CS 340 Final Project
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Outline

Our database content is about superheroes. In comic books, superheroes have many different powers, are from many different planets and are part of many different teams and affiliations. For a comic book fan, it is very easy to lose track of which hero (or villain) is part of which team and so on. This database helps the fan track the favorite characters and draw associations between them.

The database could also be useful to comic book creators. The creator would want to make sure each character was accurately portrayed and that the characters' interactions with each other are consistent. For example, a creator would not want to refer to a teammate of theirs who was not actually on their superhero team.

Please visit the website at: http://web.engr.oregonstate.edu/~huynhtri/CS340Final/index.html.

Database Outline in Words

The superhero database has 6 entities:

- Superhero
- Affiliation
- Powers
- Comic
- Publisher
- Author

The database will support searching the database, adding information to the database, updating information already in the database and deleting information from the database. Each of these operations is described next.

Search
The database will be searchable by Superhero name, First Name, Last Name, Affiliation and Comic Book. Searching by the First Name "Peter", for example, will return all of the heroes

that have the first name Peter. Searching for the Comic Book "X-Men" will return all of the heroes that appear in the X-Men comic book.

In addition, the search results for Superhero and Comic will offer the user the option to see all of the associated information for that entity. If the user searches for the hero "Wolverine", for example, the database will display that hero's name, human name, first appearance, gender, bio and universe. It will also display the information located in associated tables such as Affiliation and Comic info.

Similarly, the user will be able to easily find all of the associated data for a specific comic book title. This includes the Publisher (and publisher information) and the comic's creators.

Add
Users will be able to add a Super Hero, Affiliation, Author, Publisher, Comic and Power to the database. For Super Heroes, the foreign keys will be listed in drop-down menus so they can easily be entered without compromising the integrity of the database. For example, a Comic must have a publisher. The publishers already in the database will be shown in a drop-down menu. The user will be directed to add another publisher to the database if their desired publisher is not in the database already.
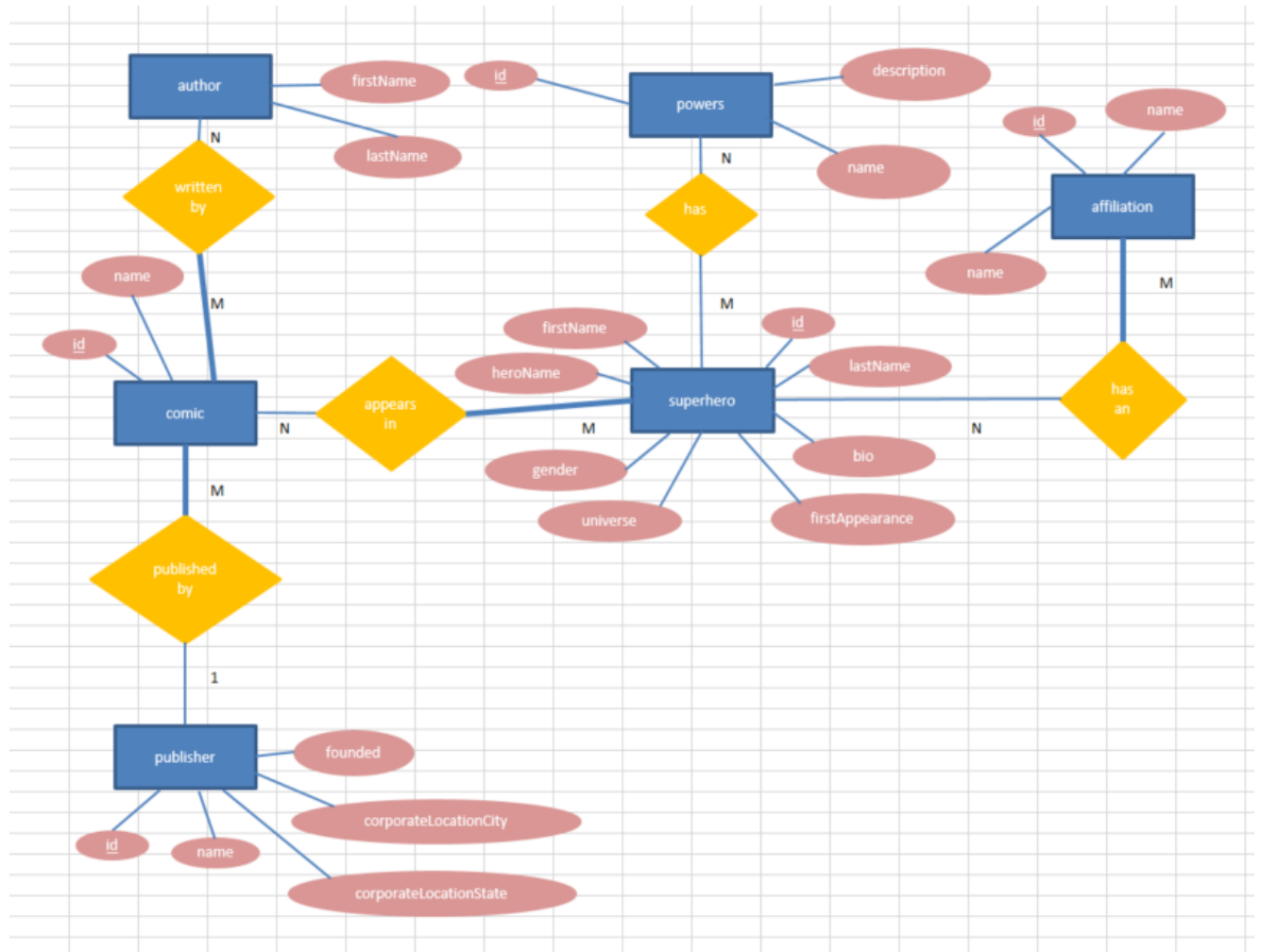
Update
Users will be able to update any of the entities in the database. Each of their attributes can be updated via text fields.
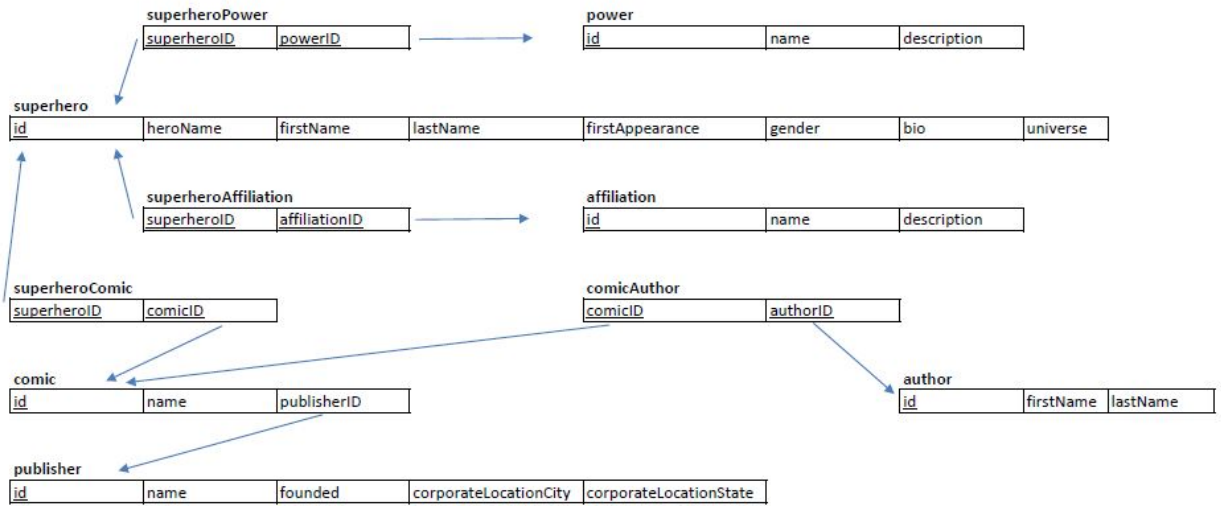
Delete
Users will be able to delete instances of each entity from the database. Users will be prevented from deleting publishers who have associated comics in the database.

ER Diagram of Database

author — firstName, id, lastName

powers — description, name

affiliation — id, name

written by (N / M)

comic — name, id

appears in (N / M)

superhero — firstName, heroName, id, lastName, gender, bio, universe, firstAppearance

has (N / M)

has an (M / N)

name

published by (M / 1)

publisher — founded, corporateLocationCity, id, name, corporateLocationState

Database Schema

superheroPower

superheroID	powerID	

power

id	name	description

superhero

id	heroName	firstName	lastName	firstAppearance	gender	bio	universe

superheroAffiliation

superheroID	affiliationID	

affiliation

id	name	description

superheroComic

superheroID	comicID	

comicAuthor

comicID	authorID	

comic

id	name	publisherID

author

id	firstName	lastName

publisher

id	name	founded	corporateLocationCity	corporateLocationState

General Use Queries

General Search Table Query (Where clause depends on what the user fills in)
Note: This generally shows everything in the table and adds a where clause in php if the user fills in the filter form. For example, if superhero and comic book form was filled it, the where clause would be added in the end as:
"WHERE sh.heroName = [superhero] AND c.name = [comic]"

SELECT DISTINCT sh.id, sh.heroName, sh.firstName, sh.lastName, aff.name, c.name, c.id
FROM superhero sh
LEFT JOIN superheroPower sh_pwr ON sh.id = sh_pwr.superheroID
LEFT JOIN power pwr ON sh_pwr.powerID = pwr.id
LEFT JOIN superheroAffiliation sh_aff ON sh.id = sh_aff.superheroID
LEFT JOIN affiliation aff ON sh_aff.affiliationID = aff.id
LEFT JOIN superheroComic sh_c ON sh.id = sh_c.superheroID
LEFT JOIN comic c ON sh_c.comicID = c.id
LEFT JOIN publisher pub ON c.publisherID = pub.id
LEFT JOIN comicAuthor c_a ON c.id = c_a.comicID
LEFT JOIN author a ON c_a.authorID = a.id;

Select Queries
SELECT id, heroName FROM superhero;

SELECT id, name FROM affiliation;

SELECT id, firstName, lastName FROM author;

SELECT id, name FROM publisher;

SELECT id, name FROM comic;

SELECT id, name FROM power;

SELECT id, heroName, firstName, lastName, firstAppearance, gender, bio, universe FROM superhero WHERE id=[id];

SELECT pwr.id, pwr.name, pwr.description FROM superheroPower sh_pwr
INNER JOIN power pwr ON sh_pwr.powerID = pwr.id
WHERE sh_pwr.superheroID =[id];

SELECT aff.id, aff.name, aff.description FROM superheroAffiliation sh_aff
INNER JOIN affiliation aff ON sh_aff.affiliationID = aff.id;

WHERE sh_aff.superheroID =[id];

SELECT id, name FROM comic WHERE id=[id];

SELECT pub.id, pub.name, pub.founded, pub.corporateLocationCity,
pub.corporateLocationState FROM comic c
INNER JOIN publisher pub ON c.publisherID = pub.id
WHERE c.id =[id];

SELECT a.id, a.firstName, a.lastName FROM comicAuthor c_a
INNER JOIN author a ON c_a.authorID = a.id
WHERE c_a.comicID =[id];

SELECT id, firstName, lastName FROM author;

SELECT id, name, description FROM affiliation WHERE id = [id];

SELECT id, firstName, lastName FROM author WHERE id = [id];

SELECT id, name, founded, corporateLocationCity, corporateLocationState FROM publisher
WHERE id = [id];

SELECT id, name, publisherID FROM comic WHERE id = [id];

SELECT id, name, description FROM power WHERE id = [id];

Update Queries
UPDATE superhero SET heroName = [superhero], firstName = [fName], lastName = [lName],
firstAppearance = [appearance], gender = [gender], bio = [bio], universe = [universe] WHERE
id = [id];

UPDATE affiliation SET name = [name], description = [description] WHERE id = [id];

UPDATE author SET firstName = [fName], lastName = [lName] WHERE id = [id];

UPDATE publisher SET name = '$name', founded = [dateFounded], corporateLocationCity =
[city], corporateLocationState = [state] WHERE id = [id];

UPDATE comic SET name = [name], publisherID = [publisherID] WHERE id = [id];

UPDATE power SET name = [name], description = [description] WHERE id = [id];

Add Queries

INSERT INTO superhero(heroName, firstName, lastName, gender, universe, bio, firstAppearance) VALUES([superhero], [fName], [lName], [gender], [universe], [bio], [appearance]);

INSERT INTO superheroAffiliation(superheroID, affiliationID) VALUES([id], [affiliation]);

INSERT INTO superheroComic(superheroID, comicID) VALUES([id], [comic]);

INSERT INTO superheroPower(superheroID, powerID) VALUES([id], [power]);

INSERT INTO affiliation(name, description) VALUES([name], [description]);

INSERT INTO author(firstName, lastName) VALUES([fName], [lName]);

INSERT INTO publisher(name, founded, corporateLocationCity, corporateLocationState) VALUES([name]', [dateFounded], [city], [state]);

INSERT INTO comic(name, publisherID) VALUES([name], [publisher]);

INSERT INTO power(name, description) VALUES([name], [description]);

INSERT INTO superheroPower(superheroID, powerID) VALUES([superheroID], [powerID])

INSERT INTO superheroAffiliation(superheroID, affiliationID) VALUES([superheroID], [affiliationID]);

INSERT INTO superheroComic(superheroID, comicID) VALUES([superheroID], [comicID]);

INSERT INTO comicAuthor(comicID, authorID) VALUES([comicID]], [authorID]);

Delete Queries
DELETE FROM superhero WHERE id=[id];

DELETE FROM affiliation WHERE id=[id];

DELETE FROM author WHERE id=[id];

DELETE FROM publisher WHERE id=[id];

DELETE FROM comic WHERE id=[id];

DELETE FROM power WHERE id=[id];

DELETE FROM superheroPower WHERE superheroID = [superheroID] AND powerID = [powerID];

DELETE FROM superheroAffiliation WHERE superheroID = [superheroID] AND affiliationID = [affiliationID];

DELETE FROM superheroComic WHERE superheroID = [superheroID] AND comicID = [comicID];

DELETE FROM comicAuthor WHERE comicID = [comic] AND authorID = [author];

Table Creation Queries

-- Note that it includes pre-set data as well for the tables
-- Solomon Huynh
-- Dustin Chase
```
/*
Table Alias Names:

superhero          sh
power              pwr
superheroPower     sh_pwr
publisher          pub
comic              c
superheroComic     sh_c
affiliation        aff
superheroAffiliation sh_aff
author             a
comicAuthor        c_a
*/

DROP TABLE IF EXISTS superheroPower;
DROP TABLE IF EXISTS superheroAffiliation;
DROP TABLE IF EXISTS superheroComic;
DROP TABLE IF EXISTS comicAuthor;
DROP TABLE IF EXISTS author;
DROP TABLE IF EXISTS superhero;
DROP TABLE IF EXISTS power;
DROP TABLE IF EXISTS affiliation;
DROP TABLE IF EXISTS comic;
DROP TABLE IF EXISTS publisher;

-- Creating tables
CREATE TABLE superhero(
id INT NOT NULL AUTO_INCREMENT,
heroName VARCHAR(255) NOT NULL,
firstName VARCHAR(255) default NULL,
lastName VARCHAR(255) default NULL,
firstAppearance DATE default NULL,
gender VARCHAR(255),
bio TEXT,
universe VARCHAR(255) default NULL,
PRIMARY KEY(id)
```

```sql
)ENGINE=InnoDB;

CREATE TABLE power(
id INT NOT NULL AUTO_INCREMENT,
name VARCHAR(255) NOT NULL,
description TEXT NOT NULL,
PRIMARY KEY(id)
)ENGINE=InnoDB;

CREATE TABLE superheroPower(
superheroID INT,
powerID INT,
PRIMARY KEY(superheroID, powerID),
FOREIGN KEY(superheroID)
        REFERENCES superhero(id)
        ON DELETE CASCADE
        ON UPDATE CASCADE,
FOREIGN KEY(powerID)
        REFERENCES power(id)
        ON DELETE CASCADE
        ON UPDATE CASCADE
)ENGINE=InnoDB;

CREATE TABLE publisher (
id INT NOT NULL AUTO_INCREMENT,
name VARCHAR(255) NOT NULL,
founded DATE,
corporateLocationCity VARCHAR(255),
corporateLocationState VARCHAR(255),
PRIMARY KEY(id)
)ENGINE=InnoDB;

CREATE TABLE comic (
id INT NOT NULL AUTO_INCREMENT,
name VARCHAR(255) NOT NULL,
publisherID INT,
PRIMARY KEY(id),
FOREIGN KEY(publisherID)
        REFERENCES publisher(id)
        ON DELETE NO ACTION
        ON UPDATE CASCADE
)ENGINE=InnoDB;
```

```sql
CREATE TABLE author(
id INT NOT NULL AUTO_INCREMENT,
firstName VARCHAR(255) NOT NULL,
lastName VARCHAR(255) NOT NULL,
PRIMARY KEY(id)
)ENGINE=InnoDB;

CREATE TABLE comicAuthor(
comicID INT,
authorID INT,
PRIMARY KEY(comicID, authorID),
FOREIGN KEY(comicID)
        REFERENCES comic(id)
        ON DELETE CASCADE
        ON UPDATE CASCADE,
FOREIGN KEY(authorID)
        REFERENCES author(id)
        ON DELETE CASCADE
        ON UPDATE CASCADE

)ENGINE=InnoDB;

CREATE TABLE superheroComic (
superheroID INT,
comicID INT,
PRIMARY KEY(superheroID, comicID),
FOREIGN KEY(superheroID)
        REFERENCES superhero(id)
        ON DELETE CASCADE
        ON UPDATE CASCADE,
FOREIGN KEY(comicID)
        REFERENCES comic(id)
        ON DELETE CASCADE
        ON UPDATE CASCADE
) ENGINE=InnoDB;

CREATE TABLE superheroAffiliation (
superheroID INT,
affiliationID INT,
PRIMARY KEY(superHeroID, affiliationID),
FOREIGN KEY(superHeroID)
        REFERENCES superhero(id)
        ON DELETE CASCADE
```

```sql
        ON UPDATE CASCADE
)ENGINE=InnoDB;

CREATE TABLE affiliation (
id INT NOT NULL AUTO_INCREMENT,
name varchar(255) NOT NULL,
description TEXT,
PRIMARY KEY(id)
)ENGINE=InnoDB;

-- Insert Sample Data
--
--

-- Insert data into table powers

INSERT INTO power (name, description) VALUES
('Flight', 'The ability to levitate into the air'),
('Shieldsmanship', 'Using a shield as a weapon'),
('Acrobat', 'High agility'),
('Healing', 'Ability to restore wounds'),
('Retractable Claws', 'Ability to pull in and out claws from the knuckles'),
('Extended Lifespan', 'Live longer than an average human lifespan'),
('Enhanced Strength', 'Strength drastically greater than a human'),
('Spider Sense', 'Ability that has the senses of a spider'),
('Weather Manipulation', 'Ability to change the weather at will'),
('Super Jump', 'Ability to jump extremely high'),
('Optic Blast', 'The ability to emit solar energy from the eyes'),
('Telepathy', 'Ability to use read minds and communicate by using one\'s mind'),
('Shapeshifting', 'Ability to change forms into any human or creature'),
('Thief', 'Highly skillful at stealing'),
('Marksman', 'High shooting accuracy');

-- Insert data into table superhero

INSERT INTO superhero (heroName, firstName, lastName, firstAppearance, gender, bio,
universe) VALUES
('Captain America', 'Steve', 'Rogers', '1941-03-01', 'Male', 'Scrawny teen is given a
super-soldier serum and transformed into a patriotic hero.', 'Marvel'),
('Wolverine', 'James', 'Howlett', '1974-11-01', 'Male', 'Wolverine was born, James Howlett,
inCold Lake, Alberta, Canada, during the late 1880s, to rich farm owners John and Elizabeth
Howlett. Bone claws emerge from the back of his hands, as his mutation manifests.', 'Marvel'),
```

('Spider-Man', 'Peter', 'Parker', '1962-08-01', 'Male', 'In Forest Hills, Queens, New York, high school student Peter Parker is a science-whiz orphan living with his Uncle Ben and Aunt May. He is bitten by a radioactive spider at a science exhibit and acquires the agility and proportionate strength of an arachnid.', 'Marvel'),

('Thor', 'Donald', 'Blake', '1962-08-01', 'Male', 'Thor\'s father Odin decides his son needed to be taught humility and consequently places Thor (without memories of godhood) into the body and memories of an existing, partially disabled human medical student, Donald Blake.', 'Marvel'),

('Hulk', 'Bruce', 'Banner', '1962-05-01', 'Male', 'During the experimental detonation of a gamma bomb, Banner is hit with the blast, absorbing massive amounts of gamma radiation. He awakens later in an infirmary, seeming relatively unscathed, but that night transforms into a lumbering grey form.', 'Marvel'),

('Superman', 'Clark', 'Kent', '1938-06-01', 'Male', 'Superman is the sole survivor of the planet Krypton. His father, Jor-El, discovered that a nuclear chain reaction was building inside Krypton that would soon shatter the entire world. Jor-El therefore had his unborn son Kal-El removed from the Kryptonian Gestation Chambers and affixed the life matrix containing Kal-El to an experimental vessel for travel through hyperspace. Jor-El launched the starcraft toward Earth just before Krypton exploded.', 'DC'),

('Wonder Woman', 'Diane', 'Prince', '1942-06-01', 'Female', 'Warrior princess of the Amazons (based on the Amazons of Greek mythology) and is known in her homeland as Princess Diana of Themyscira.', 'DC'),

('Martian Manhunter', 'J\'onn', 'J\'onzz', '1955-11-01', 'Other', 'The character is a green-skinned extraterrestrial humanoid from the planet Mars, who is pulled to earth by an experimental teleportation beam (originally presented as an attempted communication device) constructed by Dr. Saul Erdel.', 'DC'),

('Storm', 'Ororo', 'Munroe', '1975-05-01', 'Female', 'Ororo\'s mother, N\'Dare, was the princess of a tribe in Kenya and descended from a long line of African witch-priestesses with white hair, blue eyes, and a natural gift for sorcery. N\'Dare falls in love with and marries American photojournalist David Munroe.', 'Marvel'),

('Savage Dragon', 'Emperor', 'Kurr', '1982-06-01', 'Male', 'The Dragon used to be an evil tyrant named Emperor Kurr, who led a nomadic race of space aliens who spent thousands of years traveling through space, searching for a suitable new homeworld. After Kurr had chosen Earth, he decided to go against his people\'s peaceful ways and slaughter all humans. Two scientists named Rech and Weiko conspired against him, giving him brain damage that erased his memory, and implanted within his memories five days\' worth of satellite television broadcasts from Earth. Kurr was then sent to live on Earth, while his race moved on to search for a new planet elsewhere.', 'Image'),

('Invincible', 'Mark', 'Grayson', '2002-11-01', 'Male', 'Markus Sebastian Grayson is the son of Nolan Grayson, who is the superhero Omni-Man as well as a successful novelist, and Deborah Grayson. When Mark was seven years old, Nolan reveals that he is a member of a race of peaceful alien explorers called Viltrumites, that he had come to Earth to help mankind and that one day Mark would develop super powers. Mark\'s powers manifest at the age of 17 while he is working at his part-time job.', 'Image');

```sql
-- Insert data into publisher table

INSERT INTO publisher (name, founded, corporateLocationCity, corporateLocationState)
VALUES
('DC', '1934-05-01','New York','New York'),
('Marvel','1939-12-01','New York', 'New York'),
('Image','1992-02-01','Berkeley','California');

-- Insert data into table comic

INSERT INTO comic (name, publisherID) VALUES
('Captain America', 2),
('X-Men',2),
('Spider-Man', 2),
('Thor',2),
('The Incredible Hulk',2),
('Superman', 1),
('Wonder Woman', 1),
('Martian Manhunter',1),
('Savage Dragon', 3),
('Invincible', 3);

-- insert data into affiliation

INSERT INTO affiliation (name, description) VALUES
('X-Men','Heroic team of mutants'),
('Avengers','Earth\'s mightiest heroes'),
('Defenders','Team of individualistic outsiders'),
('Justice League of America','Heroic team with rotating roster'),
('BrotherHood of Mutants','Supervillian team devoted to mutant superiority over normal
humans'),
('Justice Society of America','First team of superheroes'),
('Newsboy Legion','A kid gang'),
('West Coast Avengers','Founded by Avenger Hawkeye to expand Avengers influence'),
('Alpha Flight','Canadian superhero team'),
('Sinister Six','Supervillian team drawn from Spider-Man comics'),
('Brigade ','Heroic team originally led by Battlestone'),
('Youngblood','High-profile team sanctioned by U.S. government');

-- Insert data into table superheroPower

INSERT INTO superheroPower (superheroID, powerID) VALUES
```

(1, 2),
(1, 3),
(1, 15),
(2, 4),
(2, 5),
(2, 6),
(3, 7),
(3, 8),
(3, 3),
(4, 9),
(4, 6),
(5, 7),
(5, 10),
(5, 4),
(6, 1),
(6, 11),
(6, 7),
(7, 1),
(7, 7),
(7, 4),
(7, 12),
(8, 13),
(8, 7),
(8, 11),
(9, 9),
(9, 14),
(10, 7),
(10, 4),
(11, 7),
(11, 1);

-- Insert data into table superheroComic

INSERT INTO superheroComic (superheroID, comicID) VALUES
(1, 1),
(2, 2),
(3, 3),
(4, 4),
(5, 5),
(6, 6),
(7, 7),
(8, 8),
(9, 2),

```
(10, 9),
(11, 10);

-- Insert data into table superheroAffiliation

INSERT INTO superheroAffiliation (superheroID, affiliationID) VALUES
(1, 2),
(2, 1),
(3, NULL),
(4, 2),
(5, 3),
(6, NULL),
(7, 6),
(8, 6),
(9, 1),
(10, NULL),
(11, NULL);

INSERT INTO author (firstName, lastName) VALUES
('Jack','Kirby'),
('Stan','Lee'),
('Larry','Lieber'),
('Joe','Simon'),
('Jerry','Siegel'),
('Joe ','Shuster'),
('John','Byrne'),
('William','Marston'),
('H.G.','Peter'),
('Joseph','Samachson'),
('Joe','Certa'),
('Erik','Larsen'),
('Robert','Kirkman'),
('Cory','Walker'),
('Steve','Ditko');

INSERT INTO comicAuthor (comicID, authorID) VALUES
(1, 1),
(1, 4),
(2, 2),
(2, 1),
(3, 2),
(3, 15),
(4, 3),
```

(4, 1),
(4, 2),
(5, 1),
(5, 2),
(6, 5),
(6, 6),
(6, 7),
(7, 8),
(7, 9),
(8, 10),
(8, 11),
(9, 12),
(10, 13),
(10, 14);