Matt Yates
Riley Brandau
CS340-400
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Database Project Information

DC/Marvel Superhero Outline

Our database is a miniworld that tries to represent the different heroes and villains in the DC Universe. It has been designed to be used by anyone looking for some information on their favorite hero or villain. It is made up of Characters, Cities, Super Powers, and Teams. Even though there are only four entities, it can provide some interesting data, such as who antagonizes who, the number of villains and heroes in a given city, or even which characters share the same super powers. While a database of super heroes and villains doesn't really have an application in the real world (sure there are heroes and villains, but none are truly super), it does demonstrate an ability to track different types of people with different attributes across multiple cities and if there are any conflicts or alliances between them.

DC/Marvel Superhero Database Outline

Our database consists of four different entities and five different relationships between the entities. Our entities are Characters, City, SuperPowers, and Teams. They relate to each other by means of Leadership, Antagonists, SuperPowerDetails, CityDetails, and TeamAffiliations.

Characters:

The characters table is probably the most interesting table in the database, as it contains most of the text information for the heroes and villains. While there are quite a few columns for this table, there are only a handful of mandatory columns: alias, superpower_1 and 2, team, and city. The primary key for the table is its id, and it's foreign keys are both superpowers (which reference the superPowers table by superpower id), team (references team table by team id) and city (references the city table by city id).

City:

The city table is populated with information that can be pulled to fill in portions of the character's table. It contains details on the cities name, hero population, and villain population. Aside from its id, the only other mandatory field is the city name, as it is possible to have a city without any heroes or villains, but it is not possible to have a city without a name.

SuperPowers:

This is another interesting table. It contains all of the different super powers' names, the type of power (physical or mental), and a description of the power. Every single field of this table is mandatory, as it is not possible to have an unnamed power or a power without a type or description.

Teams:

This table stores the information for a few of the DC universes' character teams. It only has one mandatory field, team_name, as it is possible to have a team that doesn't have any heroes or villains in it, but it is not possible to have a team of heroes without a team name.

Leadership (One to Many relationship):

This represents the one-to-many relationship a hero or villain can have to its subordinates. One hero can be the leader of none to many heroes, and the same goes for villains. It lets the user see who is in charge of who. However, seeing as many of these characters are strong willed individuals, do not be surprised if they answer to no one.

Antagonists (Many to Many relationship):

This represents the many-to-many relationship between heroes and villains. A hero can have many villain antagonists, and a villain can have many hero antagonists. However, do no be surprised if many of the villains in this database have the same antagonist.

SuperPowerDetails (Many to Many relationship):

This represents the many-to-many relationship between characters and superpowers. Superpowers are not restricted to one individual character, in fact, it is not uncommon for many characters to have some degree of the same power.

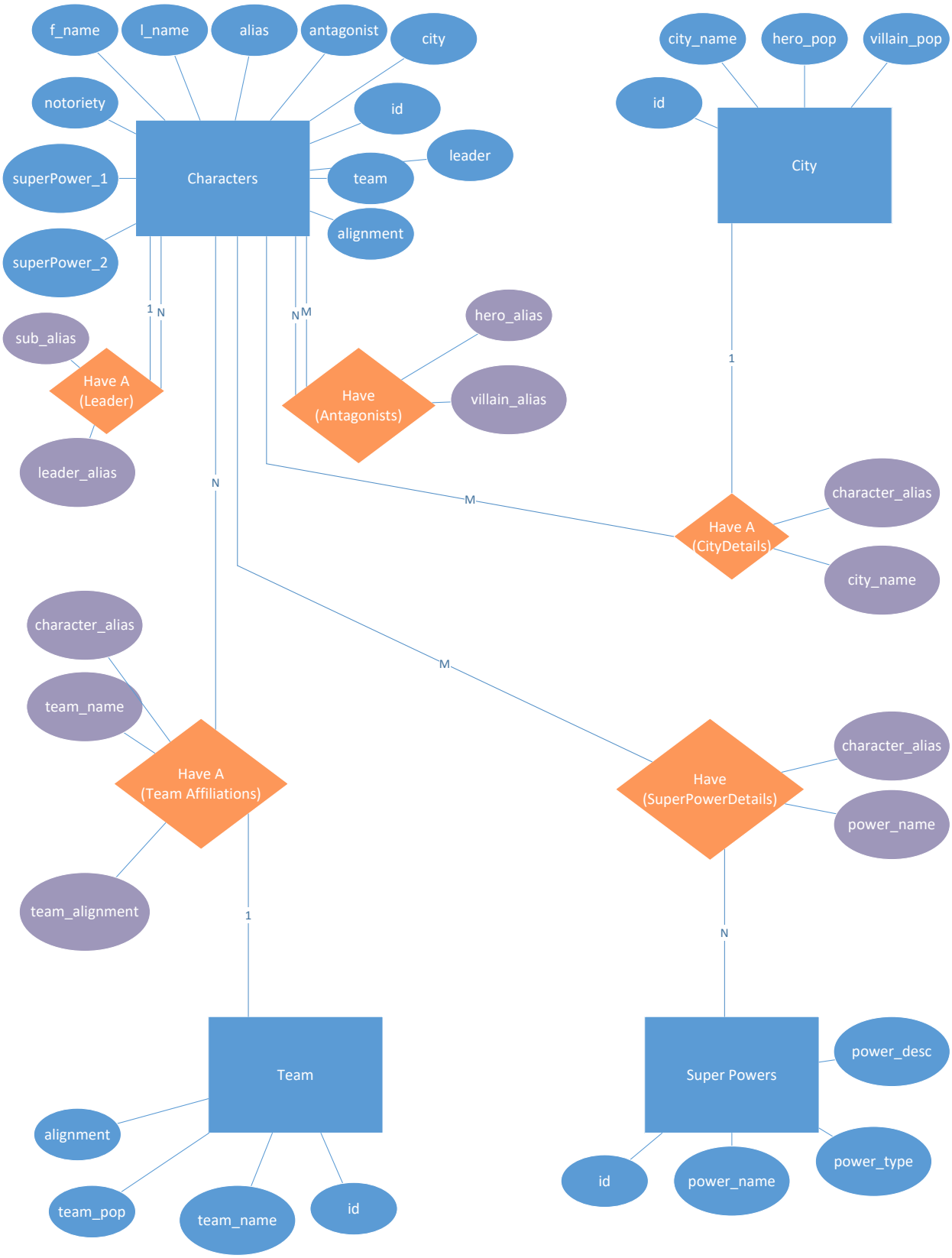
CityDetails (One to Many relationship):

This represents the relationship between characters and their main city. A city can have many characters reside in it, but only one character can have a city that they're from.

TeamAffiliations (One to Many relationship):

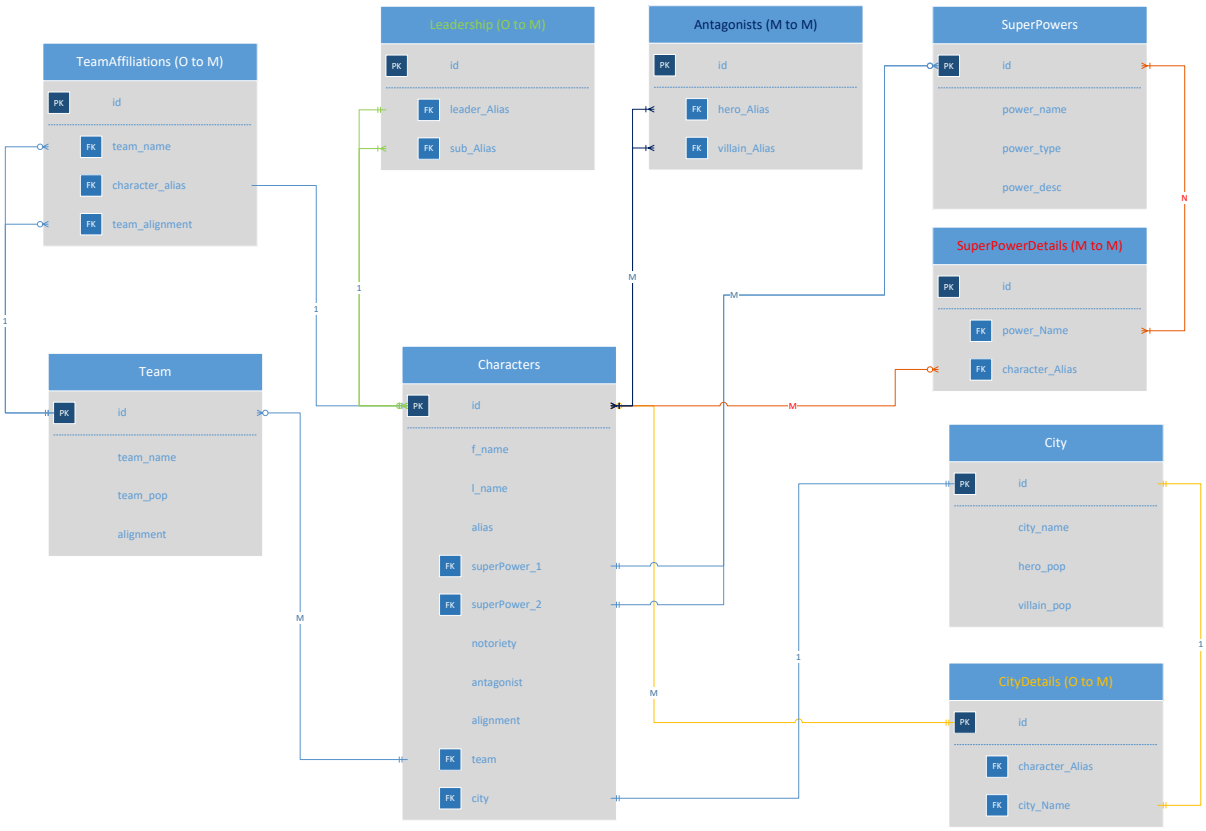
As with the character's relationship to cities, their relationship to teams is the same. A team can have many characters, but a character can only belong to one team at a time.

DC/Marvel Superhero Database ER Diagram



note: id is the primary key for all entities. When pdf-ing the diagram, the underline was lost for some unknown reason.

DC/Marvel Superhero Database Schema



DC/Marvel Superhero Database

Table Creation Queries

```
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```

```
#-------------------------------------------------------------------------------------------------------------------------
#Characters TABLE
#id, f_name, l_name, alias, superPower_1, superPower_2, notoriety, antagonist, alignment, leader, team, city
#Primary Key - id
#Foreign Keys - superPower_1, superPower_2, team, city
#DROP TABLE IF EXISTS characters
CREATE TABLE characters(
        id                              INT     NOT NULL        AUTO_INCREMENT,
        f_name                          VARCHAR(255),
        l_name                          VARCHAR(255),
        alias                           VARCHAR(255) NOT NULL,
        superPower_1                    INT NOT NULL,
        superPower_2                    INT NOT NULL,
        notoriety                       INT,
        antagonist                      VARCHAR(255),
        leader                          VARCHAR(255),
        alignment                       BOOLEAN,
        team                            INT NOT NULL,
        city                            INT NOT NULL,
        PRIMARY KEY (id),
        FOREIGN KEY (superPower_1) REFERENCES superPowers(id) ON DELETE RESTRICT ON UPDATE CASCADE,
        FOREIGN KEY (superPower_2) REFERENCES superPowers(id) ON DELETE RESTRICT ON UPDATE CASCADE,
        FOREIGN KEY (team) REFERENCES team(id) ON DELETE RESTRICT ON UPDATE CASCADE,
        FOREIGN KEY (city) REFERENCES city(id) ON DELETE RESTRICT ON UPDATE CASCADE
)ENGINE=InnoDB;
#-------------------------------------------------------------------------------------------------------------------------
#~~~
```

```
('Clark','Kent','Superman',3, 4,5,'Lex Luthor', 'None',   0,2,2),
('Barry','Allen','The Flash',  13, 2,     4,'Unknown',   'Superman',0, 2, 6),
('Diana','Unknown','Wonder Woman',3,   2,4,'Unknown','Superman',0, 2,           7),
#villain info
('Unknown','Unknown','Bane',        3,7,4,'Batman', 'None',      1, 4, 7),
('Unknown','Unknown',     'Bizarro',3, 4,5,'Superman','None',1, 4, 7),
('Selina','Kyle','Catwoman',              5, 2,2,'Batman','None',      1, 4, 1),
('Unknown','Unknown','Darkseid',3, 4,5,       'Superman','None',1, 4, 7),
('Slade','Wilson','Deathstroke',5,2,3,'Batman','None',1, 1, 7),
('Unknown','Unknown','Doomsday',3,14,      5,'Superman',      'None',   1,4, 7),
('Harleen','Quinzel',          'Harley Quinn',     2,11,2,'Batman','Joker',1, 1, 1),
('Unknown','Unknown',     'Joker',1,  11,       5,'Batman','None',1, 1, 1),
('Waylon','Jones','Killer Croc',3, 3,   3,'Batman','None',1, 1, 1),
('Lex',     'Luthor','Lex Luthor',         1, 7,       5,'Superman','None',1,      4, 2),
('Victor','Fries','Mister Freeze',7,7,  3,'Batman','None',1, 4, 1),
('Edward','Nygma','Riddler',1, 11,2,'Batman','None',1,             4, 1),
('Jonathan','Crane','Scarecrow',1, 15,2,'Batman','None',1, 4, 1);

#city Info
INSERT INTO city(city_name, hero_pop, villain_pop)
VALUES
('Gotham',          6,          7),
('Metropolis',      1,          1),
('Detroit',         1,          0),
('Coast City',      1,          0),
('Atlantis',        1,          0),
('Central City',    1,          0),
('Unknown',         4,          5);



#superPowers Info
INSERT INTO superPowers(power_name, power_type, power_desc)
VALUES
('Super Intelligence','Mental','Genius Level Intellect'),
('Super Agility','Physical','Able to dodge extremely well'),
('Super Strength', 'Physical','Able to perform super-human feats'),
('Flight',  'Mental','Able to fly'),
('Martial Arts','Physical','Expert in hand to hand combat'),
('Super Speed','Physical','Able to move faster than humans'),
('Technology','Physical','Advanced technology at their disposal'),
('Alien Technology','Physical', 'Access to technology beyond what humans are capable of creating.'),
('Telekinesis','Mental','Able to use their mind to move objects'),
('Control Sea Life', 'Mental', 'Able to control sea life telepathically'),
('NoPowers', 'n/a', 'Just a normal person.'),
('Magic', 'Mental', 'Able to do things that defy science.'),
('Super Speed', 'Physical', 'Able to move extremely fast.'),
('Indestructable',  'Phsyical', 'No known way to destroy this character.'),
('Poison', 'Physical', 'Uses poisons that affect body and mind to gain an advantage.')        ;
```

```
#team Info
INSERT INTO team(team_name, team_pop, alignment)
VALUES
('Suicide Squad',   4, 1),
 ('Justice League',8, 0),
 ('Titans',3, 0),
 ('None',  13, null);
```

DC/Marvel Superhero Database

Selection/User Queries

```
#-------------------------------------------------------------------------------------------
#Display city table
#tables: city
SELECT city_name, hero_pop, villain_pop
FROM city;
#-------------------------------------------------------------------------------------------

#-------------------------------------------------------------------------------------------
#Display superPowers table
#Tables: superPowers
SELECT power_name, power_type, power_desc
FROM superPowers;
#-------------------------------------------------------------------------------------------

#-------------------------------------------------------------------------------------------
#Display team table
#Tables: team
SELECT team_name, team_pop, alignment
FROM team;
#-------------------------------------------------------------------------------------------

#-------------------------------------------------------------------------------------------
#Display Heroes
#Tables: characters
SELECT * FROM characters WHERE alignment = 0;
#-------------------------------------------------------------------------------------------

#-------------------------------------------------------------------------------------------
#Display Villains
#Tables: characters
SELECT * FROM characters WHERE alignment = 1;
#-------------------------------------------------------------------------------------------
```

```
#-------------------------------------------------------------------------------------------
#number of heroes
#Tables: characters
SELECT COUNT(*) AS GoodGuys
FROM characters
WHERE alignment = 0
#-------------------------------------------------------------------------------------------

#-------------------------------------------------------------------------------------------
#number of villains
#Tables: characters
SELECT COUNT(*) AS BadGuys
FROM characters
WHERE alignment = 1
#-------------------------------------------------------------------------------------------

#-------------------------------------------------------------------------------------------
#display known nemesis - GOOD
#Tables: characters
SELECT c.alias, c.antagonist
FROM characters c
WHERE c.antagonist
NOT IN
(SELECT c2.antagonist
FROM characters c2
WHERE c2.antagonist='Unknown')
ORDER BY c.antagonist;
#-------------------------------------------------------------------------------------------

#-------------------------------------------------------------------------------------------
#display known leaders
#Tables: characters
SELECT c.f_name, c.l_name, c.alias, c.leader
FROM characters c
WHERE c.leader
NOT IN
(SELECT c2.leader
FROM characters c2
WHERE c2.leader='None')
ORDER BY c.leader
GROUP BY c.alignment

#-------------------------------------------------------------------------------------------
#display characters with primary power (characters.superPower_1 = ? (1-15))
#Tables: characters, superPowers
SELECT c.alias, sp.power_name
FROM characters c
INNER JOIN superPowers sp ON c.superPower_1 = sp.id
WHERE c.superPower_1 = [superPower_id]
ORDER BY c.alignment
#-------------------------------------------------------------------------------------------
```

```
#-----------------------------------------------------------------------------------------------
#display characters with secondary power (characters.superPower_2 = ? (1-15))
#Tables: characters, superPowers
SELECT c.alias, sp.power_name
FROM characters c
INNER JOIN superPowers sp ON c.superPower_2 = sp.id
WHERE c.superPower_2 = [superPower_id]
ORDER BY c.alignment
#-----------------------------------------------------------------------------------------------

#-----------------------------------------------------------------------------------------------
#display characters from a specific city (city.id = ? (1-7))
#Tables: characters, city
SELECT c.city_name, ch.alias, ch.alignment
FROM characters ch
INNER JOIN city c ON ch.city = c.id
WHERE c.id = [city_id]
ORDER BY ch.alignment
#-----------------------------------------------------------------------------------------------

#-----------------------------------------------------------------------------------------------
#display characters from a specific team (team.id = ? (1-4))
#Tables: characters, team
SELECT t.team_name, c.alias
FROM characters c
INNER JOIN team t ON c.team = t.id
WHERE t.id = [team_id]
#-----------------------------------------------------------------------------------------------

#-----------------------------------------------------------------------------------------------
#display powerful characters (4-5)
#Tables: characters
SELECT alias, notoriety
FROM characters
WHERE notoriety > 3
ORDER BY notoriety DESC
#-----------------------------------------------------------------------------------------------

#-----------------------------------------------------------------------------------------------
#display weak characters (0-2)
#Tables: characters
SELECT alias, notoriety
FROM characters
WHERE notoriety < 3
ORDER BY notoriety DESC
#-----------------------------------------------------------------------------------------------
```

```
#-----------------------------------------------------------------------------------------
#display average characters (3)
#Tables: characters
SELECT alias, notoriety
FROM characters
WHERE notoriety = 3
#-----------------------------------------------------------------------------------------

#-----------------------------------------------------------------------------------------
#add a character to character table
INSERT INTO characters(f_name,l_name,alias, superPower_1, superPower_2, notoriety, antagonist, leader,
alignment, team, city)
VALUES ([f_name], [l_name],[alias],[superPower_1], [superPower_2],
[notoriety],[antagonist],[leader],[alignment],[team],[city])
#-----------------------------------------------------------------------------------------

#-----------------------------------------------------------------------------------------
#delete a character by alias
DELETE FROM characters
WHERE alias = [char_alias]
#-----------------------------------------------------------------------------------------

#-----------------------------------------------------------------------------------------
#update a characters antagonist by alias
UPDATE characters SET antagonist = [new_antagonist]
WHERE alias = [alias]
#-----------------------------------------------------------------------------------------
```