Lab Work-I

Problem 1.1: Create a table called EMP with the following structure.

Name	Type
EMPNO	NUMBER(6)
ENAME	VARCHAR2(20)
JOB	VARCHAR2(10)
MGR	NUMBER(4)
DEPTNO	NUMBER(3)
SAL	NUMBER(7,2)

Allow NULL for all columns except ename and job.

⇒create table EMP(EMPNO number(6), ENAME varchar2(20) not null, JOB varchar2(10) not null , MGR number(4), DEPTNO number(3), SAL number(7,2));

Problem 1.2: Add a column commission to the EMP table.

Commission numeric and null allowed.

⇒alter table EMP add (COMMISSION number(7,2));

Problem 1.3: Modify the column width of the job field of emp table.

⇒alter table EMP modify(JOB varchar2(20));

Problem 1.4: Create dept table with the following structure.

Name	Type
DEPTNO	NUMBER(2)
DNAME	VARCHAR2(10)
LOC	VARCHAR2(10)

Deptno as the primarykey

⇒create table DEPT(DEPTNO number(2) primary key, DNAME varchar2(10) , LOC varchar2(10));

Problem 1.5: Add constraints to the emp table that empno as the primary key and deptno as the foreign key.

⇒alter table EMP add (foreign key(DEPTNO) references DEPT(DEPTNO));
alter table EMP modify(EMPNO primary key);

Problem 1.6: Salary value by default is 5000, otherwise as entered values.

⇒alter table EMP modify(SAL default 5000);

Problem 1.7: Add columns Dob to the emp table.

⇒alter table EMP add (DOB date);

Problem 1.8: Add and drop a column DOJ to the emp table.

⇒alter table EMP add (DOJ date);
alter table EMP drop (DOJ);

Lab Work -II

Problem 2.1: Insert 5 records into dept table.

DEPTNO	DNAME	DLOC
10	MANAGEMENT	MAIN BLOCK
20	DEVELOPMENT	MANUFACTURING UNIT
30	MAINTAINANCE	MAIN BLOCK
40	TRANSPORT	ADMIN BLOCK
50	SALES	HEAD OFFICE

```
⇒insert all
into DEPT values(10,'Management','Main Block')
into DEPT values(20,'Development','Manufacturing Unit')
into DEPT values(30,'Maintenance','Main Block')
into DEPT values(40,'Transport','Admin Block')
into DEPT values(50,'Sales','Sales Block')
select * from dual;
```

Problem 2.2: Insert 11 records into emp table.

EMPNO	ENAME	JOB	MGR	DOB	SAL	COMM	DEPTNO
7369	SMITH	CLERK	7566	17-DEC-80	800	0	20
7399	ASANT	SALESMAN	7566	20-FEB-81	1600	300	20
7499	ALLEN	SALESMAN	7698	20-FEB-81	1600	300	30
7521	WARD	SALESMAN	7698	22-FEB-82	1250	500	30
7566	JONES	MANAGER	7839	02-APR-81	5975	500	20

7698	BLAKE	MANAGER	7839	01-MAY-79	9850	1400	30
7611	SCOTT	HOD	7839	12-JUN-76	3000	0	10
7839	CLARK	CEO	NULL	16-MAR-72	9900	0	10
7368	FORD	SUPERVIS	7366	17-DEC-80	8000	0	20
7599	ALLEY	SALESMAN	7698	20-FEB-81	1600	300	30
7421	DRANK	CLERK	7698	22-JAN-82	1250	500	30

⇒insert all

into EMP values(7369,'Smith','Clerk',7566,20,800,00,'17-DEC-80')

into EMP values(7399,'Asant','Salesman',7566,20,1600,300,'20-FEB-81')

into EMP values(7499,'Allen','Salesman',7698,30,1600,300,'20-FEB-81')

into EMP values(7521,'Ward','Salesman',7698,30,1250,500,'22-FEB-82')

into EMP values(7566,'Jones','Manager',7839,20,5975,500,'02-APR-81')

into EMP values(7698,'Blake','Manager',7839,30,9850,1400,'01-MAY-79')

into EMP values(7611,'Scott','HOD',7839,10,3000,00,'12-JUN-76')

into EMP values(7839,'Clark','CEO',NULL,10,9900,00,'16-MAR-72')

into EMP values(7368,'Ford','Supervis',7366,20,8000,00,'17-DEC-80')

into EMP values(7599,'Alley','Salesman',7698,30,1600,300,'20-FEB-81')

into EMP values(7421,'Drank','Clerk',7698,30,1250,500,'22-JAN-82')

select * from dual;

Problem 2.3: Find the name of all employees

⇒select ENAME from EMP

Problem 2.4: Delete only those who are working as supervisors.

⇒delete from EMP where JOB='Supervis'

Problem 2.5: Delete the rows whose empno is 75199.

⇒delete from EMP where EMPNO=7599

Problem 2.6: List the records in the emp table order by salary in ascending order.

⇒select * from EMP order by SAL

Problem 2.7: List the records in the emp table order by salary in descending order.

⇒select * from EMP order by SAL desc

Problem 2.8: Display only those employees whose deptno is 30

⇒select * from EMP where DEPTNO=30

Problem 2.9: Display deptno from the table employee avoiding the duplicated values.

⇒select distinct DEPTNO from EMP

Problem 2.10: List the records in sorted order (date/commission) of their employees.

⇒select * from EMP order by COMMISSION

Problem 2.11: List the employee names whose commission is null.

⇒select * from EMP where COMMISSION=0

Problem 2.12: List the employee names and the department name in which they are working.

⇒select ENAME,DNAME from EMP,DEPT where EMP.DEPTNO=DEPT.DEPTNO

Problem 2.13: Display name of the dept. with deptno 20.

⇒select DNAME from DEPT where DEPTNO=20

Problem 2.14: List ename whose manager is not NULL

⇒select ENAME from EMP where MGR is not NULL

Lab Work -III

Problem 3.1: Select all employees from employee numbers 7369,7499.

⇒ *select * from EMP where EMPNO in(7369,7499)*

Problem 3.2: Display all the details of the records whose employee name starts with 'S'.

⇒ *select * from EMP where ENAME like 'S%'*

Problem 3.3: Display all the details of the records whose employee name does not starts with 'S'.

⇒ *select * from EMP where ENAME not like 'S%'*

Problem 3.4: Display the rows whose empno ranges from 7500 to 7600.

⇒ *select * from EMP where EMPNO between 7500 AND 7600*

Problem 3.5: Display the rows whose empno not in range from 7500 to 7600.

⇒ *select * from EMP where EMPNO not between 7500 AND 7600*

Problem 3.6: Calculate the square root of the salary of all employees.

⇒ *select sqrt(SAL) from EMP*

Problem 3.7: Count the total records in the emp table.

⇒ *select count(*) from emp*

Problem 3.8: Calculate the total and average salary amount of the emp table.

⇒ *select sum(SAL) from EMP*

select avg(SAL) from EMP

Problem 3.9: Determine the max and min salary and rename the column as max_salary and min_salary.

⇒ *select max(SAL) as max_salary,min(SAL) as min_salary from EMP*

Problem 3.10: Display total salary spent for employees.(assignment)

⇒ *select sum(SAL) from EMP*

Problem 3.11: Display total salary spent for each job category.

⇒ *select job,sum(SAL) from EMP group by JOB*

Problem 3.12: List all employee names, salary and 15% rise in salary.

⇒ *select ENAME,SAL, SAL*115/100 AS Increased_Salary from EMP*

Problem 3.13: List all employees which start with either B or C.

⇒ *select ENAME from EMP where ENAME Like 'B%' or ENAME Like 'C%'*

Problem 3.14: Display number of employees working in each department and their department name.

⇒ *select DNAME,count(*) from DEPT d,EMP e where D.DEPTNO = E.DEPTNO group by DNAME*

Problem 3.15: Display the employee names whose name contains up to 5 characters.

⇒ *select ENAME from EMP where ENAME not like '_____%'*

Problem 3.16: List all employee names and their manager whose manager is 7749 or7566 or 7611.

⇒ *select ENAME,MGR from EMP where MGR in(7749,7566,7611)*

Problem 3.17: Find how many job titles are available in employee table.

⇒ *select distinct job from emp*

Problem 3.18: What is the difference between maximum and minimum salaries of Employees in the organization?(assignment)

⇒ *select max(sal)-min(sal) from emp*

Problem 3.19: Find no. of dept in employee table.(assignment)

⇒ *select count(distinct DNAME) from DEPT*

Problem 3.20: Display the names and DOB of all employees who were born in February.

⇒ *select ENAME,DOB from EMP where DOB like '___FEB%'*

Problem 3.21: List out the employee names whose names starts with s and ends with h.(assignment)

⇒ *select ENAME from EMP where ENAME like 'S%h'*

Problem 3.22: List out the employee names whose salary is between 5000to 6000.(assignment)

⇒ *select ENAME,SAL from EMP where SAL between 5000 and 6000*

Problem 3.23: List all employees which starts with either S or C.(assignment)

⇒ *select ENAME from EMP where ENAME like 'S%' or ENAME like 'C%'*

Problem 3.24: List all employee names and their salaries, whose salary lies between 1500/- and 3500/- both inclusive.

⇒ *select ENAME,SAL from EMP where SAL between 1500 and 3500*

Problem 3.25: List all employee names and jobs, whose job title includes M or P.

⇒ *select ENAME,JOB from EMP where JOB like '%M%' or JOB like '%P%'*

Problem 3.26: List all employees who belongs to the department 10 or 20.

⇒ *select ENAME,DEPTNO from EMP where DEPTNO in(10,20)*

Problem 3.27: Display the department numbers and total salary in each department whose salary is greater than 5000.

⇒ *select DEPTNO,sum(SAL) from EMP where SAL>5000 group by DEPTNO*

Problem 3.28: Display total salary spent for each job category.

⇒ *select JOB,sum(SAL) as TotalSalary from EMP group by JOB*

Problem 3.29: Display total salary in each department whose total salary is greater than 12000.

⇒ *select DEPTNO,sum(SAL) as TotalSalary from EMP group by DEPTNO having sum(SAL)>12000*

4.5) Show the students with highest GPA in each major.

⇒ *SELECT name, major, gpa FROM student s1 WHERE gpa = (SELECT max(gpa)FROM student s2WHERE s1.major = s2.major);*

Lab Work –V

Join:-

⇒

```
select * from EMP cross join DEPT

select * from EMP join DEPT using (DEPTNO)

select * from EMP e join DEPT d on (e.DEPTNO = d.DEPTNO )

select * from EMP e join DEPT d on (e.DEPTNO > d.DEPTNO )

select * from EMP natural join DEPT

select * from EMP inner join DEPT using (DEPTNO)

select * from EMP e left outer join DEPT d on (e.DEPTNO = d.DEPTNO )

select * from EMP e,DEPT d where e.DEPTNO = d.DEPTNO(+)

select * from EMP e right outer join DEPT d on (e.DEPTNO = d.DEPTNO )

select * from EMP e,DEPT d where e.DEPTNO(+) = d.DEPTNO
```

*select * from EMP e full outer join DEPT d on (e.DEPTNO = d.DEPTNO)*

select e1.EMPNO,e2.ENAME,e1.JOB,e2.DEPTNO from EMP e1,EMP e2 where e1.EMPNO=e2.MGR

Problem 5.1: Select all employees from 'maintenance' and 'development' dept.

⇒ select e.ename, d.dname from emp e join dept d using (deptno) where d.dname like 'Maintenance' or d.dname like 'Development'

Problem 5.2: Display all employee names and salary whose salary is greater than minimum salary of the company and job title starts with 'M'.

⇒ select ename,sal,job from emp where sal>(select min(sal) from emp) and job like 'M%'

Problem 5.3: Issue a query to find all the employees who work in the same job as Jones.

⇒ select ename ,job from emp where job like (select job from emp where ename like 'Jones')

Problem 5.4:Display lowest paid employee details under each manager.

⇒ select mgr,ename as LowestPaidEmployee,sal from emp e1 where sal = (select min(sal) from emp where emp.mgr = e1.mgr)

Problem 5.5: Display the employees who have the same job as Jones and whose salary>= SMITH.

⇒select ename,job,sal from emp where job = (select job from emp where ename='jones') and sal>=(select sal from emp where ename='smith')

Problem 5.6: Issue a query to list all the employees who salary is > the average salary of their own dept.(Assignment)

⇒select * from emp e1 where sal > (select avg(sal) from emp where emp.deptno = e1.deptno)

Problem 5.7: Write a query to list the employees having the same job as employees located in ' mainblock'.(use multiple subquery)

⇒select ename from emp where job in (select job from emp where deptno in(select deptno from dept where loc='main_block'))

Problem 5.8: Write a query to list the employees in dept 20 with the same job as anyone in the development dept.

⇒ *select ename from emp where job in (select job from emp where deptno in(select deptno from dept where dname='development')) and deptno=20;*

select ename from emp where deptno =20 and job in (select job from emp join dept using (deptno) where dname like 'development');

Problem 5.9: Write a query to list the employees with the same job and salary as 'smith'.

⇒ *select ename,sal,job from emp where job like (select job from emp where ename like 'Asant') and sal = (select sal from emp where ename like 'Asant')*

Problem 5.10 Write a query to list the departments from Department table which have at least 3 employees in each department.

⇒ *select dname from dept where deptno in (select deptno from emp group by deptno having count(*)>=3)*

Problem 5.11: Write a query to list the employees in dept 20 with the same job as anyone in dept 30.

⇒ *select ename,deptno,job from emp where deptno = 20 and job in (select job from emp where deptno=30)*

Problem 5.12: List out the employee names who get the salary greater than the maximum salaries of dept with dept no 20, 30.

⇒ select ename,sal from emp where sal >(select max(sal) from emp where deptno in(20,30))

Problem 5.13: Display the maximum salaries of the departments whose maximum salary is greater than 9000.(assignment)

⇒ select max(sal),deptno from emp group by deptno having max(sal) > 9000

Problem 5.14: Display the maximum salaries of the departments whose maximum salary is greater than 1000 and lesser than 5000.

⇒ select max(sal),deptno from emp group by deptno having max(sal) between 1000 and 6000

Problem 5.15: Write a query to display their employee names and their managers name.

⇒ select ename,(select ename from emp where empno = e.mgr) as Manager from emp e

Problem 5.16: Write a query to display their employee names and their managers salary for every employee.

⇒ select ename,(select sal from emp where empno = e.mgr) as ManagerSalary from emp e

Problem 5.17: Write a query to output the ename , job, empno, deptname and location for each dept, even if there are no employees.

⇒ select empno,ename,job,dname ,loc from emp e right outer join dept d on(e.deptno = d.deptno)

Problem 5.18: Find the name of the manager for each employee. Include the following in the output: empno, empname, job and his manager's name . (Assignment)

⇒ select empno,ename,job,(select ename from emp where empno = e.mgr) as Manager from emp e

Problem 5.19: Display the details of those who draw the same salary.

⇒ select e1.ename,e1.sal,e2.ename,e2.sal from emp e1,emp e2 where e1.sal=e2.sal and e1.ename<>e2.ename

Problem 5.20: Issue a query to display information about employees who earn more than any employee in dept 30.

⇒ select ename from emp where sal> any(select sal from emp where deptno = 30)

Lab Work –VI

Problem 6.1 Display details of employees from two tables(emp1&emp2) whose salary is greater than 8000(from emp1) and less than 5000(from emp2) using UNION operator.

⇒create table emp2 as select * from emp

insert into emp2 values (7599,'alley','salesman',7698,30,1600,300,'20-FEB-81')

select ename,sal from emp where sal>8000 union select ename,sal from emp2 where sal<5000

Problem 6.2 Display details of employees from two tables (emp1 & emp2) whose salary is less than 8000(from emp1) and greater than 1000(from emp2) using INTERSECT operator.

⇒select ename,sal from emp where sal<8000 intersect select ename,sal from emp2 where sal>1000

Problem 6.3 Display details of employees from two tables (emp1 & emp2) whose salary is less than 8000 and greater than 5000 using MINUS operator.

⇒select ename,sal from emp where sal<8000 minus select ename,sal from emp2 where sal>5000

Lab Work -VII

Problem 6.1: The organization wants to display only the details of the employees those who are managers. (Horizontal portioning)

```
⇒create or replace view Managers as select * from emp where job = 'manager'
select * from Managers
```

Problem 6.2: The organization wants to display only the details like empno, empname, deptno, deptname of the employees. (Vertical portioning)

```
⇒create or replace view Empx as select empno,ename,deptno,dname from emp
natural join dept
select * from empx
```

Problem 6.3: The organization wants to display only the details like empno, empname, deptno, deptname of the all the employees except the HOD and CEO. (Full portioning)

```
⇒create or replace view Empy as select empno,ename,deptno,dname from emp
natural join dept where job not in('ceo','hod')
select * from empy
```

Problem 6.4: Display all the views generated.

```
⇒ create or replace view allview as select * from Managers natural join Empx natural
join Empy
```

*select * from allview*

Problem 6.6: Drop a view.

⇒ drop view allview

Lab Work -VIII

Program 8.1: write a pl/sql program to swap two numbers by taking third variable.

⇒

```
declare
a number(10);
b number(10);
c number(10);
begin
a:=:a;
b:=:b;
dbms_output.put_line('THE PREV VALUES OF A AND B WERE');
dbms_output.put_line(a);
dbms_output.put_line(b);
c:=a;
a:=b;
b:=c;
/*a:=a+b;
b:=a-b;
a:=a-b;*/
dbms_output.put_line('THE VALUES OF A AND B ARE');
dbms_output.put_line(a);
dbms_output.put_line(b);
end;
```

Program 8.2: write a PL/SQL block to check whether a given number is Even or Odd.

⇒

```
declare
a integer;
begin
a:=:a;
if mod(a,2)=0
then
dbms_output.put_line('Even');
else
dbms_output.put_line('Odd');
end if;
end;
/
```

Program 8.3: Write a pl/sql program to find the largest of two numbers.

⇒

```
declare
a integer:=:a;
b integer:=:b;

begin
if a>b
then
dbms_output.put_line('a is larger');
else
dbms_output.put_line('b is larger');
end if;
end;
/
```

Program 8.4: Write a pl/sql program to find the total and average of 6 subjects and display the Grade.

```
⇒ declare
marks1 number(3):=:marks1;
marks2 number(3):=:marks2;
marks3 number(3):=:marks3;
marks4 number(3):=:marks4;
marks5 number(3):=:marks5;
marks6 number(3):=:marks6;
aver number(3);
total number(3);
begin
total:=(marks1  +marks2 + marks3 + marks4 + marks5 + marks6);
aver:=(total/6);
dbms_output.put_line(total);
dbms_output.put_line(aver);
if(aver>90) then
dbms_output.put_line('Grade a');
elsif(aver>75) then
dbms_output.put_line('Grade b');
elsif(aver>50) then
dbms_output.put_line('Grade c');
else
dbms_output.put_line('Grade d');
end if;
end;
```

Program 8.5: Write a pl/sql program to find the sum of digits in a given number.

⇒

```
declare
n number(10):=:n;
s number(10):=0;
begin

while n>0
loop
s:=s+mod(n,10);
n:=trunc(n/10);
end loop;
dbms_output.put_line('Sum: '||s);
end;
/
```

Program 8.6: Write a pl/sql program to display the number in reverse order.

⇒

```
declare
n number(10):=:n;
s number(10):=0;

begin

while n>0
loop
s:=(s*10)+ mod(n,10);
n:=trunc(n/10);
end loop;
dbms_output.put_line('Rev : '||s);

end;
/
```

Program 8.7: Write a pl/sql program to check whether the given number is prime or not

⇒

```
declare
n number(10):=:n;
c number(10):=0;
i integer;
begin

for i in 2..sqrt(n)
loop
if (mod(n,i)=0) then
c:=1;
exit;
end if;
end loop;
if(c=1) then
dbms_output.put_line('Not Prime');
else
dbms_output.put_line('Prime');
end if;
end;
/
```

Program 8.8: Write a pl/sql program to find the factorial of a given number

⇒

```
declare
n number(10):=:n;
f number(10):=1;
i integer;
begin

for i in 1..n
loop
f:=f*i;
end loop;

dbms_output.put_line('Factorial : '||f);

end;
/
```

Program 8.9: Write a pl/sql block to Check the Given String is Palindrome or Not.

⇒

```
declare
str varchar2(20):=:str;
rev varchar2(20);
begin
for i in reverse 1..length(str)
loop
rev:=rev||substr(str,i,1);
end loop;
if (str = rev) then
dbms_output.put_line('Palindrome');
else
dbms_output.put_line('Not Palindrome');
end if;
end;
/
```

Program 8.10: Write a pl/sql code block to calculate the area of a circle for a value of radius varying from 3 to 7. Store the radius and the corresponding values of calculated area in an empty table named areas, consisting of two columns radius & area.

⇒

```
create table areas (radius number(1),area number(7,2));

declare

begin
for i in 3..7
loop
insert into areas values(i,(3.14*i*i));
end loop;
end;
/

select * from areas;
```