(The queries with ** means complex queries)
Query 1:
Choose all the species that has a similar prefix of its specific name and genus name

```
SELECT Scientific_Name,Family
FROM Species
WHERE Scientific_Name LIKE CONCAT(SUBSTRING(Family,1,3),'%')
```

Query 2:
Select all animals that are in Bird Category

```
SELECT s.Scientific_Name as bird_name
FROM Species s left join  Family_Order FO on s.Family = FO.Family
    left join Order_Category OC on FO.SpeciesOrder = OC.SpeciesOrder
WHERE OC.Category = 'Bird';
```

Query 3:
Select all the animals that are both imported and exported by the same country.

```
SELECT DISTINCT S.Taxon
FROM Species_Trade S
WHERE Exporter IN (SELECT Importer
                   FROM Species_Trade S2
                   WHERE S2.Taxon=S.Taxon)
```

Query 4:
Select all animals living in CA's national park

```
SELECT o.Scientific_Name as CA_animal
FROM Occurrence o
WHERE o.Park_Name in
   ( SELECT Name
     FROM National_Park np
     WHERE np.State = 'CA'
       );
```

Query 5:
Select all parks that in a state that has fire of class A

```
SELECT Name
FROM National_Park np
WHERE np.State in (
   select distinct state
   from Wild_fire wf
   where wf.FIRE_SIZE = 'A'
   );
```

Query 6:
Get species abundance of a state:

```
SELECT COUNT(DISTINCT O.Scientific_Name) AS SPECIES_NUM
FROM Occurrence O
```

```
WHERE O.Park_Name IN (SELECT NP.Name FROM National_Park NP WHERE NP.state =
'WA') ;
```

Query 7**:

Species in Acadia National Park that in the same Family and different genus, group by family, ordered their number desc and Family

```
WITH Temp AS (
   SELECT ID, O.Scientific_Name, Family, Park_Name, State
   FROM Occurrence O JOIN National_Park NP ON O.Park_ID = NP.Code
      JOIN Species S ON S.Scientific_Name = O.Scientific_Name
)
SELECT t1.Family, t1.Park_Name, COUNT(*) AS NUM
FROM Temp t1, Temp t2
WHERE t1.Park_Name = t2.Park_Name AND t1.Park_Name = 'Acadia National Park'
      AND t1.Family = t2.Family AND t1.Scientific_Name <> t2.Scientific_Name
GROUP BY t1.Family
ORDER BY NUM DESC, t1.Family
```

Query 8**:

Select national parks that have more than 1% of its species suffered severely from the wild fire in the park

```
WITH TEMP AS (SELECT Scientific_Name, COUNT(*)
   FROM Wild_fire W
      JOIN Occurrence O on W.National_park=O.Park_Name
   GROUP BY Scientific_Name
   ORDER BY COUNT(*) DESC
   LIMIT 3000)
SELECT Name
   FROM National_Park N JOIN Occurrence O on N.Name=O.Park_Name
   WHERE O.Scientific_Name IN (SELECT Scientific_Name
                        FROM TEMP)
   GROUP BY N.Name
   HAVING COUNT(*)>(SELECT 0.01*COUNT(*)
                  FROM National_Park N2
                  WHERE N2.Name=N.Name                    GROUP BY N2.Name)
   ORDER BY  N.Name
```

Query 9**:

Find all Species Order distribution in different parks in State ‘WA’

```
SELECT FO.SpeciesOrder, O.Park_Name, COUNT(*) AS NUM
FROM Occurrence O JOIN Species S ON O.Scientific_Name = S.Scientific_Name
JOIN Family_Order FO ON FO.Family = S.Family
WHERE O.Park_Name IN (
```

```
        SELECT NP.Name FROM National_Park NP WHERE NP.state = 'WA')
GROUP BY FO.SpeciesOrder, O.Park_Name
ORDER BY NUM DESC
```

Query 10**:

Select all animals in mammal category that live in either MN or NT's national park but not in CA's national park where no A class wildlife has happened

```
WITH temp as (
   SELECT s.Scientific_Name, O.Park_Name
   FROM Species s left join  Family_Order FO on s.Family = FO.Family
   left join Order_Category OC on FO.SpeciesOrder = OC.SpeciesOrder
   join Occurrence O on s.Scientific_Name = O.Scientific_Name
   WHERE OC.Category = 'Mammal'
)
SELECT temp.Scientific_Name, temp.Park_Name
FROM temp join National_Park on temp.Park_Name = National_Park.Name
   join Wild_fire Wf on National_Park.State = Wf.STATE
WHERE Park_Name in (SELECT Name FROM National_Park np WHERE np.State = 'MN'
or np.State = 'MT')
AND Wf.FIRE_SIZE != 'A'
AND temp.Scientific_Name not in (
   SELECT Scientific_Name
   FROM temp
   WHERE temp.Park_Name in (SELECT Name FROM National_Park np WHERE np.State
= 'CA'));
```

Credentials:

Database: MySQL

```
db_config = {
   "username" : "kevin",
   "host": "project-550.cicrqoasmhsn.us-east-2.rds.amazonaws.com",
   "port": "3306",
   "password": "8368018123aA"
}
```