Assignment 1

Q1) **Create the following tables:**
SQL:
CREATE TABLE EMPLOYEE (EMP_CODE char(16) primary key,EMP_NAME char(20),DEPT_CODE char(16), DESIG_CODE char(16), SEX char(1), ADDRESS char (25),CITY char (20), STATE char (20), PIN char (6), BASIC decimal(9,2), JN_DT Date);

CREATE TABLE DESIGNATION (DESIG_CODE char(16) primary key, DESIG_DESC char(20));

CREATE TABLE DEPARTMENT (DEPT_CODE char(16) primary key, DEPT_NAME char(20));

Q2) **Display the structure of each table**
SQL: desc EMPLOYEE;
desc DESIGNATION;
desc DEPARTMENT;

Column	Null?	Type
EMP_CODE	NOT NULL	CHAR(5)
EMP_NAME	-	CHAR(20)
DEPT_CODE	-	CHAR(5)
DESIG_CODE	-	CHAR(5)
SEX	-	CHAR(1)
ADDRESS	-	CHAR(25)
CITY	-	CHAR(20)
STATE	-	CHAR(20)
PIN	-	CHAR(6)
BASIC	-	NUMBER

Column	Null?	Type
DESIG_CODE	NOT NULL	CHAR(5)
DESIG_DESE	-	CHAR(20)

Column	Null?	Type
DEPT_CODE	NOT NULL	CHAR(5)
DEPT_NAME	-	CHAR(15)

Q3) **Insert few rows in each table.**

insert into DESIGNATION values ('D002','Executive')
insert into DESIGNATION values ('D001','Manager')
insert into DESIGNATION values ('D003','Officer')
insert into DESIGNATION values ('D004','Clerk')
insert into DESIGNATION values ('D005','Helper')
insert into DEPARTMENT values ('DP01','Personnel')
insert into DEPARTMENT values ('DP02','Production')
insert into DEPARTMENT values ('DP03','Purchase')
insert into DEPARTMENT values ('DP04','Finnance')
insert into DEPARTMENT values ('DP05','Research ')

insert into EMPLOYEE values ('E001','TAPAN','DP01', 'D001', 'M',
'BALARAMPUR','PURULIA','WEST BENGAL','723103',80000,
to_date('21:01:2024','dd:mm:yyyy'));
insert into EMPLOYEE values ('E002','ROHIT','DP02', 'D002', 'M', 'ABC','PURULIA','WEST BENGAL','723102',70000, to_date('21:01:2024','dd:mm:yyyy'));
insert into EMPLOYEE values ('E003','SUDIP',NULL, 'D002', 'M', 'ABC','PURULIA','WEST BENGAL','723102', NULL, to_date('21:01:2024','dd:mm:yyyy'));
insert into EMPLOYEE values ('E004','AMIT','DP03', 'D003', 'M', 'ABC','PURULIA','WEST BENGAL','723102',0,to_date('21:01:2024','dd:mm:yyyy'));

Q4) **In EMP table insert few rows without DEPT_CODE and BASIC.**

insert into EMPLOYEE values ('E003','SUDIP',NULL, 'D002', 'M', 'ABC','PURULIA','WEST BENGAL','723102', NULL, to_date('21:01:2024','dd:mm:yyyy'))

Q5) **Find the rows with unassigned DEPT_CODE**

SELECT * FROM EMPLOYEE WHERE DEPT_CODE IS NULL

EMP_CODE	EMP_NAME	DEPT_CODE	DESIG_CODE	SEX	ADDRESS	CITY	STATE	PIN	BASIC	JN_DT
E003	SUDIP	-	D002	M	ABC	PURULIA	WEST BENGAL	723102	-	21-JAN-24

Q6) **Find the rows with BASIC unassigned**

SELECT * FROM EMPLOYEE WHERE BASIC IS NULL

EMP_CODE	EMP_NAME	DEPT_CODE	DESIG_CODE	SEX	ADDRESS	CITY	STATE	PIN	BASIC	JN_DT
E003	SUDIP	-	D002	M	ABC	PURULIA	WEST BENGAL	723102	-	21-JAN-24

Q7) **Find the rows with basic = 0**
SELECT * FROM EMPLOYEE WHERE BASIC =0

EMP_CODE	EMP_NAME	DEPT_CODE	DESIG_CODE	SEX	ADDRESS	CITY	STATE	PIN	BASIC	JN_DT
E004	AMIT	DP03	D003	M	ABC	PURULIA	WEST BENGAL	723102	0	21-JAN-24
E005	ABC	DP03	D004	M	ABC_D	PURULIA	WEST BENGAL	723102	0	01-JAN-24
E006	DEF	DP02	D005	M	ABC	PURULIA	WEST BENGAL	723102	0	02-JAN-24
E007	GHI	DP01	D005	M	ABC	PURULIA	WEST BENGAL	723102	0	22-JAN-24

Q8) **Find the average basic of the employees.**

SELECT AVG(BASIC) AS average_basic FROM EMPLOYEE

AVERAGE_BASIC
26250

Q9) **Replace the BASIC with 0 for the rows with unassigned Basic.**
UPDATE EMPLOYEE SET BASIC = 0 WHERE BASIC IS NULL

Q10) **Again, find the average Basic. (Note the difference of result obtained in Q.8**
SELECT AVG(BASIC) AS average_basic FROM EMPLOYEE

AVERAGE_BASIC
26250

Q11) **Delete the rows with unassigned DEPT_CODE.**
DELETE FROM EMPLOYEE WHERE DEPT_CODE IS NULL

Q12) **Say, Net pay of an employee= Basic+HRA+DA where HRA is 50% of the Basic & DA is 40% of Basic. Show the employee name & Net pay for all employees.**

SELECT EMP_NAME, 50/100 * BASIC AS HRA, 40/100 * BASIC AS DA, BASIC+(50/100 * BASIC) +(40/100* BASIC) AS NET_PAY FROM EMPLOYEE

EMP_NAME	HRA	DA	NET_PAY
TAPAN	40000	32000	152000
ROHIT	35000	28000	133000
AMIT	0	0	0
ABC	0	0	0
DEF	0	0	0
GHI	0	0	0
ANITA	30000	24000	114000

Q13) **Show the EMP_NAME & BASIC in the ascending order of DEPT_CODE. The employee name must appear in uppercase.**
SELECT UPPER(EMP_NAME) AS EMPLOYEE_NAME ,
BASIC FROM EMPLOYEE
ORDER BY DEPT_CODE ASC

EMPLOYEE_NAME	BASIC
GHI	0
TAPAN	80000
ANITA	60000
ROHIT	70000
DEF	0
AMIT	0
ABC	0

Q14) **Find the employees who have joined after 1 st January 2010.**
SELECT *
FROM EMPLOYEE WHERE JN_DT > TO_DATE('2010-01-01', 'YYYY-MM-DD')

EMP_CODE	EMP_NAME	DEPT_CODE	DESIG_CODE	SEX	ADDRESS	CITY	STATE	PIN	BASIC	JN_DT
E001	TAPAN	DP01	D001	M	BALARAMPUR	PURULIA	WEST BENGAL	723103	80000	21-JAN-24
E002	ROHIT	DP02	D002	M	ABC	PURULIA	WEST BENGAL	723102	70000	21-JAN-24
E004	AMIT	DP03	D003	M	ABC	PURULIA	WEST BENGAL	723102	0	21-JAN-24

E005	ABC	DP03	D004	M	ABC_D	PURULIA	WEST BENGAL	723102	0	01-JAN-24
E006	DEF	DP02	D005	M	ABC	PURULIA	WEST BENGAL	723102	0	02-JAN-24
E007	GHI	DP01	D005	M	ABC	PURULIA	WEST BENGAL	723102	0	22-JAN-24
E008	ANITA	DP01	D005	F	ABC	PURULIA	WEST BENGAL	723102	60000	23-JAN-24

Q15) **Find, how many employees have joined in the month of January?**

```
SELECT COUNT(*)
FROM EMPLOYEE
WHERE TO_CHAR(JN_DT, 'MM') = '01'
```

COUNT(*)
7

Q16) **Find the maximum & minimum Basic.**

```
SELECT MAX(BASIC) AS  MAXIMUM, MIN(BASIC) AS MINIMUM FROM EMPLOYEE
```

MAXIMUM	MINIMUM
80000	0

Q17) **Find how many Female employees are there?**

```
SELECT COUNT(*)
FROM EMPLOYEE
WHERE SEX = 'F'
```

COUNT(*)
1

Q18) **Replace CITY with existing value converted into uppercase for all rows.**

```
UPDATE EMPLOYEE SET CITY = UPPER(CITY)
```

Q19) **Find in how many different cities various employees are residing?**

```
SELECT COUNT(DISTINCT CITY) AS DISTINCT_CITY
FROM EMPLOYEE
```

DISTINCT_CITY
1

Q20) **Display the employee information in the ascending order of DEPT_CODE and with in a Department, it should be in the descending order of BASIC.**

```
SELECT *
FROM EMPLOYEE
ORDER BY DEPT_CODE ASC, BASIC DESC
```

EMP_CODE	EMP_NAME	DEPT_CODE	DESIG_CODE	SEX	ADDRESS	CITY	STATE	PIN	BASIC	JN_DT
E001	TAPAN	DP01	D001	M	BALARAMP UR	PURULIA	WESTBENGAL	723103	80000	21-JAN-24
E008	ANITA	DP01	D005	F	ABC	PURULIA	WESTBENGAL	723102	60000	23-JAN-24
E007	GHI	DP01	D005	M	ABC	PURULIA	WESTBENGAL	723102	0	22-JAN-24
E002	ROHIT	DP02	D002	M	ABC	PURULIA	WESTBENGAL	723102	70000	21-JAN-24
E006	DEF	DP02	D005	M	ABC	PURULIA	WESTBENGAL	723102	0	02-JAN-24
E004	AMIT	DP03	D003	M	ABC	PURULIA	WESTBENGAL	723102	0	21-JAN-24
E005	ABC	DP03	D004	M	ABC_D	PURULIA	WESTBENGAL	723102	0	01-JAN-24

Assignment 2

Q1) **From the EMP table show the minimum, maximum and average basic for each department (show dept. Code).**
select DEPT_CODE, MIN(BASIC) as Minimum, MAX(BASIC) as Maximum, AVG(BASIC) as Average from employee group by DEPT_CODE

DEPT_CODE	MINIMUM	MAXIMUM	AVERAGE
DP01	0	80000	46666.666666666666666666666666666666667
DP03	0	0	0
DP02	0	70000	35000

Q2) **Find the number of female employees in each department (show dept. Code).**
SELECT DEPT_CODE, COUNT(*) from employee where SEX='F' group by DEPT_CODE

DEPT_CODE	COUNT(*)
DP01	1

Q3) **Find the city wise no. of employees for each department (show dept. Code).** SELECT count(*) as No_Of_Employee, CITY , DEPT_CODE from employee GROUP BY CITY,DEPT_CODE

NO_OF_EMPLOYEE	CITY	DEPT_CODE
2	PURULIA	DP03
2	PURULIA	DP02
3	PURULIA	DP01

Q4) **Show the designation wise no of employees who have joined in the year 2000 in each department. The listing should appear in the ascending order of no. of employees.**

SELECT count(*) as No_Of_Employee, DESIG_CODE from employee where EXTRACT(YEAR FROM JN_DT)=2000 group by DESIG_CODE order by No_Of_Employee

Q5) **Find the department code wise total basic of male employees only for the departments for which such total is more than 50,000 and the listing should appear in the descending order of total basic.**
SELECT DEPT_CODE, SUM(BASIC) as Total_Basic from employee where SEX='M' group by DEPT_CODE having SUM(BASIC) >50000 order by Total_basic DESC

DEPT_CODE	TOTAL_BASIC
DP01	80000
DP02	70000

Q6) **Show the employee name, Designation description and basic for all employees.** select EMP_NAME,DESIG_DESE,Basic from Employee,designation where Employee.DESIG_CODE=Designation.DESIG_CODE

EMP_NAME	DESIG_DESE	BASIC
TAPAN	Manager	80000
ROHIT	Executive	70000
AMIT	Officer	0
ABC	Clerk	0
DEF	Helper	0
GHI	Helper	0
ANITA	Helper	6000

Q7) **Show the employee name, Designation description, Department Name & Basic for all employees.**
select EMP_NAME,DESIG_DESE,Basic,DEPT_NAME from employee,designation,department where Employee.DESIG_CODE=Designation.DESIG_CODE AND Employee.DEPT_CODE = Department.DEPT_CODE

EMP_NAME	DESIG_DESE	BASIC	DEPT_NAME
TAPAN	Manager	80000	Personnel
GHI	Helper	0	Personnel
ANITA	Helper	60000	Personnel
ROHIT	Executive	70000	Production
DEF	Helper	0	Production
AMIT	Officer	0	Purchase
ABC	Clerk	0	Purchase

Q8) **Find the department Codes in which no employee works.**

```
SELECT Department.DEPT_CODE,

count(Employee.DEPT_CODE) FROM
Department
LEFT OUTER JOIN Employee ON
Employee.DEPT_CODE=Department.DEPT_CODE GROUP BY
Department.DEPT_CODE
HAVING count(Employee.EMP_CODE) = 0
```

DEPT_CODE	COUNT(EMPLOYEE.DEPT_CODE)
DP05	0
DP04	0

Q9) **Find the department names where at least one employee works.**

```
SELECT
Department.DEPT_NAME
FROM Department LEFT
OUTER JOIN Employee ON
Employee.DEPT_CODE=Depart
ment.DEPT_CODE GROUP BY
Department.DEPT_NAME
HAVING count(Employee.EMP_CODE)>=1
```

DEPT_NAME
Personnel
Production
Purchase

Q10) **Find the department names where at least 10 employees work.**

```
SELECT
Department.DEPT_NAME FROM
Department
LEFT OUTER JOIN Employee ON
Employee.DEPT_CODE=Department.DEPT_CODE GROUP BY
Department.DEPT_NAME
HAVING count(Employee.EMP_CODE)>=10
```

Q11) **Find the department code in which employee with highest Basic works.**

Select DEPT_CODE from EMPLOYEE where Basic=(Select MAX(BASIC) from Employee)

DEPT_CODE
DP01

Q12) **Find the Designation description of the employee with highest basic.**

Select DESIG_DESE from Designation where DESIG_CODE = (Select DESIG_CODE from EMPLOYEE where Basic=(Select MAX(BASIC) from Employee))

DESIG_DESE
Manager

Q13) **Find the no. of managers in each department.**

SELECT COUNT(E.EMP_CODE) FROM EMPLOYEE E, DESIGNATION DES WHERE E.DESIG_CODE = DES.DESIG_CODE AND DES.DESIG_DESC="MANAGER" GROUP BY E.DEPT_CODE ;

Q14) **Find the maximum basic from EMP table without using MAX().**

select DEPT_CODE, Sum(Basic) from employee where ROWNUM=1 group by DEPT_CODE

DEPT_CODE	SUM(BASIC)
DP01	80000

Q15) **Find the minimum basic from EMP table without using MIN().**

SELECT BASIC MAX_BASIC FROM EMPLOYEE ORDER BY BASIC LIMIT 1;

Q16) **Find the name of the department with highest total basic. Do the same for highest average basic and maximum no. of employee.**

SQL: SELECT E.BASIC, DEP.DEPT_NAME FROM EMPLOYEE E, DEPARTMENT DEP WHERE E.DEPT_CODE =

DEP.DEPT_CODE ORDER BY E.BASIC DESC LIMIT 1;

```
+----------------+--------------------+
| BASIC        | DEPT_NAME  |
+----------------+--------------------+
| 36750.00 | PRODUCTION |
+----------------+--------------------+
```

SQL: SELECT AVG(E.BASIC) AVG_BASIC, DEP.DEPT_NAME FROM EMPLOYEE E, DEPARTMENT DEP WHERE E.DEPT_CODE = DEP.DEPT_CODE GROUP BY DEP.DEPT_CODE ORDER BY AVG_BASIC DESC LIMIT 1;

```
+----------------+--------------------+
| BASIC        | DEPT_NAME  |
+----------------+--------------------+
| 36750.00000000| PRODUCTION |
+----------------+--------------------+
```

SQL: SELECT COUNT(E.EMP_CODE) COUNT_EMPLOYEE, DEP.DEPT_NAME FROM EMPLOYEE E, DEPARTMENT DEP WHERE E.DEPT_CODE = DEP.DEPT_CODE GROUP BY DEP.DEPT_CODE ORDER BY COUNT_EMPLOYEE DESC LIMIT 1;

```
+----------------------------+-------------------+
| COUNT_EMPLOYEE | DEPT_NAME |
+----------------------------+-------------------+
|                          1 | PURCHASE  |
+----------------------------+-------------------+
```

Q17) **Insert same rows into EMP table with designation code not existing in DESIGNATION table.**

```
INSERT INTO EMPLOYEE VALUES('EMP011', 'Jaidip Sarkar', 'DEPT004', 'DESIG008', 'M',
        'Nowhere,   Bullygaunje', 'Kolkata', 'West Bengal', '325801', 116000.0, "2003-02-
        19");
        INSERT INTO EMPLOYEE VALUES('EMP012', 'Joydipto Biswas, 'DEPT001', 'DESIG010', 'F',
        'Anywhere, Garia', 'Kolkata', 'West Bengal', '700112', 80000.0, "1999-10-17");
```

Q18) **Delete the rows from EMP table with invalid DESIG_CODE.**

SQL: DELETE FROM EMPLOYEE WHERE DESIG_CODE NOT IN (SELECT DESIG_CODE FROM DESIGNATION);

Q19) **Find the name of the female employees with basic greater than the average basic of their respective department.**

```
SQL:    SELECT e.emp_name FROM EMPLOYEE e
        JOIN DEPARTMENT d ON e.dept_code = d.dept_code
        JOIN DESIGNATION des ON e.desig_code = des.desig_code WHERE
        e.sex = 'F' AND e.basic > (
           SELECT AVG(basic) FROM EMPLOYEE
           WHERE dept_code = e.dept_code
        );
```

Q20) **Find the number of female managers.**

```
SQL:    SELECT COUNT(*) AS
        female_managers FROM EMPLOYEE e
        JOIN DESIGNATION des ON e.desig_code = des.desig_code WHERE
        e.sex = 'F' AND des.desig_desc = 'Manager' ;
```

```
+-----------------------------+
| female_managers |
+-----------------------------+
|                           1 |
+-----------------------------+
```

Assignment 3

Q1) **In an organization, number of departments exists. Each department has a name & unique code. Number of employees work in each department. Each employee has unique employee code. Detailed information**
like name, address, city, basic, date of join are also stored. In a leave register for each employee leave records are kept showing leave type (CL/EL/ML etc.), from-date and to-date. When an employee retires or resigns then all the leave information pertaining to him are also deleted. Basic salary must be within Rs.5000 to Rs.9000. A department can not be deleted if any employee record refers to it. Valid grades are A/B/C. Employee name must be in uppercase only. Default value for joining date is system date.
Design & implement the tables with necessary constraints to support the scenario depicted above.

```
-- Table for Department
CREATE TABLE DEPARTMENT (
   dcode varchar(10) primary key,
   dept_name varchar(30)
);
CREATE TABLE EMPLOYEE (
   ecode varchar(10) primary key, dcode
   varchar(10) not null,
   name varchar(30) check (name = UPPER(name)),
   address varchar(40),
   city varchar(20),
   basic decimal(9,2) check (basic >= 5000 AND basic <=9000), grades
   char(1) check(grades in ('A', 'B', 'C')),
   doj datetime default CURRENT_TIMESTAMP,
   foreign key(dcode) references DEPARTMENT(dcode)
);
CREATE TABLE LEAVE_REG (
   ecode varchar(10) not null,
   leave_type char(4) check (leave_type in ('CL','El','ML')), from_date date,
   to_date date,
   foreign key(ecode) references employee(ecode) on delete cascade
);

INSERT INTO DEPARTMENT VALUES (1, 'Sales');
INSERT INTO DEPARTMENT VALUES (2, 'Marketing');
INSERT INTO DEPARTMENT VALUES (3, 'Human Resources');
INSERT INTO employee (ecode, name, dcode, address, city, basic, grades) VALUES (2,
'El', '2023-06-01', '2023-06-05');
INSERT INTO leave_reg (ecode, leave_type, from_date, to_date) VALUES (3,
'ML', '2023-06-10', '2023-06-20');
INSERT INTO employee (ecode, name, dcode, address, city, basic, doj, grades) VALUES (2, 'Jane
Smith', 2, '456 Elm Avenue', 'Los Angeles', 8000.00, '2023-05-28
10:30:00', 'B');
INSERT INTO employee (ecode, name, dcode, address, city, basic, grades) VALUES (3,
'Sarah Johnson', 1, '789 Oak Lane', 'Chicago', 5000.00, 'C');
INSERT INTO employee (ecode, name, dcode, address, city, basic, doj, grades)
VALUES (4, 'Michael Brown', 2, '987 Pine Street', 'San Francisco', 7500.00, '2022-12-15
09:00:00', 'A');
INSERT INTO employee (ecode, name, dcode, address, city, basic, grades) VALUES (5,
'Emily Wilson', 3, '654 Maple Avenue', 'Seattle', 8500.00, 'B');
INSERT INTO employee (ecode, name, dcode, address, city, basic, grades) VALUES (6,
```

'Suman Ghosh', 1, '123 Park Street', 'Kolkata', 6000.00, 'A');
INSERT INTO leave_reg (ecode, leave_type, from_date, to_date) VALUES (1,
'CL', '2023-05-28', '2023-05-29');
INSERT INTO leave_reg (ecode, leave_type, from_date, to_date)

Q3) **a) create a view showing employee code, name, dcode & Basic For a particular department.**
b) Try to ensure a row into the view with valid department & also with invalid ones.
c) Find the newly inserted row in the table From which view was created .
d) Try to increment basic by Rs.100/-
e) Check it in the original table.
f) Delete the view.

create view emp_view as select ecode,name,dcode,basic from employee where dcode=1;
update emp_view set basic=basic+100;
select * from emp_view;

ecode	name	dcode	basic
1	John Doe	1	7100.00
3	Sarah Johnson	1	5100.00
6	Suman Ghosh	1	6100.00

drop view emp_view;

Q4) **a) create a view Showing empcode, name, deptname, basic, leave type, From date & to date.**
b) Try to insert a row in the view. Check what happens?
c) Try to increment basic by Rs.100.
d) Delete the view.
create view emp_view as select e.ecode,dept_name,basic,leave_type,from_date,to_date from employee e join department d on e.dcode=d.dcode join leave_reg lr on lr.ecode=e.ecode; select *
from emp_view;

ecode	dept_name	basic	leave_type	from_date	to_date
1	Sales	7100.00	CL	2023-05-28	2023-05-29
3	Sales	5100.00	ML	2023-06-10	2023-06-20
2	Marketing	8000.00	El	2023-06-01	2023-06-05

drop view emp_view;

Q5) **a) Create a table having empcode , Name, deptname, & basic From the existing tables along with the**
records of the employee who are in a particular department (say, d1) and with a basic Rs. 7000/-
b) From the existing table, add the employees with the basic salary greater than or equal to 7000/-
c) Alter the table to add a net pay column.
d) Replace net pay with 1.5* Basic.
e) Try to remove the net pay column.
SQL: create table emp as(
select ecode,name,dept_name,basic from employee e join
department d on e.dcode=d.dcode
where e.dcode=1 and basic>=7000
);
alter table emp
add column net_pay float8 not null;

update emp set net_pay=basic*1.5;

Q6) **Drop all the tables that you have created.**
SQL:

```
Drop table department;
Drop table  emp;
Drop table employee;
Drop table leave_reg;
```