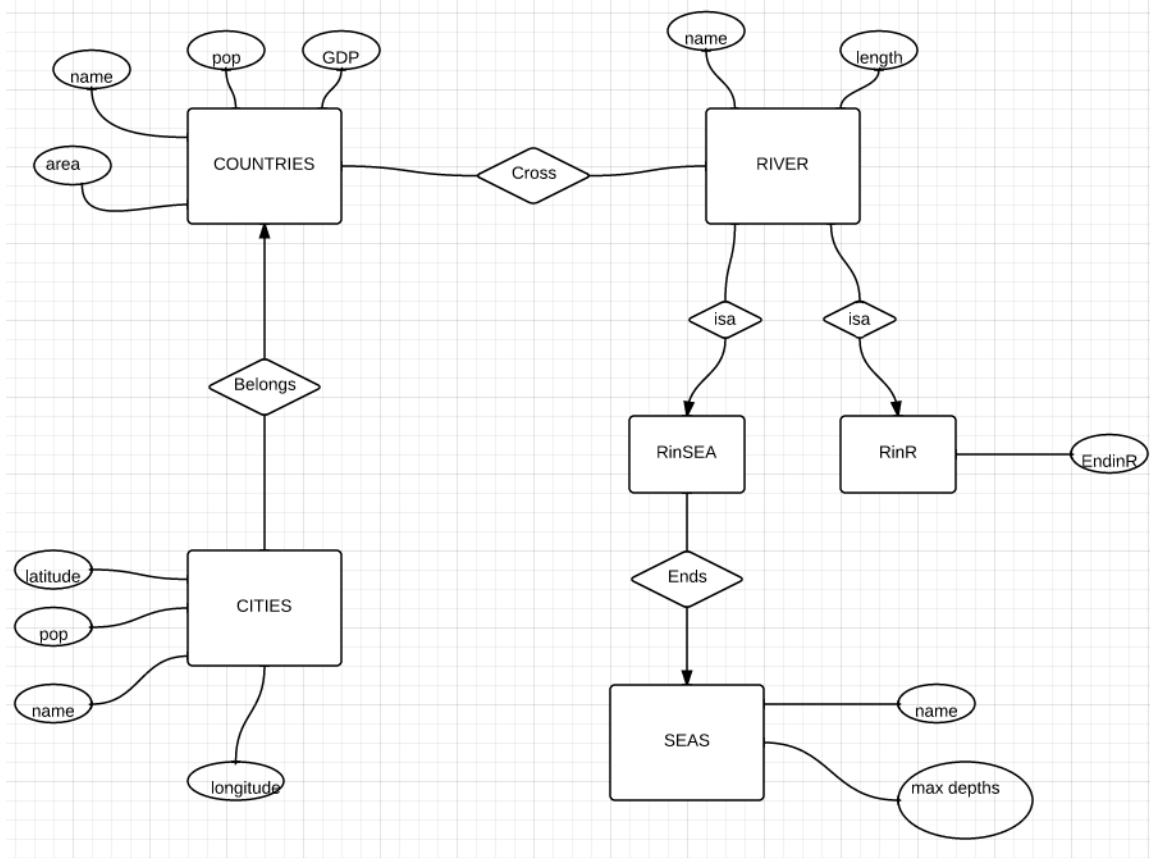


CSE 414 HW6  
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Q1



Q2

```
create table InsuranceCo (  
  name text primary key,  
  phone int);
```

```
create table Vehicle(  
  licencePlate text primary key,  
  year int, cname text references InsuranceCo(name),  
  maxLiability text, maxLossDamage text, pssn int references Person(ssn));
```

```
create table Car(  
  cplate text references Vehicle(licencePlate),  
  make text);
```

```
create table Truck(  
  make text,
```

```

tplate text references Vehicle(licencePlate),
capacity text,
tllicence int references ProfessionalDriver(licenceNo));

```

```

create table Person(
ssn int primary key,
name text);

```

```

create table Driver(
licenceNo int primary key, dssn int references Person(ssn));

```

```

create table ProfessionalDriver(licenceNos int references Driver(licenceNo),
medicalHistory text);

```

```

create table NonProfessionalDriver(licenceNos int references Driver(licenceNo));

```

```

create table Drivers(licenceNo int primary key, plate references
Vehicle(licencePlate));

```

Q3

i. R(A,B,C,D,E) FD: D → B, CE → A

step 1: D<sup>+</sup> = DB decompose into R1(D,B), R2(D,C,E,A) since R1 is in BCNF  
continue to decompose R2

step 2: CE<sup>+</sup> = CEA decompose R2 into R3(CED) and R4(CE, A)

ii. S(A,B,C,D,E) FD: A → E, BC → A, DE → B

step 1: A<sup>+</sup> = AE decompose into S1(A,E), S2(A,B,C,D) since S1 is in BCNF  
continue to decompose S2

step 2: BC<sup>+</sup> = BCA decompose S2 into S3(BC,A), S3(BCD)

Q4

a. FD: NONE

b. FD: A → B, B → C, C → D, D → A

c. FD: A → B, B → A, C → D, D → C, D → A

Q5

PART II

Potential FD to check:

1. YES, month → discount

query: select count(\*) fd from (select \* from sales group by month,  
discount) group by month having fd > 1;

this FD is holded since the checking query has no results.

2. YES, name -> price  
query: select count(\*) fd from (select \* from sales group by  
price, discount, name) group by name, discount having fd >1;  
this FD is hold since the checking query has no result.

#### PART III

```
create table priceLog(name text primary key, price int);  
create table salesLog(month text primary key, discount text);  
create table sub(month text, name text, primary key(month, month));
```

#### PART IV

TABLE priceLog:

```
create table priceLog(name text primary key, price int);  
INSERT INTO priceLog(name,price) select distinct name, price from sales;  
contents:
```

name|price

```
bar1|19  
bar8|19  
gizmo3|19  
gizmo7|19  
mouse1|19  
gizmo6|29  
gizmo4|29  
mouse3|29  
mouse7|29  
bar4|29  
bar7|29  
click7|29  
bar9|39  
click1|39  
click2|39  
click3|39  
click8|39  
click4|49  
click9|49  
gizmo1|49  
mouse2|49  
mouse8|59  
bar2|59  
bar3|59  
mouse9|69  
mouse4|69  
gizmo9|79  
gizmo5|79  
gizmo8|89
```

mouse5|89  
click6|89  
bar5|89  
bar6|99  
mouse6|99  
click5|99  
gizmo2|99

TABLE salesLog:

create table salesLog(month text primary key, discount text);  
INSERT INTO salesLog(month,discout) select distinct month, discount from  
sales;

contents:  
month|discount  
apr|15%  
aug|15%  
dec|33%  
feb|10%  
jan|33%  
jul|33%  
jun|10%  
mar|15%  
may|10%  
nov|15%  
oct|10%  
sep|15%

TABLE sub:

create table sub(month text references salesLog(month), name text  
references priceLog(name), primary key(month, name));  
INSERT INTO sub(month,name) select distinct month, name from sales;

contents:  
month|name  
apr|bar1  
apr|bar8  
apr|gizmo3  
apr|gizmo7  
apr|mouse1  
aug|bar1  
aug|bar8  
aug|gizmo3  
aug|gizmo7  
aug|mouse1  
dec|bar1

dec|bar8  
dec|gizmo3  
dec|gizmo7  
dec|mouse1  
feb|bar1  
feb|bar8  
feb|gizmo3  
feb|gizmo7  
feb|mouse1  
jan|bar1  
jan|bar8  
jan|gizmo3  
jan|gizmo7  
jul|bar1  
jul|bar8  
jul|gizmo3  
jul|gizmo7  
jul|mouse1  
jun|bar1  
jun|bar8  
jun|gizmo3  
jun|gizmo7  
jun|mouse1  
mar|bar1  
mar|bar8  
mar|gizmo3  
mar|gizmo7  
mar|mouse1  
may|bar1  
may|bar8  
may|gizmo3  
may|gizmo7  
may|mouse1  
nov|bar1  
nov|bar8  
nov|gizmo3  
nov|gizmo7  
nov|mouse1  
oct|bar1  
oct|bar8  
oct|gizmo3  
oct|gizmo7  
oct|mouse1  
sep|bar1  
sep|bar8  
sep|gizmo3

sep|gizmo7  
sep|mouse1  
sep|gizmo6  
sep|gizmo4  
sep|mouse3  
sep|mouse7  
oct|mouse7  
sep|bar4  
sep|bar7  
sep|click7  
oct|gizmo6  
oct|mouse3  
oct|gizmo4  
oct|click7  
oct|bar4  
oct|bar7  
nov|mouse7  
nov|mouse3  
nov|gizmo6  
nov|gizmo4  
nov|bar4  
nov|bar7  
nov|click7  
may|mouse7  
may|gizmo6  
may|mouse3  
may|gizmo4  
may|click7  
may|bar4  
may|bar7  
mar|mouse7  
mar|mouse3  
mar|gizmo6  
mar|gizmo4  
jun|mouse7  
mar|bar4  
mar|bar7  
mar|click7  
jun|gizmo6  
jun|mouse3  
jun|gizmo4  
jun|click7  
jun|bar4  
jun|bar7  
jul|mouse7  
jul|mouse3

jul|gizmo6  
jul|gizmo4  
jul|bar4  
jul|bar7  
jul|click7  
jan|mouse7  
jan|mouse3  
jan|gizmo4  
jan|gizmo6  
jan|click7  
jan|bar4  
jan|bar7  
feb|mouse7  
feb|mouse3  
feb|gizmo4  
feb|gizmo6  
feb|click7  
dec|mouse7  
feb|bar7  
dec|mouse3  
dec|gizmo4  
dec|gizmo6  
dec|bar7  
dec|click7  
dec|bar4  
aug|mouse7  
aug|mouse3  
aug|gizmo6  
aug|gizmo4  
aug|bar7  
aug|click7  
aug|bar4  
apr|mouse7  
apr|gizmo6  
apr|mouse3  
apr|gizmo4  
apr|bar7  
apr|click7  
apr|bar4  
apr|bar9  
apr|click1  
apr|click2  
apr|click3  
apr|click8  
aug|click8  
aug|bar9

aug|click2  
aug|click3  
dec|bar9  
dec|click1  
dec|click2  
dec|click3  
dec|click8  
feb|click8  
feb|bar9  
feb|click1  
feb|click2  
feb|click3  
jan|bar9  
jan|click1  
jan|click2  
jan|click3  
jan|click8  
jul|bar9  
jul|click1  
jul|click2  
jul|click8  
jun|bar9  
jun|click1  
jun|click2  
jun|click3  
jun|click8  
mar|click8  
mar|bar9  
mar|click1  
mar|click2  
mar|click3  
may|bar9  
may|click1  
may|click2  
may|click3  
may|click8  
nov|bar9  
nov|click1  
nov|click2  
nov|click3  
nov|click8  
oct|bar9  
oct|click1  
oct|click2  
oct|click3  
oct|click8



sep|click8  
sep|bar9  
sep|click1  
sep|click2  
sep|click3  
sep|click4  
sep|click9  
sep|gizmo1  
oct|click9  
oct|gizmo1  
oct|mouse2  
oct|click4  
nov|click9  
nov|gizmo1  
nov|mouse2  
sep|mouse2  
nov|click4  
may|mouse2  
may|click9  
may|gizmo1  
may|click4  
mar|click4  
mar|click9  
mar|gizmo1  
mar|mouse2  
jun|click9  
jun|gizmo1  
jun|mouse2  
jun|click4  
jul|click9  
jul|gizmo1  
jul|mouse2  
jul|click4  
jan|mouse2  
jan|click9  
jan|gizmo1  
jan|click4  
feb|mouse2  
feb|click4  
feb|click9  
feb|gizmo1  
dec|click9  
dec|gizmo1  
dec|mouse2  
dec|click4  
aug|mouse2

aug|click4  
aug|click9  
aug|gizmo1  
apr|gizmo1  
apr|click4  
apr|mouse2  
apr|mouse8  
aug|bar2  
aug|bar3  
apr|bar2  
apr|bar3  
aug|mouse8  
dec|bar2  
dec|bar3  
dec|mouse8  
feb|bar2  
feb|bar3  
feb|mouse8  
jan|bar2  
jan|bar3  
jan|mouse8  
jul|bar2  
jul|bar3  
jul|mouse8  
jun|bar2  
jun|bar3  
mar|mouse8  
may|bar2  
may|bar3  
jun|mouse8  
mar|bar2  
mar|bar3  
may|mouse8  
nov|bar2  
nov|bar3  
sep|mouse8  
nov|mouse8  
oct|bar2  
oct|bar3  
oct|mouse8  
sep|bar2  
sep|bar3  
oct|mouse9  
oct|mouse4  
nov|mouse9  
nov|mouse4

sep|mouse9  
sep|mouse4  
may|mouse9  
may|mouse4  
jun|mouse9  
mar|mouse9  
mar|mouse4  
jul|mouse9  
jul|mouse4  
jun|mouse4  
jan|mouse9  
jan|mouse4  
feb|mouse9  
feb|mouse4  
dec|mouse9  
dec|mouse4  
aug|mouse9  
aug|mouse4  
apr|mouse9  
apr|mouse4  
apr|gizmo9  
apr|gizmo5  
aug|gizmo5  
aug|gizmo9  
dec|gizmo9  
feb|gizmo5  
feb|gizmo9  
jan|gizmo5  
jan|gizmo9  
jul|gizmo9  
jul|gizmo5  
jun|gizmo9  
jun|gizmo5  
mar|gizmo9  
mar|gizmo5  
may|gizmo9  
may|gizmo5  
sep|gizmo9  
sep|gizmo5  
nov|gizmo9  
nov|gizmo5  
oct|gizmo9  
oct|gizmo5  
oct|gizmo8  
oct|mouse5  
sep|click6

sep|bar5  
nov|gizmo8  
nov|click6  
nov|bar5  
nov|mouse5  
oct|click6  
oct|bar5  
sep|gizmo8  
sep|mouse5  
may|gizmo8  
may|click6  
may|bar5  
may|mouse5  
mar|gizmo8  
mar|mouse5  
mar|click6  
mar|bar5  
jun|gizmo8  
jun|mouse5  
jul|mouse5  
jun|click6  
jun|bar5  
jul|gizmo8  
jul|click6  
jul|bar5  
jan|gizmo8  
jan|mouse5  
jan|click6  
jan|bar5  
feb|click6  
feb|gizmo8  
feb|mouse5  
feb|bar5  
dec|mouse5  
dec|gizmo8  
dec|click6  
aug|gizmo8  
aug|click6  
aug|mouse5  
dec|bar5  
apr|click6  
apr|bar5  
apr|gizmo8  
apr|mouse5  
aug|bar5  
aug|bar6

apr|mouse6  
apr|bar6  
apr|click5  
apr|gizmo2  
dec|bar6  
dec|click5  
aug|mouse6  
aug|gizmo2  
aug|click5  
dec|gizmo2  
dec|mouse6  
feb|bar6  
feb|gizmo2  
feb|click5  
feb|mouse6  
jan|bar6  
jan|click5  
jan|gizmo2  
jan|mouse6  
jul|click5  
jul|bar6  
jul|gizmo2  
jun|bar6  
jun|click5  
jul|mouse6  
jun|mouse6  
jun|gizmo2  
mar|bar6  
mar|gizmo2  
mar|click5  
mar|mouse6  
may|mouse6  
nov|click5  
may|bar6  
may|click5  
may|gizmo2  
sep|mouse6  
oct|bar6  
oct|click5  
nov|mouse6  
nov|bar6  
nov|gizmo2  
sep|bar6  
sep|gizmo2  
sep|click5  
oct|mouse6

oct|gizmo2