

Cardinality ratios:

* Relationship between Customer and Car is One-to-Many [1:N]
* Relationship between Car and Accident is Many-to-Many [M:N]
* Relationship between Customer, Car, and Accident is Many-to-Many-to-Many [M:N:N]

Participation Constraints:

* Participation between Customer and Car is total, as a customer cannot exist without owning at least 1 car, and a car does not exist without a customer.
* Participation between Car and Accident is partial, since a car can exist without getting into an accident, but an accident needs a car in order to exist.
* Participation between Customer and Accident is partial, since a customer can exist without getting into an accident, but an accident needs a driver (customer) in order to exist.
* Participation between Accident and Accident Owner is total, since in order for there to be an Accident owner, there must be an accident.
* Participation between Car and Accident Owner is partial, as a car may exist without getting into an accident.
* Participation between Customer and Accident Owner is partial, since a customer can own multiple cars and get into multiple accidents, thereby making them the owner of multiple accidents.

1. Customer table: customer(driver\_id, name, address)

* Driver\_id is the primary key

Car table: car (license, model, year, *driver\_id*)

* License is the primary key
* Driver\_id is the foreign key

Accident table: accident (report\_number, date, location)

* Report\_number is the primary key

Accident Owner table: accident\_owner (*driver\_id*, *license*, *report\_number*, damage\_amount)

* Driver\_id, license, and report\_number are combined and used as a unique identifier (primary key) for the table
* Driver\_id is the foreign key referencing Customer, license is the foreign key referencing Car, and report\_number is the foreign key referencing Accident.

1. SQL Query:

CREATE TABLE Customer (

driver\_id INT PRIMARY KEY,

name VARCHAR(255),

address VARCHAR(255));

CREATE TABLE Car (

license VARCHAR(255) PRIMARY KEY,

model VARCHAR(255),

year INT,

driver\_id INT,

FOREIGN KEY (driver\_id) REFERENCES Customer(driver\_id));

CREATE TABLE Accident (

report\_number INT PRIMARY KEY,

location VARCHAR(255),

date DATE,

damage\_amount DECIMAL(10,2),

license VARCHAR(255),

FOREIGN KEY (license) REFERENCES Car(license));

CREATE TABLE accident\_owner(

driver\_id INT,

license varchar(20),

report\_number INT,

damage\_amount INT,

PRIMARY KEY(driver\_id,license,report\_number),

FOREIGN KEY(driver\_id) REFERENCES customer(driver\_id),

FOREIGN KEY(license) REFERENCES car(license),

FOREIGN KEY(report\_number) REFERENCES accident(report\_number));

