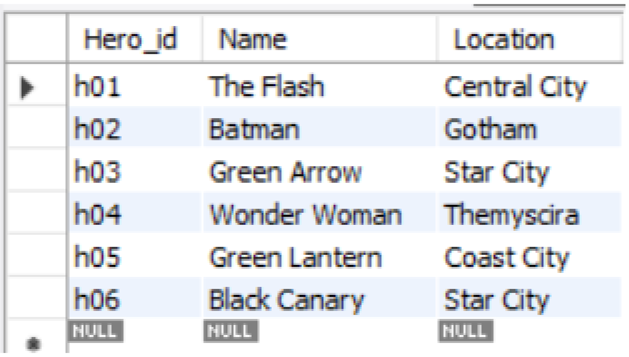
```
use dc_battles;

Insert into Heroes values ('h01', 'The Flash', 'Central City'), ('h02', 'Batman', 'Gotham'),
('h03', 'Green Arrow', 'Star City'), ('h04', 'Wonder Woman', 'Themyscira'), ('h05', 'Green Lantern', 'Coast City'),
('h06', 'Black Canary', 'Star City');

Insert into Villains values ('v01', 'Reverse Flash', 'Central City'), ('v02', 'Deathstroke', 'Star City'),
('v03', 'Joker', 'Gotham'), ('v04', 'Riddler', 'Gotham'), ('v05', 'Harley Quinn', 'Gotham'), ('v06', 'Ares', 'Mount Olympus');

Insert into Battles values ('b01', 'h01', 'v01', '2017-12-12', 85, 90, 'Central City'),
('b02', 'h01', 'v06', '2016-10-09', 40, 98, 'Metropolis'), ('b03', 'h03', 'v02', '2018-06-11', 90, 93, 'Star City'),
('b04', 'h04', 'v06', '2016-10-10', 99, 98, 'Central City'), ('b05', 'h06', 'v05', '2018-07-08', 92, 85, 'Star City'),
('b06', 'h03', 'v02', '2017-06-11', 90, 88, 'Star City');
```

- **Show the Tables**

Heroes Table:

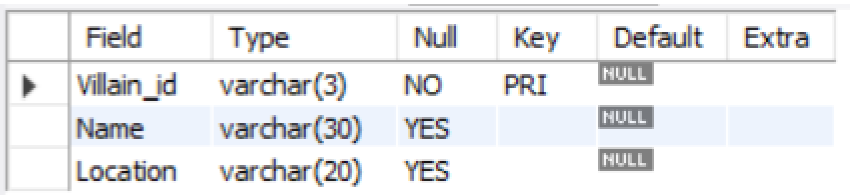


Field	Type	Null	Key	Default	Extra
Hero_id	varchar(3)	NO	PRI	NULL	
Name	varchar(30)	YES		NULL	
Location	varchar(20)	YES		NULL	

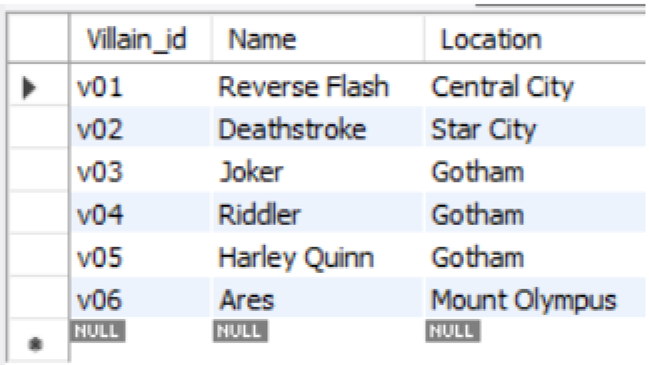


Hero_id	Name	Location
h01	The Flash	Central City
h02	Batman	Gotham
h03	Green Arrow	Star City
h04	Wonder Woman	Themyscira
h05	Green Lantern	Coast City
h06	Black Canary	Star City
NULL	NULL	NULL

Villains Table:

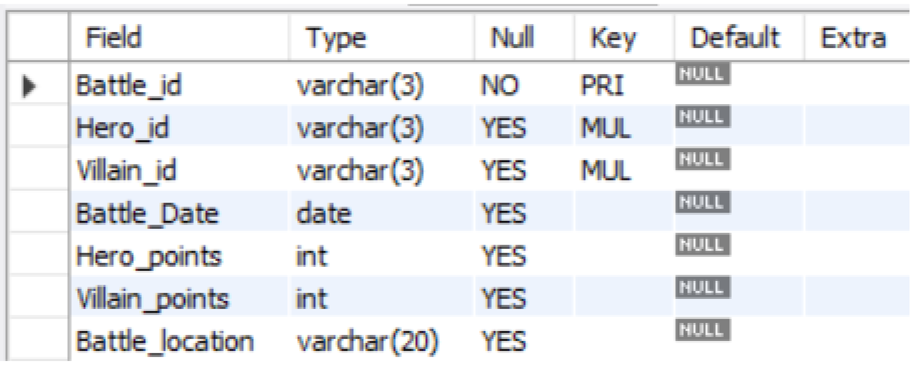


Field	Type	Null	Key	Default	Extra
Villain_id	varchar(3)	NO	PRI	NULL	
Name	varchar(30)	YES		NULL	
Location	varchar(20)	YES		NULL	

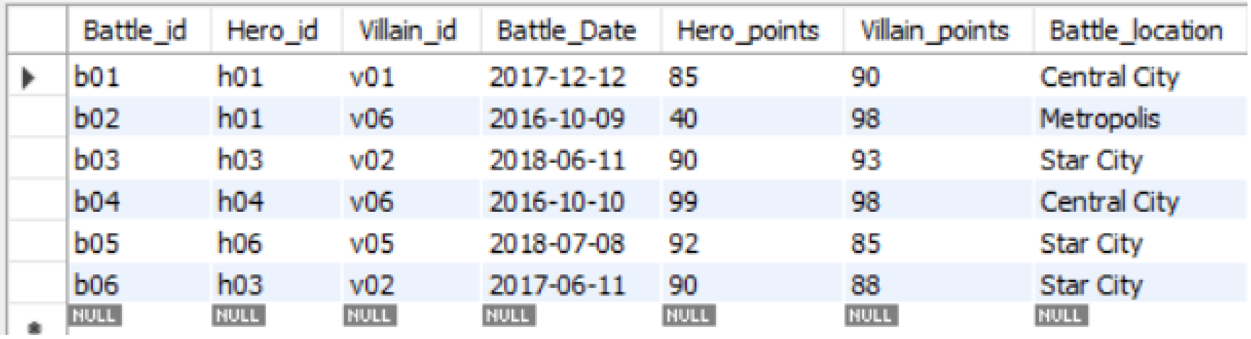


Villain_id	Name	Location
v01	Reverse Flash	Central City
v02	Deathstroke	Star City
v03	Joker	Gotham
v04	Riddler	Gotham
v05	Harley Quinn	Gotham
v06	Ares	Mount Olympus
NULL	NULL	NULL

Battles Table:

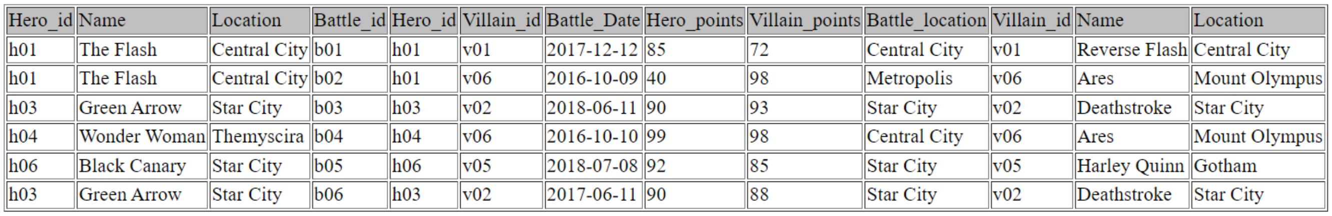


Field	Type	Null	Key	Default	Extra
Battle_id	varchar(3)	NO	PRI	NULL	
Hero_id	varchar(3)	YES	MUL	NULL	
Villain_id	varchar(3)	YES	MUL	NULL	
Battle_Date	date	YES		NULL	
Hero_points	int	YES		NULL	
Villain_points	int	YES		NULL	
Battle_location	varchar(20)	YES		NULL	



Battle_id	Hero_id	Villain_id	Battle_Date	Hero_points	Villain_points	Battle_location
b01	h01	v01	2017-12-12	85	90	Central City
b02	h01	v06	2016-10-09	40	98	Metropolis
b03	h03	v02	2018-06-11	90	93	Star City
b04	h04	v06	2016-10-10	99	98	Central City
b05	h06	v05	2018-07-08	92	85	Star City
b06	h03	v02	2017-06-11	90	88	Star City
NULL	NULL	NULL	NULL	NULL	NULL	NULL

Heroes, Villain and Battles Joined Table:

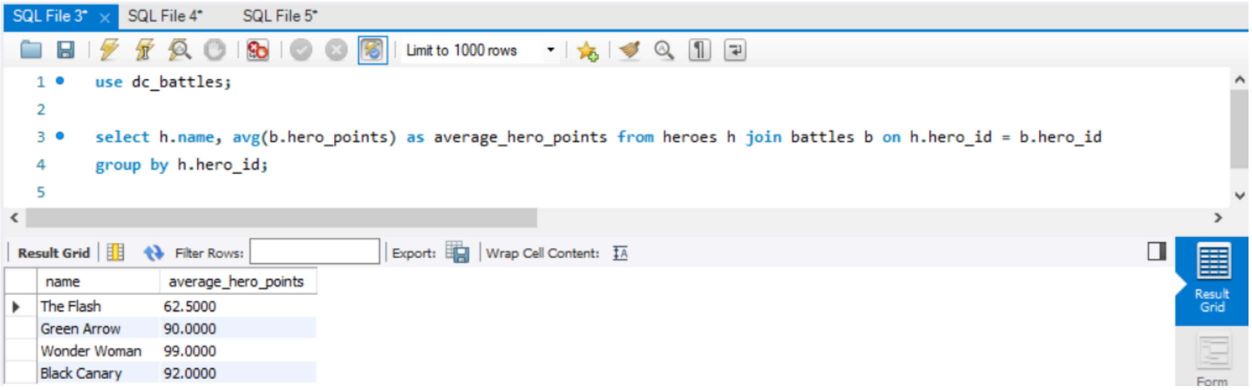


Hero_id	Name	Location	Battle_id	Hero_id	Villain_id	Battle_Date	Hero_points	Villain_points	Battle_location	Villain_id	Name	Location
h01	The Flash	Central City	b01	h01	v01	2017-12-12	85	72	Central City	v01	Reverse Flash	Central City
h01	The Flash	Central City	b02	h01	v06	2016-10-09	40	98	Metropolis	v06	Ares	Mount Olympus
h03	Green Arrow	Star City	b03	h03	v02	2018-06-11	90	93	Star City	v02	Deathstroke	Star City
h04	Wonder Woman	Themyscira	b04	h04	v06	2016-10-10	99	98	Central City	v06	Ares	Mount Olympus
h06	Black Canary	Star City	b05	h06	v05	2018-07-08	92	85	Star City	v05	Harley Quinn	Gotham
h03	Green Arrow	Star City	b06	h03	v02	2017-06-11	90	88	Star City	v02	Deathstroke	Star City

- **Retrieve the Name and average point of each Hero**

use dc_battles;

select h.name, avg(b.hero_points) as average_hero_points from heroes h join battles b on h.hero_id = b.hero_id group by h.hero_id;



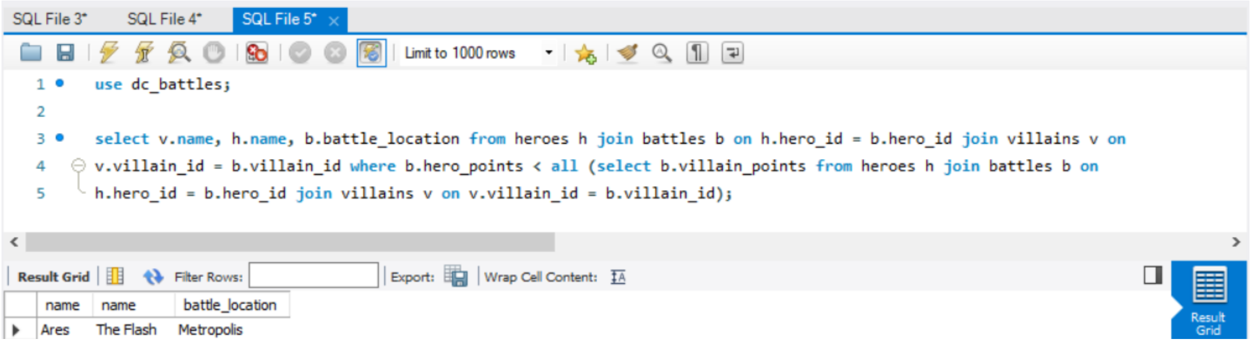
```
use dc_battles;

select h.name, avg(b.hero_points) as average_hero_points from heroes h join battles b on h.hero_id = b.hero_id
group by h.hero_id;
```

name	average_hero_points
The Flash	62.5000
Green Arrow	90.0000
Wonder Woman	99.0000
Black Canary	92.0000

- **Retrieve the Name of Heroes, name of Villains, Date and Location of Battle where the Heroes have scored lower than the Villains**

use dc_battles;

select v.name, h.name, b.battle_location from heroes h join battles b on h.hero_id = b.hero_id join villains v on v.villain_id = b.villain_id where b.hero_points < all (select b.villain_points from heroes h join battles b on h.hero_id = b.hero_id join villains v on v.villain_id = b.villain_id);



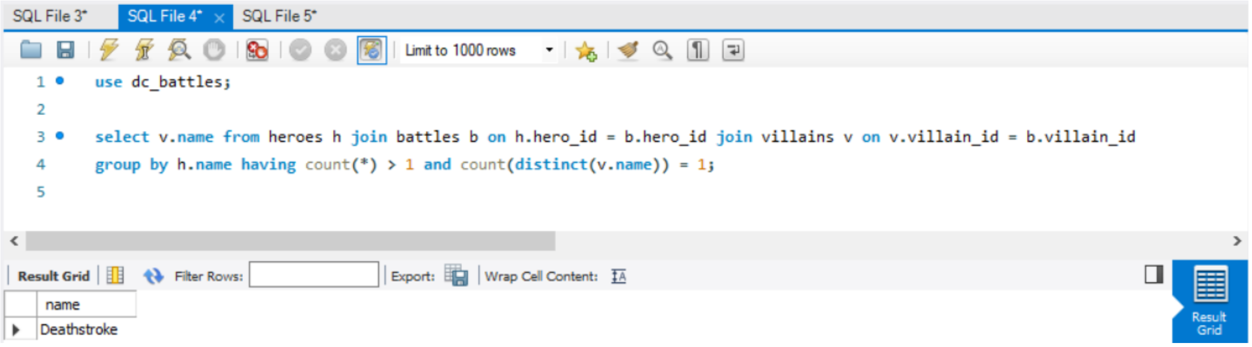
```
use dc_battles;

select v.name, h.name, b.battle_location from heroes h join battles b on h.hero_id = b.hero_id join villains v on
v.villain_id = b.villain_id where b.hero_points < all (select b.villain_points from heroes h join battles b on
h.hero_id = b.hero_id join villains v on v.villain_id = b.villain_id);
```

name	name	battle_location
Ares	The Flash	Metropolis

- **Retrieve the Name of the Villains who have fought the same Hero more than once**

use dc_battles;

select v.name from heroes h join battles b on h.hero_id = b.hero_id join villains v on v.villain_id = b.villain_id group by h.name having count(*) > 1 and count(distinct(v.name)) = 1;



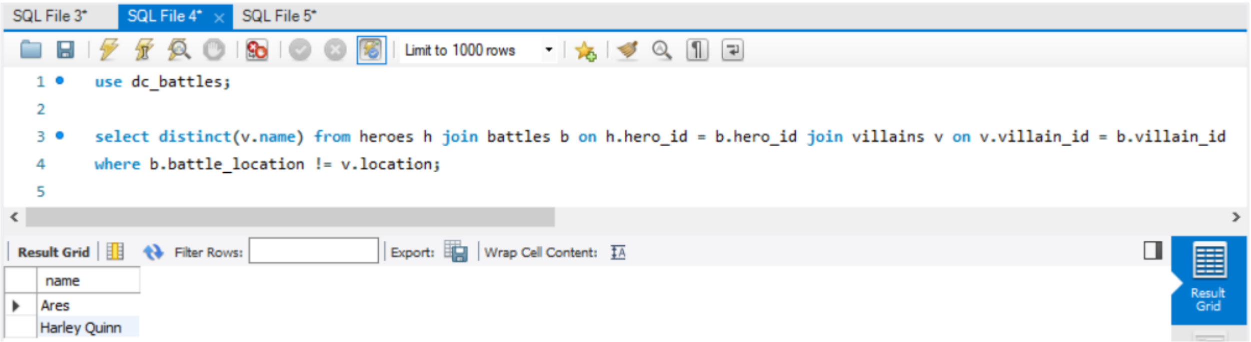
```
use dc_battles;

select v.name from heroes h join battles b on h.hero_id = b.hero_id join villains v on v.villain_id = b.villain_id
group by h.name having count(*) > 1 and count(distinct(v.name)) = 1;

```

name
Deathstroke

- **Retrieve the Name of villains whose locations are not the same as their Battle location**

use dc_battles;

select distinct(v.name) from heroes h join battles b on h.hero_id = b.hero_id join villains v on v.villain_id = b.villain_id where b.battle_location != v.location;



```
use dc_battles;

select distinct(v.name) from heroes h join battles b on h.hero_id = b.hero_id join villains v on v.villain_id = b.villain_id
where b.battle_location != v.location;
```

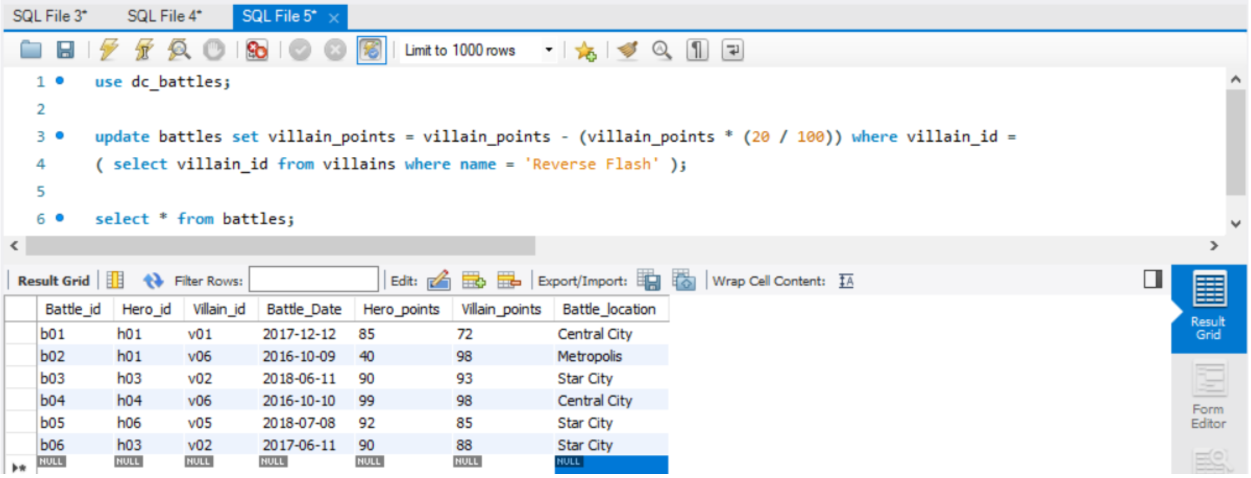
name
Ares
Harley Quinn

- **Reverse flash cheated in his Battle by time traveling. So he will lose 20% of his points**

use dc_battles;

*update battles set villain_points = villain_points - (villain_points * (20 / 100)) where villain_id = (select villain_id from villains where name = 'Reverse Flash');*

*select * from battles;*



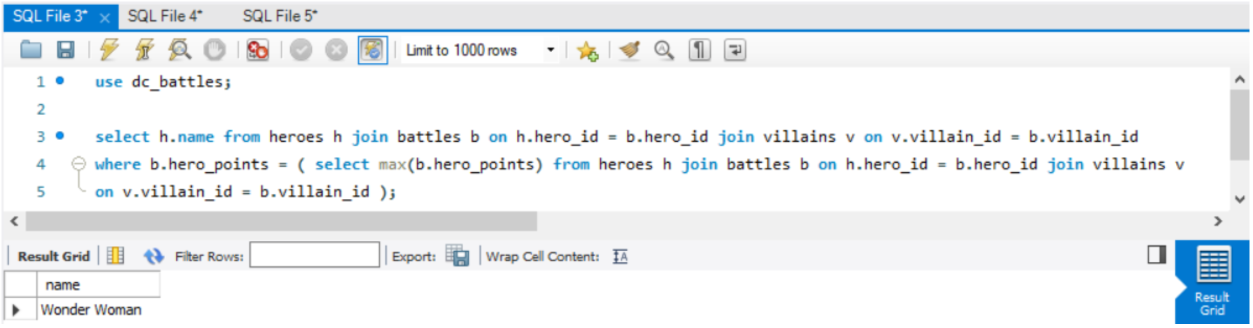
```
use dc_battles;

update battles set villain_points = villain_points - (villain_points * (20 / 100)) where villain_id =
( select villain_id from villains where name = 'Reverse Flash' );

select * from battles;
```

Battle_id	Hero_id	Villain_id	Battle_Date	Hero_points	Villain_points	Battle_location
b01	h01	v01	2017-12-12	85	72	Central City
b02	h01	v06	2016-10-09	40	98	Metropolis
b03	h03	v02	2018-06-11	90	93	Star City
b04	h04	v06	2016-10-10	99	98	Central City
b05	h06	v05	2018-07-08	92	85	Star City
b06	h03	v02	2017-06-11	90	88	Star City
NULL	NULL	NULL	NULL	NULL	NULL	NULL

- **Retrieve the name of the Vero who achieved the maximum points in all Battles**

use dc_battles;

select h.name from heroes h join battles b on h.hero_id = b.hero_id join villains v on v.villain_id = b.villain_id where b.hero_points = (select max(b.hero_points) from heroes h join battles b on h.hero_id = b.hero_id join villains v on v.villain_id = b.villain_id);



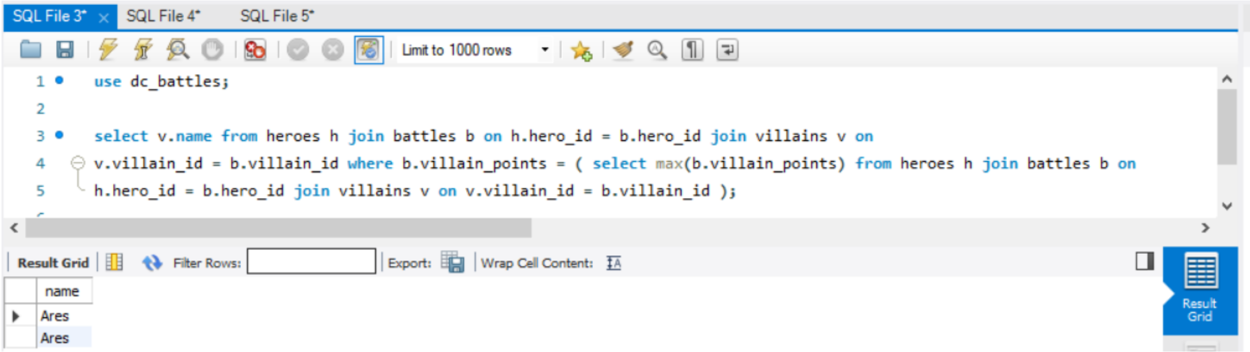
```
use dc_battles;

select h.name from heroes h join battles b on h.hero_id = b.hero_id join villains v on v.villain_id = b.villain_id
where b.hero_points = ( select max(b.hero_points) from heroes h join battles b on h.hero_id = b.hero_id join villains v
on v.villain_id = b.villain_id );
```

name
Wonder Woman

- **Retrieve the name of the Villain who achieved the maximum points in all Battles**

use dc_battles;

select v.name from heroes h join battles b on h.hero_id = b.hero_id join villains v on v.villain_id = b.villain_id where b.villain_points = (select max(b.villain_points) from heroes h join battles b on h.hero_id = b.hero_id join villains v on v.villain_id = b.villain_id);

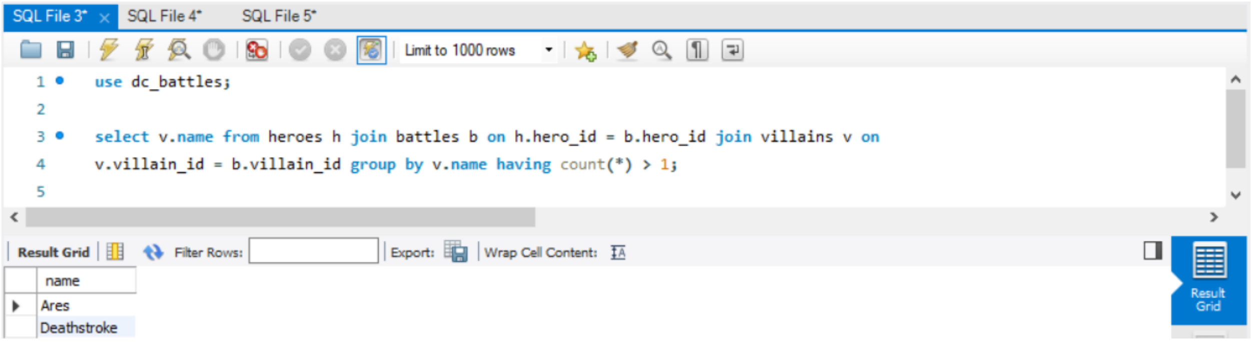


```
use dc_battles;

select v.name from heroes h join battles b on h.hero_id = b.hero_id join villains v on
v.villain_id = b.villain_id where b.villain_points = ( select max(b.villain_points) from heroes h join battles b on
h.hero_id = b.hero_id join villains v on v.villain_id = b.villain_id );
```

name
Ares
Ares

- **Retrieve the name of Villains who have fought more than 1 Battle**

```
use dc_battles;

select v.name from heroes h join battles b on h.hero_id = b.hero_id join villains v on
v.villain_id = b.villain_id group by v.name having count(*) > 1;
```

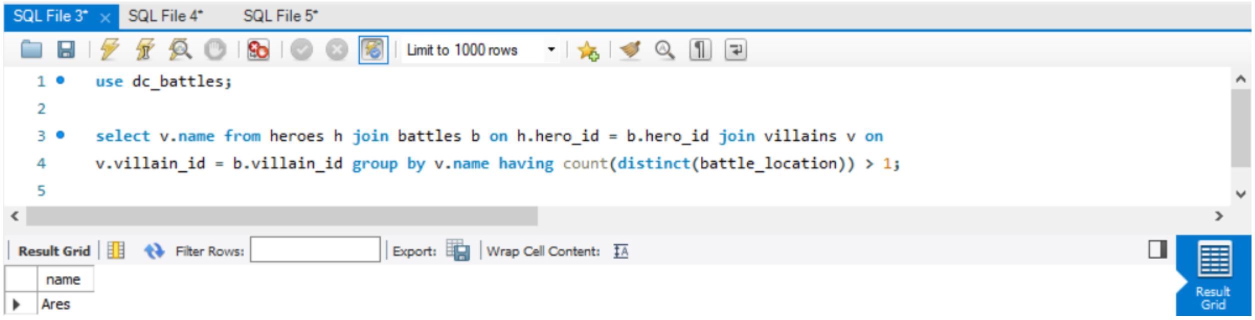


```
use dc_battles;

select v.name from heroes h join battles b on h.hero_id = b.hero_id join villains v on
v.villain_id = b.villain_id group by v.name having count(*) > 1;
```

```
name
Ares
Deathstroke
```

- **Retrieve the Name of the Heroes who have fought in more than one distinct City**

```
use dc_battles;

select v.name from heroes h join battles b on h.hero_id = b.hero_id join villains v on
v.villain_id = b.villain_id group by v.name having count(distinct(battle_location)) > 1;
```



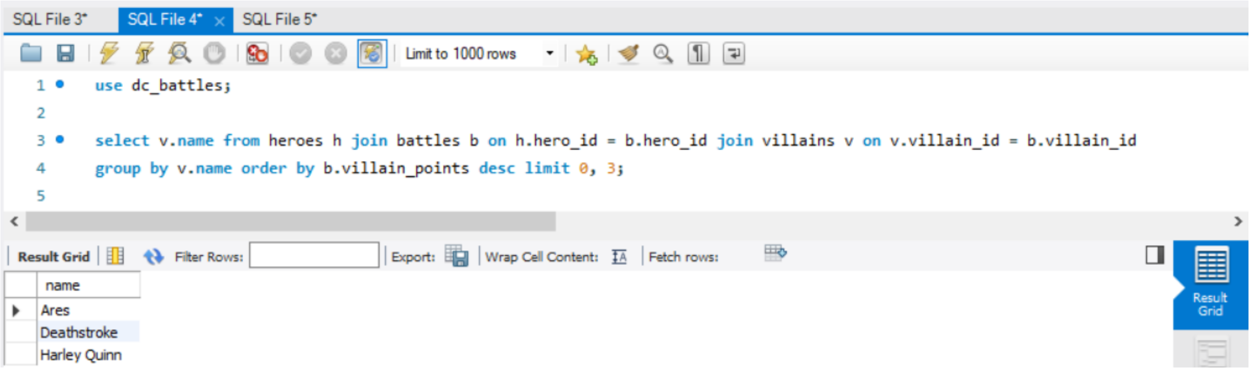
```
use dc_battles;

select v.name from heroes h join battles b on h.hero_id = b.hero_id join villains v on
v.villain_id = b.villain_id group by v.name having count(distinct(battle_location)) > 1;
```

```
name
Ares
```

- **Retrieve the Name of the Villains who have the top 3 scores**

use dc_battles;

select v.name from heroes h join battles b on h.hero_id = b.hero_id join villains v on v.villain_id = b.villain_id group by v.name order by b.villain_points desc limit 0, 3;



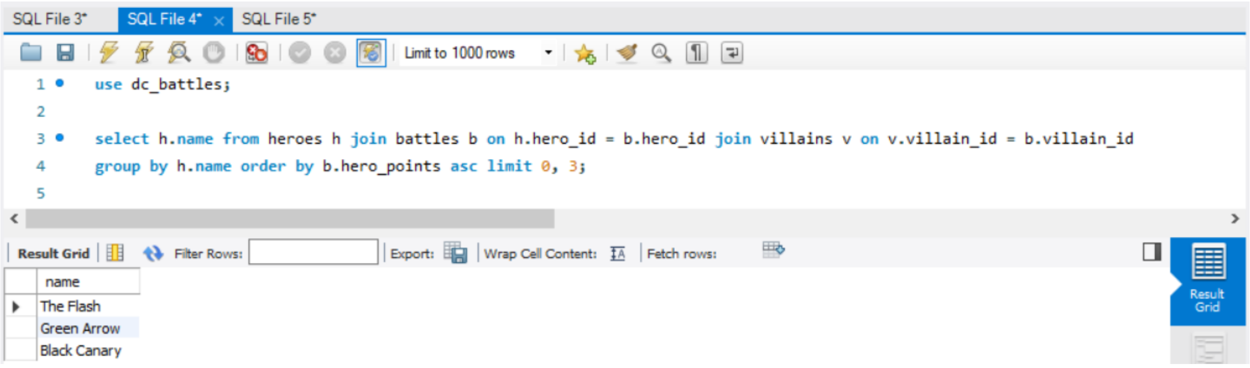
```
use dc_battles;

select v.name from heroes h join battles b on h.hero_id = b.hero_id join villains v on v.villain_id = b.villain_id
group by v.name order by b.villain_points desc limit 0, 3;

```

name
Ares
Deathstroke
Harley Quinn

- **Retrieve the Name of the Heroes who have the bottom 3 scores**

use dc_battles;

select h.name from heroes h join battles b on h.hero_id = b.hero_id join villains v on v.villain_id = b.villain_id group by h.name order by b.hero_points asc limit 0, 3;



```
use dc_battles;

select h.name from heroes h join battles b on h.hero_id = b.hero_id join villains v on v.villain_id = b.villain_id
group by h.name order by b.hero_points asc limit 0, 3;

```

name
The Flash
Green Arrow
Black Canary

Thank You