CS340 Project

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Airline Database

Outline:

The database we created is based on an airline database. You can view data for the crew members, aircraft, and the flights. Within the crew member link, you can view the crew members information as well as add a new crewmember. You can also select a link to add a new crew base or search a specific crew members certifications. In the aircraft page you can see the different aircraft in the airline. You can also add a new aircraft or select the link to allow you to add and aircraft type. Last, in the flights page you can see the different flights available. You can also add a flight to the list, view the crew members on each flight, or assign a new crew member to a flight.

Database Outline:

In our database we have five separate entities: crew base, crew member, aircraft type, aircraft, and flight. Many crew members can live in one crew base but a crew member cannot live in more than one crew base. Many crew members can be assigned to many different flights. Many crew members can have many certifications to fly aircraft. Many aircraft can have an aircraft type but an aircraft can only have one type. Many flights can be assigned to an aircraft.

Data Definition Queries:

```
DROP TABLE IF EXISTS `crew_base`;

DROP TABLE IF EXISTS `crew_member`;

DROP TABLE IF EXISTS `crew_flight`;

DROP TABLE IF EXISTS `flight`;

DROP TABLE IF EXISTS `aircraft`;

DROP TABLE IF EXISTS `aircraft_type`;

DROP TABLE IF EXISTS `crew_aircraft`;


CREATE TABLE `crew_base` (
        `id` int NOT NULL AUTO_INCREMENT,
        `city` varchar(255),
        PRIMARY KEY (`id`),
        UNIQUE (`city`)
) ENGINE=InnoDB;


CREATE TABLE `crew_member` (
        `id` int NOT NULL AUTO_INCREMENT,
        `fname` varchar(255) NOT NULL,
```

```
    `lname` varchar(255) NOT NULL,
    `crewbase` int,
    `role` varchar(255) NOT NULL,
    PRIMARY KEY (`id`),
    CONSTRAINT U_Person UNIQUE (`fname`, `lname`),
    FOREIGN KEY (`crewbase`) REFERENCES `crew_base` (`id`)
) ENGINE=InnoDB;

CREATE TABLE `crew_flight` (
    `id` int NOT NULL AUTO_INCREMENT,
    `crew_id` int NOT NULL,
    `flight_id` int NOT NULL,
    PRIMARY KEY (`id`),
    FOREIGN KEY (`crew_id`) REFERENCES `crew_member` (`id`) ON DELETE
    CASCADE,
    FOREIGN KEY (`flight_id`) REFERENCES `flight` (`id`) ON DELETE CASCADE
) ENGINE=InnoDB;

CREATE TABLE `flight` (
    `id` int NOT NULL AUTO_INCREMENT,
```

```
	`flightNum` int NOT NULL,
	`aircraft` int NOT NULL,
	`departureCity` varchar(255) NOT NULL,
	`arrivalCity` varchar(255) NOT NULL,
	`dateTime` datetime NOT NULL,
	PRIMARY KEY (`id`),
	FOREIGN KEY (`aircraft`) REFERENCES `aircraft` (`id`) ON DELETE CASCADE
) ENGINE=InnoDB;

CREATE TABLE `aircraft_type` (
	`id` int NOT NULL AUTO_INCREMENT,
	`manufacturer` varchar(255) NOT NULL,
	`model` varchar(255) NOT NULL,
	PRIMARY KEY (`id`)
) ENGINE=InnoDB;

CREATE TABLE `aircraft` (
	`id` int NOT NULL AUTO_INCREMENT,
	`type` int NOT NULL,
	`registrationNumber` varchar(6) NOT NULL,
```

```
    PRIMARY KEY (`id`),
    FOREIGN KEY (`type`) REFERENCES `aircraft_type` (`id`) ON DELETE CASCADE
) ENGINE=InnoDB;

CREATE TABLE `crew_aircraft` (
    `id` int NOT NULL AUTO_INCREMENT,
    `crew_id` int NOT NULL,
    `aircraftTypeID` int NOT NULL,
    PRIMARY KEY (`id`),
    FOREIGN KEY (`crew_id`) REFERENCES `crew_member` (`id`) ON DELETE
    CASCADE,
    FOREIGN KEY (`aircraftTypeID`) REFERENCES `aircraft_type` (`id`) ON DELETE
    CASCADE
) ENGINE=InnoDB;
```

Data Manipulation Queries:

AIRCRAFT QUERIES:

SELECT id, manufacturer, model FROM aircraft_type

SELECT aircraft.id, registrationNumber, manufacturer, model FROM aircraft INNER JOIN aircraft_type ON aircraft.type = aircraft_type.id

SELECT id, type, registrationNumber FROM aircraft WHERE id = [id input]

INSERT INTO aircraft (type, registrationNumber) VALUES ([type input],[registration# input)

INSERT INTO aircraft_type (manufacturer, model) VALUES ([manufacturer input],[model input])

UPDATE aircraft SET type=[type input], registrationNumber=[registration input] WHERE id=[id input]

DELETE FROM aircraft WHERE id = [id input]

CREW QUERIES:

SELECT id, city FROM crew_base

SELECT crew_member.id, fname, lname, crew_base.city AS crewbase, role FROM crew_member LEFT JOIN crew_base ON crew_member.crewbase = crew_base.id

SELECT id, fname, lname, crewbase, role FROM crew_member WHERE id = [id input]

SELECT crew_id, fname, lname, aircraft_type.manufacturer, aircraft_type.model FROM crew_member LEFT JOIN crew_aircraft ON crew_member.id = crew_aircraft.crew_id LEFT JOIN

aircraft_type ON crew_aircraft.aircraftTypeID = aircraft_type.id WHERE crew_member.id = [id input]

SELECT id, manufacturer, model FROM aircraft_type

INSERT INTO crew_aircraft (crew_id, aircraftTypeID) VALUES ([crew_id input],[type_id input])

INSERT INTO crew_member (fname, lname, crewbase, role) VALUES ([fname input],[lname input],[crewbase input],[role input])

INSERT INTO crew_base (city) VALUES (?)

UPDATE crew_member SET fname=[fname input], lname=[lname input], crewbase=[crewbase input], role=[role input] WHERE id=[id input]

DELETE FROM crew_member WHERE id = [id input]

FLIGHT QUERIES:

SELECT id, registrationNumber FROM aircraft

SELECT flight.id AS id, flightNum, registrationNumber, departureCity, arrivalCity, dateTime

FROM flight LEFT JOIN aircraft ON flight.aircraft = aircraft.id

SELECT id, flightNum, aircraft, departureCity, arrivalCity, DATE_FORMAT(dateTime, '%Y-%m-%dT%H:%i') AS dateTime FROM flight WHERE id = [id input]

SELECT crew_flight.id AS id, fname, lname, flightNum, dateTime FROM crew_member INNER

JOIN crew_flight ON crew_member.id = crew_flight.crew_id INNER JOIN flight ON

crew_flight.flight_id = flight.id

SELECT id, fname, lname FROM crew_member

INSERT INTO flight (flightNum, aircraft, departureCity, arrivalCity, dateTime) VALUES ([flightNum input], [aircraft input], [departure input], [arrival input], [date input])

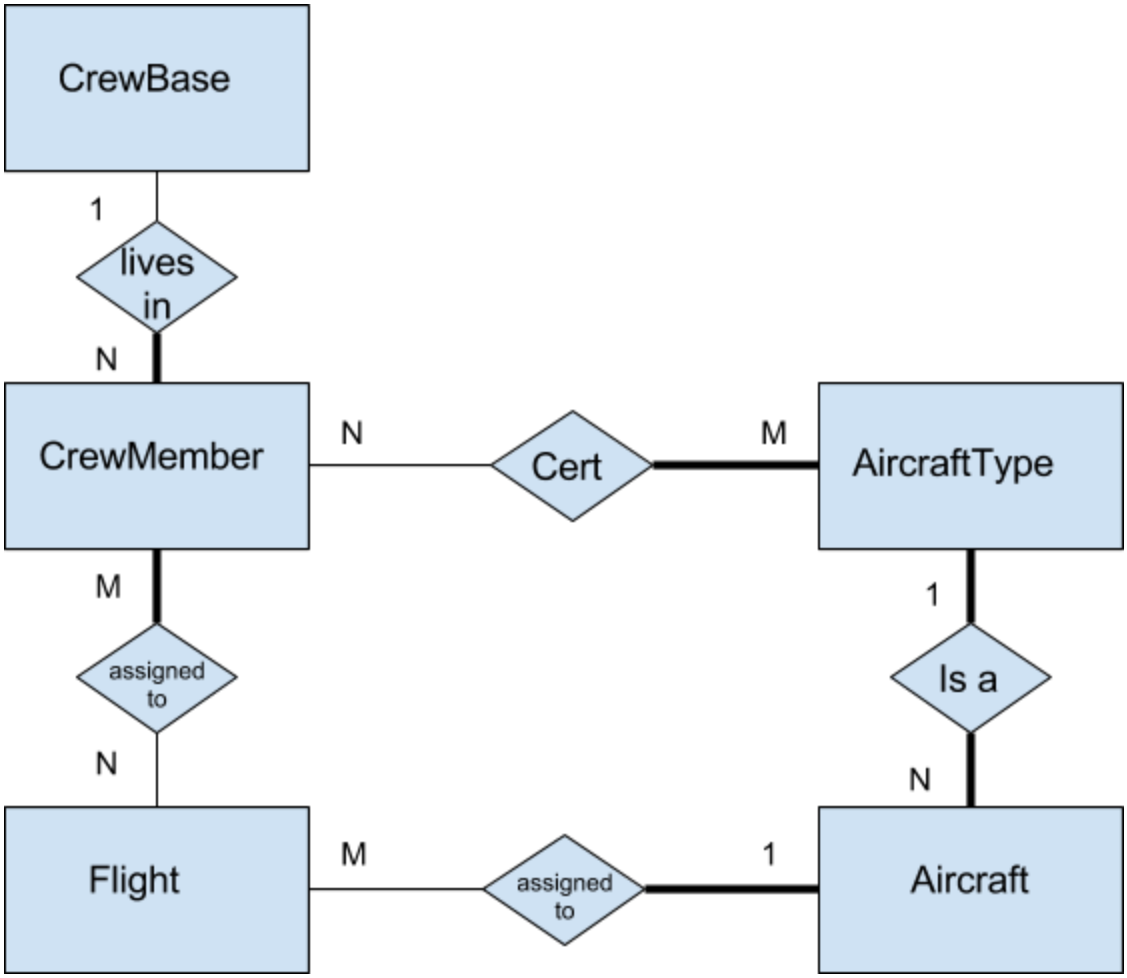
INSERT INTO crew_flight (crew_id, flight_id) VALUES ([crew_id input], [flight_id input])

UPDATE flight SET flightNum=[flightNum input], aircraft=[aircraft input], departureCity=[departure input], arrivalCity=[arrival input], dateTime=[date input] WHERE id=[id input]

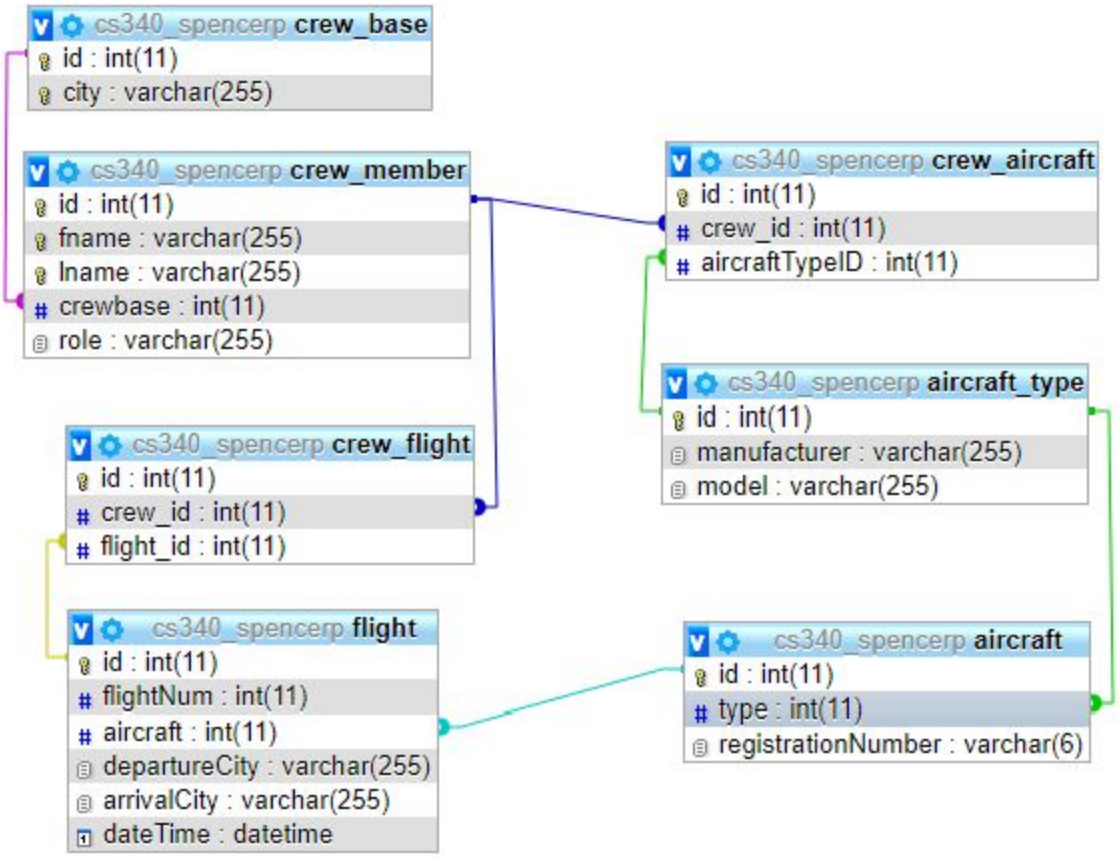
DELETE FROM crew_flight WHERE id = [id input]

DELETE FROM flight WHERE id = [id input]

ER Diagram:


CrewBase
1
lives in
N
CrewMember
N
Cert
M
AircraftType
M
assigned to
N
1
Is a
N
Flight
M
assigned to
1
Aircraft

Schema:


cs340_spencerp crew_base
id : int(11)
city : varchar(255)
cs340_spencerp crew_member
id : int(11)
fname : varchar(255)
lname : varchar(255)
crewbase : int(11)
role : varchar(255)
cs340_spencerp crew_aircraft
id : int(11)
crew_id : int(11)
aircraftTypeID : int(11)
cs340_spencerp aircraft_type
id : int(11)
manufacturer : varchar(255)
model : varchar(255)
cs340_spencerp crew_flight
id : int(11)
crew_id : int(11)
flight_id : int(11)
cs340_spencerp flight
id : int(11)
flightNum : int(11)
aircraft : int(11)
departureCity : varchar(255)
arrivalCity : varchar(255)
dateTime : datetime
cs340_spencerp aircraft
id : int(11)
type : int(11)
registrationNumber : varchar(6)