

DATABASE MANAGEMENT SYSTEMS LAB-Solution

Part A

QUESTIONS AND SOLUTIONS:

1. Consider the relations

EMPLOYEE(SSN, Name, DeptNo),

ASSIGNED_TO(USN, ProjectNo)

PROJECT(ProjectNo, ProjectArea).

Create the above tables, insert suitable tuples and perform the following operations in SQL:

- a. Obtain the SSN of employees assigned to database projects.
- b. Find the number of employees working in each department
- c. Update the ProjectNo of Employee bearing SSN=1 to ProjectNo=20

SOLUTION:

create table e

```
(  
  ssn varchar(6),  
  name varchar(10),  
  deptno int,  
  primary key(ssn)  
);
```

Table created.

create table p

```
(  
  projectno varchar(10),  
  projectarea varchar(20),  
  primary key(projectno)  
);
```

Table created.

create table a

```
(  
  usn varchar(6),  
  projectno varchar(10),
```

```
foreign key(usn)references e(ssn),  
foreign key(projectno)references p(projectno)  
);
```

Table created.

```
insert into e  
values('01','abc',10);
```

1 row updated

```
insert into e  
values('02','xyz',20);
```

1 row updated

```
insert into e  
values('03','pqr',30);
```

1 row updated

```
insert into e  
values('04','lmn',40);
```

1 row updated

```
insert into p  
values('100','database');
```

1 row updated

```
insert into p  
values('200','network');
```

1 row updated

```
insert into p  
values('300','android');
```

1 row updated

```
insert into a  
values('01','100');
```

1 row updated

```
insert into a  
values('02','200');
```

1 row updated

```
insert into a  
values('03','300');
```

1 row updated

```
insert into a  
values('01','200');
```

1 row updated

```
select *  
from e;
```

SSN	NAME	DEPTNO
-----	------	--------

01	abc	10
----	-----	----

02	xyz	20
----	-----	----

03	pqr	30
----	-----	----

04	lmn	40
----	-----	----

```
select *  
from p;
```

PROJECTNO	PROJECTAREA	100	database	200	network	300	android
-----------	-------------	-----	----------	-----	---------	-----	---------

```
select *  
from a;
```

USN	PROJECTNO
-----	-----------

01	100
----	-----

02	200
----	-----

03	300
----	-----

01	200
----	-----

```
select ssn from e  
where ssn=(select usn  
            from a  
            where projectno=(select projectno from p  
                              where projectarea='database'));
```

SSN

01

```
select count(ssn),deptno  
from e group by deptno;
```

COUNT(SSN)	DEPTNO
------------	--------

1	30
---	----

1	20
---	----

1	40
---	----

1	10
---	----

```
update a  
set projectno='200' where  
usn='03';
```

1 row updated

select *

from a;

usn	projectno
-----	-----------

01	100
----	-----

02	200
----	-----

03	200
----	-----

04	200
----	-----

2. Consider the relations

PART(PNO, PNAME, COLOUR),

SUPPLIER(SNO,SNAME,ADDRESS)

SUPPLY(PNO,SNO,QUANTITY)

Create the above tables, insert suitable tuples and perform the following operations in SQL:

- Obtain the PNO of parts supplied by supplier 'Ram'.
- Obtain the Names of suppliers who supply bolts
- Delete the parts which are green in colour

SOLUTION:

create table part

(

pno number(10),

pname varchar(20),

colour varchar(20),

primary key(pno)

);

table created.

Create table supplier

```
(  
sno number(10),  
sname varchar(20),  
address varchar(20),  
primary key(sno)  
);
```

table created.

```
create table supply  
(  
pno number(10),  
sno number(10),  
quantity varchar(20),  
primary key(pno,sno),  
foreign key(pno) references part(pno)on delete cascade,  
foreign key(sno) references supplier(sno)on delete cascade  
);
```

Table created.

```
insert into part values(1,'plug','black');
```

1 row(s) inserted.

```
insert into part values(2,'bolt','blue');
```

1 row(s) inserted.

```
insert into part values(3,'nut','green');
```

1 row(s) inserted.

```
insert into supplier values(10,'Anoop','udupi');
```

1 row(s) inserted.insert into supplier values(15,'Bharath','mangalore');1 row(s) inserted.insert into supplier values(20,'Ram','bangalore');1 row(s) inserted.insert into supply values(1,10,50);

1 row(s) inserted.

```
insert into supply values(2,10,30);1 row(s) inserted.
```

```
insert into supply values(1,15,70);1 row(s) inserted.insert into supply values(3,15,40);
```

1 row(s) inserted.

insert into supply values(1,20,55);1 row(s) inserted.

insert into supply values(2,20,65);1 row(s) inserted.

insert into supply values(3,20,75);1 row(s) inserted.

```
select *  
from part;
```

PNO PNAME COLOUR1 plug black2 bolt blue3 nut green

```
select *  
from supply ;
```

PNOSNOQUANTITY

1 10 50

2 10 30

1 15 70

31540

12055

22065

32075

```
select *  
from supplier ;
```

SNO SNAME ADDRESS

10 Anoop udupi

15 Bharath mangalore

20 Ram Bangalore

```
answer 2)select sname,pname  
from supplier,supply,part
```

where pname='bolt' AND supply.sno=supplier.sno AND part.pno=supply.pno;

SNAME PNAME

Anoop bolt

Ram bolt

answer 1)select pno
from supply
where sno IN(select sno from
supplier where
sname='Ram');

PNO

1

2

3

delete from part where colour='green';

1 row(s) deleted.

select *
from part;PNO PNAME COLOUR1 plug black2 bolt blue

select *
from supply;PNO SNO QUANTITY 1 10 50 2 10 30

3.Consider the relations

BOAT(BID, BNAME, COLOUR),
SAILOR(SID, SNAME, AGE, RATING)
RESERVES(BID,SID, DAY)

Create the above tables, insert suitable tuples and perform the following operations in SQL:

- Obtain the bid of the boats reserved by 'Ram'.
- Retrieve the bid of the boats reserved by all the sailors.
- Find the number of boats reserved by each sailor

SOLUTION:

Create table BOAT

```
(  
  
  BID varchar(6) NOT NULL,  
  
  BNAME varchar(20),  
  
  COLOUR varchar(10),  
  
  PRIMARY KEY(BID)  
  
);
```

Create table SAILOR

```
(  
  
  SID varchar(6) NOT NULL,  
  
  SNAME varchar(20),  
  
  AGE varchar(3),  
  
  RATING varchar(2),  
  
  PRIMARY KEY(SID)  
  
);
```

Create table RESERVES

```
(  
  
  BID varchar(6),  
  
  SID varchar(6),  
  
  DAY varchar(10),
```

FOREIGN KEY(BID) references BOAT(BID) ON DELETE CASCADE,

FOREIGN KEY(SID) references SAILOR(SID) ON DELETE CASCADE

);

INSERT INTO BOAT

VALUES('01','ABC','RED');

INSERT INTO BOAT

VALUES('02','XYZ','YELLOW');

INSERT INTO BOAT

VALUES('03','PQR','GREEN');

INSERT INTO BOAT

VALUES('04','LMN','BLACK');

INSERT INTO BOAT

VALUES('05','DEF','BLUE');

INSERT INTO SAILOR

VALUES('10','RAM','30','5');

INSERT INTO SAILOR

VALUES('20','RAVI','25','4');

INSERT INTO SAILOR

VALUES('30','MISHRA','22','3');

INSERT INTO SAILOR

VALUES('40','CHANDRA','24','2');

INSERT INTO SAILOR

VALUES('50','SHIVA','36','1');

INSERT INTO SAILOR

VALUES('60','KRISHNA','40','6');

INSERT INTO RESERVES

VALUES('01','20','MONDAY');

INSERT INTO RESERVES

VALUES('02','30','TUESDAY');

INSERT INTO RESERVES

VALUES('03','50','WEDNESDAY');

INSERT INTO RESERVES

VALUES('04','10','THURSDAY');

INSERT INTO RESERVES

VALUES('05','20','FRIDAY');

SELECT *

FROM RESERVES

;

BID SID DAY

01 20 MONDAY

02 30 TUESDAY

03 50 WEDNESDAY

04 10 THURSDAY

05 20 FRIDAY

SELECT *

FROM SAILOR

;

SID SNAME AGE RATING

10 RAM 30 5

20 RAVI 25 4

30 MISHRA 22 3

40 CHANDRA 24 2

50 SHIVA 36 1

60 KRISHNA 40 6

SELECT *

FROM BOAT

;

BID BNAME COLOUR

01 ABC RED

02 XYZ YELLOW

03 PQR GREEN

04 LMN BLACK

05 DEF BLUE

ans1

SELECT BID

FROM RESERVES

WHERE SID IN(SELECT SID FROM

SAILOR WHERE SNAME='RAM');

BID

04

ans2

SELECT BID,SNAME

FROM RESERVES r join SAILOR s

on (r.SID=s.SID);

BID SNAME

04 RAM

05 RAVI

01 RAVI

02 MISHRA

03 SHIVA

ans 3

```
SELECT COUNT(BID),SID
```

```
FROM RESERVES
```

```
GROUP BY SID;
```

```
COUNT(BID) SID
```

```
1 50
```

```
2 20
```

```
1 10
```

```
1 30
```

4.Consider the relations

PART(PNO, PNAME, COLOUR),

WAREHOUSE(WNO,WNAME,CITY)

SHIPMENT(PNO,WNO,QUANTITY,DATE)

Create the above tables, insert suitable tuples and perform the following operations in SQL:

- a. Obtain the Names of warehouses which have shipped red coloured parts.
- b. Retrieve the PNO of the parts shipped by all the warehouses.

Find the number of parts supplied by each warehouse

SOLUTION:

```
CREATE TABLE PARTT
```

```
(  
PNO VARCHAR(6) NOT NULL,  
PNAME VARCHAR(10) ,  
COLOUR VARCHAR(10),  
PRIMARY KEY(PNO)  
);
```

```
CREATE TABLE WAREHOUSE
```

```
(  
WNO VARCHAR(6) NOT NULL,  
WNAME VARCHAR(10),
```

```
CITY VARCHAR(10),  
PRIMARY KEY(WNO)  
);
```

```
CREATE TABLE SHIPMENT  
(  
PNO VARCHAR(6),  
WNO VARCHAR(6),  
QUANTITY NUMBER,  
DATE DATE ,  
FOREIGN KEY(PNO) REFERENCES PARTT(PNO) ON DELETE CASCADE,  
FOREIGN KEY(WNO) REFERENCES WAREHOUSE(WNO) ON DELETE CASCADE  
);
```

```
INSERT INTO PARTT  
VALUES('01','ABC','RED');
```

```
INSERT INTO PARTT  
VALUES('02','DEF','BLUE');
```

```
INSERT INTO PARTT  
VALUES('03','LMN','GREEN');
```

```
INSERT INTO PARTT  
VALUES('04','PQR','YELLOW');
```

```
INSERT INTO PARTT  
VALUES('05','XYZ','PINK');
```

```
INSERT INTO WAREHOUSE  
VALUES('10','AAA','KUMTA');
```

```
INSERT INTO WAREHOUSE  
VALUES('20','BBB','MUMBAI');
```

```
INSERT INTO WAREHOUSE  
VALUES('30','CCC','BANGALORE');
```

```
INSERT INTO WAREHOUSE
```

```
VALUES('40','DDD','UDUPI');
```

```
INSERT INTO WAREHOUSE  
VALUES('50','EEE','KARWAR');
```

```
SELECT *  
FROM PARTT;
```

```
PNO PNAME COLOUR  
01 ABC RED  
02 DEF BLUE  
03 LMN GREEN  
04 PQR YELLOW  
05 XYZ PINK
```

```
SELECT *  
FROM WAREHOUSE;
```

```
WNO WNAME CITY  
10 AAA KUMTA  
20 BBB MUMBAI  
30 CCC BANGALORE  
40 DDD UDUPI  
50 EEE KARWAR
```

```
INSERT INTO SHIPMENTS  
VALUES('01','20','300','28-FEB-2013');
```

```
INSERT INTO SHIPMENTS  
VALUES('02','30','400','30-JAN-2013');
```

```
INSERT INTO SHIPMENTS  
VALUES('03','10','00','31-JAN-2013');
```

```
INSERT INTO SHIPMENTS  
VALUES('04','40','600','31-MARCH-2013');
```

```
INSERT INTO SHIPMENTS  
VALUES('05','50','100','31-DEC-2013');
```



```

SELECT *
FROM SHIPMENTS;
PNO WNO QUANTITY DATEE
01 20 300 28-FEB-13
02 30 400 30-JAN-13
03 10 00 31-JAN-13
04 40 600 31-MAR-13
05 50 100 31-DEC-13

```

ans a)

```

SELECT WNAME FROM WAREHOUSE
WHERE WNO IN(SELECT WNO FROM SHIPMENTS WHERE PNO=(SELECT PNO FROM
PARTT WHERE COLOUR='RED'));

```

```

WNAME
BBB

```

ans b)

```

SELECT PNO,WNAME
FROM SHIPMENTS s join WAREHOUSE w
on(s.WNO=w.WNO);

```

```

PNO WNAME
03 AAA
01 BBB
02 CCC
04 DDD
05 EEE

```

c)

```

SELECT COUNT(PNO),WNO
FROM SHIPMENTS
GROUP BY WNO;

```

```

COUNT(PNO) WNO
1 50

```

1 20

1 10

1 40

1 30

5.Consider the relations

BOOK(ISBN, TITLE,AUTHOR,PUBLISHER)

STUDENT(USN, NAME, SEM, DEPTNO),

BORROW(ISBN, USN, DATE)

Create the above tables, insert suitable tuples and perform the following operations in SQL:

a.Obtain the name of the student who has borrowed the book bearing ISBN '123'

b.Obtain the Names of students who have borrowed database books.

Find the number of books borrowed by each student

SOLUTION:

1. create table books

```
(  
  ISBN varchar(10),  
  Title varchar(10),  
  Author varchar(10),  
  Publisher varchar(10),  
  primary key(ISBN)  
);
```

Insert into books values(

ISBN TITLE AUTHOR PUBLISHER

001 T1 A1 P1

002 T2 A2 P2

003 T3 A3 P3

004 T4 A4 P4

005 T5 A5 P5

create table student1

```
(  
  usn varchar(10),  
  name varchar(10),  
  sem int,  
  dept varchar(3),  
  primary key(usn)  
);
```

Insert into student1 values(

SN NAME SEM DEPT

111 aaa 3 ISE
222 bbb 4 CSE
333 ccc 3 CSE
444 ddd 4 ISE
555 eee 4 ISE

```
create table borrow
(
  ISBN varchar(10),
  usn varchar(10),
  dates varchar(10),
  foreign key(ISBN) references books(ISBN),
  foreign key(usn) references student1(usn)
);
```

Insert into borrow values(

ISBN	USN	DATES
001	222	1/2/13
002	333	2/2/13
003	111	3/2/13
005	444	4/2/13
003	555	5/2/13

Queries:

1: select NAME from student1
where USN=(select USN from borrow where ISBN='001');

NAME
bbb

2: select NAME from student1
where USN=(select USN from borrow where ISBN=(select ISBN from books where
TITLE='T2'));

NAME
ccc

3: select count(ISBN) from borrow
group by USN;

COUNT(ISBN)
1
1