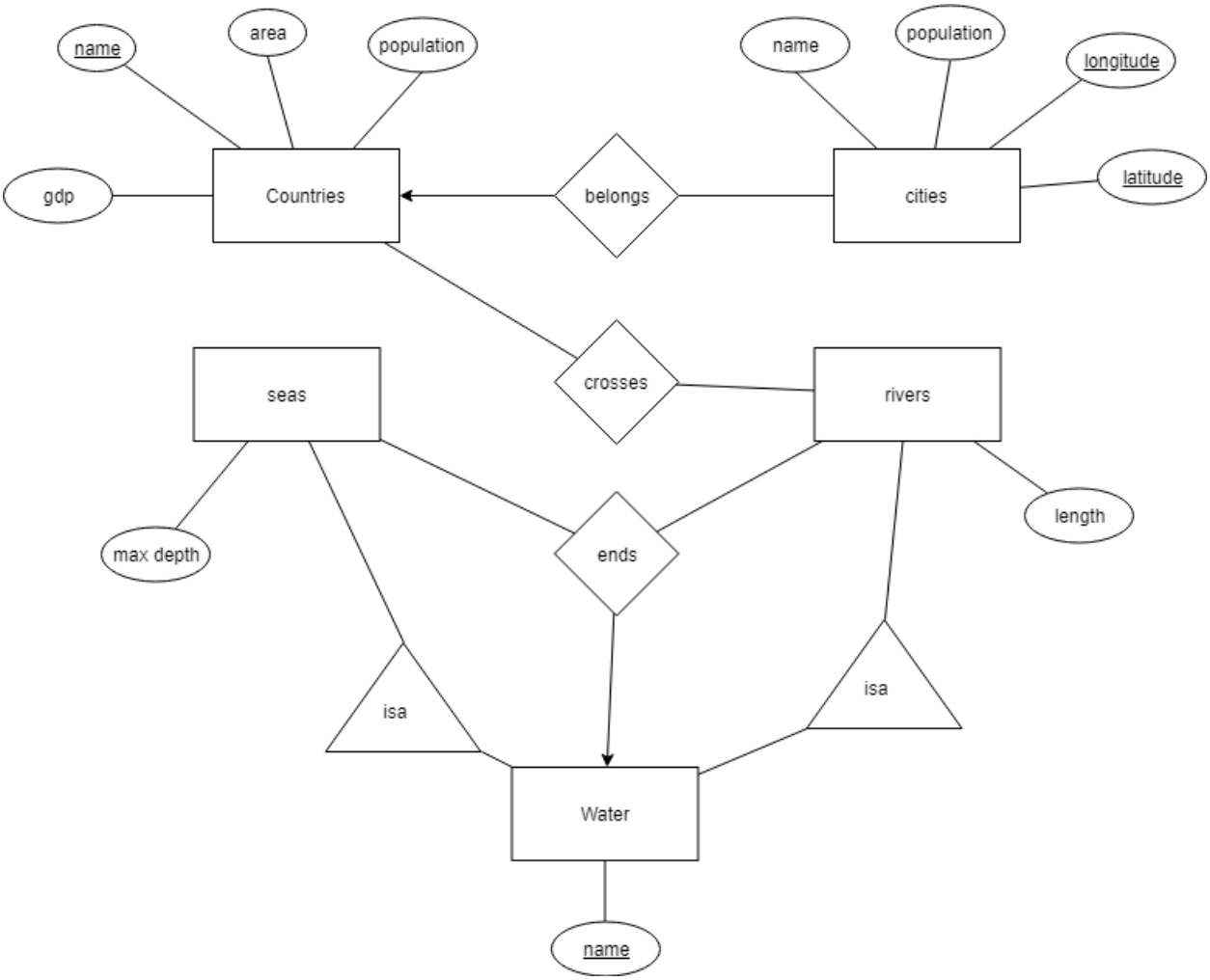
Daniel Chai

CSE 414 HW7

1.



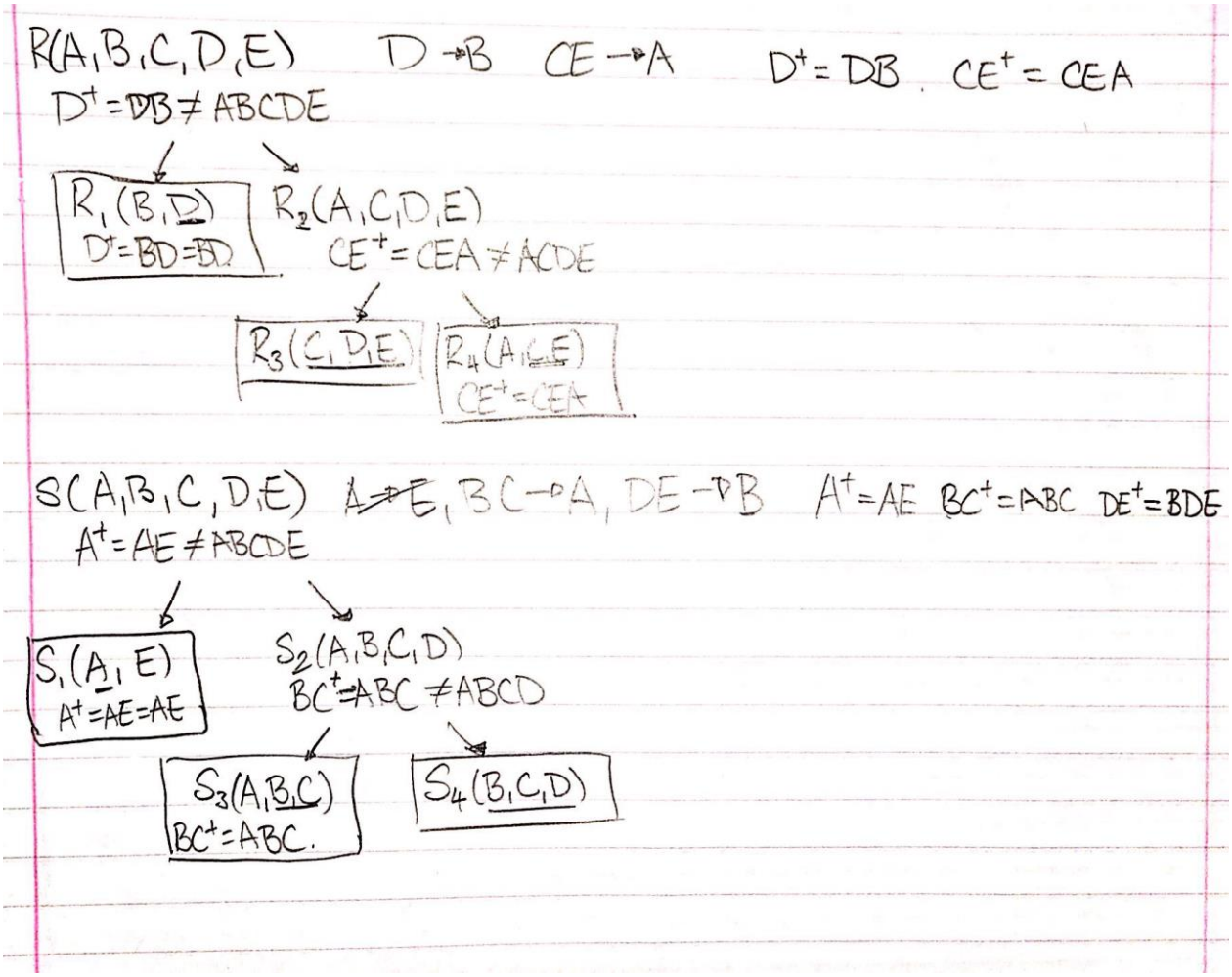
2.a)

```
CREATE TABLE Vehicle (
    licensePlate VARCHAR(30) PRIMARY KEY,
    year int,
    insuranceCoName VARCHAR(30),
    maxLiability int,
    ssn int
)

CREATE TABLE InsuranceCo (
    name VARCHAR(30) PRIMARY KEY,
    phone int
)

CREATE TABLE Person (
    ssn int PRIMARY KEY,
    name VARCHAR(30)
)

CREATE TABLE Driver (
    ssn int PRIMARY KEY REFERENCES Person (ssn),
    driverID int
)

CREATE TABLE NonProfessionalDriver (
    ssn int PRIMARY KEY REFERENCES Driver (ssn)
)

CREATE TABLE ProfessionalDriver (
    ssn int PRIMARY KEY REFERENCES Driver (ssn),
    medicalHistory VARCHAR(30)
)

CREATE TABLE Car (
    licensePlate VARCHAR(30) PRIMARY KEY REFERENCES Vehicle(licensePlate),
    make VARCHAR(30)
)

CREATE TABLE Truck (
    licensePlate VARCHAR(30) PRIMARY KEY REFERENCES Vehicle(licensePlate),
    capacity int,
    ssn int FOREIGN KEY REFERENCES ProfessionalDriver (ssn)
)

CREATE TABLE Drives (
    ssn int FOREIGN KEY REFERENCES NonProfessionalDriver(ssn),
    licensePlate VARCHAR(30) FOREIGN KEY REFERENCES Vehicle(licensePlate)
)
```

b) The Insures has a N-1 relationship with “Vehicle” and “InsuranceCo”. So, instead of creating a new table, I took the primary key of “InsuranceCo” and the attributes in “Insures” and input them into Vehicle table. This would prevent creation of unnecessary tables.

c) Because “Drives” represents the N-N relationship between “NonProfessionalDriver” and “Car”, I needed to create a new table to represent the cross product of the two entities. “Operates” represents a N-1 relationship which means it is not necessary to create another table, similar to the “Insures” in previous answer.

3)



4) a) ABCD -> ABCD

b) A -> B, B -> C, C -> D, D -> A

c) A -> B, B -> A, C -> ABD, D -> ABC