LAB 0
LAB REPORT

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Course code	:	CSE 4508
Course name	:	RDBMS Lab
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Date of performance	:	08/08/23
Date of submission	:	09/08/23

Today's task was about revisiting the basics of DBMS using Oracle. We were told to create tables from the given ER diagram.

We had to give all primary keys and foreign keys constraints accordingly.

Here are the screenshots of tables:

```
create table school(
    schoolid INT PRIMARY KEY,
    schoolname varchar2(20) UNIQUE,
    description VARCHAR2(30),
    address varchar2(40) DEFAULT 'IUT, BoardBazar, Gazipur, Bangladesh',
    phone VARCHAR2(20),
    postcode VARCHAR2(20),
    postaddress VARCHAR2(20)
);

create table class(
    schoolid INT,
    classid INT PRIMARY KEY,
    classname varchar2(20) UNIQUE,
    description VARCHAR2(20),
    CONSTRAINT fk_class FOREIGN KEY (schoolid) REFERENCES school(schoolid)
);

create table course(
    schoolid INT,
    courseid INT PRIMARY KEY,
    coursename varchar2(20) UNIQUE,
    description VARCHAR2(20),
    CONSTRAINT fk_course FOREIGN KEY (schoolid) REFERENCES school(schoolid)
);

create table teacher(
    schoolid INT,
    teacherid INT PRIMARY KEY,
    teachername varchar2(20),
    description VARCHAR2(20),
    CONSTRAINT fk_teacher FOREIGN KEY (schoolid) REFERENCES school(schoolid)
);
```

```sql
create table teacher_course(
    courseid INT,
    teacherid INT,
    CONSTRAINT fk_tcc FOREIGN KEY (courseid) REFERENCES course(courseid),
    CONSTRAINT fk_tct FOREIGN KEY (teacherid) REFERENCES teacher(teacherid)
);


create table student(
    studentid INT PRIMARY KEY,
    classid INT,
    studentname varchar2(20),
    studentnumber INT,
    totalgrade INT,
    address varchar2(40),
    phone VARCHAR2(20),
    email varchar2(20),
    CONSTRAINT fk_student FOREIGN KEY (classid) REFERENCES class(classid),
    CONSTRAINT chk_stu CHECK (totalgrade >= 2.0 AND totalgrade <= 4.0),
    CONSTRAINT chk_mail CHECK (email like '%@gmail.com')
);

create table student_course(
    courseid INT,
    studentid INT,
    CONSTRAINT fk_scc FOREIGN KEY (courseid) REFERENCES course(courseid),
    CONSTRAINT fk_scs FOREIGN KEY (studentid) REFERENCES student(studentid)
);

create table grade(
    courseid INT,
    studentid INT,
    grades INT,
    comments VARCHAR2(20),
    CONSTRAINT fk_grc FOREIGN KEY (courseid) REFERENCES course(courseid),
    CONSTRAINT fk_grs FOREIGN KEY (studentid) REFERENCES student(studentid),
    CONSTRAINT chk_grd CHECK (grades >= 2.0 AND grades <= 4.0)
);
```

- Primary and Foreign key constraints are given accordingly in the tables
- SchoolName and ClassName are instructed to be unique so I added UNIQUE constraint
- In student table and grade table, CHECK constraint is used so that the fields are within 2.0 to 4.0,

```
      CONSTRAINT chk_stu CHECK (totalgrade >= 2.0 AND totalgrade <= 4.0),
      CONSTRAINT chk_grd CHECK (grades >= 2.0 AND grades <= 4.0)
```

- In student table CHECK constraint is used to check email address is valid or not

```
      CONSTRAINT chk_mail CHECK (email like '%@gmail.com')
```

- To make default address I have used DEFAULT keyword

```
      address varchar2(40) DEFAULT 'IUT, BoardBazar, Gazipur, Bangladesh',
```

- To ensure auto-increment of student id, I have created a sequence

```
CREATE SEQUENCE seq_student_id
MINVALUE 200041100
START WITH 200041100
INCREMENT BY 1;
```

- To insert values in auto incrementing table we have to use keywords properly

```
insert into student values(seq_student_id.nextval, 4, 'Suleiman' , 34 ,
2.0 , 'my home' , '98374892','abc@gmail.com');
insert into student values(seq_student_id.nextval, 4, 'Selim' , 35 , 3.0 ,
'my home1' , '9837392','abcd@gmail.com');
insert into student values(seq_student_id.nextval, 4, 'Mehmet' , 36 , 4.0
, 'my home2' , '98354892','abcde@gmail.com');
```

- At last, I have inserted 3 data in each of the tables

```
-- insert into tablename values();

insert into school values(1, 'Mini school', 'Good school' , DEFAULT , '09834092' , 'kndsfkjsn' , 'kjhdsfkjhsak');
insert into school values(2, 'Horse school', 'Cute school' , DEFAULT , '099834092' , 'kndsfjkdjkjsn' , 'kjhdsfqwekjhsak');
insert into school values(3, 'Cat school', 'Cute school' , DEFAULT , '09823092' , 'kndsfkjkdjsn' , 'kjhdsfkjhksajsak');

insert into class values(1, 1, 'my class' , 'beautiful');
insert into class values(2, 4, 'my class4' , 'beautiful');
insert into class values(3, 5, 'my class5' , 'beautiful');

insert into course values(2, 51, 'science' , 'cool');
insert into course values(3, 52, 'my math' , 'bad');
insert into course values(3, 53, 'my bds' , 'worst');

insert into teacher values(1, 90, 'Karayel' , 'hihihi');
insert into teacher values(3, 91, 'Mimi' , 'hohoho');
insert into teacher values(3, 92, 'Mina Mina' , 'hahaha');

insert into teacher_course values(53 , 91);
insert into teacher_course values(52 , 92);
insert into teacher_course values(52 , 90);

insert into student values(seq_student_id.nextval, 4, 'Suleiman' , 34 , 2.0 , 'my home' , '98374892','abc@gmail.com');
insert into student values(seq_student_id.nextval, 4, 'Selim' , 35 , 3.0 , 'my home1' , '9837392','abcd@gmail.com');
insert into student values(seq_student_id.nextval, 4, 'Mehmet' , 36 , 4.0 , 'my home2' , '98354892','abcde@gmail.com');

insert into student_course values(52 ,200041101);
insert into student_course values(52 ,200041102);
insert into student_course values(53 ,200041100);

insert into grade values(51 , 200041101 , 2.0 , 'bad');
insert into grade values(52 , 200041102 , 3.0 , 'good');
insert into grade values(52 , 200041100 , 4.0 , 'best');
```

Now the outputs I got are given below: