Lab Experiments

Consider the **Insurance** database given below. The primary keys are underlined and the data types are specified:

PERSON (driver-id:string,name:string,address:string)

CAR (Regno:string,model:string,year:int)

ACCIDINT (report-number:int,date:date,location:string)

OWNS (driver-id:string,regno:string)

PARTICIPATED (driver-id:string,regno:string,report-number:int,damage-amount: int)

1) create the above tables by properly specifying the primary keys and the foreign keys
2) Enter atleast five tuples for each relation
3) Demonstrate how you
   a) update the damage amount for the car with a specific regno in accident with report number 12 to 25000
   b) add a new accident to the database
4) Find the total number of people who owned cars that were involved in accidents in 2002.
5) Find the number of accidents in which cars belonging to a specific model were involved.

Table creation:

```
SQL> create table Person (
   Driverid varchar(15),
   Name varchar(15) not null,
   Address varchar(20),
   primary key (Driverid));
```

Table created.

```
SQL> create table Car(
   Regno varchar(9),
   Model varchar(15) not null,
   Year integer not null,
   primary key (Regno));
```

Table created.

```
SQL> create table Accident(
    Reportno integer,
    Accdate date not null,
    Location varchar(15) not null,
    primary key (Reportno));
```

Table created.

```
SQL> create table Owns(
    Driverid varchar(15),
    Regno varchar(9),
    primary key (Driverid,Regno),
    foreign key (Driverid) references Person(Driverid),
    foreign key (Regno) references Car(Regno));
```

Table created.

```
SQL> create table Participated(
    Driverid varchar(15),
    Regno varchar(9),
    Reportno integer,
    Damageamount integer,
    primary key (Driverid,Regno,Reportno),
    foreign key (Driverid) references Person(Driverid),
    foreign key (Regno) references Car(Regno),
    foreign key (Reportno) references Accident(Reportno));
```

Table created.

SQL> desc Person;

Name	Null?	Type
DRIVERID	NOT NULL	VARCHAR2 (15)
NAME	NOT NULL	VARCHAR2 (15)
ADDRESS		VARCHAR2 (20)

```
SQL> insert into Person values ('1111','Ramu','Jayanagar');
```

1 row created.

```
SQL> insert into Person values ('2222','Manu','Rajajinagar');
```

1 row created.

```
SQL> insert into Person values ('3333','Pandit','Indiranagar');
```

1 row created.

```
SQL> insert into Person values ('4444','Gopal','BTMLayout');
```

1 row created.

SQL> insert into Person values ('5555','Lalit','Whitefield');

1 row created.

SQL> select * from Person;

DRIVERID	NAME	ADDRESS
1111	Ramu	Jayanagar
2222	Manu	Rajajinagar
3333	Pandit	Indiranagar
4444	Gopal	BTM Layout
5555	Lalit	Whitefield

SQL> desc Car;

Name	Null?	Type
REGNO	NOT NULL	VARCHAR2 (9)
MODEL	NOT NULL	VARCHAR2 (15)
YEAR	NOT NULL	NUMBER (38)

SQL> insert into Car values ('KA04Q2301','Maruthi', 2000);

1 row created.

SQL> insert into Car values ('KA05P1000','Ford', 2002);

1 row created.

SQL> insert into Car values ('KA03L1234','Honda', 1999);

1 row created.

SQL> insert into Car values ('KA03L9999','Tata',2002);

1 row created.

SQL> insert into Car values('KA01P4026','Toyota',2003);

1 row created.

SQL> select * from Car;

REGNO	MODEL	YEAR
KA04Q2301	Maruthi	2000
KA05P1000	Ford	2002
KA03L1234	Honda	1999
KA03L9999	Tata	2002
KA01P4026	Toyota	2003

SQL> desc Owns;

Name	Null?	Type
DRIVERID	NOT NULL	VARCHAR2 (15)
REGNO	NOT NULL	VARCHAR2 (9)

SQL> insert into Owns values ('1111','KA04Q2301');

1 row created.

SQL> insert into Owns values ('2222','KA05P1000');

1 row created.

SQL> insert into Owns values ('3333','KA03L1234');

1 row created.

SQL> insert into Owns values ('4444','KA03L9999');

1 row created.

SQL> insert into Owns values('5555','KA01P4026');

1 row created.

SQL> select * from Owns;

DRIVERID	REGNO
1111	KA04Q2301
2222	KA05P1000
3333	KA03L1234
4444	KA03L9999
5555	KA01P4026

SQL> desc Accident;

Name	Null?	Type
REPORTNO	NOT NULL	NUMBER (38)
ACCDATE	NOT NULL	DATE
LOCATION	NOT NULL	VARCHAR2 (15)

SQL> insert into Accident values(12,'01-Jun-2001','Jayanagar');

1 row created.

SQL> insert into Accident values(25,'02-Jul-2002','AvenueRoad');

1 row created.

SQL> insert into Accident values (512,'08-Mar-2000','MGRoad');

1 row created.

SQL> insert into Accident values (1024,'25-Oct-2002','BrigadeRoad');

1 row created.

SQL> insert into Accident values (1000,'23-Dec-2003','RichmondCircle');

1 row created.

SQL> select * from Accident;

REPORTNO	ACCDATE	LOCATION
12	01-JUN-01	Jayanagar
25	02-JUL-02	Avenue Road
512	08-MAR-00	MG Road
1024	25-OCT-02	Brigade Road
1000	23-DEC-03	Richmond Circle

SQL> desc participated;

Name	**Null?**	**Type**
DRIVERID	NOT NULL	VARCHAR2 (15)
REGNO	NOT NULL	VARCHAR2 (9)
REPORTNO	NOT NULL	NUMBER (38)
DAMAGEAM		NUMBER (38)

SQL> insert into Participated values ('1111','KA04Q2301', 12, 2000);

1 row created.

SQL> insert into Participated values ('2222','KA05P1000', 25, 15000);

1 row created.

SQL> insert into Participated values ('3333','KA03L1234', 512, 15500);

1 row created.

SQL> insert into Participated values ('4444','KA03L9999', 1024, 20000);

1 row created.

SQL> insert into Participated values ('5555','KA01P4026', 1000, 5000);

1 row created.

SQL> select * from Participated;

DRIVERID	**REGNO**	**REPORTNO**	**DAMAGEAMOUNT**
1111	KA04Q2301	12	2000
2222	KA05P1000	25	15000
3333	KA03L1234	512	15500
4444	KA03L9999	1024	20000
5555	KA01P4026	1000	5000

******* 1st QUERY *******

BEFORE:

SQL> select * from Participated;

DRIVERID	REGNO	REPORTNO	AMAGEAMOUNT
1111	KA04Q2301	12	2000
2222	KA05P1000	25	15000
3333	KA03L1234	512	15500
4444	KA03L9999	1024	20000
5555	KA01P4026	1000	5000

```
SQL> update Participated
        set Damageamount=25000
        where Regno='KA04Q2301' and Reportno=12;
```

1 row updated.

AFTER:

SQL> select * from Participated;

DRIVERID	REGNO	REPORTNO	DAMAGEAMOUNT
1111	KA04Q2301	12	25000
2222	KA05P1000	25	15000
3333	KA03L1234	512	15500
4444	KA03L9999	1024	20000
5555	KA01P4026	1000	5000

******* 2ND QUERY *******

```
SQL> insert into Person values ('6666','Bunty','Jayanagar');
```

1 row created.

SQL> select * from person;

DRIVERID	NAME	ADDRESS
1111	Ramu	Jayanagar
2222	Manu	Rajajinagar
3333	Pandit	Indiranagar
4444	Gopal	BTM Layout
5555	Lalit	Whitefield
6666	Bunty	Jayanagar

6 rows selected.

SQL> insert into Car values('KA052005','BMW',2005);

1 row created.

SQL> select * from car;

REGNO	MODEL	YEAR
KA04Q2301	Maruthi	2000
KA05P1000	Ford	2002
KA03L1234	Honda	1999
KA03L9999	Tata	2002
KA01P4026	Toyota	2003
KA052005	BMW	2005

6 rows selected.

SQL> insert into owns values('6666','KA052005');

1 row created.

SQL> select * from owns;

DRIVERID	REGNO
1111	KA04Q2301
2222	KA05P1000
3333	KA03L1234
4444	KA03L9999
5555	KA01P4026
6666	KA052005

6 rows selected.

SQL> insert into accident values (420,'30-Jan-2005','MGroad');

1 row created.

SQL> select * from accident;

REPORTNO	ACCDATE	LOCATION
12	01-JUN-01	Jayanagar
25	02-JUL-02	Avenue Road
512	08-MAR-00	MG Road
1024	25-OCT-02	Brigade Road
1000	23-DEC-03	Richmond Circle
420	30-JAN-05	M G road

6 rows selected.

SQL> insert into participated values ('6666','KA052005', 420, 25000);

1 row created.

SQL> select * from participated;

DRIVERID	REGNO	REPORTNO	DAMAGEAMOUNT
1111	KA04Q2301	12	25000
2222	KA05P1000	25	15000
3333	KA03L1234	512	15500
4444	KA03L9999	1024	20000
5555	KA01P4026	1000	5000
6666	KA052005	420	25000

6 rows selected.

******* 3RD QUERY *******

SQL> select count(*) from Accident where Accdate like '__-___-02';

COUNT(*)
2

******* 4TH QUERY *******

SQL> select count(*) from Car C,Participated P
where C.Regno=P.Regno and C.Model='Ford';

COUNT (*)
1

Order Processing Database

Consider the following relations for an order processing database applications in a Company

CUSTOMER (cust:int,cname:string,city:string)

ORDER (order:int,odate:date,cust:int,ord-amt:int)

ORDER-ITEM (order:int,item:int,qty:int)

ITEM (item:int,unitprice:int)

SHIPMENT (order:int,warehouse:int,ship-date:date)

WAREHOUSE (warehouse:int,city:string)

1) create the above tables by properly specifying the primary keys and the foreign keys
2) enter atleast five tuples for each relation
3) produce a listing: CUSTNAME,# of orders,AVG_ORDER_AMT,where the middle column is the total no of orders by the customer and the last column is the average order amount for that customer
4) list the order # for orders that were shipped from all warehouses that the company has in a specified city
5) Demonstrate how you delete item #10 from ITEM table and make the field null in the ORDER_ITEM table.

```
SQL> create table customer(
    Custno integer,
    Cname varchar(15) not null,
    City varchar(15),
    primary key (Custno));
```

Table created.

```
SQL> create table corder(
    Orderno integer,
    Odate date not null,
    Custno integer,
    OrderAmount integer not null,
    primary key (Orderno),
    foreign key (Custno) references Customer(Custno));
```

Table created.

```
SQL> create table item(
    itemno integer,
    unitprice integer not null,
    primary key (itemno));
```
Table created.

```
SQL> create table order_item(
orderno integer,
itemno integer,
quantity integer,
primary key (orderno,itemno),
foreign key (orderno) references corder(orderno),
foreign key (itemno) references item(itemno));
```
Table created.

```
SQL> create table warehouse(
  warehouseno integer,
  city varchar(15) not null,
  primary key (warehouseno));
```
Table created.

```
SQL> create table shipment(
    orderno integer,
    warehouseno integer,
    shipdate date,
    primary key (orderno,warehouseno),
    foreign key (orderno) references corder(orderno),
    foreign key (warehouseno) references warehouse(warehouseno));
```
Table created.

SQL> desc customer;

```
  SQL> insert into customer values(1111,'Jack','Bangalore');
```
1 row created.

```
SQL> insert into customer values(2222,'Fred','New York');
```

1 row created.

```
SQL> insert into customer values(3333,'George','Amsterdam');
```

1 row created.

```
SQL> insert into customer values(4444,'Kumar','Bangalore');
```

1 row created.

```
SQL> insert into customer values(5555,'Das','Bangalore');
```

1 row created.

SQL> select * from customer;

CUSTNO	CNAME	CITY
1111	Jack	Bangalore
2222	Fred	New York
3333	George	Amsterdam
4444	Kumar	Bangalore
5555	Das	Bangalore

SQL> desc corder;

Name	Null?	Type
ORDERNO	NOT NULL	NUMBER(38)
ODATE	NOT NULL	DATE
CUSTNO		NUMBER(38)
ORDERAMOUNT	NOT NULL	NUMBER(38)

SQL> insert into corder values(1,'10-Mar-2004',1111,10000);

1 row created.

SQL> insert into corder values(2,'15-Apr-2005',2222,25000);

1 row created.

SQL> insert into corder values(3,'15-Dec-2004',3333,30000);

1 row created.

SQL> insert into corder values(4,'17-Jun-2004',4444,40000);

1 row created.

SQL> insert into corder values(5,'11-Jul-2004',2222,50000);

1 row created.

SQL> select * from corder;

ORDERNO	ODATE	CUSTNO	ORDERAMOUNT
1	10-MAR-04	1111	10000
2	15-APR-05	2222	25000
3	15-DEC-04	3333	30000
4	17-JUN-04	4444	40000
5	11-JUL-04	2222	50000

SQL> desc item;

Name	Null?	Type
ITEMNO	NOT NULL	NUMBER(38)
UNITPRICE	NOT NULL	NUMBER(38)

SQL> insert into item values(11,500);

1 row created.

SQL> insert into item values(22,250);

1 row created.

SQL> insert into item values(33,100);

1 row created.

SQL> insert into item values(44,50);

1 row created.

SQL> insert into item values(55,2);

1 row created.

SQL> insert into item values(10,150);

1 row created.

SQL> select * from item;

ITEMNO	UNITPRICE
11	500
22	250
33	100
44	50
55	2
10	150

6 rows selected.

SQL> desc order_item;

Name	Null?	Type
ORDERNO	NOT NULL	NUMBER(38)
ITEMNO	NOT NULL	NUMBER(38)
QUANTITY		NUMBER(38)

SQL> insert into order_item values (1,11,150);

1 row created.

SQL> insert into order_item values (2,22,200);

1 row created.

SQL> insert into order_item values (3,33,300);

1 row created.

SQL> insert into order_item values (4,44,400);

1 row created.

SQL> insert into order_item values (5,55,500);

1 row created.

SQL> insert into order_item values(2,10,500);

1 row created.

SQL> select * from order_item;

ORDERNO	ITEMNO	QUANTITY
1	11	150
2	22	200
3	33	300
4	44	400
5	55	500
2	10	500

6 rows selected.

SQL> desc warehouse;

Name	Null?	Type
WAREHOUSENO	NOT NULL	NUMBER(38)
CITY	NOT NULL	VARCHAR2(15)

SQL> insert into warehouse values(17,'Bangalore');

1 row created.

SQL> insert into warehouse values(27,'Chennai');

1 row created.

SQL> insert into warehouse values(37,'Pune');

1 row created.

SQL> insert into warehouse values(47,'Coimbatore');

1 row created.

SQL> insert into warehouse values(57,'Cochin');

1 row created.

SQL> select * from warehouse;

WAREHOUSENO	CITY
17	Bangalore
27	Chennai
37	Pune
47	Coimbatore
57	Cochin

SQL> desc shipment;

Name	Null?	Type
ORDERNO	NOT NULL	NUMBER(38)
WAREHOUSENO	NOT NULL	NUMBER(38)
SHIPDATE		DATE

SQL> insert into shipment values(1,17,'02-Jul-2005');

1 row created.

SQL> insert into shipment values(2,17,'15-Apr-2005');

1 row created.

SQL> insert into shipment values(3,27,'6-Jun-2005');

1 row created.

SQL> insert into shipment values(4,37,'10-May-2005');

1 row created.

SQL> insert into shipment values(5,47,'9-Feb-2005');

1 row created.

SQL> select * from shipment;

ORDERNO	WAREHOUSENO	SHIPDATE
1	17	02-JUL-05
2	17	15-APR-05
3	27	06-JUN-05
4	37	10-MAY-05
5	47	09-FEB-05

******* 1ST QUERY *******

```
SQL> select C.Cname,count(CO.orderno),Avg(CO.Orderamount)
   from Customer C,corder CO
   where C.custno=CO.custno
   group by C.Cname,CO.custno;
```

CNAME	COUNT(CO.ORDERNO)	AVG(CO.ORDERAMOUNT)
Fred	2	37500
George	1	30000
Jack	1	10000
Kumar	1	40000

******* 2ND QUERY *******

```
SQL> select orderno,warehouseno
   from shipment
   where warehouseno in
   (select warehouseno
    from warehouse
    where city='Bangalore');
```

ORDERNO	WAREHOUSENO
1	17
2	17

STUDENT DATABASE

Consider the following database of student enrollment in courses and books adopted for each course

STUDENT (regno:string,name:string,major:string,bdate:date)

COURSE (course:int,cname:string,dept:string)

ENROLL (regno:string,course:int,marks:int)

BOOK_ADOPTION (course:int,sem:int,book-ISBN:int)

TEXT (book-ISBN: int,book-title:string,publisher:string,author:string)

1) create the above tables by properly specifying the primary keys and foreign keys
2) enter five tuples for each relation
3) demonstrate how you add a new text book to the database and make this book be adopted by some department
4) produce a list of text books in alphabetical order for courses offered by CS department that use more than two books
5) list any department that has all its adopted books published by a specific publisher

```
SQL> create table Student(
   Regno varchar(10),
   Name varchar(10) not null,
   Major varchar(10) not null,
   Bdate date,
   primary key (Regno));
```

Table created.

```
SQL> create table Course(
   Courseno integer,
   Cname varchar(10) not null,
   Dept varchar(10) not null,
   primary key (Courseno));
```

Table created.

```
SQL> create table Enroll(
    Regno varchar(10),
    Courseno integer,
    Sem integer not null,
    Marks integer,
    primary key (Regno,Courseno),
    foreign key (Regno) references Student(Regno),
    foreign key (Courseno) references Course(Courseno));
```

Table created.

```
SQL> create table Text(
    ISBN integer,
    Booktitle varchar(20) not null,
    Publisher varchar(20),
    Author varchar(15),
    primary key (ISBN));
```

Table created.

```
SQL> create table Book_adoption(
    Courseno integer,
    Sem integer,
    ISBN integer,
    primary key (Courseno,Sem),
    foreign key (Courseno) references Course(Courseno),
    foreign key (ISBN) references Text(ISBN));
```

Table created.

SQL> desc student;

Name	Null?	Type
REGNO	NOT NULL	VARCHAR2(10)
NAME	NOT NULL	VARCHAR2(10)
MAJOR	NOT NULL	VARCHAR2(10)
BDATE		DATE

SQL> insert into Student values('1BI02CS010','Karan','CSE','02-Jan-1984');

1 row created.

SQL> insert into Student values('1BI02EE015','Jack','EEE','15-Apr-1983');

1 row created.

SQL> insert into Student values('1BI00CS010','Adi','CSE','02-Jan-1982');

1 row created.

SQL> insert into Student values('1BI01EC089','Rahul','ECE','01-Dec-1983');

1 row created.

SQL> insert into student values ('1BI01ME075','Sachin','MECH','18-Jul-1983');

1 row created.

SQL> select * from student;

REGNO	NAME	MAJOR	BDATE
1BI01ME075	Sachin	MECH	18-JUL-83
1BI02CS010	Karan	CSE	02-JAN-84
1BI02EE015	Jack	EEE	15-APR-83
1BI00CS010	Adi	CSE	02-JAN-82
1BI01EC089	Rahul	ECE	01-DEC-83

SQL> desc course;

Name	**Null?**	**Type**
COURSENO	NOT NULL	NUMBER(38)
CNAME	NOT NULL	VARCHAR2(10)
DEPT	NOT NULL	VARCHAR2(10)

SQL> insert into course values(11,'DSC','CSE');

1 row created.

SQL> insert into course values(22,'ADA','CSE');

1 row created.

SQL> insert into course values(33,'CN','EC');

1 row created.

SQL> insert into course values(44,'TD','MECH');

1 row created.

SQL> insert into course values(55,'MP','EC');

1 row created.

SQL> select * from course;

COURSENO	CNAME	DEPT
11	DSC	CSE
22	ADA	CSE
33	CN	EC
44	TD	MECH
55	MP	EC

SQL> desc enroll;

Name	Null?	Type
REGNO	NOT NULL	VARCHAR2(10)
COURSENO	NOT NULL	NUMBER(38)
SEM	NOT NULL	NUMBER(38)
MARKS		NUMBER(38)

SQL> insert into enroll values('1BI02CS010',22,5,72);

1 row created.

SQL> insert into enroll values('1BI00CS010',11,3,90);

1 row created.

SQL> insert into enroll values('1BI01EC089',33,6,52);

1 row created.

SQL> insert into enroll values('1BI01ME075',44,4,85);

1 row created.

SQL> insert into enroll values('1BI02EE015',22,5,75);

1 row created.

SQL> select * from enroll;

REGNO	COURSENO	SEM	MARKS
1BI02CS010	22	5	72
1BI00CS010	11	3	90
1BI01EC089	33	6	52
1BI01ME075	44	4	85
1BI02EE015	22	5	75

SQL> desc text;

Name	Null?	Type
ISBN	NOT NULL	NUMBER(38)
BOOKTITLE	NOT NULL	VARCHAR2(20)
PUBLISHER		VARCHAR2(20)
AUTHOR		VARCHAR2(15)

SQL> insert into text values(7722,'VB6','Dreamtech','Holzner');

1 row created.

SQL> insert into text values(1144,'DS with C','Sapna','Nandagopalan');

1 row created.

SQL> insert into text values(4400,'C programming', 'TMH', 'Balaguruswamy');

1 row created.

SQL> insert into text values(5566,'Computer Nw','PHI','Tennenbaum');

1 row created.

SQL> insert into text values(3388,'MP','PHI','Brey');

1 row created.

SQL> select * from text;

ISBN	BOOKTITLE	PUBLISHER	AUTHOR
7722	VB6	Dreamtech	Holzner
1144	DS with C	Sapna	Nandagopalan
4400	C Programming	TMH	Balaguruswamy
5566	Computer Nw	PHI	Tennenbaum
3388	MP	PHI	Brey

SQL> desc book_adoption;

Name	Null?	Type
COURSENO	NOT NULL	NUMBER(38)
SEM	NOT NULL	NUMBER(38)
ISBN		NUMBER(38)

SQL> insert into book_adoption values(11,3,7722);

1 row created.

SQL> insert into book_adoption values(22,4,7722);

1 row created.

SQL> insert into book_adoption values(11,5,4400);

1 row created.

SQL> insert into book_adoption values(11,8,5566);

1 row created.

SQL> insert into book_adoption values(55,4,3388);

1 row created.

SQL> insert into book_adoption values(44,4,5566);

1 row created.

SQL> insert into book_adoption values(44,7,3388);

1 row created.

SQL> select * from book_adoption;

COURSENO	SEM	ISBN
11	3	7722
22	4	7722
11	5	4400
11	8	5566
55	4	3388
44	4	5566
44	7	3388

7 rows selected.

******* 1ST QUERY *******

SQL> insert into text values(1234,'Elec.Circuits','Sapna','Giridhar');

1 row created.

SQL> insert into book_adoption values(55,3,1234);

1 row created.

SQL> select * from text;

ISBN	BOOKTITLE	PUBLISHER	AUTHOR
VB6	Dreamtech	Holzner	
1144	DS with C	Sapna	Nandagopalan
4400	C Programming	TMH	Balaguruswamy
5566	Computer Nw	PHI	Tennenbaum
3388	MP	PHI	Brey
1234	Elec.Circuits	Sapna	Giridhar

6 rows selected.

SQL> select * from book_adoption;

COURSENO	SEM	ISBN
11	3	7722
22	4	7722
11	5	4400
11	8	5566
55	4	3388
44	4	5566
44	7	3388
55	3	1234

8 rows selected.

******* 2ND QUERY *******

```
SQL> select C.Courseno,T.ISBN,T.Booktitle
  from Course C,Book_adoption BA,Text T
  where C.Courseno=BA.Courseno and BA.ISBN=T.ISBN and C.Dept='CSE'
  group by C.Courseno,T.ISBN,T.Booktitle;
```

COURSENO	ISBN	BOOKTITLE
11	4400	C Programming
11	5566	Computer Nw
11	7722	VB6
22	7722	VB6

******* 3RD QUERY *******

```
SQL>  select distinct C.Dept
  from Course C, Book_adoption A,Text T
  where C.Courseno=A.Courseno and
  A.ISBN=T.ISBN and
  not exists (( select Y.ISBN
  from Course X,Book_Adoption Y
  where X.Courseno=Y.Courseno
  and X.Dept=C.Dept)
  minus
 (select ISBN
 from Text
 where publisher='PHI'));
```

DEPT

MECH

BOOK DEALER DATABASE

The following tables are maintained by a book dealer

AUTHOR(author-id:int,name:string,city:string,country:string)

PUBLISHER(publisher-id:int,name:string,city:string,country:string)

CATALOG(book-id:int,title:string,author-id:int,publisher-id:int,category-id:int,year:int,price:int)

CATEGORY(category-id:int,description:script)

ORDER-DETAILS(order-no:int,book-id:int,quantity:int)

1) create the above details by properly specifying the primary keys and foreign keys
2) enter atleast five tuples for each relation
3) find the author of the book which has maximium sales
4) demonstrate how you increase the price of books published by a specific publisher by 10%
5) generation of suitable reports
6) create suitable front end for querying and display the results

```
SQL> create table Author(
    Authorid integer,
    Aname varchar(15),
    Acity varchar(15),
    Acountry varchar(15),
    primary key (Authorid));
```

Table created.

```
SQL> create table Publisher(
    Publisherid integer,
    Pname varchar(15),
    Pcity varchar(15),
    Pcountry varchar(15),
    primary key (Publisherid));
```

Table created.

```
SQL> create table Category(
    Categoryid integer,
    Description varchar(20),
    primary key (Categoryid));
```

Table created.

```
SQL> create table Catalog(
    Bookid integer,
    Title varchar(20),
    Authorid integer,
    Publisherid integer,
    Categoryid integer,
    Year integer,
    Price integer,
    primary key (Bookid),
   foreign key (Authorid) references Author(Authorid),
   foreign key (Publisherid) references Publisher(Publisherid),
   foreign key (Categoryid) references Category(Categoryid));
```

Table created.

```
SQL> create table Order_details(
    Orderno integer,
    Bookid integer,
    Quantity integer,
    primary key (Orderno,Bookid),
    foreign key (Bookid) references Catalog(Bookid));
```

Table created.

SQL> desc author;

Name	Null?	Type
AUTHORID	NOT NULL	NUMBER(38)
ANAME		VARCHAR2(15)
ACITY		VARCHAR2(15)
ACOUNTRY		VARCHAR2(15)

SQL> insert into Author values(1000,'Nandagopalan','Bangalore','India');

1 row created.

SQL> insert into Author values(2000,'Tony','Haywood','USA');

1 row created.

SQL> insert into Author values(3000,'Holzner','New York','USA');

1 row created.

SQL> insert into Author values(4000,'Tennenbaum','London','UK');

1 row created.

SQL> insert into Author values(5000,'Balaguruswamy','Chennai','India');

1 row created.

SQL> select * from Author;

AUTHORID	ANAME	ACITY	ACOUNTRY
1000	Nandagopalan	Bangalore	India
2000	Tony	Haywood	USA
3000	Holzner	New York	USA
4000	Tennenbaum	London	UK
5000	Balaguruswamy	Chennai	India

SQL> desc publisher;

Name	Null?	Type
PUBLISHERID	NOT NULL	NUMBER(38)
PNAME		VARCHAR2(15)
PCITY		VARCHAR2(15)
PCOUNTRY		VARCHAR2(15)

SQL> insert into publisher values(11,'Wiely','NewDelhi','India');

1 row created.

SQL> insert into publisher values(22,'PHI','California','USA');

1 row created.

SQL> insert into publisher values(33,'Sapna','Bangalore','India');

1 row created.

SQL> insert into publisher values(44,'TMH','NewYork','USA');

1 row created.

SQL> insert into publisher values(55,'Wrox','Texas','USA');

1 row created.

SQL> select * from publisher;

PUBLISHERID	PNAME	PCITY	PCOUNTRY
11	Wiely	NewDelhi	India
22	PHI	California	USA
33	Sapna	Bangalore	India
44	TMH	NewYork	USA
55	Wrox	Texas	USA

SQL> desc category;

Name	Null?	Type
CATEGORYID	NOT NULL	NUMBER(38)
DESCRIPTION		VARCHAR2(20)

SQL> insert into category values(1,'OS');

1 row created.

SQL> insert into category values(2,'Languages');

1 row created.

SQL> insert into category values(3,'Hardware');

1 row created.

SQL> insert into category values(4,'Algorithms');

1 row created.

SQL> insert into category values(5,'Internet');

1 row created.

SQL> select * from category;

CATEGORYID	DESCRIPTION
1	OS
2	Languages
3	Hardware
4	Algorithms
5	Internet

SQL> desc catalog;

Name	Null?	Type
BOOKID	NOT NULL	NUMBER(38)
TITLE		VARCHAR2(20)
AUTHORID		NUMBER(38)
PUBLISHERID		NUMBER(38)
CATEGORYID		NUMBER(38)
YEAR		NUMBER(38)
PRICE		NUMBER(38)

SQL> insert into catalog values(123,'DSC',1000,33,2,2000,185);

1 row created.

SQL> insert into catalog values(456,'Networks',4000,44,4,2002,365);

1 row created.

SQL> insert into catalog values(789,'VB6',2000,11,2,2000,300);

1 row created.

SQL> insert into catalog values (213,'Frontpage2002',4000,44,5,2003,500);

1 row created.

SQL> insert into catalog values(879,'ADA',1000,33,4,2001,195);

1 row created.

SQL> select * from catalog;

BOOKID	TITLE	AUTHORID	PUBLISHERID	CATEGORYID	YEAR	PRICE
123	DSC	1000	33	2	2000	185
456	Networks	4000	44	4	2002	365
789	VB6	2000	11	2	2000	300
213	Frontpage2002	4000	44	5	2003	500
879	ADA	1000	33	4	2001	195

SQL> desc order_details;

Name	Null?	Type
ORDERNO	NOT NULL	NUMBER(38)
BOOKID	NOT NULL	NUMBER(38)
QUANTITY		NUMBER(38)

SQL> insert into order_details values(112,123,100);

1 row created.

SQL> insert into order_details values(113,123,20);

1 row created.

SQL> insert into order_details values(114,213,50);

1 row created.

SQL> insert into order_details values(115,789,500);

1 row created.

SQL> insert into order_details values(116,879,8);

1 row created.

SQL> select * from order_details;

ORDERNO	BOOKID	QUANTITY
112	123	100
113	123	20
114	213	50
115	789	500
116	879	8

******* 1ST QUERY *******

SQL> select C.Authorid,A.Aname
from Catalog C,Author A
where A.Authorid=C.Authorid and C.Year>2000 and C.Price>(Select Avg(Price) from Catalog)
group by C.Authorid,A.Aname
having count(C.Authorid)>=2;

AUTHORID	ANAME
4000	Tennenbaum

******* 2ND QUERY *******

SQL> create view salesdetails as(
Select OD.Bookid as Book#,C.Price as Cost,Sum(OD.quantity) as Qty,
sum(OD.quantity*C.price) as sales
from Order_details OD,Catalog C,Author A
where OD.Bookid=C.Bookid and C.Authorid=A.Authorid
group by OD.Bookid,C.Price);

View created.

```
SQL> select A.Authorid,A.Aname,S.Book#,S.Sales
    from Author A,Catalog C,Salesdetails S
    where A.Authorid=C.Authorid and S.Book#=C.Bookid and sales=(
    select Max(Sales) from Salesdetails);
```

AUTHORID	ANAME	BOOK#	SALES
2000	Tony	789	150000

******* 3RD QUERY *******

BEFORE:

SQL> select * from Catalog;

BOOKID	TITLE	AUTHORID	PUBLISHERID	CATEGORYID	YEAR	PRICE
123	DSC	1000	33	2	2000	185
456	Networks	4000	44	4	2002	365
789	VB6	2000	11	2	2000	300
213	Frontpage	2002	4000	44	5	2003	500
879	ADA	1000	33	4	2001	195

```
SQL> update catalog
   set price=price*1.10
  where publisherid=33;
```

2 rows updated.

AFTER:

SQL> select * from catalog;

BOOKID	TITLE	AUTHORID	PUBLISHERID	CATEGORYID	YEAR	PRICE
123	DSC	1000	33	2	2000	204
456	Networks	4000	44	4	2002	365
789	VB6	2000	11	2	2000	300
213	Frontpage	2002	4000	44	5	2003	500
879	ADA	1000	33	4	2001	215

BANKING DATABASE

Consider the following database for a banking enterprise

BRANCH(branch-name:string,branch-city:string,assets:real)

ACCOUNT(accno:int,branch-name:string,balance:real)

DEPOSITOR(customer-name:string,accno:int)

CUSTOMER(customer-name:string,customer-street:string,city:string)

LOAN(loan-number:int,branch-name:string,loan-number-int)

BORROWER(customer-name:string,customer-street:string,city:string)

1) create the above tables by properly specifying the primary and foreign keys
2) enter 5 tuples for each relation
3) find all the customers who have atleast two accounts at the main branch
4) find all the customers who have an account at all the branches located in a specified city
5) demonstrate how you delete all account tuples at every branch located in a specified city
6) genetration of suitable reports
7) create suitable front end for querying and display the results

```
SQL> create table branch(
  branchname varchar(15),
  branchcity varchar(15),
  assets real,
  primary key (branchname));
```

Table created.

```
SQL> create table accnt(
   accountno integer,
  branchname varchar(15),
   balance real,
  primary key (accountno),
   foreign key (branchname) references branch(branchname));
```

Table created.

```
SQL> create table depositor(
  customername varchar(15),
  accountno integer,
  primary key (customername,accountno),
  foreign key (accountno) references accnt(accountno));
```

Table created.

```
SQL> create table custmer(
  customername varchar(15),
  customerstreet varchar(15),
  city varchar(15),
  primary key (customername));
```

Table created.

```
SQL> create table loan(
  loanno integer,
  branchname varchar(15),
  amount real,
  primary key (loanno),
  foreign key (branchname) references branch(branchname));
```

Table created.

```
SQL> create table borrower(
  customername varchar(15),
  loanno integer,
  primary key (customername,loanno),
  foreign key (customername) references custmer(customername),
  foreign key (loanno) references loan(loanno));
```

Table created.

SQL> desc branch;

Name	Null?	Type
BRANCHNAME	NOT NULL	VARCHAR2(15)
BRANCHCITY		VARCHAR2(15)
ASSETS		NUMBER(63)

```
SQL> insert into branch values('Jayanagar','Bangalore','15000000');
```

1 row created.

```
SQL> insert into branch values('Basavanagudi','Bangalore','25000000');
```

1 row created.

SQL> insert into branch values('Noida','NewDelhi','50000000');

1 row created.

SQL> insert into branch values('Marinedrive','Mumbai','40000000');

1 row created.

SQL> insert into branch values('GreenPark','Newdelhi','30000000');

1 row created.

SQL> select * from branch;

BRANCHNAME	BRANCHCITY	ASSETS
Jayanagar	Bangalore	15000000
Basavanagudi	Bangalore	25000000
Noida	NewDelhi	50000000
Marinedrive	Mumbai	40000000
GreenPark	Newdelhi	30000000

SQL> desc accnt;

Name	Null?	Type
ACCOUNTNO	NOT NULL	NUMBER(38)
BRANCHNAME		VARCHAR2(15)
BALANCE		NUMBER(63)

SQL> insert into accnt values('123','Jayanagar','25000');

1 row created.

SQL> insert into accnt values('156','Jayanagar','30000');

1 row created.

SQL> insert into accnt values('456','Basavanagudi','15000');

1 row created.

SQL> insert into accnt values('789','Noida','25000');

1 row created.

SQL> insert into accnt values('478','Marinedrive','48000');

1 row created.

SQL> insert into accnt values('778','GreenPark','60000');

1 row created.

SQL> insert into accnt values('189','Basavanagudi','48888');

1 row created.

SQL> select * from accnt;

ACCOUNTNO	BRANCHNAME	BALANCE
123	Jayanagar	25000
156	Jayanagar	30000
456	Basavanagudi	15000
789	Noida	25000
478	Marinedrive	48000
778	GreenPark	60000
189	Basavanagudi	48888

7 rows selected.

SQL> desc custmer;

Name	Null?	Type
CUSTOMERNAME	NOT NULL	VARCHAR2(15)
CUSTOMERSTREET		VARCHAR2(15)
CITY		VARCHAR2(15)

SQL> insert into custmer values('Ramu','Jayanagar','Bangalore');

1 row created.

SQL> insert into custmer values('Kumar','Basavanagudi','Bangalore');

1 row created.

SQL> insert into custmer values('John','Noida','Newdelhi');

1 row created.

SQL> insert into custmer values('Mike','Marinedrive','Mumbai');

1 row created.

SQL> insert into custmer values('Sachin','GreenPark','NewDelhi');

1 row created.

SQL> select * from custmer;

CUSTOMERNAME	CUSTOMERSTREET	CITY
Ramu	Jayanagar	Bangalore
Kumar	Basavanagudi	Bangalore
John	Noida	Newdelhi
Mike	Marinedrive	Mumbai
Sachin	GreenPark	NewDelhi

SQL> desc depositor;

Name	Null?	Type
CUSTOMERNAME	NOT NULL	VARCHAR2(15)
ACCOUNTNO	NOT NULL	NUMBER(38)

SQL> insert into depositor values('Ramu',123);

1 row created.

SQL> insert into depositor values('Ramu',156);

1 row created.

SQL> insert into depositor values('Ramu',189);

1 row created.

SQL> insert into depositor values('Kumar',456);

1 row created.

SQL> insert into depositor values('John',789);

1 row created.

SQL> insert into depositor values('Mike',478);

1 row created.

SQL> insert into depositor values('Sachin',778);

1 row created.

SQL> select * from depositor;

CUSTOMERNAME	ACCOUNTNO
Ramu	123
Ramu	156
Ramu	189
Kumar	456
John	789
Mike	478
Sachin	778

7 rows selected.

SQL> desc loan;

Name	Null?	Type
LOANNO	NOT NULL	NUMBER(38)
BRANCHNAME		VARCHAR2(15)
AMOUNT		NUMBER(63)

SQL> insert into loan values('1111','Jayanagar','250000');

1 row created.

SQL> insert into loan values('2222','Basavanagudi','350000');

1 row created.

SQL> insert into loan values('3333','Noida','150000');

1 row created.

SQL> insert into loan values('4444','Marinedrive','1500000');

1 row created.

SQL> insert into loan values('5555','GreenPark','7500000');

1 row created.

SQL> select * from loan;

LOANNO	BRANCHNAME	AMOUNT
1111	Jayanagar	250000
2222	Basavanagudi	350000
3333	Noida	150000
4444	Marinedrive	1500000
5555	GreenPark	7500000

SQL> desc borrower;

Name	Null?	Type
CUSTOMERNAME	NOT NULL	VARCHAR2(15)
LOANNO	NOT NULL	NUMBER(38)

SQL> insert into borrower values('Ramu',1111);

1 row created.

SQL> insert into borrower values('Kumar',2222);

1 row created.

SQL> insert into borrower values('John',3333);

1 row created.

SQL> insert into borrower values('Mike',4444);

1 row created.

SQL> insert into borrower values('Sachin',5555);

1 row created.

SQL> select * from borrower;

CUSTOMERNAME	LOANNO
Ramu	1111
Kumar	2222
John	3333
Mike	4444
Sachin	5555

******* 1ST QUERY *******

```
SQL> select customername
   from Depositor D,Accnt A
  where D.accountno=A.accountno and
  branchname='Jayanagar'
  having count(D.accountno)>=2
  group by customername;
```

CUSTOMERNAME

Ramu

******* 2ND QUERY *******

```
SQL> select customername
  from Branch B,Accnt A,Depositor D
  where B.Branchname=A.Branchname and
   A.Accountno=D.Accountno and
  B.Branchcity='Bangalore'
  having count(distinct B.Branchname)=(Select
   count(Branchname)
 from Branch
  where Branchcity='Bangalore')
 group by customername;
```

CUSTOMERNAME

Ramu

******* 3RD QUERY *******

```
SQL>delete from ACCOUNT
where BNAME in ( select         BNAME
                 from BRANCH
                 where          BCITY = '&CITY' ) ;
```