DATABASE LABORATORY

Subject Code: 2TMCAL1 I. A. Marks: 50
Hours/Week: 02 Exam Marks: 50
Total Hours: 24 Exam Hours: 03

Practical – 3.

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)

TEXT (Book_ISBN: int, Book_Title: string, Publisher: string, Author: string)

ENROLL (Regno: string, course#: int, Sem: int, Marks: int)

BOOK_ADOPTION (Course#: int, Sem: int, Book_ISBN: int)

Create the above tables by properly specifying the primary keys and the foreign keys

Enter at least 7 to 10 records to each table.

Write and execute the SQL queries for the following requirements :

1) List out the student details, and their course details. The records should be ordered in a semester wise manner.

2) List out the student details under a particular department whose name is ordered in a semester wise

3) List out all the book details under a particular course

4) Find out the Courses in which number of students studying will be more than 2.

5) Find out the Publisher who has published more than 2 books.

6) Find out the authors who have written book for I semester, computer science course.

7) List out the student details whose total number of months starting from their date of birth is more than 225

8) Find out the course to which maximum number of students have joined

Create the tables with the following source codes :

Table Name : Student :

```
create table STUDENT (
reg_no          varchar2(6)    primary key,
student_name    varchar2(20),
major           varchar2(20),
birth_date      date
);
```

Table Name : Course :

```
create table COURSE (
course_no       varchar2(6)    primary key,
course_name     varchar2(25),
Department      varchar2(20)
);
```

Table Name : Text :

```
create table TEXT (
book_isbn       varchar2(6)    primary key,
book_title      varchar2(25),
publisher       varchar2(20),
author          varchar2(20)
);
```

Table Name : Enroll :

```
create table ENROLL (
reg_no          references STUDENT(reg_no),
course_no       references COURSE(course_no),
semester        varchar2(12),
marks           number(4)
);
```

Table name : Book_adoption

```
create table BOOK_ADOPTION (
course_no       references COURSE(course_no),
book_isbn       references TEXT(book_isbn),
semester        varchar2(12)
);
```

Insert the records in to the tables with the following codes :

To the table : Student

```
insert into student values ('STD001','Ashok','Engineering','12-feb-1990');
insert into student values ('STD002','Bharath','Engineering','15-Mar-1990')
insert into student values ('STD003','Devanand','Engineering','21-Mar-1991')
insert into student values ('STD004','Guruprakash','Medical','22-May-1991')
insert into student values ('STD005','Gururaj','Medical','28-apr-1993')
insert into student values ('STD006','Hemanth','Medical','25-apr-1993')
insert into student values ('STD007','Ramesh','Science','25-Oct-1993')
insert into student values ('STD008','Srivatsa','Science','12-Oct-1994')
insert into student values ('STD009','Sowmya','Science','24-Sep-1990')
insert into student values ('STD010','Suma','Science','14-jan-1990')
insert into student values ('STD011','Varun','Engineering','15-apr-1991')
```

To the table : Course

```
insert into course values ('CU01','Computer Science Engg','CS Dept');
insert into course values ('CU02','Information Science Engg','IS Dept')
insert into course values ('CU03','Electronics Engg','EC Dept')
insert into course values ('CU04','Medical Electronics Engg','MED Dept')
insert into course values ('CU05','Master of Computers ','MCA Dept')
insert into course values ('CU06','Master of Business ','MBA Dept')
```

To the table : Text

```
insert into text values ('BK001','Computer Fundamentals','BPB publishers','Raghuram');
insert into text values ('BK002','Program Fundamentals','Tata
publishers','Dr.M.A.Jayaram')
insert into text values ('BK003','Engg Maths','Sapna publishers','Dr.Martin')
insert into text values ('BK004','Engg Physics','Sapna publishers','Dr.H.K.T.Kumar')
insert into text values ('BK005','Medical Applications','PHP publishers','O.P.Khanna')
insert into text values ('BK006','Data Structures','Sapna publishers','Kevin Loney')
insert into text values ('BK007','Database Applications','PHP publishers','Navathe')
```

To the table : Enroll

```
insert into enroll values ('STD001','CU01','I Semester',850);
insert into enroll values ('STD002','CU01','I Semester',650)
insert into enroll values ('STD003','CU02','I Semester',670)
insert into enroll values ('STD004','CU02','I Semester',670)
insert into enroll values ('STD005','CU02','II Semester',670)
insert into enroll values ('STD006','CU03','I Semester',770)
insert into enroll values ('STD007','CU04','II Semester',775)
insert into enroll values ('STD008','CU04','II Semester',675)
insert into enroll values ('STD009','CU05','II Semester',675)
```

```
insert into enroll values ('STD010','CU01','I Semester',675)
insert into enroll values ('STD011','CU01','II Semester',850);
```

To the table : Book_adoption

```
insert into book_adoption values ('CU01','BK001','I Semester');
insert into book_adoption values ('CU02','BK002','I Semester');
insert into book_adoption values ('CU04','BK005','I Semester');
insert into book_adoption values ('CU05','BK003','I Semester');
insert into book_adoption values ('CU05','BK006','II Semester');
insert into book_adoption values ('CU06','BK003','I Semester');
insert into book_adoption values ('CU01','BK007','II Semester');
```

Execute the queries in the following steps :

1) List out the student details, and their course details. The records should be ordered in a semester wise manner.

Step-1 : First try to list out student and their course details by joining the tables student, course, and enroll

```
SQL> select semester, student_name,major,course_name, department
     from course,student,enroll
     where enroll.reg_no=student.reg_no
     and enroll.course_no=course.course_no
```

Step- 2: Then, try to display the same by ordering the records by using ORDER BY clause

```
SQL> select semester, student_name,major,course_name, department
     from course,student,enroll
     where enroll.reg_no=student.reg_no
     and enroll.course_no=course.course_no
     order by semester
```

2) List out the student details under a particular department whose name is ordered in a semester wise

Step-1 : First try to list out student and their course details by joining the tables student, course, and enroll

```
SQL> select course_name, semester, student_name
     from course,student,enroll
     where enroll.reg_no=student.reg_no
     and enroll.course_no=course.course_no
```

Step- 2: Then, try to display the same by using WHERE clause and ORDER BY clause

```
SQL> select course_name, semester, student_name
     from course,student,enroll
     where enroll.reg_no=student.reg_no
     and enroll.course_no=course.course_no
     and department = 'CS Dept'
     order by semester
```

3) List out all the book details under a particular course

Step-1 : First, try to list the book details by joining the tables text, book_adoption and course

```
SQL> select book_title, course_name,author, publisher, semester
     from text, book_adoption, course
     where  book_adoption.book_isbn = text.book_isbn
     and    book_adoption.course_no = course.course_no;
```

Step-2 : Then, try to display the same by adding an aditional condition to accept particular course name

```
SQL> select book_title, course_name,author, publisher, semester
     from text, book_adoption, course
     where  book_adoption.book_isbn = text.book_isbn
     and    book_adoption.course_no = course.course_no
     and    course_name='Computer Science Engg'
```

4. Find out the Courses in which number of students studying will be more than 2.

Step-1 : First, try to display the course name, and number of students by using Group by clause and joining the tables enorll and course

```
SQL> select course_name, count(course_name) as noofstudents
     from enroll, course
     where enroll.course_no=course.course_no
     group by course_name
```

Step-2 : Then, try to display the same by adding an Having Clause to find number of students will be more than 2.

```
SQL> select course_name, count(course_name) as noofstudents
     from enroll, course
     where enroll.course_no=course.course_no
     group by course_name
     having count(course_name) > 2
```

5. Find out the Publisher who has published more than 2 books.

Step-1 : First, try to display the Publisher name, and number of books published by using Group by clause

```
SQL> select publisher, count(publisher) as noofbooks
       from text
       group by publisher;
```

Step-2 : Then, try to display the same by adding an Having Clause to find number of books will be more than 2.

```
SQL> select publisher, count(publisher) as noofbooks
       from text
       group by publisher
       having count(publisher) > 2;
```

6. Find out the authors who have written book for I semester, computer science course.

Step-1 : First, try to list the author details by joining the tables text, book_adoption and course

```
SQL> select author,book_title,course_name,semester
     from text,course,book_adoption
     where book_adoption.book_isbn=text.book_isbn
     and book_adoption.course_no=course.course_no;
```

Step-2 : Then, try to display the same by adding an aditional condition to accept

course name = 'Computer Science Engg' and semester = 'I Semester'

```
SQL> select author,book_title,course_name,semester
     from text,course,book_adoption
     where book_adoption.book_isbn=text.book_isbn
     and book_adoption.course_no=course.course_no
     and course_name='Computer Science Engg'
     and semester = 'I Semester'
```

7. List out the student details whose total number of months starting from their date of birth is more than 225

Step - 1 : First try to display the student details from student table by using months_between function to display number of months starting from their date of birth till today's date.

```
SQL> select reg_no, student_name, birth_date, months_between (sysdate,birth_date) as
                noofmonths
     from  student ;
```

Step - 2 : Then try display the same by adding additional condition

```
SQL> select reg_no, student_name, birth_date,  months_between(sysdate,birth_date) as
      noofmonths
     from student
     where months_between(sysdate,birth_date) > 225
```

8. Find out the course to which maximum number of students have joined

Step – 1 : First, try to list out course name and number of students from table ENROLL By using Group by clause

```
SQL >  select course_no, count(course_no) as noofstudents
       from enroll
       group by course_no
```

Step – 2 : Then, try to find course_no to which maximum students have joined by using sub query concept and aggregate function.

```
SQL> select course_no, count(course_no)
     from enroll
     group by course_no
     having count(course_no) >=  (
                                  select max(count(course_no))
                                  from enroll
                                  group by course_no)
```

Step – 3 : Then, lastly the course name to which maximum students have joined.

```
SQL > select course_name
      from course
      where course_no in (
                          select course_no
                          from enroll
                          group by course_no
                          having count(course_no) >= (
                                                      select max(count(course_no))
                                                      from enroll
                                                      group by course_no) )
```