# 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. 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;
```

| 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;
```

| 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;
```

| 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','SEETTLE','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.

| LOCATION_ID | STREET_ADDRESS | POSTAL_CODE | CITY | STATE_PROVINCE | COUNTRY_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 | SEETTLE | WASHINGTON | US |
| 1500 | 12 CHESTER RD. | 8732 | WHITEHORSE | 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 | MAHARASHTRA | 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.

| EMPLOYE 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 100 | STEVEN | KING | SKING@GMAIL .COM | 8182345 210 | 17-JUN-03 | AD_PRE S | 280 00 | 0 | 0 | 90 |
| 101 | NEENA | KOCHH AR | NKOCHHAR@GM AIL.COM | 9897561 234 | 21-SEP-05 | AD_VP | 220 00 | 0 | 100 | 130 |
| 102 | LEX | DE HAAN | LDEHAAN@GMA IL.COM | 9554667 890 | 13-JAN-01 | AD_VP | 300 00 | 0 | 100 | 130 |
| 103 | ALEXAN DER | HUNOL D | AHUNOLD@GMA IL.COM | 8678905 431 | 03-JAN-06 | IT_PRO G | 105 00 | 0 | 103 | 110 |
| 104 | DAVID | AUSTI N | DAUSTIN@GMA IL.COM | 9495235 678 | 10-MAY-07 | IT_PRO G | 100 00 | 0 | 103 | 110 |
| 105 | DIANA | LOREN TZ | DLORENTZ@GM AIL.COM | 9876542 310 | 20-NOV-09 | IT_PRO G | 800 0 | 0 | 103 | 110 |
| 106 | NANCY | GREEN BERG | NGREEN@GMAI L.COM | 8769054 324 | 30-OCT-10 | IT_PRO G | 700 0 | 0 | 103 | 110 |
| 107 | JOHN | RUSSE L | JRUSSEL@GMA IL.COM | 6778653 490 | 09-OCT-04 | SA_MAN | 140 00 | 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_MAN | 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.

| 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_MAN | 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 | SEETTLE | WASHINGTO N | 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 | 32200 | 0 | 0 | 90 |
| 101 | NEENA | KOCHHAR | NKOCHHAR@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 | LORENTZ | DLORENTZ@GMAIL.COM | 9876542310 | 20-NOV-09 | IT_PROG | 9200 | 0 | 103 | 110 |
| 106 | NANCY | GREENBERG | NGREEN@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 | 76890 54321 | 31-MAR-06 | SA_MAN | 13800 | 0 | 201 | 20 |
| 110 | JANETTE | KING | JKING@GMAIL.COM | 98098 97645 | 04-MAR-06 | SA_REP | 11500 | 0 | 145 | 80 |
| 111 | WILLIAM | JOHN | WJOHN@GMAIL.COM | 76823 15672 | 23-NOV-08 | CLERK | 6900 | 0 | 200 | 10 |
| 112 | ANITTA | BAKER | ABAKER@GMAIL.COM | 23456 78910 | 15-SEP-10 | HR_REP | 10350 | 0 | 203 | 40 |
| 113 | NANDITA | MOHAN | NMOHAN@GMAIL.COM | 94445 634213 | 20-JUL-14 | ACCOUNTANT | 9200 | 0 | 205 | 60 |
| 114 | SUSAN | VARKEY | SVARKEY@GMAIL.COM | 89760 54321 | 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 | 94961 31093 | 14-AUG-21 | CLERK | 2500 | 0 | 0 | 120 |
| 100 | STEVEN | KING | SKING@GMAIL.COM | 81823 45210 | 17-JUN-03 | AD_PRES | 32200 | 0 | 0 | 90 |

| 101 | NEENA | KOCHHAR | NKOCHHAR@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 | LORENTZ | DLORENTZ@GMAIL.COM | 9876542310 | 20-NOV-09 | IT_PROG | 9200 | 0 | 103 | 110 |
| 106 | NANCY | GREENBERG | NGREEN@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 | ANITTA | BAKER | ABAKER@GMAIL.COM | 2345678910 | 15-SEP-10 | HR_REP | 10350 | 0 | 203 | 40 |

| 113 | NAN DIT A | MO HA N | NMOHAN@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 UI;

`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'));

| EMPLOYE 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 107 | JOHN | RUSSEL | JRUSSEL@GMA IL.COM | 67786534 90 | 09- OCT-04 | SA_M AN | 3238 3 | 0 | 201 | 20 |
| 109 | NEIL | JOSEPH | NJOSEPH@GMA IL.COM | 76890543 21 | 31- MAR-06 | SA_M AN | 2775 8 | 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);
```

| EMPLOYE 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'));
```

| EMPLOYE 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 106 | NANCY | GREENB ERG | NGREEN@GMA IL.COM | 87690543 24 | 30-OCT-10 | IT_P ROG | 1619 3 | 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');
```

| EMPLOYE 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 | VARKE Y | SVARKEY@GMA IL.COM | 8976054 321 | 14-DEC-04 | FIN_MA N | 346 97 | 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_PRES | 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 | DE HAAN | 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 |