STUDENT DATABASE APPLICATION

AIM: Create the following database for an application and insert values to it.

student(ssn,name,major,bdate)

course(coursenumber,coursename,department)

enroll(ssn,coursenumber,quarter,grade)

book(coursenumber,quarter,book-isbn)

text(book-isbn,book-title,publisher,author)

2. Do the following using PL/SQL

1. List the number of courses taken by all students named joe in quarter-1

2. Produce a list of textbooks(coursenumber,book-isbn,book-title etc)for courses offered by cs department that have used more than two books.

3. List any department that has all its books published by "pearson".

4. Create a trigger that prints the name of the book when the isbn number of the book is changed.

ALGORITHM:

Step 1: Start

Step 2: Create tables Student, course, enroll,book,text

Step 3: Declare variable numberOfCourses

a. Select the distinct courseno from student table and enroll table.

b. Selection is based on the condition that the value of ssn of the student table and enrol table should be same, quarter = 1 and name of the student should be 'JOE'

Step 4: Intialize a cursor <cursor name> for fields coursenumber, book_isbn,

book_title from tables, book and text.

a. The above selction is based on the condition that the values of field coursenumber from book and course table should be same and book_isbn value from book and text table should be same and department name should be ‘computer science’.

b. Group by coursenumber where the field book_isbn should be distinct and the count of book_isbn should be greater than two.

Step 5: Create a cursor named cursor1 to store the field department and count of distinct book_isbn field from course and book table based on the condition that the value of the coursenumber should be same in the tables.

a. Create another cursor named cursor2 to store the field department, count of distinct book_isbn with the condition that the value of coursenumber from the course and book table should be same ,similarly the _isbn number from book and text table should be same and also the publisher should be ‘Pearson’.

b. open cursor2

c. Create a for loop for row1 in cursor1

d. Fetch the values in cursor2 into row2

e. if row1.department is equal to row2.department then check whether

row1.num equals row2.num then print the value of row1.department.

Step 6: Create a trigger named print_book_title before updating the text for each row

based on the if condition, that the old isbn value of the book (before updation) and the new value(after updation) does not match..

a. Print the value of the object old of the field book_isbn.

Step 7: Stop

Creation and Insertion on Student database

```
SQL> create table student
   (
    ssn varchar(6) primary key,
    name varchar(20),
    major varchar(30),
    bdate date
   );

Table created.

SQL> create table course
   (
    coursenumber varchar(6) primary key,
    coursename varchar(25),
      department varchar(25)
   );

Table created.

SQL> create table enroll
   (
    ssn varchar(6) references student1(ssn),
    coursenumber varchar(6) references course(coursenumber),
    quarter number(1),
    grade number(1)
   );

Table created.

SQL> create table text
  (
    book_isbn varchar(20) primary key,
    book_title varchar(30),
     publisher varchar2(30),
     author varchar(30)
    );


Table created.


SQL> create table book
    (
     coursenumber varchar2(20) references course(coursenumber),
       quarter number(2),
    book_isbn varchar(20) references text(book_isbn)
   );


Table created.
```

Student table

```
SQL> insert into student values('s1','Akshay','major','10-FEB-1990');

1 row created.

SQL> insert into student values('s2','Joe','major','01-APR-1991');

1 row created.

SQL> insert into student values('s3','Jibin','major','20-DEC-1989');

1 row created.

SQL> insert into student values('s5','Anuja','major','19-SEP-1990');

1 row created.
```

Course Table

```
SQL> insert into course values('c101','btech','cs');
```

```
1 row created.

SQL> insert into course values('c102','bhm','HK');

1 row created.

SQL> insert into course values('c103','PG','MCA');

1 row created.
```

Enroll table

```
SQL> insert into enroll values('s1','c102',2,3);

1 row created.

SQL> insert into enroll values('s2','c101',1,2);

1 row created.

SQL> insert into enroll values('s5','c103',4,1);

1 row created.
```

Text table

```
SQL> insert into text values('b1','Database','Hudson plb','Jain');

1 row created.

SQL> insert into text values('b2','Java 2','Pearson','Herbict');

1 row created.

SQL> insert into text values('b7','OOP with c++','Pearson','Balaguru');

1 row created.
```

```
SQL> insert into text values('b9','Operating system','Pearson','Allan morge');

1 row created.
```

Book table

```
SQL> insert into book values('c101',1,'b2');

1 row created.

SQL> insert into book values('c101',1,'b7');

1 row created.

SQL> insert into book values('c101',2,'b9');
1 row created.

SQL> insert into book values('c103',2,'b1');

1 row created.

SQL> insert into book values('c103',4,'b2');

1 row created.
```

1. List the number of courses taken by all students named joe in QUARTER-1

```
SQL> declare
        numberOfCourses number(5);
        begin
        select count(distinct coursenumber) into numberOfCOurses from student, enroll
        where student.ssn = enroll.ssn and quarter = 1 and name like 'JOE%';
        dbms_output.put_line('Number of courses taken by all students named Joe in quarter 1 is '||numberOfCourses);
        end;
        /
```

2. Produce a list of textbooks(coursenumber,book-isbn,book-title etc)for courses offered by cs department that have used more than two books.

```
SQL> declare
        cursor cursor1 is select DISTINCT coursenumber, a.book_isbn, book_title
        from book a, text b
        where a.book_isbn = b.book_isbn and
        coursenumber in (
                        select a.coursenumber
                        from course a, text b, book c where
                        a.coursenumber = c.coursenumber and
                        b.book_isbn = c.book_isbn and
                        a.department like 'Computer Science'
                        group by a.coursenumber having count(distinct b.book_isbn)>2
                        );
        row1 cursor1%ROWTYPE;
        begin
        dbms_output.put_line('COURSENUMBER    BOOK_ISBN             BOOK_TITLE');
        for row1 in cursor1
        loop
        dbms_output.put_line(row1.coursenumber || ' ' || row1.book_isbn || '' ||
        row1.book_title);
        end loop;
        end;
        /
```

3. List any department that has all its books published by "pearson".

```
SQL> declare
        cursor cursor1 is select a.department, count(distinct b.book_isbn) as num from course a,
        book b
```

```
    where a.coursenumber = b.coursenumber group by department;

    cursor cursor2 is select department, count(distinct b.book_isbn) as num from course a, book
    b, text c

    where a.coursenumber = b.coursenumber and

    c.book_isbn = b.book_isbn and

     publisher like 'Pearson' group by department;

    row1 cursor1%ROWTYPE;

    row2 cursor2%ROWTYPE;

    begin

    open cursor2;

    for row1 in cursor1

    loop

        fetch cursor2 into row2;

        if(row1.department = row2.department) then

            if(row1.num = row2.num) then

                dbms_output.put_line(row1.department);

            end if;

        end if;

    end loop;

    end;

    /
```

4. Create a trigger that prints the name of the book when the isbn number of the book is changed.

```
SQL> create or replace trigger print_book_title

    before update on text

    for each row

    begin

    if(:old.book_isbn <> :new.book_isbn) then
```

```
                dbms_output.put_line(:old.book_title);
        end if;
        end;
        /
```

OUTPUT

Ans 1:

```
 Number of courses taken by all students named Joe in quarter 1 is 1
PL/SQL procedure successfully completed.
```

Ans 2:

```
COURSENUMBER   BOOK_ISBN        BOOK_TITLE
c101           b9          Operating system

c101           b2          Java 2

c101           b7          OOP with C++


PL/SQL procedure successfully completed.
```

Ans 3:

```
cs


PL/SQL procedure successfully completed.
```

Ans 4:

```
        BOOK_TITLE

   ---------------------------

         Database
```