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Bài tập thực hành

5.1 Ordinary Relations and Object Relations

```
CREATE TABLE people (ID number PRIMARY KEY, name VARCHAR2(30), phone  
VARCHAR2(20));
```

```
INSERT into people VALUES (0, 'Smith', '546-4364');
```

```
INSERT into people VALUES (1, 'Miller', '556-4374');
```

```
INSERT into people VALUES (2, 'Jones', '536-4386');
```

```
CREATE TYPE phone_nested AS TABLE OF VARCHAR2(12);
```

```
CREATE TYPE people_type AS OBJECT (person_ID number, name VARCHAR2(30),  
phone_list phone_nested);
```

```
CREATE TABLE people_object_table OF people_type
```

```
NESTED TABLE phone_list STORE AS p_table;
```

```
INSERT INTO people_object_table
```

```
  SELECT ID, name, phone_nested(phone) FROM people;
```

```
CREATE VIEW people_object_view OF people_type WITH OBJECT IDENTIFIER  
(person_ID) AS
```

```
  SELECT ID, name, phone_nested(phone) AS phone_list from people;
```

Exercises 29: Create a relational table "department", which has columns dno, dname, dstreet, dstreetnumber, dcity and dpostalcode. Create a type for the address information (or use the address type from previous exercises). Create a type "dept_type" with columns deptno, deptname and deptaddress. Create an object view dept_view that views the data from the relational table.

```
CREATE TABLE department(dno NUMBER PRIMARY KEY, dname VARCHAR2(20),  
dstreet VARCHAR2(30), dstreetnumber VARCHAR2(20), dcity VARCHAR2(30),  
dpostalcode VARCHAR2(8));/
```

```
CREATE OR REPLACE TYPE address_typ AS OBJECT (dstreet VARCHAR2(30),  
dstreetnumber VARCHAR2(20), dcity VARCHAR2(30), dpostalcode VARCHAR2(8));/
```

```
CREATE OR REPLACE TYPE dept_type AS OBJECT (deptno NUMBER, deptname  
VARCHAR2(20), deptaddress address_typ);/
```

```
CREATE VIEW dept_view OF dept_type WITH OBJECT IDENTIFIER (deptno) AS
```

```
    SELECT dno, dname , address_typ(d.dstreet, d.dstreetnumber, d.dcity, d.dpostalcode)  
    AS address_list from department d;
```

Exercises 30: Insert three rows into the department table. Use the object view to view the rows. Can you use the object view to insert further rows?

```
INSERT INTO department VALUES (1, 'Tran Thi A', 'Nguyen Van Cu', '02', 'TP.Vinh',  
'098-8372');/
```

```
INSERT INTO department VALUES (2, 'ST', '400 Oracle Pkwy', 'Redwood S', 'CA',  
'94065');
```

```
INSERT INTO department VALUES (3, 'Apps', '310 Open', 'RedSan', 'TA', '73826');
```

```
INSERT INTO dept_view VALUES (4, 'Apple', address_typ('300 Close', 'Footsan', 'HN',  
'089-2928'));/
```

```
SELECT v.deptno, v.deptname, v.deptaddress.dstreet, v.deptaddress.dcity FROM  
dept_view v;
```

5.2 Using Nested Tables in Views

```
CREATE TABLE phone_nrs (ID number, phone VARCHAR2(20));
```

```
INSERT into phone_nrs VALUES (0, '546-4364');
```

```
INSERT into phone_nrs VALUES (0, '546-4123');
```

```
INSERT into phone_nrs VALUES (1, '556-4374');
```

```
INSERT into phone_nrs VALUES (2, '536-4386');
```

```

CREATE VIEW people_object_view2 OF people_type WITH OBJECT IDENTIFIER
(person_ID) AS

SELECT p.ID, p.name, CAST(MULTISET (SELECT phone FROM phone_nrs n
WHERE n.ID = p.ID) AS phone_nested)

FROM people p;

```

Exercises 31: Create a relational table employees with columns empID, empname and deptno. Insert a few rows into this table. Create an object type employee_t with columns eID and ename. Create a type employee_list_t which is a nested table of employee_t. Create a type dept_t with columns deptno, deptname and emp_list where emp_list is of type employee_list_t. Finally, create an object view that combines the department data from the previous exercises with the employees from the employees table.

```

CREATE TABLE employees (empID NUMBER PRIMARY KEY, empname
VARCHAR2(20), deptno NUMBER REFERENCES department(dno));/

```

```

CREATE OR REPLACE TYPE employee_t AS OBJECT (eID NUMBER, ename
VARCHAR2(20)) ;/

```

```

CREATE OR REPLACE TYPE employee_list_t AS TABLE OF employee_t ;/

```

```

CREATE OR REPLACE TYPE dept_t AS OBJECT(deptno NUMBER, deptname
VARCHAR2(20), address address_typ, emp_list employee_list_t);/

```

```

CREATE VIEW dept_view1 OF dept_t WITH OBJECT IDENTIFIER (deptno) AS

```

```

SELECT d.dno, d.dname, address_typ(d.dstreet, d.dstreetnumber, d.dcity, d.dpostalcode)
AS address_list, CAST(MULTISET (SELECT e.empID, e.empname FROM
employees e WHERE e.deptno = d.dno) AS employee_list_t) AS emp_list FROM
department d;

```

```

INSERT INTO employees VALUES (100, 'John', 1);/

```

```

INSERT INTO employees VALUES (200, 'Robert', 2 );/

```

```

INSERT INTO employees VALUES (300, 'Mary', 3);/

```

```

SELECT dv.deptno, dv.deptname, dv.address.dstreet, e.* FROM dept_view1 dv,
TABLE(dv.emp_list) e WHERE dv.deptno = 1;/

```