**ADVANCED DATA BASE MANAGEMENT SYSTEM LAB CYCLE-I**

**I. 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 PRIMARY KEY,REGION\_NAME VARCHAR(25));

create table countries(COUNTRY\_ID CHAR(2) PRIMARY KEY,COUNTRY\_NAME VARCHAR2(40),REGION\_ID NUMBER,FOREIGN KEY (REGION\_ID) REFERENCES regions(REGION\_ID));

create table locations(LOCATION\_ID NUMBER PRIMARY KEY,STREET\_ADDRESS VARCHAR2(25),POSTAL\_CODE VARCHAR2(12),CITY VARCHAR2(30),STATE\_PROVINCE VARCHAR2(12),COUNTRY\_ID CHAR(2),FOREIGN KEY (COUNTRY\_ID) REFERENCES countries(COUNTRY\_ID));

create table departments(DEPARTMENT\_ID NUMBER PRIMARY KEY,DEPARTMENT\_NAME VARCHAR2(30),MANAGER\_ID NUMBER,LOCATION\_ID NUMBER,FOREIGN KEY (LOCATION\_ID) REFERENCES locations(LOCATION\_ID));

create table jobs(JOB\_ID VARCHAR2(10) PRIMARY KEY,JOB\_TITLE VARCHAR2(35),MIN\_SALARY NUMBER,MAX\_SALARY NUMBER);

create table employees(EMPLOYEE\_ID NUMBER PRIMARY KEY,FIRST\_NAME VARCHAR2(20),LAST\_NAME VARCHAR2(25),EMAIL VARCHAR2(25),PHONE\_NUMBER VARCHAR2(20),HIRE\_DATE DATE,JOB\_ID VARCHAR2(10),FOREIGN KEY (JOB\_ID) REFERENCES jobs(JOB\_ID),SALARY NUMBER,COMMISSION\_PCT NUMBER,MANAGER\_ID NUMBER,DEPARTMENT\_ID NUMBER,FOREIGN KEY (DEPARTMENT\_ID) REFERENCES departments(DEPARTMENT\_ID));

create table job\_grades(GRADE\_LEVEL VARCHAR2(2) PRIMARY KEY,LOWEST\_SAL NUMBER,HIGHEST\_SAL NUMBER);

create table job\_history(EMPLOYEE\_ID NUMBER,START\_DATE DATE,END\_DATE DATE,JOB\_ID VARCHAR2(10),FOREIGN KEY (JOB\_ID) REFERENCES jobs(JOB\_ID),DEPARTMENT\_ID NUMBER,FOREIGN KEY (DEPARTMENT\_ID) REFERENCES departments(DEPARTMENT\_ID),FOREIGN KEY (EMPLOYEE\_ID) REFERENCES employees(EMPLOYEE\_ID),PRIMARY KEY(EMPLOYEE\_ID,START\_DATE));

1. 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(10) default 'East';

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

alter table employees add constraint salary check(salary>0);

1. Modify the table countries by changing the width of the field COUNTRY\_NAME to 30.

alter table countries modify country\_name varchar2(30);

1. Make the PHONE\_NUMBER field in employees unique and check the EMAIL is a valid gmail account.

alter table employees add unique(phone\_number);

alter table employees add constraint email check(email like '%\_@\_\_%.\_\_%');

1. Drop the column Circle from the regions table.

alter table regions drop column circle;

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

create view employeeview as select

employee\_id,first\_name,last\_name,email,phone\_number,hire\_date,job\_id,manager\_id,department\_id from employees where commission\_pct != 0;

**II. DML Commands:**

1. 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

|  |  |
| --- | --- |
| **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

|  |  |  |
| --- | --- | --- |
| **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 |

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(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(1700,'CROWN HILL','678','BROWNSWICK','NEW JERSEY','US');

insert into locations values(1800,'123 MARINA RD.','123456','MUMBAI','MAHARASHTRA','IN');

alter table locations modify STATE\_PROVINCE varchar2(20);

insert into locations values(1600,'MARIANO 9991','11932','MEXICO CITY','DISTRITO FEDERAL','MX');

insert into locations values(1900,'29 SEA LANE','3456','SYDNEY','NEW SOUTH WALES','AU');

insert into locations values(1100,'234 CHURCH RD.','23416','TOKYO','TOKYO PREFECTURE','JP');

select \* from locations;

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **LOCATION\_ID** | **STREET\_ADDRESS** | **POSTAL\_CODE** | **CITY** | **STATE\_PROVINCE** | **COUNTRY\_ID** |
| 1600 | MARIANO 9991 | 11932 | MEXICO CITY | DISTRITO FEDERAL | MX |
| 1900 | 29 SEA LANE | 3456 | SYDNEY | NEW SOUTH WALES | AU |
| 1000 | 147 BOX WOOD ST. | 15643 | ROMA | NIL | IT |
| 1200 | 12/98 VICTORIA RD. | 1657 | TORONTO | ONTARIO | CA |
| 1300 | 820 ARTHUR RD. | NIL | LONDON | NIL | UK |
| 1400 | 2004 CAROL RD | 7645 | SEETTLE | WASHINGTON | US |
| 1500 | 12 CHESTER RD. | 8732 | WHITEHORSE | YUKON | CA |
| 1700 | CROWN HILL | 678 | BROWNSWICK | NEW JERSEY | US |
| 1800 | 123 MARINA RD. | 123456 | MUMBAI | MAHARASHTRA | IN |
| 1100 | 234 CHURCH RD. | 23416 | TOKYO | TOKYO PREFECTURE | JP |

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;

|  |  |  |
| --- | --- | --- |
| **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;

|  |  |  |  |
| --- | --- | --- | --- |
| **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);

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;

|  |  |  |  |
| --- | --- | --- | --- |
| **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(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(104,'DAVID','AUSTIN','DAUSTIN@GMAIL.COM',9495235678,'10-MAY-2007','IT\_PROG',10000,0,103,110);

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;

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **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 | DE HAAN | 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 |
| 105 | DIANA | LORENTZ | DLORENTZ@GMAIL.COM | 9876542310 | 20-NOV-09 | IT\_PROG | 8000 | 0 | 103 | 110 |
| 106 | NANCY | GREENBERG | NGREEN@GMAIL.COM | 8769054324 | 30-OCT-10 | IT\_PROG | 7000 | 0 | 103 | 110 |
| 104 | DAVID | AUSTIN | DAUSTIN@GMAIL.COM | 9495235678 | 10-MAY-07 | IT\_PROG | 10000 | 0 | 103 | 110 |
| 107 | JOHN | RUSSEL | JRUSSEL@GMAIL.COM | 6778653490 | 09-OCT-04 | SA\_MAN | 14000 | .4 | 201 | 20 |
| 108 | PETER | TUKER | PTUKER@GMAIL.COM | 9067865423 | 30-JAN-05 | SA\_MAN | 10000 | .3 | 201 | 20 |
| 109 | NEIL | JOSEPH | NJOSEPH@GMAIL.COM | 7689054321 | 31-MAR-06 | SA\_MAN | 12000 | .2 | 201 | 20 |
| 110 | JANETTE | KING | JKING@GMAIL.COM | 9809897645 | 04-MAR-06 | SA\_REP | 10000 | .35 | 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(102,'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(101,'01-Jan-2007','31-Dec-2007','AD\_VP',130);

insert into job\_history values(108,'24-Mar-2006','31-Dec-2006','SA\_MAN',20);

insert into job\_history values(110,'01-Jul-2002','31-Dec-2005','SA\_REP',80);

insert into job\_history values(106,'17-Feb-2006','19-Dec-2007','IT\_PROG',110);

select \* from job\_history;

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **EMPLOYEE\_ID** | **START\_DATE** | **END\_DATE** | **JOB\_ID** | **DEPARTMENT\_ID** |
| 102 | 17-FEB-04 | 19-DEC-07 | HR\_REP | 40 |
| 114 | 24-MAR-06 | 31-DEC-07 | CLERK | 10 |
| 101 | 01-JAN-07 | 31-DEC-07 | AD\_VP | 130 |
| 108 | 24-MAR-06 | 31-DEC-06 | SA\_MAN | 20 |
| 110 | 01-JUL-02 | 31-DEC-05 | SA\_REP | 80 |
| 106 | 19-DEC-06 | 19-DEC-07 | IT\_PROG | 110 |
| 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 |

1. 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';

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

UPDATE employees SET salary=salary+salary\*.15;

1. Add a new employee in the ‘Recruiting‘ department as clerk and set joining date as today’s date.

insert into employees values(115,'Surya','Chandran','surabhi@gmail.com','9912376655','12-Aug-2021','CLERK',35000,0.4,5,120);

1. 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';

**III. TCL Commands:**

**13**.Undo the previous delete operation.

rollback;

**14.**Save all the transactions to the database.

Commit;

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

GRANT DELETE ON employees TO U1;

**16**.Revoke the delete privilege from U1.

REVOKE DELETE ON employees FROM U1;

**IV. 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;

|  |  |
| --- | --- |
| **COUNTRY\_NAME** | **REGION\_ID** |
| AUSTRALIA | 3 |
| CANADA | 2 |
| CHINA | 3 |
| INDIA | 1 |
| AMERICA | 2 |
| JAPAN | 4 |
| ITALY | 1 |
| MEXICO | 2 |
| UNITED KINGDOM | 1 |

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

SELECT DISTINCT department\_id from employees;

|  |
| --- |
| **DEPARTMENT\_ID** |
| 50 |
| 110 |
| 40 |
| 90 |
| 10 |
| 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 CONCAT(first\_name,last\_name) AS Name,department\_id,salary from employees where department\_id in

(select department\_id from departments where location\_id in (select location\_id from locations where city='MUMBAI'));

|  |  |  |
| --- | --- | --- |
| **NAME** | **DEPARTMENT\_ID** | **SALARY** |
| NEENAKOCHHAR | 130 | 44249.858125 |
| LEXDE HAAN | 130 | 60340.715625 |
| NANDITAMOHAN | 60 | 16090.8575 |

**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** |
| 60 | 16090.8575 |
| 10 | 12068.143125 |
| 50 | 30170.3578125 |
| 90 | 56318.00125 |
| 40 | 18102.2146875 |
| 80 | 20113.571875 |
| 110 | 71403.18015625 |
| 20 | 72408.85875 |
| 130 | 104590.57375 |

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

SELECT CONCAT(first\_name,last\_name) AS Name FROM employees WHERE salary IN (SELECT salary FROM employees WHERE department\_id IN (SELECT department\_id

FROM departments WHERE department\_name = 'marketing')) and salary > (SELECT max(salary) FROM employees WHERE department\_id IN

(SELECT department\_id FROM departments WHERE department\_name = 'it'));

|  |
| --- |
| **NAME** |
| JOHNRUSSEL |
| NEILJOSEPH |

**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 Full\_Name,hire\_date,salary,department\_id from employees where first\_name not LIKE '%S%' order by department\_id asc;

|  |  |  |  |
| --- | --- | --- | --- |
| **FULL\_NAME** | **HIRE\_DATE** | **SALARY** | **DEPARTMENT\_ID** |
| WILLIAMJOHN | 23-NOV-08 | 12068.143125 | 10 |
| JOHNRUSSEL | 09-OCT-04 | 28159.000625 | 20 |
| NEILJOSEPH | 31-MAR-06 | 24136.28625 | 20 |
| PETERTUKER | 30-JAN-05 | 20113.571875 | 20 |
| ANITTABAKER | 15-SEP-10 | 18102.2146875 | 40 |
| NANDITAMOHAN | 20-JUL-14 | 16090.8575 | 60 |
| JANETTEKING | 04-MAR-06 | 20113.571875 | 80 |
| DAVIDAUSTIN | 10-MAY-07 | 20113.571875 | 110 |
| DIANALORENTZ | 20-NOV-09 | 16090.8575 | 110 |
| ALEXANDERHUNOLD | 03-JAN-06 | 21119.25046875 | 110 |
| NANCYGREENBERG | 30-OCT-10 | 14079.5003125 | 110 |
| NEENAKOCHHAR | 21-SEP-05 | 44249.858125 | 130 |
| LEXDE HAAN | 13-JAN-01 | 60340.715625 | 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 |
| DIANA |
| NANCY |
| DAVID |
| 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 | 56318.00125 |
| NEENAKOCHHAR | 44249.858125 |
| LEXDE HAAN | 60340.715625 |
| ALEXANDERHUNOLD | 21119.25046875 |
| DAVIDAUSTIN | 20113.571875 |
| JOHNRUSSEL | 28159.000625 |
| PETERTUKER | 20113.571875 |
| NEILJOSEPH | 24136.28625 |
| JANETTEKING | 20113.571875 |
| SUSANVARKEY | 30170.3578125 |

**V. 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.

SELECTemployees.first\_name,employees.last\_name,departments.department\_id,departments.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 |
| DIANA | LORENTZ | 110 | it |
| NANCY | GREENBERG | 110 | it |
| DAVID | AUSTIN | 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 |

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

SELECT DISTINCT CONCAT(first\_name,last\_name) AS Name FROM employees LEFT OUTER JOIN job\_history ON employees.employee\_id = job\_history.employee\_id;

|  |
| --- |
| **NAME** |
| PETERTUKER |
| JANETTEKING |
| JOHNRUSSEL |
| NEILJOSEPH |
| DIANALORENTZ |
| DAVIDAUSTIN |
| SUSANVARKEY |
| ALEXANDERHUNOLD |
| NEENAKOCHHAR |
| NANDITAMOHAN |
| ANITTABAKER |
| LEXDE HAAN |
| NANCYGREENBERG |
| WILLIAMJOHN |
| STEVENKING |

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

SELECT \* FROM departments RIGHT OUTER JOIN employees ON departments.department\_id = employees.employee\_id;

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **DEPARTMENT\_ID** | **DEPARTMENT\_NAME** | **MANAGER\_ID** | **LOCATION\_ID** | **EMPLOYEE\_ID** | **FIRST\_NAME** | **LAST\_NAME** | **EMAIL** | **PHONE\_NUMBER** | **HIRE\_DATE** | **JOB\_ID** | **SALARY** | **COMMISSION\_PCT** | **MANAGER\_ID** | **DEPARTMENT\_ID** |
| 100 | construction | 0 | 1300 | 100 | STEVEN | KING | SKING@GMAIL.COM | 8182345210 | 17-JUN-03 | AD\_PRES | 56318.00125 | 0 | 0 | 90 |
| 110 | it | 103 | 1400 | 110 | JANETTE | KING | JKING@GMAIL.COM | 9809897645 | 04-MAR-06 | SA\_REP | 20113.571875 | .35 | 145 | 80 |
| - | - | - | - | 107 | JOHN | RUSSEL | JRUSSEL@GMAIL.COM | 6778653490 | 09-OCT-04 | SA\_MAN | 28159.000625 | .4 | 201 | 20 |
| - | - | - | - | 113 | NANDITA | MOHAN | NMOHAN@GMAIL.COM | 94445634213 | 20-JUL-14 | ACCOUNTANT | 16090.8575 | 0 | 205 | 60 |
| - | - | - | - | 108 | PETER | TUKER | PTUKER@GMAIL.COM | 9067865423 | 30-JAN-05 | SA\_MAN | 20113.571875 | .3 | 201 | 20 |
| - | - | - | - | 109 | NEIL | JOSEPH | NJOSEPH@GMAIL.COM | 7689054321 | 31-MAR-06 | SA\_MAN | 24136.28625 | .2 | 201 | 20 |
| - | - | - | - | 105 | DIANA | LORENTZ | DLORENTZ@GMAIL.COM | 9876542310 | 20-NOV-09 | IT\_PROG | 16090.8575 | 0 | 103 | 110 |
| - | - | - | - | 104 | DAVID | AUSTIN | DAUSTIN@GMAIL.COM | 9495235678 | 10-MAY-07 | IT\_PROG | 20113.571875 | 0 | 103 | 110 |
| - | - | - | - | 101 | NEENA | KOCHHAR | NKOCHHAR@GMAIL.COM | 9897561234 | 21-SEP-05 | AD\_VP | 44249.858125 | 0 | 100 | 130 |
| - | - | - | - | 103 | ALEXANDER | HUNOLD | AHUNOLD@GMAIL.COM | 8678905431 | 03-JAN-06 | IT\_PROG | 21119.25046875 | 0 | 103 | 110 |
| - | - | - | - | 112 | ANITTA | BAKER | ABAKER@GMAIL.COM | 2345678910 | 15-SEP-10 | HR\_REP | 18102.2146875 | 0 | 203 | 40 |
| - | - | - | - | 111 | WILLIAM | JOHN | WJOHN@GMAIL.COM | 7682315672 | 23-NOV-08 | CLERK | 12068.143125 | 0 | 200 | 10 |
| - | - | - | - | 114 | SUSAN | VARKEY | SVARKEY@GMAIL.COM | 8976054321 | 14-DEC-04 | FIN\_MAN | 30170.3578125 | 0 | 108 | 50 |
| - | - | - | - | 102 | LEX | DE HAAN | LDEHAAN@GMAIL.COM | 9554667890 | 13-JAN-01 | AD\_VP | 60340.715625 | 0 | 100 | 130 |
| - | - | - | - | 106 | NANCY | GREENBERG | NGREEN@GMAIL.COM | 8769054324 | 30-OCT-10 | IT\_PROG | 14079.5003125 | 0 | 103 | 110 |

**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\_ID** | **FIRST\_NAME** | **LAST\_NAME** | **EMAIL** | **PHONE\_NUMBER** | **HIRE\_DATE** | **JOB\_ID** | **SALARY** | **COMMISSION\_PCT** | **MANAGER\_ID** | **DEPARTMENT\_ID** |
| 102 | LEX | DE HAAN | LDEHAAN@GMAIL.COM | 9554667890 | 13-JAN-01 | AD\_VP | 60340.715625 | 0 | 100 | 130 |

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

SELECT avg(salary) FROM employees WHERE hire\_date>('01-Jan-2009');

|  |
| --- |
| **AVG(SALARY)** |
| 16090.8575 |

**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\_ID** | **FIRST\_NAME** | **LAST\_NAME** | **EMAIL** | **PHONE\_NUMBER** | **HIRE\_DATE** | **JOB\_ID** | **SALARY** | **COMMISSION\_PCT** | **MANAGER\_ID** | **DEPARTMENT\_ID** |
| 106 | NANCY | GREENBERG | NGREEN@GMAIL.COM | 8769054324 | 30-OCT-10 | IT\_PROG | 14079.5003125 | 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 ('01-Jan-2011') AND hire\_date NOT IN ('01-Jan-2007','01-Jan-2008');

|  |
| --- |
| **FIRST\_NAME** |
| STEVEN |
| NEENA |
| ALEXANDER |
| DIANA |
| NANCY |
| DAVID |
| JOHN |
| PETER |
| NEIL |
| JANETTE |
| WILLIAM |
| 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\_ID** | **FIRST\_NAME** | **LAST\_NAME** | **EMAIL** | **PHONE\_NUMBER** | **HIRE\_DATE** | **JOB\_ID** | **SALARY** | **COMMISSION\_PCT** | **MANAGER\_ID** | **DEPARTMENT\_ID** |
| 114 | SUSAN | VARKEY | SVARKEY@GMAIL.COM | 8976054321 | 14-DEC-04 | FIN\_MAN | 30170.3578125 | 0 | 108 | 50 |
| 112 | ANITTA | BAKER | ABAKER@GMAIL.COM | 2345678910 | 15-SEP-10 | HR\_REP | 18102.2146875 | 0 | 203 | 40 |
| 100 | STEVEN | KING | SKING@GMAIL.COM | 8182345210 | 17-JUN-03 | AD\_PRES | 56318.00125 | 0 | 0 | 90 |
| 111 | WILLIAM | JOHN | WJOHN@GMAIL.COM | 7682315672 | 23-NOV-08 | CLERK | 12068.143125 | 0 | 200 | 10 |
| 101 | NEENA | KOCHHAR | NKOCHHAR@GMAIL.COM | 9897561234 | 21-SEP-05 | AD\_VP | 44249.858125 | 0 | 100 | 130 |
| 102 | LEX | DE HAAN | LDEHAAN@GMAIL.COM | 9554667890 | 13-JAN-01 | AD\_VP | 60340.715625 | 0 | 100 | 130 |
| 107 | JOHN | RUSSEL | JRUSSEL@GMAIL.COM | 6778653490 | 09-OCT-04 | SA\_MAN | 28159.000625 | .4 | 201 | 20 |
| 108 | PETER | TUKER | PTUKER@GMAIL.COM | 9067865423 | 30-JAN-05 | SA\_MAN | 20113.571875 | .3 | 201 | 20 |
| 109 | NEIL | JOSEPH | NJOSEPH@GMAIL.COM | 7689054321 | 31-MAR-06 | SA\_MAN | 24136.28625 | .2 | 201 | 20 |
| 113 | NANDITA | MOHAN | NMOHAN@GMAIL.COM | 94445634213 | 20-JUL-14 | ACCOUNTANT | 16090.8575 | 0 | 205 | 60 |
| 110 | JANETTE | KING | JKING@GMAIL.COM | 9809897645 | 04-MAR-06 | SA\_REP | 20113.571875 | .35 |  |  |

**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 | 14079.5003125 |
| NEENA | KOCHHAR | AD\_VP | 11062.46453125 |
| LEX | DE HAAN | AD\_VP | 15085.17890625 |
| ALEXANDER | HUNOLD | IT\_PROG | 5279.8126171875 |
| DIANA | LORENTZ | IT\_PROG | 4022.714375 |
| NANCY | GREENBERG | IT\_PROG | 3519.875078125 |
| DAVID | AUSTIN | IT\_PROG | 5028.39296875 |
| JOHN | RUSSEL | SA\_MAN | 7039.75015625 |
| PETER | TUKER | SA\_MAN | 5028.39296875 |
| NEIL | JOSEPH | SA\_MAN | 6034.0715625 |
| JANETTE | KING | SA\_REP | 5028.39296875 |
| WILLIAM | JOHN | CLERK | 3017.03578125 |
| ANITTA | BAKER | HR\_REP | 4525.553671875 |
| NANDITA | MOHAN | ACCOUNTANT | 4022.714375 |
| SUSAN | VARKEY | FIN\_MAN | 7542.589453125 |

Angelmary Joly

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