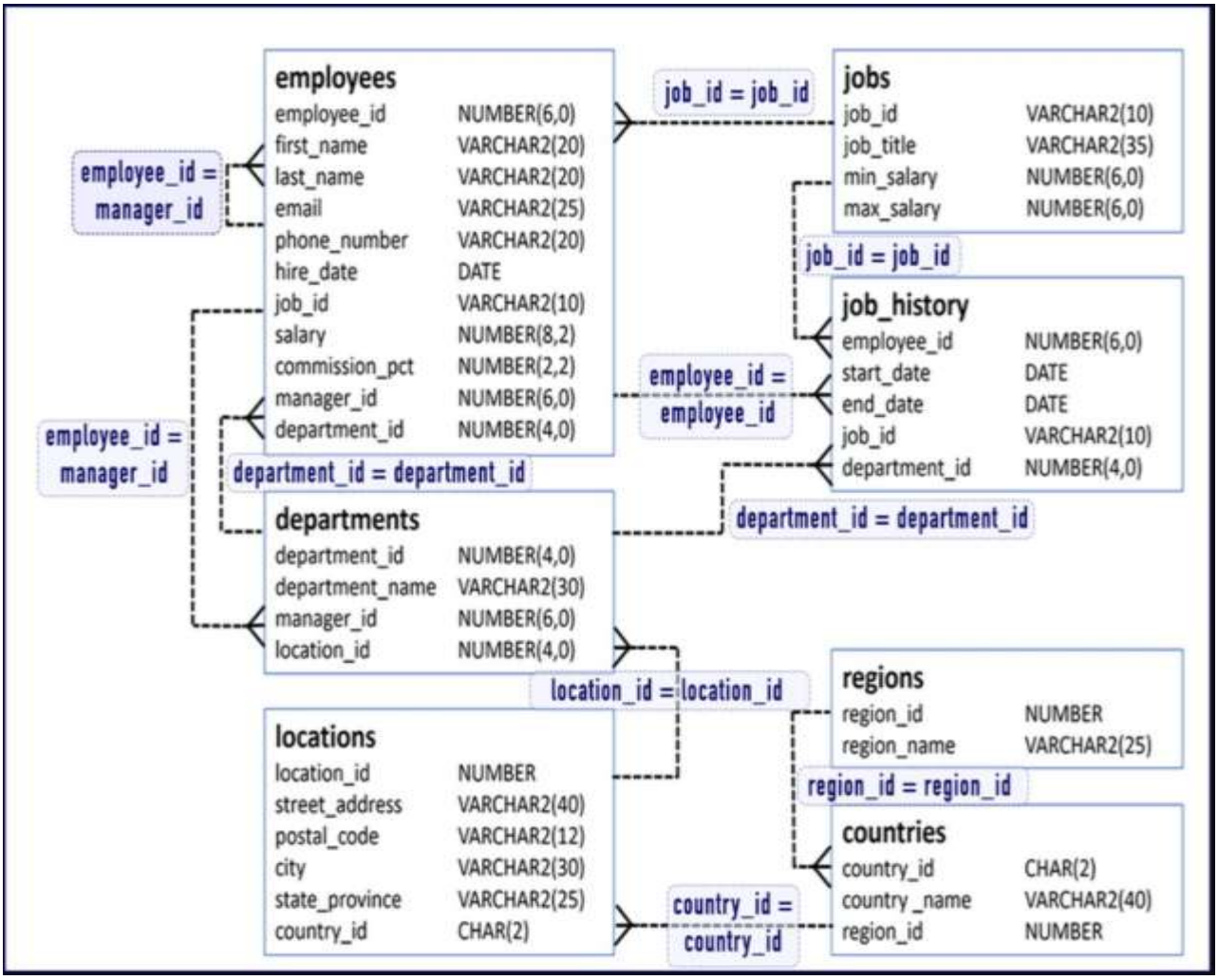

Figure:- Database schema

Lab 1: Getting familarized with SQL Join.

a. Find all employees who work on IT department and have salary>3000

```
select E.first_name , E.last_name, D.department_name FROM
HR.EMPLOYEES E JOIN
HR.DEPARTMENTS D
ON e.department_id = d.department_id
where D.department_name ='IT' AND E.salary>3000
```

OUTPUT:

FIRST_NAME	LAST_NAME	DEPARTMENT_NAME
Alexander	Hunold	IT
Bruce	Ernst	IT
David	Austin	IT
Valli	Pataballa	IT
Diana	Lorentz	IT

b. Find all employees who works on department located at country 'United States of America' and have salary>4000

```
select E.first_name, E.last_name from HR.employees E JOIN
HR.departments D ON D.department_id = E.department_id
join HR.locations L ON L.location_id = D.location_id
join HR.countries C ON C.country_id = L.country_id
where C.country_name ='United States of America' and E.salary > 4000;
```

OUTPUT:

FIRST_NAME	LAST_NAME
Steven	King
Neena	Kochhar
Lex	De Haan
Alexander	Hunold
Bruce	Ernst
David	Austin
Valli	Pataballa
Diana	Lorentz

Lab3: Getting familiarized with Horizontal Fragmentation

 Primary Horizontal Fragmentation

- Divide Employees table with IT and Sales department in different fragments

Query to create the table named as employeeIT

```
create table employeeIT AS
select E.* from
   HR.employees E join
HR.departments D
on D.department_id = E.department_id
   where D.department_name ='IT';
```

OUTPUT:

```
Table created.
```

Query to display the data inside the employeeIT table

```
SELECT * FROM employeeIT;
```

OUTPUT:

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY	COMMISSION_PCT	MANAGER_ID
103	Alexander	Hunold	AHUNOLD	590.423.4567	03-JAN-06	IT_PROG	9000	-	102
104	Bruce	Ernst	BERNST	590.423.4568	21-MAY-07	IT_PROG	6000	-	103
105	David	Austin	DAUSTIN	590.423.4569	25-JUN-05	IT_PROG	4800	-	103
106	Valli	Pataballa	VPATABAL	590.423.4560	05-FEB-06	IT_PROG	4800	-	103
107	Diana	Lorentz	DLORENTZ	590.423.5567	07-FEB-07	IT_PROG	4200	-	103

Query to create the table named as employeeSales

```
create table employeeSales AS
select E.* from
   HR.employees E join
HR.departments D
on D.department_id = E.department_id
   where D.department_name ='Sales';
```

OUTPUT:

```
Table created.
```

Query to display the data inside the employeeSales table

```
select * from employeeSales;
```

OUTPUT:

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY	COMMISSION_PCT
145	John	Russell	JRUSSEL	011.44.1344.429268	01-OCT-04	SA_MAN	14000	.4
146	Karen	Partners	KPARTNER	011.44.1344.467268	05-JAN-05	SA_MAN	13500	.3
147	Alberto	Errazuriz	AERRAZUR	011.44.1344.429278	10-MAR-05	SA_MAN	12000	.3
148	Gerald	Cambrault	GCAMBRAU	011.44.1344.619268	15-OCT-07	SA_MAN	11000	.3
149	Eleni	Zlotkey	EZLOTKEY	011.44.1344.429018	29-JAN-08	SA_MAN	10500	.2
150	Peter	Tucker	PTUCKER	011.44.1344.129268	30-JAN-05	SA_REP	10000	.3
151	David	Bernstein	DBERNSTE	011.44.1344.345268	24-MAR-05	SA_REP	9500	.25

Query for Fragmentation

```
select * from employeeIT
   union
select * from employeeSales;
```

OUTPUT:

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY	COMMISSION_PCT
103	Alexander	Hunold	AHUNOLD	590.423.4567	03-JAN-06	IT_PROG	9000	-
104	Bruce	Ernst	BERNST	590.423.4568	21-MAY-07	IT_PROG	6000	-
105	David	Austin	DAUSTIN	590.423.4569	25-JUN-05	IT_PROG	4800	-
106	Valli	Pataballa	VPATABAL	590.423.4560	05-FEB-06	IT_PROG	4800	-
107	Diana	Lorentz	DLORENTZ	590.423.5567	07-FEB-07	IT_PROG	4200	-
145	John	Russell	JRUSSEL	011.44.1344.429268	01-OCT-04	SA_MAN	14000	.4
146	Karen	Partners	KPARTNER	011.44.1344.467268	05-JAN-05	SA_MAN	13500	.3

Derived Horizontal Fragmentation

- Create a different fragments for all employees who works on department located at country 'United States of America' and have salary>4000

Query to create the table USAemployee

```
select E.first_name,E.last_name,C.country_name from HR.employees E JOIN
HR.departments D ON D.department_id = E.department_id
join HR.locations L ON L.location_id = D.location_id
join HR.countries C ON C.country_id = L.country_id
where C.country_name ='United States of America' and E.salary > 4000;
```

OUTPUT:

```
Table created.
```

Query to display the data

select * from USAemployee;

OUTPUT:

FIRST_NAME	LAST_NAME	COUNTRY_NAME
Steven	King	United States of America
Neena	Kochhar	United States of America
Lex	De Haan	United States of America
Alexander	Hunold	United States of America
Bruce	Ernst	United States of America
David	Austin	United States of America
Valli	Pataballa	United States of America

Lab 4: Getting familiarized with Vertical Fragmentation

Divide HR.EMPLOYEES table to hold employees related information in different fragment and JOB description(all related columns) in different fragment.

CREATE TABLE EMPLOYEE_INFO AS

select employee_id, first_name, last_name,email from HR.EMPLOYEES;

SELECT * FROM EMPLOYEE_INFO;

SELECT * FROM HR.EMPLOYEES;

OUTPUT:

```
Table created.
```

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL
100	Steven	King	SKING
101	Neena	Kochhar	NKOCHHAR
102	Lex	De Haan	LDEHAAN
103	Alexander	Hunold	AHUNOLD
104	Bruce	Ernst	BERNST
105	David	Austin	DAUSTIN

employee information must hold EMPLOYEE_ID, FIRST_NAME, LAST_NAME, EMAIL, PHONE_NUMBER,HIRE_DATE
job description fragment must hold EMPLOYEE_ID, JOB, SALARY, DEPARTMENT_ID, DEPARTMENT_NAME, JOB_TITLE
(YOU MAY JOIN TO GET ALL RELATED INFORMATION)

CREATE TABLE JOB_DESCRIPTION AS

select E.employee_id, J.Job_title,E.salary,D.department_id,D.department_name from HR.EMPLOYEES E

JOIN

HR.departments D ON D.department_id = E.department_id

JOIN

HR.jobs J ON J.job_id = E.job_id;

OUTPUT:

```
Table created.
```

- Reconstruct all employees and job information from fragment tables in part 1.

select * from EMPLOYEE_INFO E1 , JOB_DESCRIPTION J1 WHERE J1.employee_id = E1.employee_id;

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	EMPLOYEE_ID	JOB_TITLE	SALARY	DEPARTMENT_ID	DEPARTMENT_NAME
100	Steven	King	SKING	100	President	24000	90	Executive
101	Neena	Kochhar	NKOCHHAR	101	Administration Vice President	17000	90	Executive
102	Lex	De Haan	LDEHAAN	102	Administration Vice President	17000	90	Executive
103	Alexander	Hunold	AHUNOLD	103	Programmer	9000	60	IT
104	Bruce	Ernst	BERNST	104	Programmer	6000	60	IT
105	David	Austin	DAUSTIN	105	Programmer	4800	60	IT