

CPSC 368: Databases in Data Science
Tutorial #2a: Relational Schema, DDL, and Key Constraints Solution

Task #1:

CREATE TABLE Customer (

customerID	int	PRIMARY KEY,
email	char(50)	UNIQUE ,
streetAddress	char(80),	
firstName	char(50)	NOT NULL,
lastName	char(50)	NOT NULL

);

CREATE TABLE Reservation (

confirmationNumber	int	PRIMARY KEY,
customerID	int,	
FOREIGN KEY (customerID) REFERENCES Customer(customerID) ON DELETE CASCADE		

);

CREATE TABLE Branch (

branchName	char(50)	PRIMARY KEY,
streetAddress	char(80)	NOT NULL,
city	char(30)	NOT NULL

);

CREATE TABLE VehicleType (

typeName	char(50)	PRIMARY KEY,
rentalRate	int	DEFAULT 0,
numberOfSeats	int	

);

```
CREATE TABLE Reserves (  
    branchName      char(50)      DEFAULT "Scranton PA",  
    confirmationNumber int,  
    typeName        char(50),  
    startDate       date          NOT NULL,  
    endDate         date          NOT NULL,  
    PRIMARY KEY ( branchName, confirmationNumber, typeName )  
    FOREIGN KEY (branchName) REFERENCES Branch ON DELETE SET DEFAULT,  
    FOREIGN KEY (confirmationNumber) REFERENCES Reservation ON DELETE CASCADE,  
    FOREIGN KEY (typeName) REFERENCES VehicleType  
);
```

Task #2: Insertion (Only the first row is shown, as the other rows are similar, albeit with different data.)

```
INSERT INTO Customer      VALUES (101, '10 Watford St', 'a@ubc.ca', 'Kate', 'Selvarajah');  
INSERT INTO VehicleType   VALUES ('SUV', 40, NULL);  
INSERT INTO Branch        VALUES ('Sheffield', '1212 Orlando St', 'New York');  
INSERT INTO Reserves      VALUES ('Sheffield', 1, 'SUV', '2017-01-01', '2017-01-02');  
INSERT INTO Reservation   VALUES (1, 101);
```

Task #3

- Yes, it is deleted, but so is the Reservation row that has 101 as its customerID (this is because of the ON DELETE CASCADE rule on the FK to Customer), and the Reserve row that has 1 as its confirmationNumber (because of the ON DELETE CASCADE rule on FK to Reservation)
- We get an error: the first name field cannot be null.
- The first tuple is deleted, and nothing happens to other tables.
- Yes it will be deleted. Because of the ON DELETE CASCADE rule in the Reserves table, the corresponding row in Reserves that has confirmationNumber = 1 will also be deleted.
- Open-ended/Subjective answer: The FK for typeName in Reserves is better off to be ON DELETE SET NULL instead of CASCADE because the renter might still want to rent some kind of vehicle. Also rentalRate in VehicleType should probably be set to NOT NULL so that the prices of vehicles are not accidentally free. Also, streetAddress in Customer can be argued to be NOT NULL since it is not a good idea to rent expensive vehicles to people with no fixed address. It might be hard

to collect on outstanding bills. (More changes can be argued for; it's helpful to provide a justification for each change.)