

1. Create a table EMPLOYEE with following schema:
(Emp_no, E_name, E_address, E_ph_no, Dept_no, Dept_name, Job_id, Salary)
 - a. Add a new column; HIREDATE to the existing relation.
 - b. Change the datatype of JOB_ID from char to varchar2.
 - c. Change the name of column/field Emp_no to E_no.
 - d. Modify the column width of the job field of emp table.

i)

```
Create table Employee (Emp-no Int primary Key,  
                        E-name Varchar2(50) not null,  
                        E-address Varchar2(225),  
                        E-ph-no Varchar2(15),  
                        Dept-no Int,  
                        Dept-name Varchar2(50),  
                        Job-id Varchar2(10)Char(10),  
                        Salary decimal(10,2));
```

a) Add a new Column Hiredate:

```
alter table employee add hiredate date;
```

b) Change the datatype of job-id to varchar2:

```
alter table employee modify job-id Varchar2(10);
```

c) change the name of the Emp-no Column to E-no:

```
alter table employee rename Column Emp-no to E-no;
```

d) Modify the Column width of the Job-id field:

```
alter table employee modify job-id Varchar2(15);
```

2. Create a table EMPLOYEE with following schema: (Emp_no, E_name, E_address, E_ph_no, Dept_no, Dept_name, Job_id, Salary)
Write SQL queries for following question:
- Insert a least 5 rows in the table.
 - Display all the information of EMP table.
 - Update the city of Emp_no-12 with current city as Nagpur.

2)

```
Create table employee(Emp_no number, E_name varchar2(50),  
                      E_address varchar2(100), E_ph_no varchar2(15),  
                      Dept_no number, Dept_name varchar2(30),  
                      Job_id varchar2(10), Salary number);
```

a) Insert at least 5 rows:

```
Insert into employee(Emp_no, E_name, E_address, E_ph_no,  
                    Dept_no, Dept_name, Job_id, salary)  
values
```

b) Display all information in the EMP table:

```
select * from employee;
```

c) update the city of Emp_no-12 to nagpur:

```
update employee set E_address = 'Nagpur' where  
Emp_no = 12;
```

3. Create a table EMPLOYEE with following schema: (Emp_no, E_name, E_address, E_ph_no, Dept_no, Dept_name, Job_id, Salary)
Write SQL queries for following question:
- Display the details of Employee who works in department MECH.
 - Delete the email_id of employee James.
 - Display the complete record of employees working in SALES Department.

3)

```
Create table employee (Emp_no Int primary key,  
                        E_name varchar2(50),  
                        E_address varchar2(255),  
                        E_ph_no varchar2(15),  
                        Dept_no Int,  
                        Dept_name varchar2(50),  
                        Job_id varchar2(10),  
                        Salary decimal(10,2));
```

a) Display the details of employee in the MECH department:

```
Select * from employee where Dept_name = 'MECH';
```

b) Delete the email_id of employee James (assuming email_id is stored in a column named "E_email"):

```
update employee set E_email = null where E_name = 'James';
```

c) Display the complete record of employees working in the SALES department:

```
Select * from employee where Dept_name = 'Sales';
```


4. Create a table EMPLOYEE with following schema:

E_id	E_name	Age	Salary
101	Anu	22	9000
102	Shane	29	8000
103	Rohan	34	6000
104	Scott	44	10000
105	Tiger	35	8000
106	Alex	27	7000
107	Abhi	29	8000

Write SQL queries for following question:

- Count number of employee names from employee table.
- Find the Maximum age from employee table.
- Find the Minimum age from employee table.

4)

Create table employee(E-id int primary key,
E_name varchar (255),
Age int, salary int);

Insert into employee (E-id, E_name, age, salary) values
(101, 'Anu', 22, 9000),
(102, 'Shane', 29, 8000),
(103, 'Rohan', 34, 6000),
(104, 'Scott', 44, 10000),
(105, 'Tiger', 35, 8000),
(106, 'Alex', 27, 7000),
(107, 'Abhi', 29, 8000);

a) Count the number of employee names:
select count(E_name) as number-of-employee from
Employee;

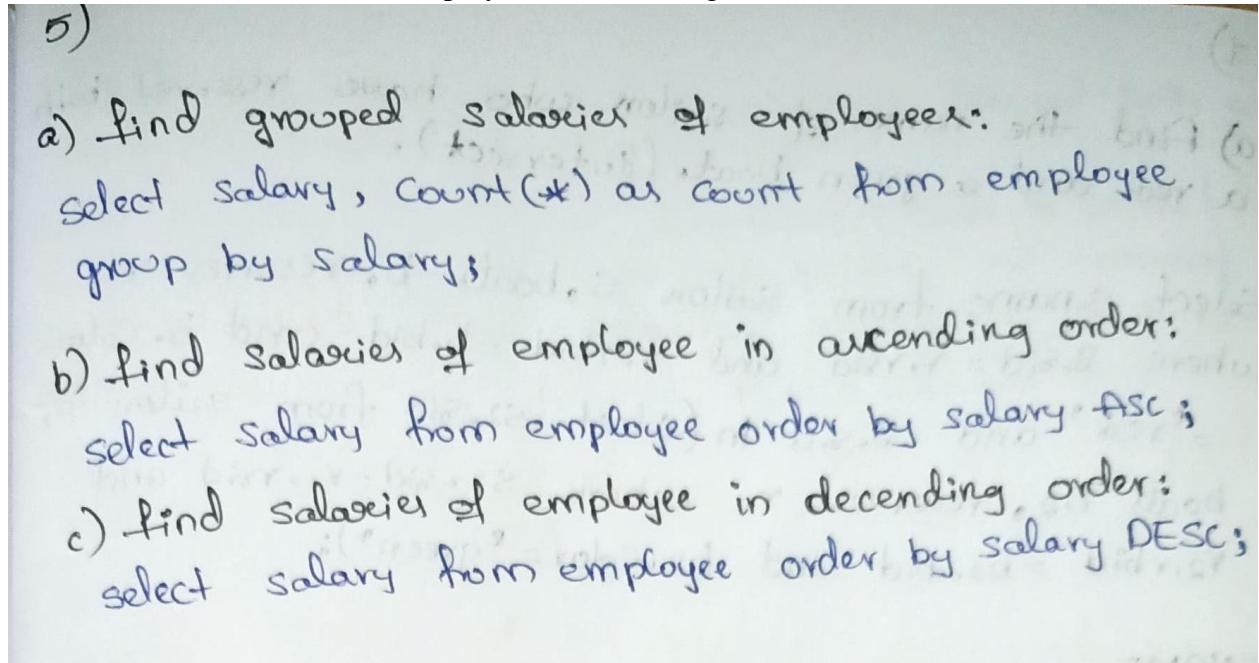
b) find the maximum age:
select max(age) as maximum_age from employee;

c) find the minimum age:
select min(age) as minimum_age from employee;

5. Create a table EMPLOYEE with following schema:

E_id	E_name	Age	Salary
101	Anu	22	9000
102	Shane	29	8000
103	Rohan	34	6000
104	Scott	44	10000
105	Tiger	35	8000
106	Alex	27	7000
107	Abhi	29	8000

- Find grouped salaries of employees. (group by clause)
- Find salaries of employee in Ascending Order. (order by clause)
- Find salaries of employee in Descending Order.



6. Create a table EMPLOYEE with following schema:

EMPNO	ENAME	JOB	MANAGER_NO	SAL	COMMISSION
101	abhi	manager	1234	1100	70
102	rohith	analyst	2345	9000	65
103	david	trainee	3456	9000	65
104	rahul	clerk	4567	7000	55

- Insert the any three records in the employee table and use rollback. Check the result.
- Add primary key constraint and not null constraint to the employee table.
- Insert null values to the employee table and verify the result.

6)

Create table employee(Empno number,
 Ename varchar2(20),
 Job varchar2(20),
 manager_no number,
 sal number,
 Commission number);

a) Insert three records and rollback:

Insert the given values in the given table
 rollback;

b) Add Constraints:

Alter table employee add Constraint PK_empno
 Primary Key(empno), modify ename varchar2(20) not
 null;

c) insert null values:

insert into employee values (104, NULL, 'clerk', 4567,
 7000, 55);

7. Create a table sailor, reserves, boats:

sid	sname	rating	age
22	Dustin	7	45.0
29	Brutus	1	33.0
31	Lubber	8	55.5
32	Andy	8	25.5
58	Rusty	10	35.0
64	Horatio	7	35.0
71	Zorba	10	16.0
74	Horatio	9	35.0
85	Art	3	25.5
95	Bob	3	63.5

sid	bid	day
22	101	10/10/98
22	102	10/10/98
22	103	10/8/98
22	104	10/7/98
31	102	11/10/98
31	103	11/6/98
31	104	11/12/98
64	101	9/5/98
64	102	9/8/98
74	103	9/8/98

bid	bname	color
101	Interlake	blue
102	Interlake	red
103	Clipper	green
104	Marine	red

- Find the names of sailors who have reserved both a red and a green boat. (Intersect)
- Find the names of sailors who have reserved both a red and a green boat. (union all)
- Find the names of sailors who have reserved boat 103. (Exists)

7)

a) find the names of sailors who have reserved both a red and a green boat. (Intersect).

Select s.sname from sailor s, reserves r, boats b where
s.sid = r.rsid and r.rbid = b.bid and b.color = 'red' intersect
select s2.sname from sailor s2, reserves r2, boats b2
where s2.sid = r2.rsid and r2.rbid = b2.bid and
b2.color = 'green';

SNAME

Dustin
Horatio
Lubber

b) find the names of sailors who have reserved both a red and a green boat (Union all)

Select s.sname from sailor s, reserves r, boats b
where s.sid = r.rsid and r.rbid = b.bid and
b.color = 'red' union all select s2.sname from
sailor s2, reserves r2, boats b2 where
s2.sid = r2.rsid and r2.rbid = b2.bid and
b2.color = 'green';

SNAME

Dustin
Dustin
Lubber
Lubber
Dustin
Horatio
Horatio

c) Find the names of sailors who have reserved boat 103. (Exists).

Select s.sname from sailor s where exists (select *
from reserves r where r.rbid = 103 and r.rsid = s.sid);

SNAME: Dustin Lubber Horatio

8. Create a table sailor, reserves, boats:

sid	sname	rating	age
22	Dustin	7	45.0
29	Brutus	1	33.0
31	Lubber	8	55.5
32	Andy	8	25.5
58	Rusty	10	35.0
64	Horatio	7	35.0
71	Zorba	10	16.0
74	Horatio	9	35.0
85	Art	3	25.5
95	Bob	3	63.5

sid	bid	day
22	101	10/10/98
22	102	10/10/98
22	103	10/8/98
22	104	10/7/98
31	102	11/10/98
31	103	11/6/98
31	104	11/12/98
64	101	9/5/98
64	102	9/8/98
74	103	9/8/98

bid	bname	color
101	Interlake	blue
102	Interlake	red
103	Clipper	green
104	Marine	red

- Find the average age of sailors with a rating of 10?
- Find the name and age of the oldest sailor?
- Find the age of the youngest sailor for each rating level?
- Find the average age of sailors for each rating level that has at least two sailors?
(group by and Having)

8)

a) Find the average age of sailors with a rating of 10?

Select avg(s.age) from sailor s where s.rating=10;

AVG(S.AGE)

25.5

b) Find the name and age of the oldest sailor?

Select s.sname, s.age from sailor s where s.age = (Select max(s.age) from sailor);

SNAME AGE

bob 63.5

c) Find the age of the youngest sailor for each rating level?

Select s.rating, min(s.age) from sailor s group by s.rating;

RATING MIN(S.AGE)

1 33

8 25

7 35

3 25.5

10 16

9 35

d) Find the average age of sailors for each rating level that has at least two sailors? (group by and having).

Select s.rating, avg(s.age) as average from sailors s group by s.rating having Count(*) > 1;

RATING AVERAGE

8 40.5

7 40

3 44.5

10 25.5

9. Create a table customer and order table:

CUSTOMER TABLE

ORDER TABLE

ID	NAME	AGE	ADDRESS	SALARY
1	Ramesh	32	Ahmedabad	2000.00
2	Khilan	25	Delhi	1500.00
3	Kaushik	23	Kota	2000.00
4	Chaitali	25	Mumbai	6500.00
5	Hardik	27	Bhopal	8500.00
6	Komal	22	MP	4500.00
7	Muffy	24	Indore	10000.00

OID	DAY	CUSTOMER_ID	AMOUNT
102	2009-10-08	3	3000
100	2009-10-08	3	1500
101	2009-11-20	2	1560
103	2008-05-20	4	2060

- Write a query to perform INNER JOIN for the above tables.
- Write a query to perform LEFT OUTER JOIN for the above tables.
- Write a query to perform RIGHT OUTER JOIN for the above tables.

9)

a) write a query to perform INNER JOIN for the above tables.

Select id, name, amount, day from Customer inner join order1 on Customer.id = order1.Customerid;

ID	NAME	AMOUNT	DAY
3	Kaushik	3000	08-OCT-09
3	Kaushik	1500	08-OCT-09
2	Khilan	1560	20-NOV-09
4	Chaitali	2060	20-MAY-08

b) LEFT OUTER JOIN

Select id, name, amount, day from Customer left join order1 on Customer.id = order1.Customerid;

c) RIGHT

Select id, name, amount, day from Customer right join order1 on Customer.id = order1.Customerid;

10. Create a table sailor, reserves, boats:

sid	sname	rating	age
22	Dustin	7	45.0
29	Brutus	1	33.0
31	Lubber	8	55.5
32	Andy	8	25.5
58	Rusty	10	35.0
64	Horatio	7	35.0
71	Zorba	10	16.0
74	Horatio	9	35.0
85	Art	3	25.5
95	Bob	3	63.5

sid	bid	day
22	101	10/10/98
22	102	10/10/98
22	103	10/8/98
22	104	10/7/98
31	102	11/10/98
31	103	11/6/98
31	104	11/12/98
64	101	9/5/98
64	102	9/8/98
74	103	9/8/98

bid	bname	color
101	Interlake	blue
102	Interlake	red
103	Clipper	green
104	Marine	red

- Find the names of sailors who have reserved red boat. (Nested Query)
- Find the names of sailors who have reserved boat number 103. (correlated Nested Query)

10)

a) find the names of sailor who have reserved red boat (Nested query)

```
select s.sname from sailors s where s.sid
IN(select r.rsid from reserves r where r.rbid
IN(select b.bid from boats b where b.color='red'));
```

b) find the names of sailor who have reserved boat number 103 (Correlated Nested query)

```
select s.sname from sailors s where exists
(select * from reserves r where r.rbid=103 and
r.rsid = s.sid);
```

11. Create a table sailor, reserves, boats:

sid	sname	rating	age
22	Dustin	7	45.0
29	Brutus	1	33.0
31	Lubber	8	55.5
32	Andy	8	25.5
58	Rusty	10	35.0
64	Horatio	7	35.0
71	Zorba	10	16.0
74	Horatio	9	35.0
85	Art	3	25.5
95	Bob	3	63.5

sid	bid	day
22	101	10/10/98
22	102	10/10/98
22	103	10/8/98
22	104	10/7/98
31	102	11/10/98
31	103	11/6/98
31	104	11/12/98
64	101	9/5/98
64	102	9/8/98
74	103	9/8/98

bid	bname	color
101	Interlake	blue
102	Interlake	red
103	Clipper	green
104	Marine	red

- Find sailors whose rating is better than some sailor called Horatio. (Any)
- Find the sailors with the highest rating. (All)
- Find the names of sailors who have reserved a red and a green boat. (Union)

Database Management Systems

1) Find sailors whose rating is better than some sailor called Horatio. (Any)

Select s.sid, s.sname from sailors s where s.rating > any
(select sl.rating from sailors sl where sl.sname='horatio');

SID	SNAME
58	Rusty
71	Zorba
74	Horatio
31	Lubber
32	Andy

2) Find the sailors with the highest rating. (All)

Select s.sid, s.sname from sailors s where s.rating >= all
(select sl.rating from sailors sl);

SID	SNAME
58	Rusty
71	Zorba

3) Find the names of sailors who have reserved a red and a green boat. (Union)

Select s.sname from sailors s, reserves r, boats b where
s.sid = r.sid and r.bid = b.bid and b.color='red' union
select s2.sname from sailors s2, reserves r2, boats b2 where
s2.sid = r2.sid and r2.bid = b2.bid and b2.color='green';

SNAME
Dustin
Horatio
Lubber

12. Write a PL/SQL code for creation of Trigger to insert and to update data into a table

```
12)
to insert
Create (or) replace trigger t1
before insert on sailors
for each row
begin
:new.sname := upper (:new.sname);
end;
/

to update
Create (or) replace trigger t22
after update of sid on sailors
for each row
begin
if (:new.sid < 80) then
raise_application_error (-20017, 'Can't update ');
end if;
end;
/
```

13. Write a PL/SQL code for creation of Trigger to insert and to delete data into a table

```
13)
to insert → same as 12th
to delete
Create (or) replace trigger t16
after
delete on sailors
for each row
begin
if (:old.sid = 22) then
raise_application_error
(-20019, 'you cannot delete this row');
end if;
end;
/
```

14. a) Write a PL/SQL program that uses cursor operation on any data base.

```
14)
a)
declare
v_sname varchar2(10);
v_age varchar2(10);
v_rating number(4);
Cursor c1 is
select sname, age, rating from sailon;
BEGIN
open c1;
loop
fetch
fetch c1 into v_sname, v_age, v_rating;
exit when c1% not found;
dbms_output.put_line(v_sname || ' ' || v_age || ' ' ||
                    v_rating);

end loop;
close c1 c1;
end;
/
```

b) Write a PL/SQL program for displaying multiplication of any number

```
DECLARE

num NUMBER := 7; -- Replace with the desired number
range NUMBER := 12; -- Replace with the desired range
BEGIN

FOR i IN 1..range LOOP

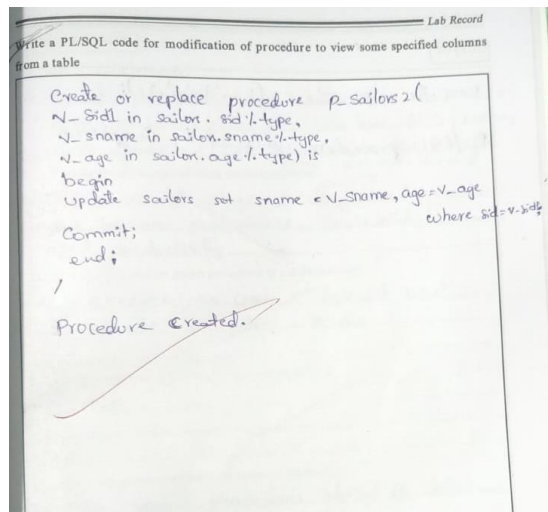
    dbms_output.put_line(num || ' x ' || i || ' = ' || num * i);

END LOOP;

END;

/
```

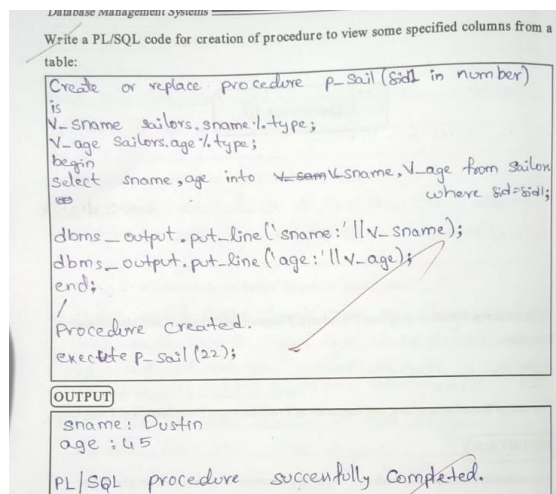
15. a) Write a PL/SQL code for modification of procedure to view some specified columns from a table.



- b) Write a PL/SQL program for displaying multiplication of any number

```
DECLARE
num NUMBER := 7; -- Replace with the desired number
range NUMBER := 12; -- Replace with the desired range
BEGIN
FOR i IN 1..range LOOP
dbms_output.put_line(num || ' x ' || i || ' = ' || num * i);
END LOOP;
END;
/
```

16. a) Write a PL/SQL code for creation of procedure to view some specified columns from a table.



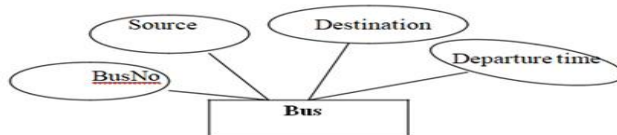
b) Write a PL/SQL program for displaying factorial of any number.

```

DECLARE
    num NUMBER := 6; -- Replace with the desired number
    fact NUMBER := 1;
BEGIN
    FOR i IN 1..num LOOP
        fact := fact * i;
    END LOOP;
    dbms_output.put_line('Factorial of ' || num || ' is ' || fact);
END;
/

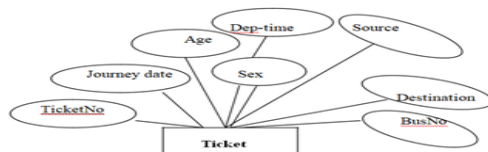
```

17. Converting ER Model to Relational Model (Represent entities and relationships in Tabular form, represent attributes as columns, identifying keys)



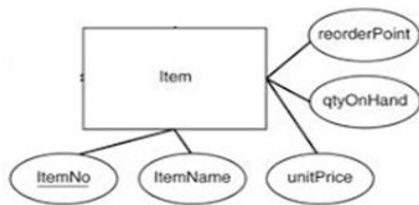
1.

(1-1)
 1)
 Create table bus(bus_no varchar2(10) Primary Key,
 Source char(10), destination char(10),
~~Coach type char(10)),~~
 departure time varchar2(10));
 insert into bus values(



2.

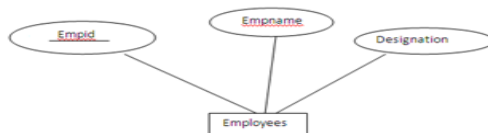
2)
 Create table ticket(ticket_no number(6), journey_date date,
 age real, gender char(1), ~~dept~~
 dept-time varchar2(10),
 Source char(15), destination char(15),
 bus_no varchar2(10), foreign Key
 (bus_no)
 reference bus(bus_no));



3.

```

CREATE TABLE Item (
    itemno INT PRIMARY KEY,
    itemname VARCHAR(255) NOT NULL,
    unitprice DECIMAL(10,2) NOT NULL,
    reorderpoint INT,
    qtyonhand INT
);
    
```



4.

4)
 Create table Employees(Empid varchar2(10),
 Emprname char(20),
 Designation char(10),
 Primary key (EMPID));

18. Create tables for following schemas

Students (sid: string, name: string, login: string, age: integer, gpa: real)

Faculty (fid: string, fname: string, sal: real)

Courses (cid: string, cname: string, credits: integer)

- write a sql query to drop a column in students table.
- Write a query to rename table students to STUDENT
- Write a query to insert three rows in each table

18)

```
Create table students (sid varchar(255),  
                        name varchar(255),  
                        login varchar(255),  
                        age integer,  
                        gpa real);
```

```
Create table faculty (fid varchar(255),  
                      fname varchar(255),  
                      sal real);
```

```
Create table Courses (cid varchar(255),  
                       cname varchar(255),  
                       credits integer);
```

a) Drop a Column in the students table:

```
alter table students drop column age age;
```

b) Rename the students table to student:

```
Rename table students to student;
```

c) Insert three rows into each table: