

1. Insurance database.

PERSON(driver_id:string , name:string , address:string)

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

ACCIDENT(report_number:int , accd_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 foreign keys.
- 2) Enter at least five tuples for each relation.
- 3) Demonstrate updating of data value, insertion of new record.
- 4) Write queries
 - a. Find the total number of people who owned cars that were involved in accidents in a specific year.
 - b. Find the number of accidents in which cars belonging to a specific model were involved.
 - c. List the details of the cars not involved in accident for a specific year.

PERSON TABLE

```
CREATE TABLE PERSON(  
  DRIVER_ID      VARCHAR2(10),  
  NAME           VARCHAR2(10),  
  ADDRESS        VARCHAR2(50));
```

```
ALTER TABLE PERSON ADD CONSTRAINT DRVR_ID_PK PRIMARY  
KEY(DRIVER_ID);
```

```
INSERT INTO PERSON VALUES( 11 , 'KRISHNAN','GURGOAN');  
INSERT INTO PERSON VALUES( 22 , 'NAVATHE','DELHI');  
INSERT INTO PERSON VALUES( 33 , 'GERKHE','CALCUTTA');  
INSERT INTO PERSON VALUES( 44 , 'ELMARSEE','BANGALORE');  
INSERT INTO PERSON VALUES( 55 , 'LEVINTIN','NEWYORK');
```

CAR TABLE

```
CREATE TABLE CAR(  
  REGNO          VARCHAR2(10),  
  MODEL          VARCHAR2(10),  
  YEAR           DATE);
```

```
ALTER TABLE CAR ADD CONSTRAINT REGNO_PK PRIMARY KEY(REGNO);
```

```
INSERT INTO CAR VALUES(110,'HONDA',TO_DATE('2002','YYYY'));
INSERT INTO CAR VALUES(112,'LAMBO',TO_DATE('2003','YYYY'));
INSERT INTO CAR VALUES(113,'AUDI',TO_DATE('2004','YYYY'));
INSERT INTO CAR VALUES(114,'MARUTI',TO_DATE('2005','YYYY'));
INSERT INTO CAR VALUES(115,'SUZUKI',TO_DATE('2006','YYYY'));
```

----- ACCIDENT TABLE -----

```
CREATE TABLE ACCIDENT(
REPORT_NUMBER      NUMBER(10),
ACCD_DATE          DATE,
LOCATION             VARCHAR2(10));
```

```
ALTER TABLE ACCIDENT ADD CONSTRAINT RPT_NO PRIMARY
KEY(REPORT_NUMBER);
```

```
INSERT INTO SYSTEM.ACCIDENT VALUES(11,TO_DATE('10-06-2001','DD-MM-
YYYY'),'BELGAVI');
INSERT INTO SYSTEM.ACCIDENT VALUES(12,TO_DATE('12-08-2003','DD-MM-
YYYY'),'BELGAVI');
INSERT INTO SYSTEM.ACCIDENT VALUES(13,TO_DATE('14-10-2015','DD-MM-
YYYY'),'BELGAVI');
INSERT INTO SYSTEM.ACCIDENT VALUES(14,TO_DATE('16-12-2010','DD-MM-
YYYY'),'BELGAVI');
INSERT INTO SYSTEM.ACCIDENT VALUES(15,TO_DATE('18-02-2013','DD-MM-
YYYY'),'BELGAVI');
```

OWNS TABLE -----

```
CREATE TABLE OWNS(
DRIVER_ID          VARCHAR2(10),
REGNO              VARCHAR2(10));
```

```
ALTER TABLE OWNS ADD CONSTRAINT FK_DRVR_ID FOREIGN KEY
(DRIVER_ID) REFERENCES PERSON((DRIVER_ID));
```

```
ALTER TABLE OWNS ADD CONSTRAINT FK_REGNO_ID FOREIGN KEY
(REGNO) REFERENCES CAR(REGNO);
```

```
INSERT INTO SYSTEM.OWNS VALUES(11,110);
INSERT INTO SYSTEM.OWNS VALUES(22,112);
INSERT INTO SYSTEM.OWNS VALUES(33,113);
INSERT INTO SYSTEM.OWNS VALUES(44,114);
INSERT INTO SYSTEM.OWNS VALUES(55,115);
```

PARTICIPATED TABLE

CREATE TABLE PARTICIPATED(
DRIVER_ID VARCHAR2(10),
REGNO VARCHAR2(10),
REPORT_NUMBER NUMBER(10),
DAMAGE_AMOUNT NUMBER(10));

ALTER TABLE PARTICIPATED ADD CONSTRAINT FK_DRVR1_ID FOREIGN
KEY (DRIVER_ID) REFERENCES PERSON((DRIVER_ID);

ALTER TABLE PARTICIPATED ADD CONSTRAINT FK_REGNO1_ID FOREIGN
KEY (REGNO) REFERENCES CAR(REGNO);

ALTER TABLE PARTICIPATED ADD CONSTRAINT FK_RPTNO_ID FOREIGN
KEY REPORT_NUMBER) REFERENCES ACCIDENT(REPORT_NUMBER);

INSERT INTO SYSTEM.PARTICIPATED VALUES('11','110',11,5000);
INSERT INTO SYSTEM.PARTICIPATED VALUES('22','112',12,6000);
INSERT INTO SYSTEM.PARTICIPATED VALUES('33','113',13,7000);
INSERT INTO SYSTEM.PARTICIPATED VALUES('44','114',14,8000);
INSERT INTO SYSTEM.PARTICIPATED VALUES('55','115',15,9000);

2. Order processing database application in a company.

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

ORDER(orderno:int , odate:date , custno:int , ord_amt:int)

ORDER_ITEM(orderno:int , itemno:int , quantity:int)

ITEM(itemno:int , unitprice:int)

SHIPMENT(orderno:int , warehouseno:int , ship_date:date)

WAREHOUSE(warehouseno:int , city:string)

- 1) Create the above tables by properly specifying the primary keys and foreign keys.
- 2) Enter at least five tuples for each relation.
- 3) Produce a listing: custname , No_of_orders , Avg_order_amount , where the middle column is the total number of orders by the customer and the last column is the average order amount for that customer.
- 4) List the orderno for orders that were shipped from all the warehouses that the company has in a specific city.
- 5) Demonstrate the deletion of an item from the ITEM table and demonstrate a method of handling the rows in the ORDER_ITEM table that contains this particular item.

CUSTOMER TABLE

```
-----  
CREATE TABLE CUSTOMER(  
CUSTNO          NUMBER(20),  
CNAME           VARCHAR2(50),  
CITY            VARCHAR2(50));
```

```
ALTER TABLE CUSTOMER ADD CONSTRAINT CUSTNO_PK PRIMARY  
KEY(CUSTNO);
```

```
INSERT INTO CUSTOMER VALUES('22','NAVATHE','DELHI');  
INSERT INTO CUSTOMER VALUES('11','KRISHNAN','GURGOAN');  
INSERT INTO CUSTOMER VALUES('33','GERKHE','CALCUTTA');  
INSERT INTO CUSTOMER VALUES('44','ELMARSEE','BANGALORE');  
INSERT INTO CUSTOMER VALUES('55','LEVINTIN','NEWYORK');
```

ORDERS TABLE

```
-----  
CREATE TABLE ORDERS(  
ORDERNO          NUMBER(20),  
ODATE            DATE,  
CUSTNO           NUMBER(20),  
ORD_AMT          NUMBER(20));
```

```
ALTER TABLE ORDERS ADD CONSTRAINT ORDERNO_PAK PRIMARY  
KEY(ORDERNO);
```

```
ALTER TABLE ORDERS ADD CONSTRAINT FK_CUSTNO FOREIGN KEY  
(CUSTNO) REFERENCES CUSTOMER(CUSTNO);
```

```
INSERT INTO ORDERS VALUES(11,TO_DATE('12-12-2002','DD-MM-  
YYYY'),'22','2000');  
INSERT INTO ORDERS VALUES(12,TO_DATE('12-12-2003','DD-MM-  
YYYY'),'11','5000');  
INSERT INTO ORDERS VALUES(13,TO_DATE('12-12-2004','DD-MM-  
YYYY'),'33','6000');  
INSERT INTO ORDERS VALUES(14,TO_DATE('12-12-2005','DD-MM-  
YYYY'),'44','7000');  
INSERT INTO ORDERS VALUES(15,TO_DATE('12-12-2006','DD-MM-  
YYYY'),'55','8500');
```

ITEM TABLE

```
-----  
CREATE TABLE ITEM(  
ITEMNO           NUMBER(20),  
UNITPRICE        NUMBER(20));ORDERS TABLE
```

```
-----  
CREATE TABLE ORDERS(  
ORDERNO          NUMBER(20),  
ODATE            DATE,  
CUSTNO           NUMBER(20),  
ORD_AMT          NUMBER(20));
```

```
ALTER TABLE ORDERS ADD CONSTRAINT ORDERNO_PAK PRIMARY  
KEY(ORDERNO);
```

```
ALTER TABLE ORDERS ADD CONSTRAINT FK_CUSTNO FOREIGN KEY  
(CUSTNO) REFERENCES CUSTOMER(CUSTNO);
```

```
INSERT INTO ORDERS VALUES(11,TO_DATE('12-12-2002','DD-MM-  
YYYY'),'22','2000');  
INSERT INTO ORDERS VALUES(12,TO_DATE('12-12-2003','DD-MM-  
YYYY'),'11','5000');  
INSERT INTO ORDERS VALUES(13,TO_DATE('12-12-2004','DD-MM-  
YYYY'),'33','6000');
```

```
INSERT INTO ORDERS VALUES(14,TO_DATE('12-12-2005','DD-MM-
YYYY'),'44','7000');
INSERT INTO ORDERS VALUES(15,TO_DATE('12-12-2006','DD-MM-
YYYY'),'55','8500');
```

ITEM TABLE

```
CREATE TABLE ITEM(
ITEMNO          NUMBER(20),
UNITPRICE      NUMBER(20));
```

```
ALTER TABLE ITEM ADD CONSTRAINT ITEMNO_PK PRIMARY KEY(ITEMNO);
```

```
INSERT INTO ITEM VALUES('456','15000');
INSERT INTO ITEM VALUES('123','20000');
INSERT INTO ITEM VALUES('789','12000');
INSERT INTO ITEM VALUES('654','18000');
INSERT INTO ITEM VALUES('321','25000');
```

ORDERITEM TABLE

```
CREATE TABLE ORDERITEM(
ORDERNO        NUMBER(20),
ITEMNO         NUMBER(20),
QTY            SNUMBER(20));
```

```
ALTER TABLE ORDERITEM ADD CONSTRAINT FK_ORDERNO FOREIGN KEY
(ORDERNO) REFERENCES ORDERS(ORDERNO);
```

```
ALTER TABLE ORDERITEM ADD CONSTRAINT FK_ITEMNO FOREIGN KEY
(ITEMNO) REFERENCES ITEM(ITEMNO);
```

```
INSERT INTO ORDERITEM VALUES('11','123','2');
INSERT INTO ORDERITEM VALUES('12','456','5');
INSERT INTO ORDERITEM VALUES('13','789','4');
INSERT INTO ORDERITEM VALUES('14','654','1');
INSERT INTO ORDERITEM VALUES('15','321','6');
```

WAREHOUSE TABLE

```
CREATE TABLE WAREHOUSE(
WAREHOUSENO    NUMBER(20),
CITY           VARCHAR2(50));
```

```
ALTER TABLE WAREHOUSE ADD CONSTRAINT WAREHOUSENO_PK PRIMARY
KEY(WAREHOUSENO);
```

```
INSERT INTO WAREHOUSE VALUES('01','JENSHEDPUR');
```

```
INSERT INTO WAREHOUSE VALUES('02','MUMBAI');
INSERT INTO WAREHOUSE VALUES('03','LAHORE');
INSERT INTO WAREHOUSE VALUES('04','SIDNEY');
INSERT INTO WAREHOUSE VALUES('05','CANADA');
```

SHIPMENT TABLE

```
CREATE TABLE SHIPMENT(
ORDERNO      NUMBER(20),
WAREHOUSENO  NUMBER(20),
SHIPDATE     DATE);
```

```
ALTER TABLE SHIPMENT ADD CONSTRAINT FAK_ORDERNO FOREIGN KEY
(ORDERNO) REFERENCES ORDERS(ORDERNO);
```

```
ALTER TABLE SHIPMENT ADD CONSTRAINT FK_WAREHOUSENO FOREIGN KEY
(WAREHOUSENO) REFERENCES WAREHOUSE(WAREHOUSENO);
```

```
INSERT INTO SHIPMENT VALUES('11','01',TO_DATE('15-12-2002','DD-MM-YYYY'));
INSERT INTO SHIPMENT VALUES('12','02',TO_DATE('15-01-2004','DD-MM-YYYY'));
INSERT INTO SHIPMENT VALUES('13','03',TO_DATE('05-02-2005','DD-MM-YYYY'));
INSERT INTO SHIPMENT VALUES('14','04',TO_DATE('12-03-2006','DD-MM-YYYY'));
INSERT INTO SHIPMENT VALUES('15','05',TO_DATE('15-04-2007','DD-MM-YYYY'));
```


Output:

Produce a listing: custname , No_of_orders , Avg_order_amount , where the middle column is the total number of orders by the customer and the last column is the average order amount for that customer.

```
C:\Windows\system32\cmd.exe - sqlplus
SQL>
SQL> SELECT C.CNAME, COUNT<CO.ORDERNO>, AVG<CO.ORD_AMT> FROM CUSTOMER C, ORDERS CO WHERE
2 C.CUSTNO=CO.CUSTNO GROUP BY C.CNAME, CO.CUSTNO;

CNAME                                COUNT<CO.ORDERNO>  AVG<CO.ORD_AMT>
-----
GERKHE                                1                  6000
NAUATHE                               1                  2000
KRISHNAN                              1                  5000
ELMARSEE                              1                  7000
```

List the orderno for orders that were shipped from all the warehouses that the company has in a specific city.

```
C:\Windows\system32\cmd.exe - sqlplus
SQL> SELECT ORDERNO, WAREHOUSENO FROM SHIPMENT WHERE WAREHOUSENO IN<SELECT WAREHOUSENO
2 FROM WAREHOUSE WHERE CITY='LAHORE'>;

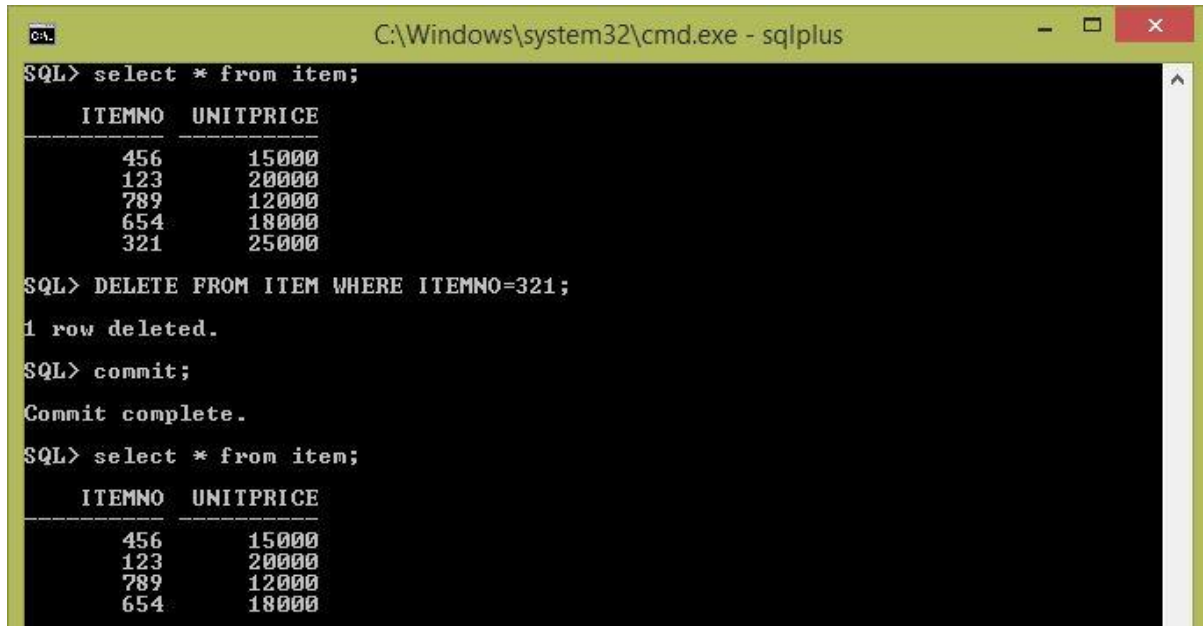
ORDERNO  WAREHOUSENO
-----
13        3
```

List the orderno for orders that were shipped from all the warehouses that the company has in a specific city.

```
C:\Windows\system32\cmd.exe - sqlplus
SQL> UPDATE ORDERITEM SET ITEMNO=NULL WHERE ITEMNO=456;
1 row updated.
SQL> SELECT * FROM ORDERITEM;

ORDERNO  ITEMNO  QTY
-----
11        2
12        5
13        789   4
14        654   1
```

Demonstrate the deletion of an item from the ITEM table and demonstrate a method of handling the rows in the ORDER_ITEM table that contains this particular item.



```
SQL> select * from item;

  ITEMNO  UNITPRICE
-----
    456      15000
    123      20000
    789      12000
    654      18000
    321      25000

SQL> DELETE FROM ITEM WHERE ITEMNO=321;

1 row deleted.

SQL> commit;

Commit complete.

SQL> select * from item;

  ITEMNO  UNITPRICE
-----
    456      15000
    123      20000
    789      12000
    654      18000
```

3. Book dealer information database.

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:string)
ORDER_DETAILS(order_no:int , book_id:int , quantity:int)

- 1) Create the above tables by properly specifying the primary keys and foreign keys.
- 2) Enter at least five tuples for each relation.
- 3) Give the details of the authors who have 2 or more books in the catalog and the price of the books is greater than the average price of the books in the catalog and the year of publication is after 2000.
- 4) Find the author of the book that has maximum sales.
- 5) Demonstrate how you increase the price of books published by a specific publisher by 10%

AUTHOR TABLE

```
-----  
CREATE TABLE AUTHOR(  
AUTHORID      NUMBER(10),  
NAME          VARCHAR2(12),  
CITY          VARCHAR2(20),  
COUNTRY       VARCHAR2(12));
```

```
ALTER TABLE AUTHOR ADD CONSTRAINT AUTHORID_PK PRIMARY  
KEY(AUTHORID);
```

```
INSERT INTO AUTHOR VALUES('11','KRISHNAN','GURGOAN','INDIA');  
INSERT INTO AUTHOR VALUES('22','NAVATHE','DELHI','INDIA');  
INSERT INTO AUTHOR VALUES('33','GERKHE','CALCUTTA','INDIA');  
INSERT INTO AUTHOR VALUES('44','ELMARSEE','BANGALORE','INDIA');  
INSERT INTO AUTHOR VALUES('55','LEVINTIN','NEWYORK','US');
```

PUBLISHER TABLE

```
-----  
CREATE TABLE PUBLISHER(  
PUBLISHERID   NUMBER(5),  
NAME          VARCHAR2(12),  
CITY          VARCHAR2(20),  
COUNTRY       VARCHAR2(12));
```

```
ALTER TABLE PUBLISHER ADD CONSTRAINT PUBLISHERID_PK PRIMARY  
KEY(PUBLISHERID);
```

```
INSERT INTO PUBLISHER VALUES('110','PEARSON','MUMBAI','INDIA');  
INSERT INTO PUBLISHER VALUES('120','WILEY','LAHORE','PAKISTAN');  
INSERT INTO PUBLISHER VALUES('130','PRENTICE','SIDNEY','AUSTRALIA');  
INSERT INTO PUBLISHER VALUES('140','TATA','JENSHEDPUR','INDIA');  
INSERT INTO PUBLISHER VALUES('150','MCGRAW','CANADA','US');
```

CATEGORY TABLE

```
-----  
CREATE TABLE CATEGORY(  
CATEGORYID      NUMBER(6),  
DECRPTION      sVARCHAR2(12));
```

```
ALTER TABLE CATEGORY ADD CONSTRAINT CATEGORYID_PK PRIMARY  
KEY(CATEGORYID);
```

```
INSERT INTO CATEGORY VALUES('201','WEB PROG');  
INSERT INTO CATEGORY VALUES('202','DATABASE');  
INSERT INTO CATEGORY VALUES('203','UNIX');  
INSERT INTO CATEGORY VALUES('204','DESIGN');  
INSERT INTO CATEGORY VALUES('205','SOFTWARE');
```

CATLOG TABLE

```
-----  
CREATE TABLE CATLOG(  
CBOOKID        NUMBER(5),  
TITLE          VARCHAR2(12),  
AUTHORID       NUMBER(6),  
PUBLISHERID    NUMBER(5),  
CATEGORYID     NUMBER(6),  
YEAR          NUMBER(5),  
PRICE          NUMBER(6,2));
```

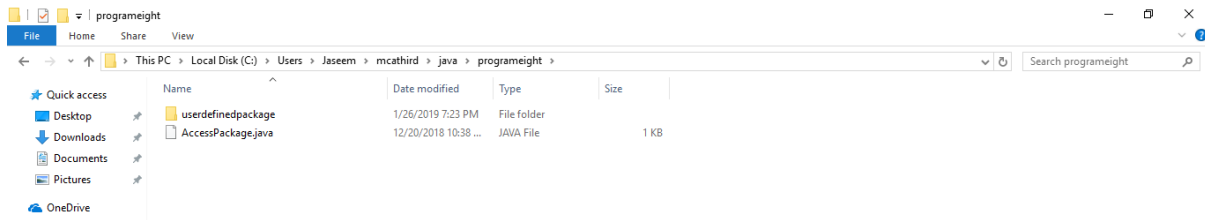
```
ALTER TABLE CATLOG ADD CONSTRAINT CBOOKID_PK PRIMARY  
KEY(CBOOKID);
```

```
ALTER TABLE CATLOG ADD CONSTRAINT FK_AUTHORID FOREIGN KEY  
(AUTHORID) REFERENCES AUTHOR(AUTHORID);
```

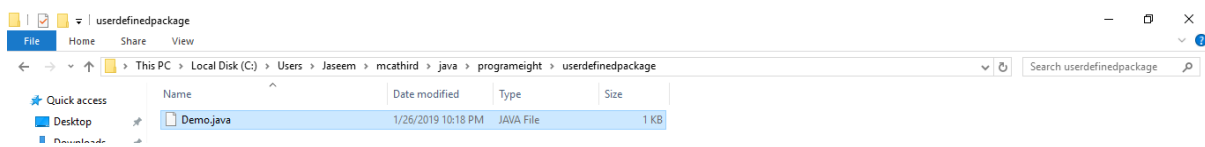
```
ALTER TABLE CATLOG ADD CONSTRAINT FK_PUBLISHERID FOREIGN KEY  
(PUBLISHERID) REFERENCES PUBLISHER(PUBLISHERID);
```

```
ALTER TABLE CATLOG ADD CONSTRAINT FK_CATEGORYID FOREIGN KEY  
(CATEGORYID) REFERENCES CATEGORY(CATEGORYID);
```

8. Write a program to demonstrate use of user defined package by importing the package and access the member variable of classes contained in the package.



Create a folder “userdefinedpackage” and inside it create a java file “Demo.java” & compile.



```
INSERT INTO CATLOG VALUES('101','INTRO_DBMS','22','110','202','2000','375.5');
INSERT INTO CATLOG VALUES('102','DBMS','11','120','202','2002','495');
INSERT INTO CATLOG VALUES('104','ADA','55','140','204','2003','275.75');
INSERT INTO CATLOG VALUES('105','SE','44','150','205','2003','400');
INSERT INTO CATLOG VALUES('106','UNIX','11','110','203','1999','450');
INSERT INTO CATLOG VALUES('107','CPROG','11','140','205','2001','425');
```

ORDERDETAILS TABLE

```
CREATE TABLE ORDERDETAILS(
ORDERNO          NUMBER(5),
BOOKID           NUMBER(5),
QTY              NUMBER(4));
```


```
ALTER TABLE ORDERDETAILS ADD CONSTRAINT ORDERNO_PK PRIMARY
KEY(ORDERNO);
```

```
ALTER TABLE ORDERDETAILS ADD CONSTRAINT FK_BOOKID FOREIGN KEY
(BOOKID) REFERENCES CATLOG(CBOOKID);
```

```
INSERT INTO ORDERDETAILS VALUES('1111','101','25');
INSERT INTO ORDERDETAILS VALUES('1112','102','15');
INSERT INTO ORDERDETAILS VALUES('1113','102','15');
INSERT INTO ORDERDETAILS VALUES('1114','104','30');
INSERT INTO ORDERDETAILS VALUES('1115','105','20');
```

Output:

Give the details of the authors who have 2 or more books in the catalog and the price of the books is greater than the average price of the books in the catalog and the year of publication is after 2000.

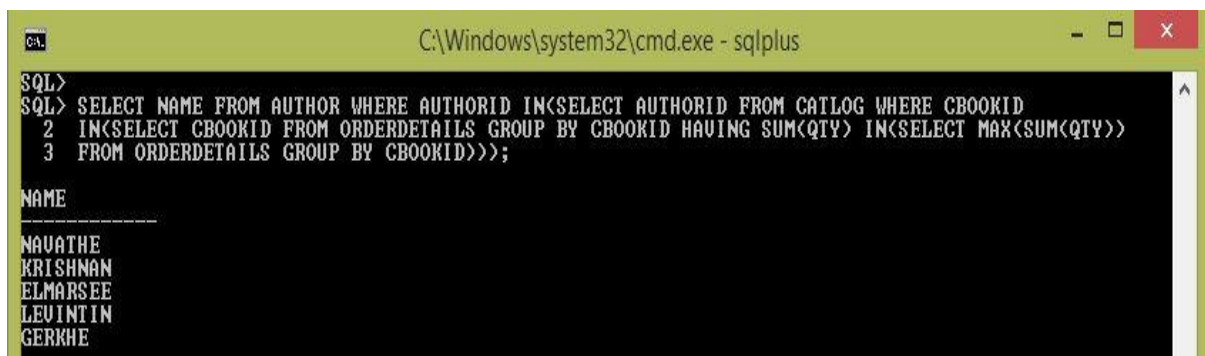


```
C:\Windows\system32\cmd.exe - sqlplus

SQL> SELECT * FROM AUTHOR WHERE AUTHORID IN(SELECT CATLOG.AUTHORID FROM CATLOG WHERE
2 YEAR>2000 AND PRICE>(SELECT AVG(PRICE) FROM CATLOG)AND CATLOG.AUTHORID IN(SELECT
3 CATLOG.AUTHORID FROM CATLOG GROUP BY CATLOG.AUTHORID HAVING COUNT(CATLOG.AUTHORID)>1));
```

AUTHORID	NAME	CITY	COUNTRY
11	KRISHNAN	GURGOAN	INDIA

Find the author of the book that has maximum sales.



```
C:\Windows\system32\cmd.exe - sqlplus

SQL>
SQL> SELECT NAME FROM AUTHOR WHERE AUTHORID IN(SELECT AUTHORID FROM CATLOG WHERE CBOOKID
2 IN(SELECT CBOOKID FROM ORDERDETAILS GROUP BY CBOOKID HAVING SUM(QTY) IN(SELECT MAX(SUM(QTY))
3 FROM ORDERDETAILS GROUP BY CBOOKID)));
```

NAME
NAUATHE
KRISHNAN
ELMARSEE
LEVINTIN
GERKHE

Demonstrate how you increase the price of books published by a specific publisher by 10%

```
C:\Windows\system32\cmd.exe - sqlplus

SQL> select * from catlog;

  CBOOKID TITLE          AUTHORID PUBLISHERID CATEGORYID      YEAR      PRICE
-----
    101 INTRO_DBMS         22         110         202         2000         499.8
    102 DBMS                11         120         202         2002          495
    103 INTO TO WAP         33         130         201         2003         425.25
    104 ADA                 55         140         204         2003         275.75
    105 SE                  44         150         205         2003          400
    107 CPROG              11         140         205         2001          425

6 rows selected.

SQL> UPDATE CATLOG SET PRICE=PRICE*1.1 WHERE PUBLISHERID IN(SELECT PUBLISHERID FROM
  2 PUBLISHER WHERE NAME='&PUBLISHERNAME');
Enter value for publishername: PEARSON
old 2: PUBLISHER WHERE NAME='&PUBLISHERNAME'>
new 2: PUBLISHER WHERE NAME='PEARSON'>

1 row updated.

SQL> commit;

Commit complete.

SQL> select * from catlog;

  CBOOKID TITLE          AUTHORID PUBLISHERID CATEGORYID      YEAR      PRICE
-----
    101 INTRO_DBMS         22         110         202         2000         549.78
    102 DBMS                11         120         202         2002          495
    103 INTO TO WAP         33         130         201         2003         425.25
    104 ADA                 55         140         204         2003         275.75
    105 SE                  44         150         205         2003          400
    107 CPROG              11         140         205         2001          425

6 rows selected.
```