Name: Pinaki Ganguly
[redacted]

---

1. List all employee who work in Dallas or have joined the company as manager before 82.

Ans. select * from emp1 where
deptno in (select deptno from dept1 where loc='DALLAS')
or to_char(hiredate,'YYYY')<'1982' and job='MANAGER';

Output:

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7369	SMITH	CLERK	7902	12/17/1980	800	300	20
7566	JONES	MANAGER	7839	04/02/1981	2975	-	20
7698	BLAKE	MANAGER	7839	05/01/1981	2850	-	30
7782	CLARK	MANAGER	7839	06/09/1981	2450	-	10
7788	SCOTT	ANALYST	7566	12/09/1982	3000	-	20
7876	ADAMS	CLERK	7788	01/12/1983	1100	-	20
7902	FORD	ANALYST	7566	12/03/1981	3000	-	20

2. List all employees who work in Boston and earn more than any employee working in Chicago.

Ans. select * from emp1 where deptno in (select deptno from dept1 where loc='BOSTON') and
sal>(select max(sal) from emp1
where deptno in (select deptno from dept1 where loc='CHICAGO'));

Output:
no data found

3. List name of the employee who earns the minimum salary.

Ans. select ename from emp1 where sal=(select min(sal) from emp1);

Output:

ENAME
SMITH

4. List all employees who work in the same post as Smith.

Ans.select ename from emp1 where job=(select job from emp1 where ename='SMITH');

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7369	SMITH	CLERK	7902	12/17/1980	800	300	20
7876	ADAMS	CLERK	7788	01/12/1983	1100	-	20
7900	JAMES	CLERK	7698	12/03/1981	950	-	30
7934	MILLER	CLERK	7782	01/23/1982	1300	-	10

5. List all employees who earn the lowest salary in their respective dept.

Ans. select ename from emp1 where sal in(select min(sal) from emp1 group by deptno);

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7369	SMITH	CLERK	7902	12/17/1980	800	300	20
7900	JAMES	CLERK	7698	12/03/1981	950	-	30
7934	MILLER	CLERK	7782	01/23/1982	1300	-	10

6. List all employees who earn more than every employee in the â€˜Salesâ€™ department.

Ans. select * from emp1 where sal>(select max(sal) from emp1 where job='SALESMAN');

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7566	JONES	MANAGER	7839	04/02/1981	2975	-	20
7698	BLAKE	MANAGER	7839	05/01/1981	2850	-	30
7782	CLARK	MANAGER	7839	06/09/1981	2450	-	10
7788	SCOTT	ANALYST	7566	12/09/1982	3000	-	20
7839	KING	PRESIDENT	-	11/17/1981	5000	-	10
7902	FORD	ANALYST	7566	12/03/1981	3000	-	20

7. Find the job with the highest average salary.

Ans. select job from emp1 where sal in (select max(avg(sal)) from emp1 group by job);

Output:
JOB
PRESIDENT

8. Create a Account table with following attribute
Acc_no(4), Acc_type(1), Cust_no1(6), Cust_no2(6), Opp_date.

Ans. create table account(
acc_no number(4),
acc_type char(1),
Cust_no1 number(6),
Cust_no2 number(6),
opp_date date
);

Output:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
ACCOUNT	ACC_NO	NUMBER	-	4	0	-	nullable	-	-
	ACC_TYPE	CHAR1	-	-	-		nullable	-	-

```
      CUST_NO1     NUMBER    -     6             0         -
      nullable       -     -
      CUST_NO2     NUMBER    -     6             0         -
      nullable       -       -
      OPP_DATE     DATE7     -             -         -          nullable
         -       -

      1 - 5
```

9. Create the same table using Not Null on all and Default on Opp_date constraint.

```
Ans. create table account(
acc_no number(4) not null,
acc_type char(1) not null,
Cust_no1 number(6) not null,
Cust_no2 number(6) not null,
opp_date date default sysdate not null
);
```

Output:

```
Table Column      Data Type   Length      Precision   Scale Primary Key
      Nullable    Default     Comment
ACCOUNT     ACC_NO      NUMBER      -     4     0     -     -     -     -
      ACC_TYPE    CHAR  1     -     -     -     -     -     -
      CUST_NO1    NUMBER      -     6     0     -     -     -     -
      CUST_NO2    NUMBER      -     6     0     -     -     -     -
      sysdate
      OPP_DATE    DATE  7     -     -     -     -           -

      1 - 5
```

10. Add a field called Balance(7,2) to the table Account.

```
Ans. alter table account add balance decimal(7,2);
```

Output:

```
Table Column      Data Type   Length      Precision   Scale Primary Key
      Nullable    Default     Comment
ACCOUNT     ACC_NO      NUMBER      -     4     0     -     -     -     -
      ACC_TYPE    CHAR  1     -     -     -     -     -     -
      CUST_NO1    NUMBER      -     6     0     -     -     -     -
      CUST_NO2    NUMBER      -     6     0     -     -     -     -
      OPP_DATE    DATE  7     -     -     -     -     sysdate     -
      BALANCE     NUMBER      -     7     2     -     nullable    -     -
/*new column balance added with (7,2)*/
1 - 6
```

11. Increase the field of Acc_no to 6.

```
Ans. alter table account modify acc_no number(6);
```

Output:

```
Table Column      Data Type   Length      Precision   Scale Primary Key
      Nullable    Default     Comment
ACCOUNT     ACC_NO      NUMBER      -     6     0     -     -     -     -
/* datatype changed for acc_no*/
      ACC_TYPE    CHAR  1     -     -     -     -     -     -
      CUST_NO1    NUMBER      -     6     0     -     -     -     -
      CUST_NO2    NUMBER      -     6     0     -     -     -     -
      OPP_DATE    DATE  7     -     -     -     -     sysdate     -
      BALANCE     NUMBER      -     7     2     -     nullable    -     -
1 - 6
```

12. Remove the constraint of Cust_no2.

Ans. alter table account modify cust_no2 number(6) null;

Output:

```
Table Column      Data Type   Length      Precision   Scale Primary Key
      Nullable    Default     Comment
ACCOUNT     ACC_NO      NUMBER      -     6     0     -     -     -     -
      ACC_TYPE    CHAR  1     -     -     -     -     -     -
      CUST_NO1    NUMBER      -     6     0     -     -     -     -
      CUST_NO2    NUMBER      -     6     0     -     nullable    -     -
/* changed to null for cust_no2*/
      OPP_DATE    DATE  7     -     -     -     -     sysdate     -
      BALANCE     NUMBER      -     7     2     -     nullable    -     -
1 - 6
```

13. Disable the constraint of Acc_type.

Ans. alter table account modify acc_type char(1) null;

Output:

```
Table Column      Data Type   Length      Precision   Scale Primary Key
      Nullable    Default     Comment
ACCOUNT     ACC_NO      NUMBER      -     6     0     -     -     -     -
      ACC_TYPE    CHAR  1     -     -     -     nullable    -     -      /*
disabled the constraint for acc_type*/
      CUST_NO1    NUMBER      -     6     0     -     -     -     -
      CUST_NO2    NUMBER      -     6     0     -     nullable    -     -
      OPP_DATE    DATE  7     -     -     -     -     sysdate     -
      BALANCE     NUMBER      -     7     2     -     nullable    -     -
1 - 6
```

14. Remove the table from the database.

Ans. drop table account;

Output:

```
Table dropped.
```

15. Create a table called CRICKTERS, with columns as specified below:

Column Name	Description

Country Character string
Name Character string (max length 20)
Runs Number
Wickets number
Catches number
Date-of-birth date
The country and name fields should be declared NOT NULL.

Ans. create table cricketers(
Country varchar(50) not null,
Name varchar2(20) not null,
Runs number,
Wickets number,
catches number,
date_of_birth date
);

Output:

Table	Column	Data Type	Length	Precision	Scale	Primary Key		
	Nullable	Default	Comment					
CRICKETERS	COUNTRY	VARCHAR2	50	-	-	-	-	-
	NAME	VARCHAR2	20	-	-	-	-	
	RUNS	NUMBER	22	-	-	-	nullable	-
	WICKETS	NUMBER	22	-	-	-	nullable	-
	CATCHES	NUMBER	22	-	-	-	nullable	-
	DATE_OF_BIRTH	DATE	7	-	-	-	nullable	-

1 - 6

16. Modify the table CRICKETERS to
a) Add a field centuries, which will hold the number of centuries scored.
Use the DESC command to check the column defines.

Ans. alter table cricketers add centuries number;

Output:

Table	Column	Data Type	Length	Precision	Scale	Primary Key		
	Nullable	Default	Comment					
CRICKETERS	COUNTRY	VARCHAR2	50	-	-	-	-	-
	NAME	VARCHAR2	20	-	-	-	-	
	RUNS	NUMBER	22	-	-	-	nullable	-
	WICKETS	NUMBER	22	-	-	-	nullable	-
	CATCHES	NUMBER	22	-	-	-	nullable	-
	DATE_OF_BIRTH	DATE	7	-	-	-	nullable	-
	CENTURIES	NUMBER	22	-	-	-	nullable	-

/* new column centuries added*/
1 - 7

b) Add a field fiveâ€™s, which will hold the number at times he has taken five wickets in an innings.
Ans. alter table cricketers add fives number;

Output:

```
Table Column      Data Type   Length      Precision   Scale Primary Key
      Nullable    Default     Comment
CRICKETERS  COUNTRY     VARCHAR2    50    -     -     -     -     -     -
      NAME  VARCHAR2    20    -     -     -     -     -     -
      RUNS  NUMBER      22    -     -     -     nullable    -     -
      WICKETS     NUMBER      22    -     -     -     nullable    -     -
      CATCHES     NUMBER      22    -     -     -     nullable    -     -
      DATE_OF_BIRTH     DATE  7     -     -     -     nullable    -     -
      CENTURIES   NUMBER      22    -     -     -     nullable    -     -
      FIVES NUMBER      22    -     -     -     nullable    -     -
/* fives column added*/
1 - 8
```

18. c) A Boolean field caption, indicating whether the person is currently the caption of
the team.

```
Ans. alter table cricketers add captain char(1);
alter table cricketers add constraint chk_captain check(captain='Y' or
captain='N');
```

Output:

```
Table Column      Data Type   Length      Precision   Scale Primary Key
      Nullable    Default     Comment
CRICKETERS  COUNTRY     VARCHAR2    50    -     -     -     -     -     -
      NAME  VARCHAR2    20    -     -     -     -     -     -
      RUNS  NUMBER      22    -     -     -     nullable    -     -
      WICKETS     NUMBER      22    -     -     -     nullable    -     -
      CATCHES     NUMBER      22    -     -     -     nullable    -     -
      DATE_OF_BIRTH     DATE  7     -     -     -     nullable    -     -
      CENTURIES   NUMBER      22    -     -     -     nullable    -     -
      FIVES NUMBER      22    -     -     -     nullable    -     -
      CAPTAIN     CHAR  1     -     -     -     nullable    -     -
/* it will only take one value as boolean yes or no*/
1 - 9
```

19. a) Create a Transaction table with the following attribute :
Acc_no(4), T_date(date), T_type(1), T_mode(6), Cheque_no(7),
Operator(20),
Drawn_bank(30), T_amount(7,2), Clear(1).

- T_date should be Sysdate.
- T_type will be Deposit or Withdraw.
- T_mode will be Cheque or Cash.
- Clear will be Yes or No.
- Maintain the relationship with Account table.

```
Ans. create table Transaction(
Acc_no number(4) not null,
T_date date default sysdate,
T_type char(1),
T_mode varchar2(6),
Cheque_no number(7),
```

```
Operator varchar2(20),
Drawn_bank varchar2(30),
T_amount decimal(7,2),
Clear char(1),
constraint chk_type check(T_type='D' or T_type='W'),
constraint chk_mode check(T_mode='Cheque' or T_mode='Cash'),
constraint chk_clear check(Clear='Y' or Clear='N'),
PRIMARY KEY (Acc_no),
FOREIGN KEY (Acc_no) REFERENCES account(Acc_no)
);
```

Output:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
TRANSACTION	ACC_NO	NUMBER	-	4	0	1	-	-	-
	T_DATE	DATE	7	-	-	-	nullable	sysdate	-
	T_TYPE	CHAR	1	-	-	-	nullable	-	-
	T_MODE	VARCHAR2	6	-	-	-	nullable	-	-
	CHEQUE_NO	NUMBER	-	7	0	-	nullable	-	-
	OPERATOR	VARCHAR2	20	-	-	-	nullable	-	-
	DRAWN_BANK	VARCHAR2	30	-	-	-	nullable	-	-
	T_AMOUNT	NUMBER	-	7	2	-	nullable	-	-
	CLEAR	CHAR	1	-	-	-	nullable	-	-

1 - 9

b) Insert some appropriate data in these tables.

Ans.
```
insert into transaction
values(1001,'03/12/2019','D','Cheque',1070089,'Cashier','SBI',34000.50,'Y
');
insert into transaction
(acc_no,t_date,t_type,t_mode,operator,drawn_bank,t_amount,clear)
values(1222,'11/29/2020','D','Cash','Manager','PNB',63455.00,'N');
insert into transaction
(acc_no,t_date,t_type,t_mode,operator,drawn_bank,t_amount,clear)
values(1906,'02/28/2020','W','Cash','Accountant','Union
Bank',15000.00,'Y');
insert into transaction
(acc_no,t_type,t_mode,Cheque_no,operator,drawn_bank,t_amount,clear)
values(2656,'W','Cheque',1080934,'Cashier','HDFC',10460.00,'Y');
insert into transaction
values(2678,'07/10/2021','D','Cheque',1239095,'Cashier','SBI',4500.63,'N'
);
insert into transaction
values(1232,'09/30/2021','W','Cheque',1738165,'Accountant','HDFC',5000.00
,'Y');
```

ACC_NO	T_DATE	T_TYPE	T_MODE	CHEQUE_NO	OPERATOR	DRAWN_BANK	T_AMOUNT	CLEAR
1001	03/12/2019	D	Cheque	1070089	Cashier	SBI	34000.5	Y
1222	11/29/2020	D	Cash -	Manager	PNB	63455	N	
1906	02/28/2020	W	Cash -	Accountant	Union Bank	15000	Y	
2656	07/10/2021	W	Cheque	1080934	Cashier	HDFC	10460	Y

```
2678  07/10/2021  D     Cheque      1239095     Cashier     SBI   4500.63
      N
1232  09/30/2021  W     Cheque      1738165     Accountant  HDFC  5000  Y
```

20. a)Insert the following information in the Account table that you have created in experiment
no-8

Ans.
```
insert into account (acc_no,acc_type,cust_no1,opp_date,balance)
values('S00001','S','C00001','02/20/1998',2600.00);
insert into account (acc_no,acc_type,cust_no1,cust_no2,opp_date,balance)
values('S00002','S','C00002','C00003','04/01/1998',14657.00);
update account set acc_type='J' where acc_no='S00002';
insert into account (acc_no,acc_type,cust_no1,cust_no2,opp_date,balance)
values('S00003','J','C00004','C00005','03/02/1998',368.00);
insert into account (acc_no,acc_type,cust_no1,opp_date,balance)
values('S00004','S','C00003','01/01/1998',27000.00);
insert into account (acc_no,acc_type,cust_no1,opp_date,balance)
values('S00005','F','C00006','01/01/1998',51000.00);
update account set cust_no2='C00007' where acc_no='S00005';
insert into account (acc_no,acc_type,cust_no1,opp_date,balance)
values('S00006','S','C00008','07/10/1998',14562.00);
insert into account (acc_no,acc_type,cust_no1,opp_date,balance)
values('S00007','F','C00009','03/25/1998',12000.00);
insert into account (acc_no,acc_type,cust_no1,cust_no2,opp_date,balance)
values('S00008','J','C00001','C00010','05/30/1998',8765.00);
```

Output:

ACC_NO	ACC_TYPE	CUST_NO1	CUST_NO2	OPP_DATE	BALANCE
S00001	S	C00001	-	02/20/1998	2600
S00002	J	C00002	C00003	04/01/1998	14657
S00003	J	C00004	C00005	03/02/1998	368
S00004	S	C00003	-	01/01/1998	27000
S00005	F	C00006	C00007	01/01/1998	51000
S00006	S	C00008	-	07/10/1998	14562
S00007	F	C00009	-	03/25/1998	12000
S00008	J	C00001	C00010	05/30/1998	8765

b) Insert a value of Acc_No,Acc_type and Cust_No1 only....

Ans.
```
insert into account(acc_no,acc_type,cust_no1)
values('S00009','J','C00012');
```

Output:

ACC_NO	ACC_TYPE	CUST_NO1	CUST_NO2	OPP_DATE	BALANCE
S00009	J	C00012	-	07/10/2021	-

c) Insert an information with Opp_date on FEB-7-2000.

Ans.
```
update account set opp_date='07/02/2000' where acc_no='S00009';
```

Output:

ACC_NO	ACC_TYPE	CUST_NO1	CUST_NO2	OPP_DATE	BALANCE

S00009 J C00012 C00001 07/02/2000 2600

d) Delete the joint Account who have balance less than Rs.500

Ans. delete from account where cust_no1 is not null and cust_no2 is not null and balance<500;

Output:
S00003 J C00004 C00005 03/02/1998 368 /* this row has got deleted after execution*/

The new table is:

ACC_NO	ACC_TYPE	CUST_NO1	CUST_NO2	OPP_DATE	BALANCE
S00001	S	C00001	-	02/20/1998	2600
S00002	J	C00002	C00003	04/01/1998	14657
S00004	S	C00003	-	01/01/1998	27000
S00005	F	C00006	C00007	01/01/1998	51000
S00006	S	C00008	-	07/10/1998	14562
S00007	F	C00009	-	03/25/1998	12000
S00008	J	C00001	C00010	05/30/1998	8765
S00009	J	C00012	C00001	07/02/2000	2600

e) Give an extra bonus of 10% on balance those have more than Rs.10000 and not fixed
Account.

Ans. update account set balance=balance+0.10*balance where balance>10000 and acc_type in ('S','J');

Output:

ACC_NO	ACC_TYPE	CUST_NO1	CUST_NO2	OPP_DATE	BALANCE
S00001	S	C00001	-	02/20/1998	2600
S00002	J	C00002	C00003	04/01/1998	16122.81
S00004	S	C00003	-	01/01/1998	29700.11
S00005	F	C00006	C00007	01/01/1998	51000
S00006	S	C00008	-	07/10/1998	16018.31
S00007	F	C00009	-	03/25/1998	12000
S00008	J	C00001	C00010	05/30/1998	8765
S00009	J	C00012	C00001	07/02/2000	2600

21.It is necessary to create a table to contain information pertaining to a railway
reservation system.Identify the columns of the table,their data types and hence create the
table using SQL.

Ans. create table railway_reserve(
train_no number(5) not null,
src varchar2(15) not null,
dest varchar2(15) not null,
arrtime number,
depttime number,
totseats number,
seatsbooked number not null,

```
seatsavail number
);
```

Output:

Table	Column	Data Type	Length	Precision	Scale	Primary Key		
	Nullable	Default	Comment					
RAILWAY_RESERVE	TRAIN_NO	NUMBER	-	5	0	-	-	-
	-							
	SRC	VARCHAR2	15	-	-	-	-	-	-	
	DEST	VARCHAR2	15	-	-	-	-	-	-	
	ARRTIME	NUMBER	22	-	-	-	nullable	-	-
	DEPTTIME	NUMBER	22	-	-	-	nullable	-	-
	TOTSEATS	NUMBER	22	-	-	-	nullable	-	-
	SEATSBOOKED	NUMBER	22	-	-	-	-	-	-
	SEATSAVAIL	NUMBER	22	-	-	-	nullable	-	-

1 - 8

22.a) Create a table Employee with the following attribute:
EMPNO NUMBER(4)
ENAME VARCHAR2(10)
JOB VARCHAR2(9)
MGR NUMBER(2)
D_O_J DATE
SALARY NUMBER(7,2)
COMM NUMBER(7,2)
DEPTNO NUMBER(2)

Ans.
```
create table employee(
empno number(4),
ename varchar2(10),
job varchar2(9),
MGR number(2),
d_o_j date,
salary number(7,2),
comm number(7,2),
deptno number(2)
);
```

Output:

Table	Column	Data Type	Length	Precision	Scale	Primary Key		
	Nullable	Default	Comment					
EMPLOYEE	EMPNO	NUMBER	-	4	0	-	nullable	-	-
	ENAME	VARCHAR2	10	-	-	-	nullable	-	-
	JOB	VARCHAR2	9	-	-	-	nullable	-	-
	MGR	NUMBER	-	2	0	-	nullable	-	-
	D_O_J	DATE	7	-	-	-	nullable	-	-
	SALARY	NUMBER	-	7	2	-	nullable	-	-
	COMM	NUMBER	-	7	2	-	nullable	-	-
	DEPTNO	NUMBER	-	2	0	-	nullable	-	-

1 - 8

b) Make the EMPNO NOT NULL.

Ans.
```
alter table employee modify empno number(4) not null;
```

Output:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
EMPLOYEE	EMPNO	NUMBER	-	4	0	-	-	-	-

c) Increase the size of MGR by 2.

Ans. alter table employee modify mgr number(4);

Output:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
	MGR	NUMBER	-	4	0	-	nullable	-	-

d) Make the EMPNO as primary key(give the name of the constraint).

Ans. alter table employee add constraint P_empno primary key(empno);

Outptut:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
EMPLOYEE	EMPNO	NUMBER	-	4	0	1	-	-	-

e) Make the JOB unique.

Ans. alter table employee add constraint u_job unique(job);

Output:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
EMPLOYEE	EMPNO	NUMBER	-	4	0	1	-	-	-
	ENAME	VARCHAR2	10	-	-	-	nullable	-	-
	JOB	VARCHAR2	9	-	-	-	nullable	-	-
	MGR	NUMBER	-	4	0	-	nullable	-	-
	D_O_J	DATE	7	-	-	-	nullable	-	-
	SALARY	NUMBER	-	7	2	-	nullable	-	-
	COMM	NUMBER	-	7	2	-	nullable	-	-
	DEPTNO	NUMBER	-	2	0	-	nullable	-	-

1 - 8

f) DROP the constraint on JOB.

Ans. alter table employee drop constraint u_job;

Outuput:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
EMPLOYEE	EMPNO	NUMBER	-	4	0	1	-	-	-
	ENAME	VARCHAR2	10	-	-	-	nullable	-	-
	JOB	VARCHAR2	9	-	-	-	nullable	-	-
	MGR	NUMBER	-	4	0	-	nullable	-	-
	D_O_J	DATE	7	-	-	-	nullable	-	-
	SALARY	NUMBER	-	7	2	-	nullable	-	-

```
      COMM  NUMBER      -     7     2     -     nullable    -     -
      DEPTNO      NUMBER      -     2     0     -     nullable    -     -
1 - 8
```

g) DEPTNO can be anyone 10,20,30.

Ans. alter table employee add constraint chk_deptno check(deptno=10 or deptno=20 or deptno=30);

Output:

```
Table Column      Data Type   Length      Precision   Scale Primary Key
      Nullable    Default     Comment
EMPLOYEE    EMPNO NUMBER      -     4     0     1     -     -     -
      ENAME VARCHAR2    10    -     -     -     nullable    -     -
      JOB   VARCHAR2    9     -     -     -     nullable    -     -
      MGR   NUMBER      -     4     0     -     nullable    -     -
      D_O_J DATE  7     -     -     -     nullable    -     -
      SALARY      NUMBER      -     7     2     -     nullable    -     -
      COMM  NUMBER      -     7     2     -     nullable    -     -
      DEPTNO      NUMBER      -     2     0     -     nullable    -     -
1 - 8
```

h) Drop the constraint on DEPTNO.

Ans. alter table employee drop constraint chk_deptno;

Output:

```
Table Column      Data Type   Length      Precision   Scale Primary Key
      Nullable    Default     Comment
EMPLOYEE    EMPNO NUMBER      -     4     0     1     -     -     -
      ENAME VARCHAR2    10    -     -     -     nullable    -     -
      JOB   VARCHAR2    9     -     -     -     nullable    -     -
      MGR   NUMBER      -     4     0     -     nullable    -     -
      D_O_J DATE  7     -     -     -     nullable    -     -
      SALARY      NUMBER      -     7     2     -     nullable    -     -
      COMM  NUMBER      -     7     2     -     nullable    -     -
      DEPTNO      NUMBER      -     2     0     -     nullable    -     -
1 - 8
```

i) Make the JOB,DEPTNO unique.

Ans. alter table employee add constraint u_job unique(job);
alter table employee add constraint u_job unique(job);

j) Drop the constraint on JOB,DEPTNO.

Ans. alter table employee drop constraint u_job;
alter table employee drop constraint u_deptno;

23. a) a.Create a table called PROJECTS,with columns as specified below.In addition
define PROJECTID as the primary key column and ensure that P_END_DATE dates are not earlier than P_START_DATE dates.
Column Name Data type Size

PROJECTID NUMBER 4
P_DESC VARCHAR2 20
P_START_DATE DATE
P_END_DATE DATE
BUDGET_AMOUNT NUMBER 7,2
MAX_NO_STAFF NUMBER 2

Ans. create table projects(
projectid number(4) primary key,
p_desc varchar2(20),
p_start_date date,
p_end_date date,
budget_amount number(7,2),
max_no_satff number(2),
constraint chk_end_date check(p_end_date<p_start_date)
);

Output:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
PROJECTS	PROJECTID	NUMBER	-	4	0	1	-	-	-
	P_DESC	VARCHAR2	20	-	-	-	nullable	-	-
	P_START_DATE	DATE	7	-	-	-	nullable	-	-
	P_END_DATE	DATE	7	-	-	-	nullable	-	-
	BUDGET_AMOUNT	NUMBER	-	7	2	-	nullable	-	-
	MAX_NO_SATFF	NUMBER	-	2	0	-	nullable	-	-

1 - 6

b) Create a second table, ASSIGNMENTS ,as shown below. Define its PROJECTID
column as foreign key, which references the PROJECTS table.Your tableâ€™s EMPNO
column is a further foreign to Employee, these two should not allow NULL values(PROJECTID and EMPNO).

Column Name Date type Size
PROJECTID NUMBER 4

EMPNO NUMBER 4
A_START_DATE DATE
A_END_DATE DATE
BILL_RATE NUMBER 4,2
ASSIGN_TYPE VARCHAR2 2

Ans. create table assignments(
projectid number(4) not null,
empno number(4) not null,
a_start_date date,
a_end_date date,
bill_rate number(4,2),
assign_type varchar2(2),
foreign key(projectid) references projects(projectid),

```
foreign key(empno) references employee(empno)
);
```

c) Use the DESCRIBE command to check the column definitions.

Ans. desc assignments;

Output:

```
Table Column      Data Type   Length      Precision   Scale Primary Key
      Nullable    Default     Comment
ASSIGNMENTS PROJECTID   NUMBER      -     4     0     -     -     -     -
      EMPNO NUMBER      -     4     0     -     -     -     -
      A_START_DATE      DATE  7     -     -     -     nullable    -     -
      A_END_DATE  DATE  7     -     -     -     nullable    -     -
      BILL_RATE   NUMBER      -     4     2     -     nullable    -     -
      ASSIGN_TYPE VARCHAR2    2     -     -     -     nullable    -     -
1 - 6
```

24. Using the default table of Oracle, such as Emp and Dept.

a) Define a view according to the following output :

```
Deptno NaxSal MinSal No. of emp
10 5000 1400 3
20 3000 800 5
30 2850 950 6
```

Ans.

```
create view emp_dept as
select deptno,max(sal) MAXSAL,min(sal) MINSAL,count(empno) "No.of emp"
from emp1
group by deptno order by deptno;
```

Output:

```
DEPTNO      MAXSAL      MINSAL      No.of emp
10    5000  1300  3
20    3100  800   5
30    2850  950   6
```

b) From the transaction table define a view of all deposits done in last 2 months.

Ans.

```
create view trans as
select * from transaction where t_type='D' and to_char(t_date,'MM')
in(6,5);
```

Output:

```
ACC_NO      T_DATE      T_TYPE      T_MODE      CHEQUE_NO   OPERATOR
      DRAWN_BANK  T_AMOUNT    CLEAR
S00006      05/30/2021  D     Cheque      1738165     Accountant  HDFC  5000
      Y
S00002      06/29/2021  D     Cash  -     Manager     PNB   63455 N
```

c) Define the following table :

```
Rate
Empid Rate Hour
```

2101 21.5
2102 24
2103 18.5
2104 15.5
2105 14
3101 32
3102 36
3103 30
4101 42

Ans. create table rate(
empid number(4) primary key,
rate_hour number(3,1)
);

Output:
EMPID RATE_HOUR
2101 21.5

*) Project
Account MGR
A-2000 3101
B-2500 3102
C-3000 3103
D-0010 4101

Ans. create table project(
account varchar2(7) primary key,
mgr number(4)
);

Output:
ACCOUNT   MGR
C-3000   3103

*) Time Card
Empid Account Period Hours

2101 A-2000 1 20
2101 B-2500 1 40
2101 C-3000 1 20
2102 A-2000 1 30
2102 B-2500 1 50
2103 C-3000 1 32
2104 A-2000 1 80
2105 C-2500 1 24
2105 C-3000 1 56
3101 A-2000 1 20
3101 O-0010 1 60
3102 B-2500 1 40
3102 O-0010 1 40
3103 C-3000 1 40
3103 O-0010 1 40

Ans. create table timecard(
empid number(4),
account varchar2(7),
period number(1),
Hours number(2),
foreign key(empid) references rate(empid),
foreign key(account) references project(account)
);

Output:

EMPID	ACCOUNT	PERIOD	HOURS
2101	C-3000	1	20

25. a) Create a view ,which will give the information of each employee rate/hour and
details of their MGRâ€™s.

Ans. create view manager as
select unique mgr,empid from project,rate where
account in(select account from timecard where empid is not null);

Output:

MGR	EMPID
3101	3101
3101	2103
3102	4101
3102	2105
3103	2105
3101	4101
3101	2104
3102	2101
3103	3103
3103	3102
3103	2101
3101	2101
3103	4101
3103	2103
3103	2102
4101	4101
3101	2102
3102	3102
3103	3101
3103	2104
3101	3102
3102	3101
3102	2102
4101	3103
4101	3102
4101	3101
4101	2104
3101	2105
4101	2101

3101 3103
3102 2104
4101 2103
4101 2102
3102 3103
3102 2103
4101 2105

b) Create a view which will give the information for each employeeâ€™s total incomeâ€¦

Ans. create view income_info as
select r.empid,r.rate_hour*h.hours as "Income"
from rate r,timecard h where h.hours in(select hours from timecard);

Output:
EMPID Income
4101 840
3103 600
3102 720
3101 640
2105 280
2104 310
2103 370
2102 480
2101 430
4101 1680
3103 1200
3102 1440
3101 1280
2105 560
2104 620
2103 740
2102 960
2101 860
4101 840
3103 600
3102 720
3101 640
2105 280
2104 310
2103 370
2102 480
2101 430
4101 1260
3103 900
3102 1080
3101 960
2105 420
2104 465
2103 555
2102 720
2101 645
4101 2100

3103 1500
3102 1800
3101 1600
2105 700
2104 775
2103 925
2102 1200
2101 1075
4101 1344
3103 960
3102 1152
3101 1024
2105 448
2104 496
2103 592
2102 768
2101 688
4101 3360
3103 2400
3102 2880
3101 2560
2105 1120
2104 1240
2103 1480
2102 1920
2101 1720
4101 2352
3103 1680
3102 2016
3101 1792
2105 784
2104 868
2103 1036
2102 1344
2101 1204
4101 1008
3103 720
3102 864
3101 768
2105 336
2104 372
2103 444
2102 576
2101 516
4101 840
3103 600
3102 720
3101 640
2105 280
2104 310
2103 370
2102 480
2101 430
4101 2520

```
3103  1800
3102  2160
3101  1920
2105  840
2104  930
2103  1110
2102  1440
2101  1290
4101  1680
3103  1200
3102  1440
3101  1280
2105  560
2104  620
2103  740
2102  960
2101  860
4101  1680
3103  1200
3102  1440
3101  1280
2105  560
2104  620
2103  740
2102  960
2101  860
4101  1680
3103  1200
3102  1440
3101  1280
2105  560
2104  620
2103  740
2102  960
2101  860
4101  1680
3103  1200
3102  1440
3101  1280
2105  560
2104  620
2103  740
2102  960
2101  860
```

c) Create a view which will give the information of each employeeâ€™s total expenses
for each account.

Ans. create view expense_info as
select t.account,r.rate_hour*t.hours as "Expense info" from rate r,
timecard t join project p on t.account=p.account where
r.rate_hour in (select rate_hour from rate);

Output:

ACCOUNT	Expense info
D-0010	860
C-3000	860
D-0010	860
B-2500	860
D-0010	1290
A-2000	430
C-3000	516
C-3000	1204
A-2000	1720
C-3000	688
B-2500	1075
A-2000	645
C-3000	430
B-2500	860
A-2000	430
D-0010	960
C-3000	960
D-0010	960
B-2500	960
D-0010	1440
A-2000	480
C-3000	576
C-3000	1344
A-2000	1920
C-3000	768
B-2500	1200
A-2000	720
C-3000	480
B-2500	960
A-2000	480
D-0010	740
C-3000	740
D-0010	740
B-2500	740
D-0010	1110
A-2000	370
C-3000	444
C-3000	1036
A-2000	1480
C-3000	592
B-2500	925
A-2000	555
C-3000	370
B-2500	740
A-2000	370
D-0010	620
C-3000	620
D-0010	620
B-2500	620
D-0010	930
A-2000	310
C-3000	372

C-3000	868
A-2000	1240
C-3000	496
B-2500	775
A-2000	465
C-3000	310
B-2500	620
A-2000	310
D-0010	560
C-3000	560
D-0010	560
B-2500	560
D-0010	840
A-2000	280
C-3000	336
C-3000	784
A-2000	1120
C-3000	448
B-2500	700
A-2000	420
C-3000	280
B-2500	560
A-2000	280
D-0010	1280
C-3000	1280
D-0010	1280
B-2500	1280
D-0010	1920
A-2000	640
C-3000	768
C-3000	1792
A-2000	2560
C-3000	1024
B-2500	1600
A-2000	960
C-3000	640
B-2500	1280
A-2000	640
D-0010	1440
C-3000	1440
D-0010	1440
B-2500	1440
D-0010	2160
A-2000	720
C-3000	864
C-3000	2016
A-2000	2880
C-3000	1152
B-2500	1800
A-2000	1080
C-3000	720
B-2500	1440
A-2000	720
D-0010	1200

C-3000	1200
D-0010	1200
B-2500	1200
D-0010	1800
A-2000	600
C-3000	720
C-3000	1680
A-2000	2400
C-3000	960
B-2500	1500
A-2000	900
C-3000	600
B-2500	1200
A-2000	600
D-0010	1680
C-3000	1680
D-0010	1680
B-2500	1680
D-0010	2520
A-2000	840
C-3000	1008
C-3000	2352
A-2000	3360
C-3000	1344
B-2500	2100
A-2000	1260
C-3000	840
B-2500	1680
A-2000	840