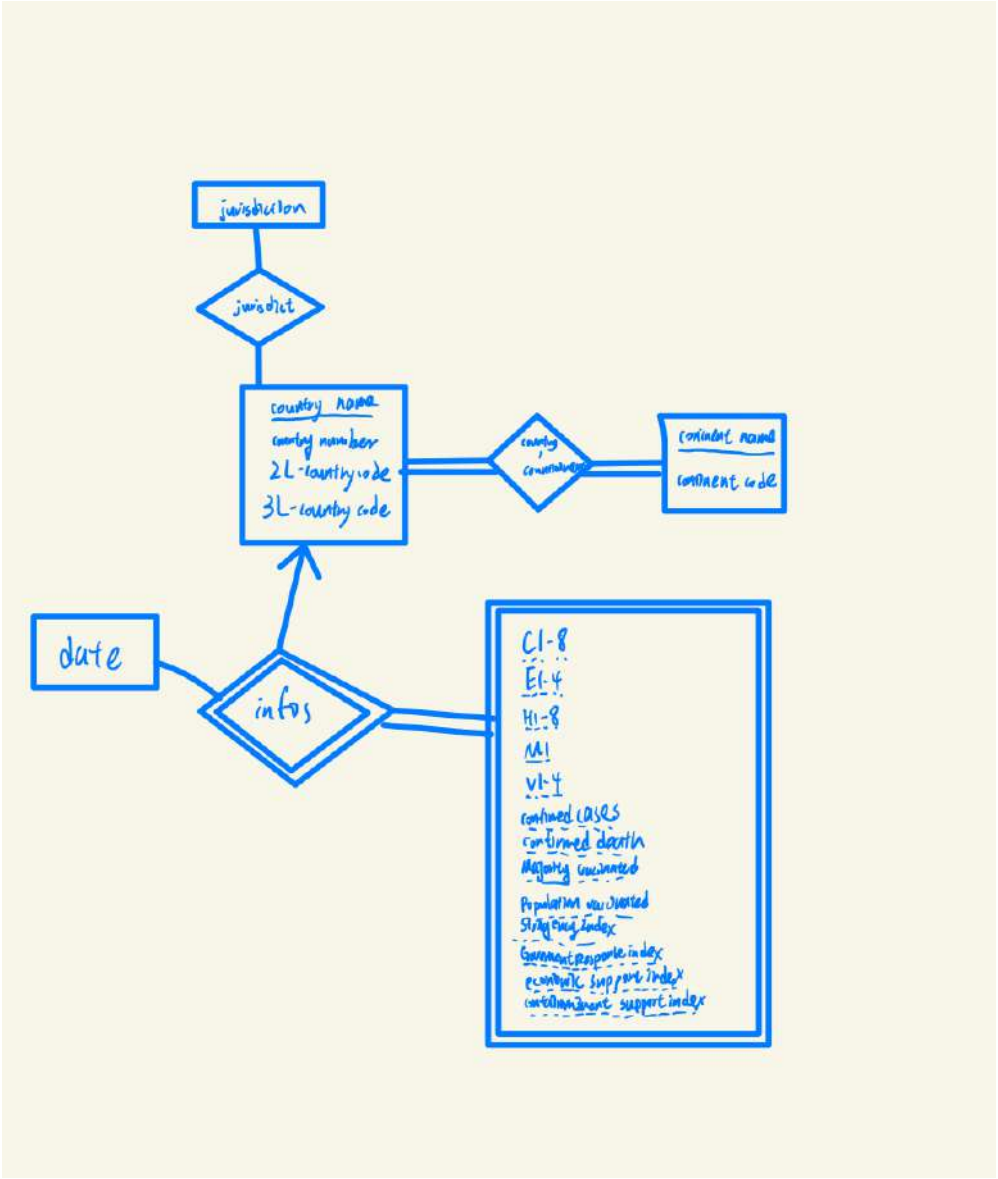
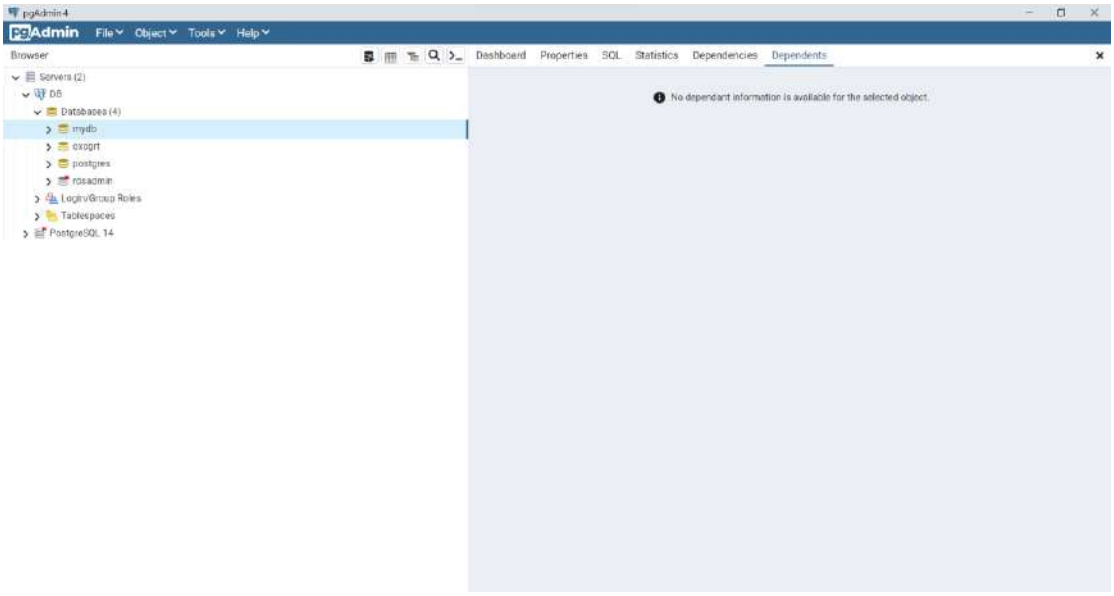
1. ER diagram with entity sets and relationship sets, with or without attributes. Add constraints if needed. (30pts) (if it is hard to include your ER diagram in the .pdf file, you can submit the diagram separately)

Ans:



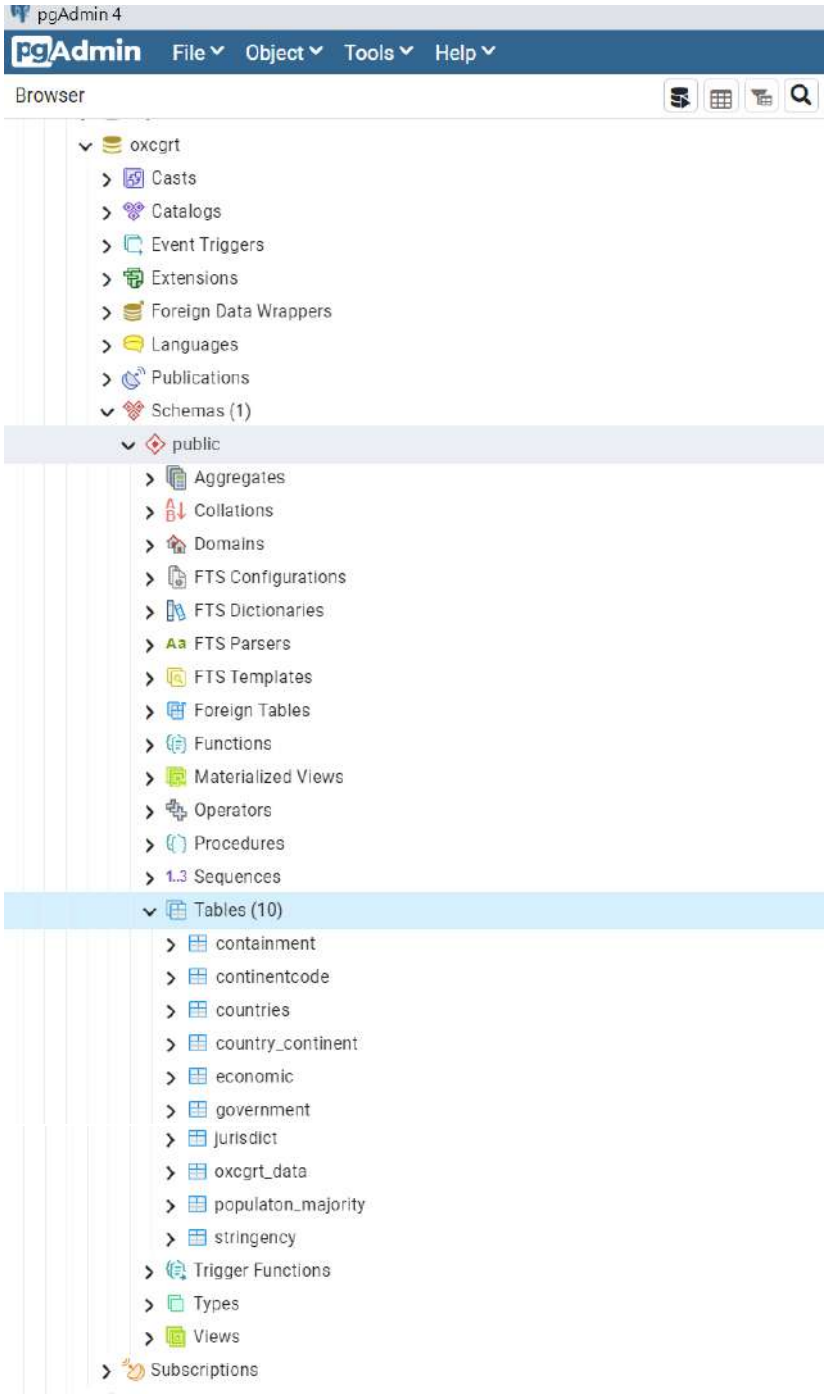
2. Provide print screens of the 1) AWS RDS lunch page, and 2) the way you connect to the AWS RDS (PostgreSQL console tool, pgAdmin, or other IDE's connection page, with the same IP or URL with your AWS RDS) (10pts)

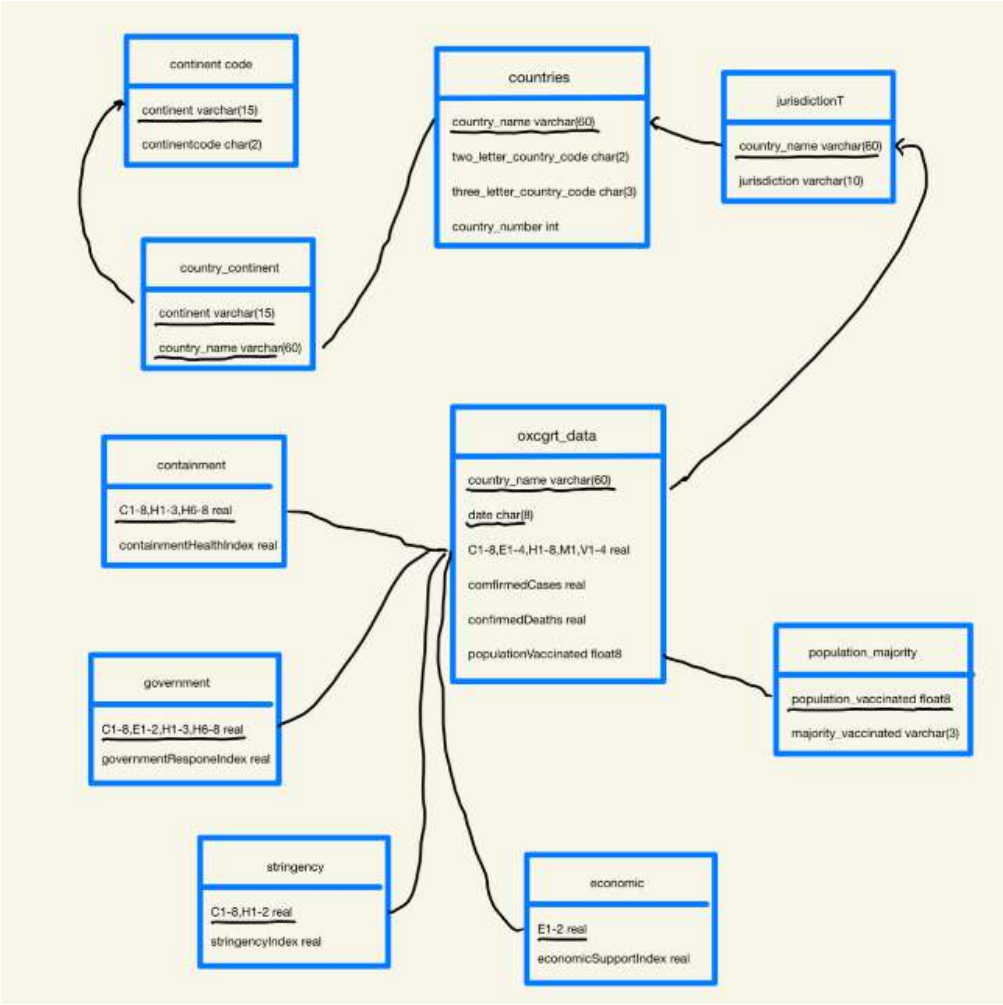
Ans:



3. Please provide the schema after decomposition, of each table, and a print screen to show that the tables have been created in your database on AWS RDS. (10+10pts)

Ans:





4. Clearly indicate the level of normal form, test the level of normal form for each table (10pts)

Ans:

* columns : from up to down (attributes in the schema) : A ~ Z
* Table continentcode , {A → B, B → A} A , B are both candidate key → BCNF
  country_continent, F⁺ = ∅ ⇒ BCNF
  countries : {A → B, B → A, A → C, C → A, B → C, C → B, A → D, B → D, C → D}, A, B, C can all be candidate key → BCNF
  jurisdiction : {A → B} ⇒ BCNF
  oxcgrt_data : {AB → C, AB → D, AB → E, AB → F}, AB : candidate key ⇒ BCNF
  the last 5 tables : {A → B}, A : candidate key ⇒ BCNF

5. List the functional dependency of each table. (10pts)

Ans:

columns : from up to down (attributes in the schema) : A ~ Z

* Table continentcode , {A → B, B → A}

country_continent, F⁺ = ∅

countries : {A → B, B → A, A → C, C → A, B → C, C → B, A → D, B → D, C → D}

jurisdiction : {A → B}

except_data : {AB → C, AB → D, AB → E, AB → F}

the last 5 tables : {A → B}

6. The SQL statements (in .sql file) and output results of 4a (10pts)

Ans:

	continent character varying (15)	date character (8)	country_name character varying (60)
1	Africa	20200601	Libya
2	Asia	20200601	Nepal
3	Asia	20200601	Iraq
4	Europe	20200601	Malta
5	Europe	20200601	Ireland
6	North America	20200601	Honduras
7	North America	20200601	El Salvador
8	North America	20200601	Cuba
9	South America	20200601	Argentina
10	Africa	20210601	Mauritius
11	Asia	20210601	Nepal
12	Europe	20210601	Italy
13	North America	20210601	Trinidad and Tobago
14	Oceania	20210601	Australia
15	South America	20210601	Venezuela
16	Asia	20220601	China
17	Europe	20220601	Ukraine
18	Oceania	20220601	Vanuatu

Query Query History

```
(select maxindex.ct as continent,alld.date, alld.country_name
from (select max(stringency.stringencyindex) as maxstr,country_continent.continent as ct
        from (select *
        from oxcgrt_data
        where oxcgrt_data.date='20200601')as ad natural join stringency natural join country_continent
        group by continent) as maxindex,
        ((select * from oxcgrt_data
        where oxcgrt_data.date='20200601')as ad natural join stringency natural join country_continent)
        as alld
where alld.stringencyindex=maxindex.maxstr and alld.continent=maxindex.ct
order by continent)
union
(select maxindex.ct as continent,alld.date, alld.country_name
from (select max(stringency.stringencyindex) as maxstr,country_continent.continent as ct
        from (select *
        from oxcgrt_data
        where oxcgrt_data.date='20210601')as ad natural join stringency natural join country_continent
        group by continent) as maxindex,
        ((select * from oxcgrt_data
        where oxcgrt_data.date='20210601')as ad natural join stringency natural join country_continent)
        as alld
where alld.stringencyindex=maxindex.maxstr and alld.continent=maxindex.ct
order by continent)
union
(select maxindex.ct as continent,alld.date, alld.country_name
from (select max(stringency.stringencyindex) as maxstr,country_continent.continent as ct
        from (select *
        from oxcgrt_data
        where oxcgrt_data.date='20220601')as ad natural join stringency natural join country_continent
        group by continent) as maxindex,
        ((select * from oxcgrt_data
        where oxcgrt_data.date='20220601')as ad natural join stringency natural join country_continent)
        as alld
where alld.stringencyindex=maxindex.maxstr and alld.continent=maxindex.ct
order by continent)
```

The code is also provided in .sql File

7. The SQL statements (in .sql file) and output results of 4b (10pts)

Ans:

Data output Messages Notifications

	country_name character varying (60)	continent character varying (15)	date text
1	Russia	Europe	20200601
2	South Africa	Africa	20200601
3	Brazil	South America	20200601
4	United States	North America	20200601
5	Russia	Asia	20200601
6	India	Asia	20210601
7	Australia	Oceania	20210601
8	Morocco	Africa	20210601
9	Brazil	South America	20210601
10	Turkey	Europe	20210601
11	United States	North America	20210601
12	Ukraine	Europe	20220601
13	Vanuatu	Oceania	20220601
14	China	Asia	20220601

code is in the .sql file

8. Database auto-update (from the data provider’s GitHub repo) strategy and implementation (bonus 20pts)

Ans:

恩...沒寫