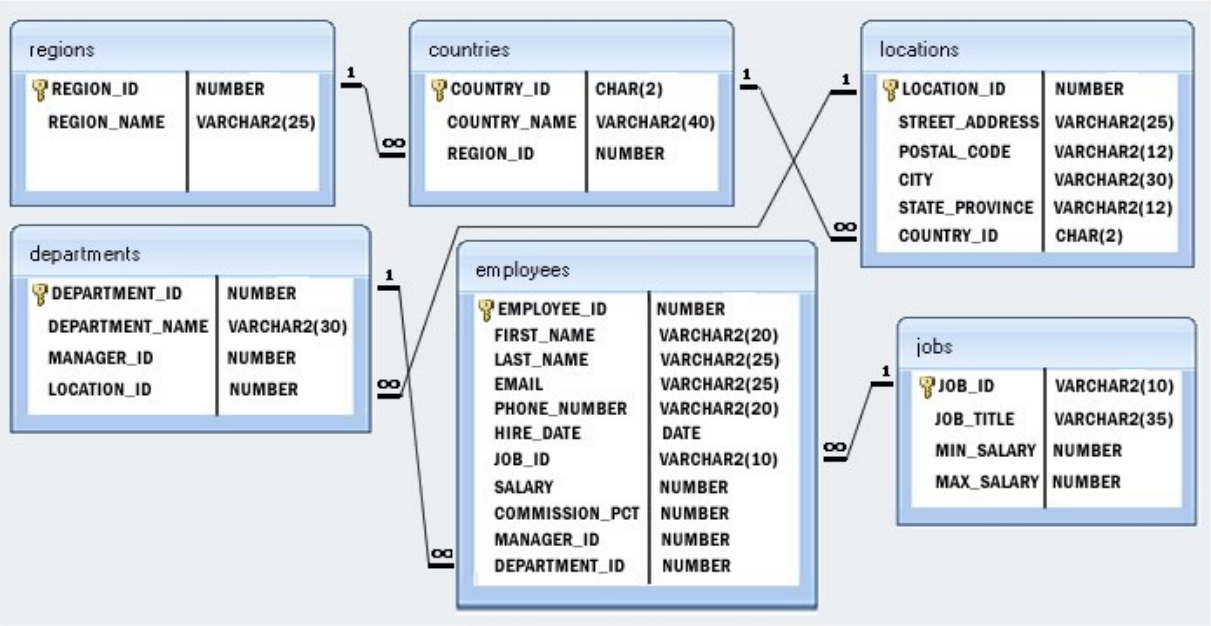
Assignment 4

Structure of 'hr' database :



1. Convert the above relational database schema in to NoSQL schema
    a. Create the database and collections in MongoDB.
    b. Insert dummy values in each collection.
    c. Normalize as applicable.

Solution: create two collections for this relational database, locations(regions, countries, locations) and employees(departments, employees, jobs).
Code:

```
// Zhicheng Pan, 104639463
// MongoDB Assignment 4, tested under mongo shell
// ####Q1
use HR_DB;
db.createCollection('locations');
db.createCollection('employees');
show dbs;
db.locations.insert({region_id:0001,region_name:'SOUTHEAST_ASIA',country_id:'CN',
country_name:'CHINA',location_id:0001, street_address:'646 SHENNAN AVE', postal_code:'N9B
2R9',city:'SHENZHEN',state_province:'GUANGDONG'});
db.locations.insert({region_id:0001,region_name:'SOUTHEAST_ASIA',country_id:'CN',
country_name:'CHINA',location_id:0002, street_address:'181 SHANGHAI AVE', postal_code:'S28
HR8',city:'SHANGHAI',state_province:'SHANGHAI'});
db.locations.find();
```

```
db.employees.insert({employee_id:0001,first_name:'Jack',last_name:'Daniel',
email:'JackDaniel@gmail.com',phone_number:'2269756789', hire_date:01-09-2016, job_id:'J0001',salary:
4000, commission_pct:123456, manager_id:0001, department_id:0001,department_name:'MARKETING',
location_id:0001, job_title:'sales', min_salary:3500, max_salary:6000});
db.employees.insert({employee_id:0002,first_name:'Tom',last_name:'Chen',
email:'TomChen@gmail.com',phone_number:'2269753456', hire_date:01-09-2015, job_id:'J0001',salary:
5500, commission_pct:123789, manager_id:0001, department_id:0001,department_name:'MARKETING',
location_id:0001, job_title:'sales', min_salary:3500, max_salary:6000});
db.employees.insert({employee_id:0003,first_name:'Bruce',last_name:'Lee',
email:'BruceLee@gmail.com',phone_number:'3389756578', hire_date:01-09-2014, job_id:'J0008',salary:
6000, commission_pct:678456, manager_id:0008, department_id:0008,department_name:'SOLUTION',
location_id:0002, job_title:'researcher', min_salary:4000, max_salary:8000});
db.employees.insert({employee_id:0004,first_name:'Lucy',last_name:'Bell',
email:'LucyBell@gmail.com',phone_number:'3389753425', hire_date:01-09-2014, job_id:'J0008',salary:
6200, commission_pct:678123, manager_id:0008, department_id:0008,department_name:'SOLUTION',
location_id:0002, job_title:'researcher', min_salary:4000, max_salary:8000});
db.employees.find();
```

```
MongoDB Enterprise > use HR_DB;
switched to db HR_DB
MongoDB Enterprise > db.createCollection('locations');
{ "ok" : 1 }
MongoDB Enterprise > db.createCollection('employees');
{ "ok" : 1 }
MongoDB Enterprise > show dbs;
HR_DB      0.000GB
admin      0.000GB
demoDB     0.000GB
local      0.000GB
myMongodb  0.000GB
MongoDB Enterprise > db.locations.insert({region_id:0001,region_name:'SOUTHEAST_ASIA',country_id:'CN', country_name:'CHINA',location_i
d:0001, street_address:'646 SHENNAN AVE', postal_code:'N9B 2R9',city:'SHENZHEN',state_province:'GUANGDONG'});
WriteResult({ "nInserted" : 1 })
MongoDB Enterprise > db.locations.insert({region_id:0001,region_name:'SOUTHEAST_ASIA',country_id:'CN', country_name:'CHINA',location_i
d:0002, street_address:'181 SHANGHAI AVE', postal_code:'S28 HR8',city:'SHANGHAI',state_province:'SHANGHAI'});
WriteResult({ "nInserted" : 1 })
MongoDB Enterprise > db.employees.insert({employee_id:0001,first_name:'Jack',last_name:'Daniel', email:'JackDaniel@gmail.com',phone_nu
mber:'2269756789', hire_date:01-09-2016, job_id:'J0001',salary:4000, commission_pct:123456, manager_id:0001, department_id:0001,depart
ment_name:'MARKETING', location_id:0001, job_title:'sales', min_salary:3500, max_salary:6000});
WriteResult({ "nInserted" : 1 })
MongoDB Enterprise > db.employees.insert({employee_id:0002,first_name:'Tom',last_name:'Chen', email:'TomChen@gmail.com',phone_number:'
2269753456', hire_date:01-09-2015, job_id:'J0001',salary:5500, commission_pct:123789, manager_id:0001, department_id:0001,department_n
ame:'MARKETING', location_id:0001, job_title:'sales', min_salary:3500, max_salary:6000});
WriteResult({ "nInserted" : 1 })
MongoDB Enterprise > db.employees.insert({employee_id:0003,first_name:'Bruce',last_name:'Lee', email:'BruceLee@gmail.com',phone_number
:'3389756578', hire_date:01-09-2014, job_id:'J0008',salary:6000, commission_pct:678456, manager_id:0008, department_id:0008,department
_name:'SOLUTION', location_id:0002, job_title:'researcher', min_salary:4000, max_salary:8000});
WriteResult({ "nInserted" : 1 })
MongoDB Enterprise > db.employees.insert({employee_id:0004,first_name:'Lucy',last_name:'Bell', email:'LucyBell@gmail.com',phone_number
:'3389753425', hire_date:01-09-2014, job_id:'J0008',salary:6200, commission_pct:678123, manager_id:0008, department_id:0008,department
_name:'SOLUTION', location_id:0002, job_title:'researcher', min_salary:4000, max_salary:8000});
WriteResult({ "nInserted" : 1 })
```

2. Write a query to get the employee ID, names (first_name, last_name), salary in ascending order of salary.

Code:

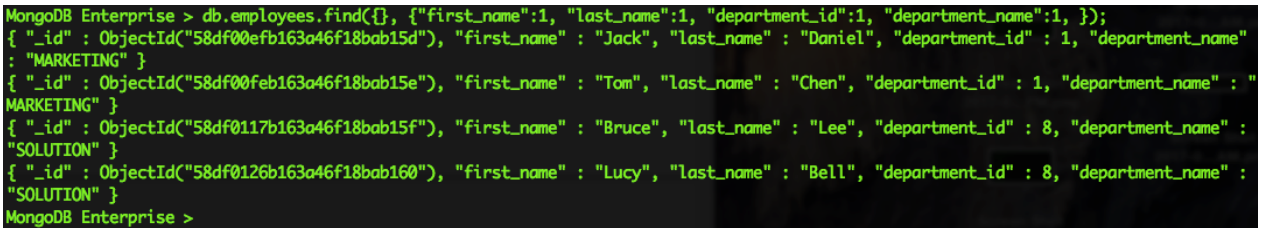
```
// ####Q2
db.employees.find({}, {"employee_id":1, "first_name":1, "last_name":1, "salary":1}).sort({"salary":
1}).pretty();
```

3. Write a query to find the names (first_name, last name), department ID, and department name all the employees.

Code:

```
// ####Q3

db.employees.find({}, {"first_name":1, "last_name":1, "department_id":1, "department_name":1, });
```



4. Write a query for find average salary of all employees working in a particular department.

Code:

```
// ####Q4
db.employees.aggregate([{$group: {_id:"$department_id", AVERAGE_SALARY:{$avg: "$salary"} }}]);
```