

Lab cycle - 1

DDL Commands

1. Create the database named HR and the above tables in the HR database; include the Primary Key Constraint, Referential Integrity Constraints as shown in the schema diagram

```
create table regions(region_id number(5) primary key,region_name
varchar(25));
```

```
create table countries(country_id char(5) primary key,country_name
varchar(40),region_id number(5),foreign key(region_id) references
regions(region_id));
```

```
create table locations(location_id number(5) primary key,street_address
varchar(25),postal_code varchar(12),city varchar(30),state_province
varchar(12),country_id char(5),foreign key(country_id) references
countries(country_id));
```

```
create table departments(department_id number(3) primary
key,department_name varchar(30),manager_id number(5),location_id
number(3),foreign key(location_id) references locations(location_id));
```

```
create table job_grades(grade_level varchar(2) primary key,lowest_sal
number(5),highest_sal number(5));
```

```
create table jobs(job_id varchar(10) primary key,job_title
varchar(35),min_salary number(10),max_salary number(10));
```

```
create table employees(employee_id number(3) primary key,first_name
varchar(20),last_name varchar(25),email varchar(25),phone_number
varchar(20),hire_date date,job_id varchar(10),salary
number(10),commission_pct number(5),manager_id number(3),department_id
number(3),foreign key(job_id) references jobs(job_id),foreign
key(department_id) references departments(department_id));
```

```
create table job_history(employee_id number(3),start_date date,end_date
date,job_id varchar(10),department_id number(3),primary
key(employee_id,start_date),foreign key(employee_id) references
employees(employee_id),foreign key(job_id) references
jobs(job_id),foreign key(department_id) references
departments(department_id));
```

Table created. Table created. Table created. Table created. Table created. Table created. Table created.

2. Add a field Circle to the table regions with the default value set to 'East' and display its modified schema.

```
alter table regions add circle varchar(3);
alter table regions modify circle varchar(4) default 'East';
DESC regions;
```

Table altered. Table altered.

TABLE REGIONS

Column	Null?	Type
REGION_ID	NOT NULL	NUMBER(5,0)
REGION_NAME	-	VARCHAR2(25)
CIRCLE	-	VARCHAR2(4)

3. Set a constraint to the SALARY field in the employees table that accepts only amount greater than zero

```
alter table employees modify salary number(10) check(salary>0);  
DESC employees;
```

Table altered.

TABLE EMPLOYEES

Column	Null?	Type
EMPLOYEE_ID	NOT NULL	NUMBER(3,0)
FIRST_NAME	-	VARCHAR2(20)
LAST_NAME	-	VARCHAR2(25)
EMAIL	-	VARCHAR2(25)
PHONE_NUMBER	-	VARCHAR2(20)
HIRE_DATE	-	DATE
JOB_ID	-	VARCHAR2(10)
SALARY	-	NUMBER(10,0)
COMMISSION_PCT	-	NUMBER(5,0)
MANAGER_ID	-	NUMBER(3,0)
DEPARTMENT_ID	-	NUMBER(3,0)

4. Modify the table countries by changing the width of the field COUNTRY_NAME to 30.

```
alter table countries modify country_name varchar(30);  
DESC countries;
```

Table altered.

TABLE COUNTRIES

Column	Null?	Type
COUNTRY_ID	NOT NULL	CHAR(5)
COUNTRY_NAME	-	VARCHAR2(30)
REGION_ID	-	NUMBER(5,0)

5. Make the PHONE_NUMBER field in employees unique and check the EMAIL is a valid gmail account

```
alter table employees modify phone_number varchar(20) unique;
alter table employees modify email varchar(25) check(email like
'_%@%.%');
```

Table altered.

Table altered.

6. Drop the column Circle from the regions table

```
alter table regions drop column circle;
desc regions;
```

Table altered.

TABLE REGIONS

Column	Null?	Type
REGION_ID	NOT NULL	NUMBER(5,0)
REGION_NAME	-	VARCHAR2(25)

7. Create a view for employees who get commission by hiding salary information. Display the contents of created view.

```
create view emps_view as select
employee_id,first_name,last_name,email,phone_number,hire_date,job_id,com
mission_pct,manager_id,department_id from employees where
commission_pct!=0;
```

View created.

DML Commands

8. Insert details in the above tables using the values given below

```
insert into regions values(1,'zone1');
insert into regions values(2,'zone2');
insert into regions values(3,'zone3');
insert into regions values(4,'zone4');
select * from regions;
1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted.
```

REGION_ID	REGION_NAME
-----------	-------------

1	zone1
2	zone2
3	zone3
4	zone4

```
insert into countries values('AU','AUSTRALIA',3);
insert into countries values('CA','CANADA',2);
insert into countries values('CN','CHINA',3);
insert into countries values('IN','INDIA',1);
insert into countries values('US','AMERICA',2);
insert into countries values('JP','JAPAN',4);
insert into countries values('IT','ITALY',1);
insert into countries values('MX','MEXICO',2);
insert into countries values('UK','UNITED KINGDOM',1);
select *from countries;
1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s)
inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted.
```

COUNTRY_ID	COUNTRY_NAME	REGION_ID
------------	--------------	-----------

AU	AUSTRALIA	3
CA	CANADA	2
CN	CHINA	3
IN	INDIA	1
US	AMERICA	2
JP	JAPAN	4
IT	ITALY	1
MX	MEXICO	2
UK	UNITED KINGDOM	1

```
alter table locations modify STATE_PROVINCE varchar(20);
Table altered.
```

```
insert into locations values(1000,'147 BOX WOOD
ST.','15643','ROMA','NIL','IT');
insert into locations values(1200,'12/98 VICTORIA
RD.','1657','TORONTO','ONTARIO','CA');
insert into locations values(1100,'234 CHURCH
RD.','23416','TOKYO','TOKYO PREFECTURE','JP');
insert into locations values(1300,'820 ARTHUR
RD.','NIL','LONDON','NIL','UK');
insert into locations values(1400,'2004 CAROL
RD','7645','SEATTLE','WASHINGTON','US');
insert into locations values(1500,'12 CHESTER
RD.','8732','WHITEHORSE','YUKON','CA');
insert into locations values(1600,'MARIANO 9991','11932','MEXICO
CITY','DISTRITO FEDERAL','MX');
insert into locations values(1700,'CROWN HILL','678','BROWNSWICK','NEW
JERSEY','US');
```

```

insert into locations values(1800,'123 MARINA
RD.','123456','MUMBAI','MAHARASHTRA','IN');
insert into locations values(1900,'29 SEA LANE','3456','SYDNEY','NEW
SOUTH WALES','AU');
select * from locations;
1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s)
inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted.

```

LOCATIO N_ID	STREET_AD DRESS	POSTAL_ CODE	CITY	STATE_PRO VINCE	COUNTR Y_ID
1000	147 BOX WOOD ST.	15643	ROMA	NIL	IT
1200	12/98 VICTORIA RD.	1657	TORONTO	ONTARIO	CA
1100	234 CHURCH RD.	23416	TOKYO	TOKYO PREFECTURE	JP
1300	820 ARTHUR RD.	NIL	LONDON	NIL	UK
1400	2004 CAROL RD	7645	SEATTLE	WASHINGTON	US
1500	12 CHESTER RD.	8732	WHITEHO RSE	YUKON	CA
1600	MARIANO 9991	11932	MEXICO CITY	DISTRITO FEDERAL	MX
1700	CROWN HILL	678	BROWNS WICK	NEW JERSEY	US
1800	123 MARINA RD.	123456	MUMBAI	MAHARASHT RA	IN
1900	29 SEA LANE	3456	SYDNEY	NEW SOUTH WALES	AU

```

insert into job_grades values('A',1000,2999);
insert into job_grades values('B',3000,5999);
insert into job_grades values('C',6000,9999);
insert into job_grades values('D',10000,14999);
insert into job_grades values('E',15000,24999);
insert into job_grades values('F',25000,40000);
select *from job_grades;
1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s)
inserted.

```


GRADE_LEVEL	LOWEST_SAL	HIGHEST_SAL
A	1000	2999
B	3000	5999
C	6000	9999
D	10000	14999
E	15000	24999
F	25000	40000

```

insert into jobs values('AD_PRES','PRESIDENT',20080,40000);
insert into jobs values('SA_REP','SALES REPRESENTATIVES',6000,12008);
insert into jobs values('AD_VP','ADMN.VICE PRESIDENT',15000,30000);
insert into jobs values('IT_PROG','PROGRAMMER',6000,11000);
insert into jobs values('SA_MAN','SALES MANAGER',10000,20080);
insert into jobs values('CLERK','CLERK',2500,7000);
insert into jobs values('HR_REP','HR REPRESENTATIVE',5000,10000);
insert into jobs values('ACCOUNTANT','ACCOUNTANT',4200,9000);
insert into jobs values('FIN_MAN','FINANCE MANAGER',8200,16000);
select *from jobs;
1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s)
inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted.

```

JOB_ID	JOB_TITLE	MIN_SALARY	MAX_SALARY
AD_PRES	PRESIDENT	20080	40000
SA_REP	SALES REPRESENTATIVES	6000	12008
AD_VP	ADMN.VICE PRESIDENT	15000	30000
IT_PROG	PROGRAMMER	6000	11000
SA_MAN	SALES MANAGER	10000	20080
CLERK	CLERK	2500	7000
HR_REP	HR REPRESENTATIVE	5000	10000
ACCOUNTANT	ACCOUNTANT	4200	9000
FIN_MAN	FINANCE MANAGER	8200	16000

```

alter table departments modify location_id number(5);

```

Table altered.

```

insert into departments values(10,'administration',200,1700);
insert into departments values(20,'marketing',201,1900);
insert into departments values(30,'purchasing',114,1700);
insert into departments values(40,'human resource',203,1000);
insert into departments values(50,'finance',108,1200);
insert into departments values(60,'accounting',205,1800);
insert into departments values(70,'shipping',121,1500);
insert into departments values(80,'sales',145,1900);
insert into departments values(90,'manufacturing',0,1700);

```

```

insert into departments values(100,'construction',0,1300);
insert into departments values(110,'it',103,1400);
insert into departments values(120,'recruiting',0,1600);
insert into departments values(130,'payroll',100,1800);
select *from departments;
1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s)
inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted.
1 row(s) inserted. 1 row(s) inserted.

```

DEPARTMENT_ID	DEPARTMENT_NAME	MANAGER_ID	LOCATION_ID
10	administration	200	1700
20	marketing	201	1900
30	purchasing	114	1700
40	human resource	203	1000
50	finance	108	1200
60	accounting	205	1800
70	shipping	121	1500
80	sales	145	1900
90	manufacturing	0	1700
100	construction	0	1300
110	it	103	1400
120	recruiting	0	1600
130	payroll	100	1800

```

insert into employees
values(100,'STEVEN','KING','SKING@GMAIL.COM',8182345210,'17-JUN-
2003','AD_PRES',28000,0,0,90);
insert into employees
values(101,'NEENA','KOCHHAR','NKOCHHAR@GMAIL.COM',9897561234,'21-SEP-
2005','AD_VP',22000,0,100,130);
insert into employees values(102,'LEX','DE
HAAN','LDEHAAN@GMAIL.COM',9554667890,'13-JAN-
2001','AD_VP',30000,0,100,130);
insert into employees
values(103,'ALEXANDER','HUNOLD','AHUNOLD@GMAIL.COM',8678905431,'03-JAN-
2006','IT_PROG',10500,0,103,110);
insert into employees
values(104,'DAVID','AUSTIN','DAUSTIN@GMAIL.COM',9495235678,'10-MAY-
2007','IT_PROG',10000,0,103,110);
insert into employees
values(105,'DIANA','LORENTZ','DLORENTZ@GMAIL.COM',9876542310,'20-NOV-
2009','IT_PROG',8000,0,103,110);
insert into employees
values(106,'NANCY','GREENBERG','NGREEN@GMAIL.COM',8769054324,'30-OCT-
2010','IT_PROG',7000,0,103,110);

```

```

insert into employees
values (107, 'JOHN', 'RUSSEL', 'JRUSSEL@GMAIL.COM', 6778653490, '09-OCT-
2004', 'SA_MAN', 14000, 0.4, 201, 20);
insert into employees
values (108, 'PETER', 'TUKER', 'PTUKER@GMAIL.COM', 9067865423, '30-JAN-
2005', 'SA_MAN', 10000, 0.3, 201, 20);
insert into employees
values (109, 'NEIL', 'JOSEPH', 'NJOSEPH@GMAIL.COM', 7689054321, '31-MAR-
2006', 'SA_MAN', 12000, 0.2, 201, 20);
insert into employees
values (110, 'JANETTE', 'KING', 'JKING@GMAIL.COM', 9809897645, '04-MAR-
2006', 'SA_REP', 10000, 0.35, 145, 80);
insert into employees
values (111, 'WILLIAM', 'JOHN', 'WJOHN@GMAIL.COM', 7682315672, '23-NOV-
2008', 'CLERK', 6000, 0, 200, 10);
insert into employees
values (112, 'ANITTA', 'BAKER', 'ABAKER@GMAIL.COM', 2345678910, '15-SEP-
2010', 'HR_REP', 9000, 0, 203, 40);
insert into employees
values (113, 'NANDITA', 'MOHAN', 'NMOHAN@GMAIL.COM', 94445634213, '20-JUL-
2014', 'ACCOUNTANT', 8000, 0, 205, 60);
insert into employees
values (114, 'SUSAN', 'VARKEY', 'SVARKEY@GMAIL.COM', 8976054321, '14-DEC-
2004', 'FIN_MAN', 15000, 0, 108, 50);
select *from employees;
1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1
row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1
row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted.

```

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY	COMMISSION_PCT	MANAGER_ID	DEPARTMENT_ID
100	STEVEN	KING	SKING@GMAIL.COM	8182345210	17-JUN-03	AD_PRES	28000	0	0	90
101	NEENA	KOCHHAR	NKOCHHAR@GMAIL.COM	9897561234	21-SEP-05	AD_VP	22000	0	100	130
102	LEX	DEHAAN	LDEHAAN@GMAIL.COM	9554667890	13-JAN-01	AD_VP	30000	0	100	130
103	ALEXANDER	HUNOLD	AHUNOLD@GMAIL.COM	8678905431	03-JAN-06	IT_PROG	10500	0	103	110
104	DAVID	AUSTIN	DAUSTIN@GMAIL.COM	9495235678	10-MAY-07	IT_PROG	10000	0	103	110
105	DIANA	LORENTZ	DLORENTZ@GMAIL.COM	9876542310	20-NOV-09	IT_PROG	8000	0	103	110
106	NANCY	GREENBERG	NGREENBERG@GMAIL.COM	8769054324	30-OCT-10	IT_PROG	7000	0	103	110
107	JOHN	RUSSELL	JRUSSELL@GMAIL.COM	6778653490	09-OCT-04	SA_MAN	14000	0	201	20

108	PETER	TUKER	PTUKER@GMAIL.COM	9067865423	30-JAN-05	SA_MAN	10000	0	201	20
109	NEIL	JOSEPH	NJOSEPH@GMAIL.COM	7689054321	31-MAR-06	SA_MAN	12000	0	201	20
110	JANETTE	KING	JKING@GMAIL.COM	9809897645	04-MAR-06	SA_REP	10000	0	145	80
111	WILLIAM	JOHN	WJOHN@GMAIL.COM	7682315672	23-NOV-08	CLERK	6000	0	200	10
112	ANITTA	BAKER	ABAKER@GMAIL.COM	2345678910	15-SEP-10	HR_REP	9000	0	203	40
113	NANDITA	MOHAN	NMOHAN@GMAIL.COM	94445634213	20-JUL-14	ACCOUNTANT	8000	0	205	60
114	SUSAN	VARKEY	SVARKEY@GMAIL.COM	8976054321	14-DEC-04	FIN_MANAGER	15000	0	108	50

```

insert into job_history values(102,'13-JAN-2001','24-JUL-2006','IT_PROG',110);
insert into job_history values(101,'21-SEP-1997','27-OCT-2001','ACCOUNTANT',60);
insert into job_history values(101,'28-OCT-2001','15-MAR-2005','FIN_MAN',50);
insert into job_history values(112,'17-FEB-2004','19-DEC-2007','HR_REP',40);
insert into job_history values(114,'24-MAR-2006','31-DEC-2007','CLERK',10);
insert into job_history values(112,'01-JAN-2007','31-DEC-2007','AD_VP',130);
insert into job_history values(109,'24-MAR-2006','31-DEC-2006','SA_MAN',20);
insert into job_history values(105,'01-JUL-2002','31-DEC-2005','SA_REP',80);
insert into job_history values(105,'17-FEB-2006','19-DEC-2007','IT_PROG',110);
select * from job_history;

```

1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted. 1 row(s) inserted.

EMPLOYEE_ID	START_DATE	END_DATE	JOB_ID	DEPARTMENT_ID
102	13-JAN-01	24-JUL-06	IT_PROG	110
101	21-SEP-97	27-OCT-01	ACCOUNTANT	60
101	28-OCT-01	15-MAR-05	FIN_MANAGER	50
112	17-FEB-04	19-DEC-07	HR_REP	40
114	24-MAR-06	31-DEC-07	CLERK	10

112	01-JAN-07	31-DEC-07	AD_VP	130
109	24-MAR-06	31-DEC-06	SA_MAN	20
105	01-JUL-02	31-DEC-05	SA_REP	80
105	17-FEB-06	19-DEC-07	IT_PROG	110

9. Update the street_Address of Roma city to 115 Monte Carlo Rd. in locations table.

```
update locations set street_address='115 MONTE CARLO RD.' where
city='ROMA';
select *from locations;
1 row(s) updated.
```

LOCATIO N_ID	STREET_AD DRESS	POSTAL_ CODE	CITY	STATE_PRO VINCE	COUNTR Y_ID
1000	115 MONTE CARLO RD.	15643	ROMA	NIL	IT
1200	12/98 VICTORIA RD.	1657	TORONTO	ONTARIO	CA
1100	234 CHURCH RD.	23416	TOKYO	TOKYO PREFECTURE	JP
1300	820 ARTHUR RD.	NIL	LONDON	NIL	UK
1400	2004 CAROL RD	7645	SEATTLE	WASHINGTON	US
1500	12 CHESTER RD.	8732	WHITEHO RSE	YUKON	CA
1600	MARIANO 9991	11932	MEXICO CITY	DISTRITO FEDERAL	MX
1700	CROWN HILL	678	BROWNS WICK	NEW JERSEY	US
1800	123 MARINA RD.	123456	MUMBAI	MAHARASHT RA	IN
1900	29 SEA LANE	3456	SYDNEY	NEW SOUTH WALES	AU

10. Give a 15% increment in salary for all employees.

```
update employees set salary=salary+salary*0.15;
select * from employees;
15 row(s) updated.
```

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY	COMMISSION_PCT	MANAGER_ID	DEPARTMENT_ID
100	STEVEN	KING	SKING@GMAIL.COM	8182345210	17-JUN-03	AD_PRES	3200	0	0	90
101	NEENA	KOCHHAR	NKOOCHHAR@GMAIL.COM	9897561234	21-SEP-05	AD_VP	25300	0	100	130
102	LEX	DEHAAN	LDEHAAN@GMAIL.COM	9554667890	13-JAN-01	AD_VP	34500	0	100	130
103	ALEXANDER	HUNOLD	AHUNOLD@GMAIL.COM	8678905431	03-JAN-06	IT_PROG	12075	0	103	110
104	DAVID	AUSTIN	DAUSTIN@GMAIL.COM	9495235678	10-MAY-07	IT_PROG	11500	0	103	110
105	DIANA	LORENZ	DLORENZ@GMAIL.COM	9876542310	20-NOV-09	IT_PROG	9200	0	103	110
106	NANCY	GREENBERG	NGREENBERG@GMAIL.COM	8769054324	30-OCT-10	IT_PROG	8050	0	103	110
107	JOHN	RUSSEL	JRUSSEL@GMAIL.COM	6778653490	09-OCT-04	SA_MAN	16100	0	201	20
108	PETER	TUKER	PTUKER@GMAIL.COM	9067865423	30-JAN-05	SA_MAN	11500	0	201	20

109	NEIL	JOSEPH	NJOSEPH@GMAIL.COM	7689054321	31-MAR-06	SA_MAN	13800	0	201	20
110	JANETTE	KING	JKING@GMAIL.COM	9809897645	04-MAR-06	SA_REP	11500	0	145	80
111	WILLIAM	JOHN	WJOHN@GMAIL.COM	7682315672	23-NOV-08	CLERK	6900	0	200	10
112	ANITA	BAKER	ABAKER@GMAIL.COM	2345678910	15-SEP-10	HR_REP	10350	0	203	40
113	NANDA	MOHAN	NMOHAN@GMAIL.COM	94445634213	20-JUL-14	ACCOUNTANT	9200	0	205	60
114	SUSAN	VARKEY	SVARKEY@GMAIL.COM	8976054321	14-DEC-04	FIN_MAN	17250	0	108	50

11. Add a new employee in the 'Recruiting' department as clerk and set joining date as today's date.

```
insert into employees
values(115, 'JAIDEN', 'ALEX', 'JAI@GMAIL.COM', 9496131093, SYSDATE, 'CLERK', 2500, 0, 0, 120);
select * from employees;
1 row(s) inserted.
```

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY	COMMISSION_PCT	MANAGER_ID	DEPARTMENT_ID
115	JAIDEN	ALEX	JAI@GMAIL.COM	9496131093	14-AUG-21	CLERK	2500	0	0	120
100	STEVEN	KING	SKING@GMAIL.COM	8182345210	17-JUN-03	AD_PRES	3200	0	0	90

101	NEE NA	KO CH HA R	NKOCH HAR@G MAIL.C OM	98975 61234	21- SEP -05	AD_ VP	25 30 0	0	100	130
102	LEX	DE HA AN	LDEHAA N@GMA IL.COM	95546 67890	13- JAN -01	AD_ VP	34 50 0	0	100	130
103	ALE XAN DER	HU NOL D	AHUNO LD@GM AIL.CO M	86789 05431	03- JAN -06	IT_P ROG	12 07 5	0	103	110
104	DAV ID	AUS TIN	DAUSTI N@GMA IL.COM	94952 35678	10- MA Y- 07	IT_P ROG	11 50 0	0	103	110
105	DIA NA	LOR ENT Z	DLOREN TZ@GM AIL.CO M	98765 42310	20- NO V- 09	IT_P ROG	92 00	0	103	110
106	NAN CY	GRE ENB ERG	NGREEN @GMAI L.COM	87690 54324	30- OC T-10	IT_P ROG	80 50	0	103	110
107	JOH N	RUS SEL	JRUSSEL @GMAI L.COM	67786 53490	09- OC T-04	SA_ MA N	16 10 0	0	201	20
108	PET ER	TUK ER	PTUKER @GMAI L.COM	90678 65423	30- JAN -05	SA_ MA N	11 50 0	0	201	20
109	NEI L	JOS EPH	NJOSEP H@GMA IL.COM	76890 54321	31- MA R- 06	SA_ MA N	13 80 0	0	201	20
110	JAN ETT E	KIN G	JKING@ GMAIL. COM	98098 97645	04- MA R- 06	SA_ REP	11 50 0	0	145	80
111	WIL LIA M	JOH N	WJOHN @GMAI L.COM	76823 15672	23- NO V- 08	CLE RK	69 00	0	200	10
112	ANI TTA	BA KER	ABAKER @GMAI L.COM	23456 78910	15- SEP -10	HR_ REP	10 35 0	0	203	40

113	NAN DIT A	MO HA N	NMOHA N@GMA IL.COM	94445 63421 3	20- JUL -14	ACC OUN TAN T	92 00	0	205	60
114	SUS AN	VA RKE Y	SVARKE Y@GMA IL.COM	89760 54321	14- DE C- 04	FIN_ MA N	17 25 0	0	108	50

commit;

Statement processed.

12. Delete grade_level value 'F' in table job_grades and conform the deletion by verifying the remaining rows of the table

```
delete from job_grades where grade_level='F';
select * from job_grades;
1 row(s) deleted.
```

GRADE_LEVEL	LOWEST_SAL	HIGHEST_SAL
A	1000	2999
B	3000	5999
C	6000	9999
D	10000	14999
E	15000	24999

TCL Commands

13.Undo the previous delete operation.

rollback;

Statement processed.

14. Save all the transactions to the database.

commit;

Statement processed.

15. .Grant the privilege to read and delete from the employees table to the User U1.

GRANT UPDATE, TRIGGER ON TABLE employees TO UI;

Statement processed.

16. .Revoke the delete privilege from U1.

REVOKE DELETE ON employees FROM U1;

Statement processed.

Accessing database (SELECT, Filtering using WHERE, HAVING, GROUP BY, ORDER BY Clauses, Subquery):

17. Display countries along with their regional code.

```
SELECT country_name,region_id from countries;  
SELECT a.country_name,b.region_name from countries a, regions b where  
a.region_id=b.region_id;
```

COUNTRY_NAME	REGION_ID
--------------	-----------

AUSTRALIA	3
-----------	---

CANADA	2
--------	---

CHINA	3
-------	---

INDIA	1
-------	---

AMERICA	2
---------	---

JAPAN	4
-------	---

ITALY	1
-------	---

MEXICO	2
--------	---

UNITED KINGDOM	1
----------------	---

COUNTRY_NAME	REGION_NAME
--------------	-------------

AUSTRALIA	zone3
-----------	-------

CANADA	zone2
--------	-------

CHINA	zone3
-------	-------

INDIA	zone1
-------	-------

AMERICA	zone2
---------	-------

JAPAN	zone4
-------	-------

ITALY	zone1
MEXICO	zone2
UNITED KINGDOM	zone1

18. List department ID without any repeats from employees table.

```
SELECT DISTINCT department_id from employees;
```

DEPARTMENT_ID

50

110

40

90

10

120

130

20

60

80

19. . List the official address and names of all employees in Marketing Department

```
SELECT first_name,last_name,street_address from employees,locations
where location_id in (select location_id from departments where
department_name='marketing')
and department_id in (select department_id from departments where
department_name='marketing');
```

FIRST_NAME LAST_NAME STREET_ADDRESS

JOHN RUSSEL 29 SEA LANE

PETER TUKER 29 SEA LANE

NEIL JOSEPH 29 SEA LANE

20. Display first and last name in a single heading Name, salary, department ID for those employees whose department is located in the city Mumbai.

```
SELECT department_id,CONCAT(first_name,last_name) AS Name,salary from
employees where department_id in
(select department_id from departments where location_id in (select
location_id from locations where city='MUMBAI'));
```

DEPARTMENT_ID	NAME	SALARY
130	NEENAKOCHHAR	50888
130	LEXDE HAAN	69392
60	NANDITAMOHAN	18505

21. List the total salary spent for each department

```
SELECT DISTINCT department_id,sum(salary) OVER(PARTITION BY
department_id) Salary from employees;
```

DEPARTMENT_ID	SALARY
40	20817
50	34697
130	120280
20	83272
90	64767
10	13878
110	82116
60	18505
120	5028
80	23131

22. List the names of employees in Marketing having salary greater than maximum salary of employees in IT department

```
SELECT *FROM employees WHERE salary IN (SELECT salary FROM employees
WHERE department_id IN (SELECT d.department_id FROM departments d WHERE
d.department_name = 'marketing')) and salary > (SELECT max(salary) FROM employees
WHERE department_id IN (SELECT d.department_id FROM departments d WHERE
d.department_name = 'it'));
```

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY	COMMISSION_PCT	MANAGER_ID	DEPARTMENT_ID
107	JOHN	RUSSEL	JRUSSEL@GMAIL.COM	6778653490	09-OCT-04	SA_MAN	32383	0	201	20
109	NEIL	JOSEPH	NJOSEPH@GMAIL.COM	7689054321	31-MAR-06	SA_MAN	27758	0	201	20

23. Display country names in upper case and in descending order along with their codes.

```
SELECT country_id,upper(country_name) from countries order by
country_name desc;
```

COUNTRY_ID	UPPER(COUNTRY_NAME)
UK	UNITED KINGDOM
MX	MEXICO
JP	JAPAN
IT	ITALY
IN	INDIA
CN	CHINA
CA	CANADA
AU	AUSTRALIA
US	AMERICA

24. Display the full name (first and last), hire date, salary, and department number for those employees whose first name does not containing the letter 'S' and make the result set in ascending order by department number

SELECT CONCAT(first_name,last_name) AS Name,hire_date,salary,department_id from employees where first_name not LIKE '%S%' order by department_id asc;

NAME	HIRE_DATE	SALARY	DEPARTMENT_ID
WILLIAMJOHN	23-NOV-08	13878	10
JOHNRUSSEL	09-OCT-04	32383	20
NEILJOSEPH	31-MAR-06	27758	20
PETERTUKER	30-JAN-05	23131	20
ANITTABAKER	15-SEP-10	20817	40
NANDITAMOHAN	20-JUL-14	18505	60
JANETTEKING	04-MAR-06	23131	80
DIANALORENTZ	20-NOV-09	18505	110
DAVIDAUSTIN	10-MAY-07	23131	110
ALEXANDERHUNOLD	03-JAN-06	24287	110
NANCYGREENBERG	30-OCT-10	16193	110
JAIDENALEX	14-AUG-21	5028	120
LEXDE HAAN	13-JAN-01	69392	130
NEENAKOCHHAR	21-SEP-05	50888	130

25. Identify all employees who work in departments located in the United States.

```
SELECT first_name from employees where department_id in (select
department_id from departments where location_id in (select location_id
from locations where country_id in (select country_id from countries
where country_name= 'AMERICA')));
```

FIRST_NAME

STEVEN

ALEXANDER

DAVID

DIANA

NANCY

WILLIAM

26. Display the name (first name and last name) for those employees who gets more salary than the employee whose id is 112.

```
SELECT CONCAT(first_name,last_name) AS Name,salary from employees where
salary > (select salary from employees where employee_id='112');
```

NAME	SALARY
STEVENKING	64767
NEENAKOCHHAR	50888
LEXDE HAAN	69392
ALEXANDERHUNOLD	24287
DAVIDAUSTIN	23131
JOHNRUSSEL	32383
PETERTUKER	23131
NEILJOSEPH	27758
JANETTEKING	23131
SUSANVARKEY	34697

Optimizing databases (Join, Aggregate & Set operations, Other operators like arithmetic, special etc):

27. Use inner join to display the name, department number, and department name for each employee

```
SELECT  
employees.first_name, employees.last_name, departments.department_id, depar  
tments.department_name FROM employees INNER JOIN departments ON  
employees.department_id = departments.department_id;
```

FIRST_NAME	LAST_NAME	DEPARTMENT_ID	DEPARTMENT_NAME
STEVEN	KING	90	manufacturing
NEENA	KOCHHAR	130	payroll
LEX	DE HAAN	130	payroll
ALEXANDER	HUNOLD	110	it
DAVID	AUSTIN	110	it
DIANA	LORENTZ	110	it
NANCY	GREENBERG	110	it
JOHN	RUSSEL	20	marketing
PETER	TUKER	20	marketing
NEIL	JOSEPH	20	marketing
JANETTE	KING	80	sales
WILLIAM	JOHN	10	administration
ANITTA	BAKER	40	human resource
NANDITA	MOHAN	60	accounting
SUSAN	VARKEY	50	finance
JAIDEN	ALEX	120	recruiting

28. List employees who have no job history details using left outer join.

```
Select employee_name from employees left outer join departments where  
employee_id is NULL
```

```
null
```

29. List department details which have currently no employees using right outer join.

```
Select department_id,department_id from employees right outer join
departments where employee_id is NULL
```

null

30. List all employees who are working in Marketing or Human Resource Department.

```
SELECT first_name,last_name from employees where department_id in
(select department_id from departments where department_name in
('marketing','human resource'));
```

FIRST_NAME LAST_NAME

JOHN RUSSEL

PETER TUKER

NEIL JOSEPH

ANITTA BAKER

31. List the details of employee who draw the highest salary

```
SELECT * from employees where salary = ( select max(salary) from
employees);
```

EMPLOYEE E_ID	FIRST_ NAME	LAST_N AME	EMAIL	PHONE_NU MBER	HIRE_D ATE	JOB_ ID	SALA RY	COMMISSIO N_PCT	MANAGE R_ID	DEPARTME NT_ID
102	LEX	DE HAAN	LDEHAAN@GMA IL.COM	95546678 90	13- JAN-01	AD_V P	6939 2	0	100	130

32. Find the average salary of employees who joined after 2009.

```
SELECT avg(salary) FROM employees WHERE hire_date>('01-JAN-09');
```

AVG(SALARY)

15809.6

33. Count total number of employees in department with ID 20.

```
SELECT COUNT(department_id)FROM employees WHERE department_id='20';
```

COUNT(DEPARTMENT_ID)

3

34. Find out the person with lowest salary in IT department

```
SELECT * from employees where salary = ( select min(salary) from
employees where department_id in (select department_id from departments
where department_name='it'));
```

EMPLOYEE E_ID	FIRST_ NAME	LAST_ NAME	EMAIL	PHONE_NU MBER	HIRE_D ATE	JOB_ ID	SALA RY	COMMISSIO N_PCT	MANAGE R_ID	DEPARTME NT_ID
106	NANCY	GREENBERG	NGREEN@GMAIL.COM	8769054324	30-OCT-10	IT_PROG	16193	0	103	110

35. List all employees who joined in the period 2003-2006 and 2009-2011.

```
SELECT first_name FROM employees WHERE hire_date BETWEEN ('01-JAN-2003')
AND ('12-DEC-2011') AND hire_date NOT BETWEEN ('01-JAN-2007') AND ('12-
DEC-2008');
```

FIRST_NAME

STEVEN

NEENA

ALEXANDER

DIANA

NANCY

JOHN

PETER

NEIL

JANETTE

ANITTA

SUSAN

36. List all employees along with their salary excluding IT programmers.

```
SELECT * FROM Employees WHERE department_id not in (select department_id
from departments WHERE department_name='it');
```

EMPLOYEE E_ID	FIRST_ NAME	LAST_ NAME	EMAIL	PHONE_N UMBER	HIRE_ DATE	JOB_ID	SAL ARY	COMMISSIO N_PCT	MANAGE R_ID	DEPARTME NT_ID
114	SUSAN	VARKEY	SVARKEY@GMAIL.COM	8976054321	14-DEC-04	FIN_MAN	34697	0	108	50

112	ANITTA	BAKER	ABAKER@GMAIL.COM	2345678910	15-SEP-10	HR_REP	20817	0	203	40
100	STEVEN	KING	SKING@GMAIL.COM	8182345210	17-JUN-03	AD_PRE S	64767	0	0	90
111	WILLIAM	JOHN	WJOHN@GMAIL.COM	7682315672	23-NOV-08	CLERK	13878	0	200	10
115	JAIDEN	ALEX	JAI@GMAIL.COM	9496131093	14-AUG-21	CLERK	5028	0	0	120
101	NEENA	KOCHHAR	NKOCHHAR@GMAIL.COM	9897561234	21-SEP-05	AD_VP	50888	0	100	130
102	LEX	DEHAAN	LDEHAAN@GMAIL.COM	9554667890	13-JAN-01	AD_VP	69392	0	100	130
107	JOHN	RUSSEL	JRUSSEL@GMAIL.COM	6778653490	09-OCT-04	SA_MAN	32383	0	201	20
108	PETER	TUKER	PTUKER@GMAIL.COM	9067865423	30-JAN-05	SA_MAN	23131	0	201	20
109	NEIL	JOSEPH	NJOSEPH@GMAIL.COM	7689054321	31-MAR-06	SA_MAN	27758	0	201	20
113	NANDITA	MOHAN	NMOHAN@GMAIL.COM	94445634213	20-JUL-14	ACCOUNTANT	18505	0	205	60
110	JANETTE	KING	JKING@GMAIL.COM	9809897645	04-MAR-06	SA_REP	23131	0	145	80

37. Display the name and job_id of employees with their DA amount (DA= 25% of salary).

```
select first_name,last_name,job_id,salary*.25 as DA from employees;
```

FIRST_NAME	LAST_NAME	JOB_ID	DA
STEVEN	KING	AD_PRES	16191.75
NEENA	KOCHHAR	AD_VP	12722
LEX	DE HAAN	AD_VP	17348
ALEXANDER	HUNOLD	IT_PROG	6071.75
DAVID	AUSTIN	IT_PROG	5782.75
DIANA	LORENTZ	IT_PROG	4626.25
NANCY	GREENBERG	IT_PROG	4048.25
JOHN	RUSSEL	SA_MAN	8095.75
PETER	TUKER	SA_MAN	5782.75
NEIL	JOSEPH	SA_MAN	6939.5
JANETTE	KING	SA_REP	5782.75
WILLIAM	JOHN	CLERK	3469.5
ANITTA	BAKER	HR_REP	5204.25
NANDITA	MOHAN	ACCOUNTANT	4626.25
SUSAN	VARKEY	FIN_MAN	8674.25
JAIDEN	ALEX	CLERK	1257