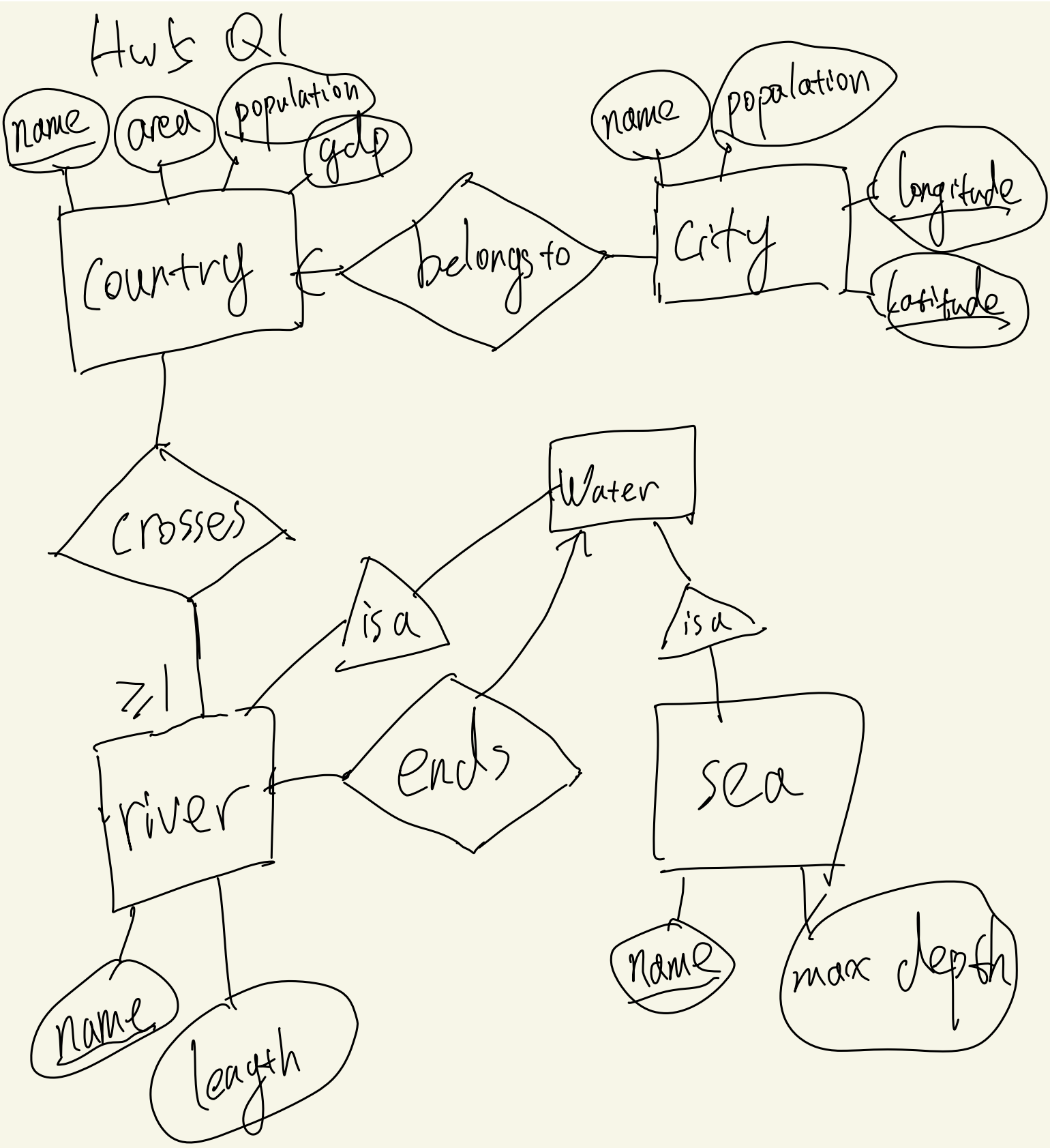
Hw5 Q1
name
area
population
gdp
Country
belongs to
name
population
City
longitude
latitude
crosses
Water
is a
is a
N
1
river
ends
sea
name
length
name
max depth

```
 1 CREATE TABLE InsuranceCo (
 2     name VARCHAR(100) PRIMARY KEY,
 3     phone INT
 4 );
 5
 6 CREATE TABLE Person (
 7     ssn VARCHAR(100) PRIMARY KEY,
 8     name VARCHAR(100)
 9 );
10
11 CREATE TABLE Driver (
12     driverID INT,
13     dssn VARCHAR(100) REFERENCES Person(
   ssn),
14     dname VARCHAR(100) REFERENCES Person
   (name)
15 );
16
17 CREATE TABLE Vehicle (
18     licensePlate VARCHAR(100) PRIMARY
   KEY,
19     year INT,
20     iname VARCHAR(100) REFERENCES
   InsuranceCo(name),
21     pssn VARCHAR(100) REFERENCES Person(
   ssn)
22 );
23
24 CREATE TABLE Car (
25     make VARCHAR(100),
26     clicensePlate VARCHAR(100)
   REFERENCES Vehicle(licensePlate),
27     cname VARCHAR(100) REFERENCES
   InsuranceCo(name),
28     cssn VARCHAR(100) REFERENCES Person(
   ssn)
29 );
30
```

```
31 CREATE TABLE Truck (
32     capacity INT,
33     tlicensePlate VARCHAR(100)
   REFERENCES Vehicle(licensePlate),
34     tname VARCHAR(100) REFERENCES
   InsuranceCo(name),
35     tssn VARCHAR(100) REFERENCES Person(
   ssn)
36 );
37
38 CREATE TABLE ProfessionalDriver (
39     medicalHistory VARCHAR(100),
40     dssn VARCHAR(100) REFERENCES Person(
   ssn),
41     dname VARCHAR(100) REFERENCES Person
   (name),
42     pddriverID INT REFERENCES Driver(
   driverID)
43 );
44
45 CREATE TABLE NonProfessionalDriver (
46     dssn VARCHAR(100) REFERENCES Person(
   ssn),
47     dname VARCHAR(100) REFERENCES Person
   (name),
48     npddriverID INT REFERENCES Driver(
   driverID)
49 );
50
51 CREATE TABLE Insures (
52     maxiLiability INT,
53     iname VARCHAR(100) REFERENCES
   InsuranceCo(name),
54     ilicensePlate VARCHAR(100)
   REFERENCES Vehicle(licensePlate)
55 );
56
57 CREATE TABLE Drives (
```

```
58      dlicensePlate VARCHAR(100)
    REFERENCES Vehicle(licensePlate),
59      dssn VARCHAR(100) REFERENCES Person(
    ssn)
60  );
61
62
63  --B.A table. It needs a table to put the
     extra attribute of that relationship.
64
65  --C.We don't need a table for many-to-
    one relationship like Operates.
66  --But we need a table for many-to-many
    relationship like Drives.
67
68
69
70
```

Hw 5. Q3

a) we extract B^+, $R_1 = (B, D)$, (A, B, C, E) remains. Then we extract CE^+, $R_2 = (A, C, E)$, and $R_3 = (B, C, E)$, so we have:

$R_1 = (B, D)$, $R_2 = (A, C, E)$, $R_3 = (B, C, E)$

b) we first extract A^+, $R_1 = (A, E)$, (A, B, C, D) remains. Then we extract BC^+, $R_2 = (A, B, C)$, (B, C, D) remains, so we have

$R_1 = (A, E)$, $R_2 = (A, B, C)$, $R_3 = (B, C, D)$

Hw5 Q4.

a) trivial only

b) $A \to B$, $B \to C$, $C \to D$, $D \to A$

c) $A \to B$, $B \to A$, $C \to AD$, $D \to BC$