**BÀI TẬP THỰC HÀNH 2**

-- **MO HINH QUAN HE**

CREATE TABLE NhanVien (MaSoNV CHAR(10) NOT NULL, HoTen VARCHAR2(20), NamSinh NUMBER, PRIMARY KEY (MaSoNV));

CREATE TABLE NgoaiNgu (MaSoNN CHAR(10) NOT NULL, TenNN VARCHAR2(20), TrinhDoNN VARCHAR(20), PRIMARY KEY (MaSoNN));

CREATE TABLE NhanVien\_NgoaiNgu (MaSoNV CHAR(10) NOT NULL, MaSoNN CHAR(10) NOT NULL, PRIMARY KEY (MaSoNV, MaSoNN), FOREIGN KEY (MaSoNV) REFERENCES NhanVien (MaSoNV), FOREIGN KEY (MaSoNN) REFERENCES NgoaiNgu (MaSoNN));

--CRUD CHO MO HINH QUAN HE

INSERT INTO NhanVien VALUES ('NV1','Tran Van A',1999);

INSERT INTO NhanVien VALUES ('NV2','Nguyen Thi B',1998);

INSERT INTO NhanVien VALUES ('NV3','Le Van C',1990);

INSERT INTO NhanVien VALUES ('NV4','Hoang Van D',1991);

INSERT INTO NhanVien VALUES ('NV5','Nguyen Van E',1997);

INSERT INTO NgoaiNgu VALUES ('NN01','Tieng Anh','B1');

INSERT INTO NgoaiNgu VALUES ('NN02','Tieng Phap','B2');

INSERT INTO NgoaiNgu VALUES ('NN03','Tieng Duc','A1');

INSERT INTO NgoaiNgu VALUES ('NN04','Tieng Trung','A2');

INSERT INTO NgoaiNgu VALUES ('NN05','Tieng Anh','C1');

INSERT INTO NhanVien\_NgoaiNgu VALUES ('NV1','NN01');

INSERT INTO NhanVien\_NgoaiNgu VALUES ('NV1','NN02');

INSERT INTO NhanVien\_NgoaiNgu VALUES ('NV2','NN02');

INSERT INTO NhanVien\_NgoaiNgu VALUES ('NV2','NN03');

INSERT INTO NhanVien\_NgoaiNgu VALUES ('NV3','NN04');

INSERT INTO NhanVien\_NgoaiNgu VALUES ('NV3','NN05');

INSERT INTO NhanVien\_NgoaiNgu VALUES ('NV4','NN02');

INSERT INTO NhanVien\_NgoaiNgu VALUES ('NV4','NN04');

INSERT INTO NhanVien\_NgoaiNgu VALUES ('NV5','NN01');

INSERT INTO NhanVien\_NgoaiNgu VALUES ('NV5','NN05');

--HIEN THI THONG TIN

SELECT NV.\* FROM NhanVien NV;

SELECT NN.\* FROM NgoaiNgu NN;

SELECT NVNN.\* FROM NhanVien\_NgoaiNgu NVNN;

SELECT NV.MaSoNV, HoTen, NamSinh, NN.MaSoNN, TenNN, TrinhDoNN FROM NhanVien NV INNER JOIN NhanVien\_NgoaiNgu NVNN

ON NV.MaSoNV = NVNN.MaSoNV

INNER JOIN NgoaiNgu NN

ON NN.MaSoNN = NVNN.MaSoNN

--CHO BIET HO TEN, TEN NGOAI NGU VA TRINH DO CUA CAC NHAN VIEN

SELECT HoTen, TenNN, TrinhDoNN FROM NhanVien NV INNER JOIN NhanVien\_NgoaiNgu NVNN

ON NV.MaSoNV = NVNN.MaSoNV

INNER JOIN NgoaiNgu NN

ON NN.MaSoNN = NVNN.MaSoNN

--BO SUNG NGOAI NGU VA TRINH DO CHO 1 NHAN VIEN DUA VAO MA SO NHAN VIEN

INSERT INTO NhanVien\_NgoaiNgu VALUES ('NV5','NN03');

--THAY DOI TRINH DO NGOAI NGU CUA 1 NHAN VIEN DUA VAO MA SO NHAN VIEN

UPDATE NgoaiNgu NN

SET NN.TrinhDoNN = 'B1'

WHERE NN.TrinhDoNN = 'A1' AND NN.MaSoNN IN (SELECT NVNN.MaSoNN FROM NhanVien\_NgoaiNgu NVNN WHERE NVNN.MaSoNV = 'NV5')

--CHO BIET SO LUONG NHAN VIEN CO TRINH DO TIENG ANH B1

SELECT TenNN, TrinhDoNN, COUNT(NV.MaSoNV) SLNV FROM NhanVien NV

INNER JOIN NhanVien\_NgoaiNgu NVNN

ON NV.MaSoNV = NVNN.MaSoNV

INNER JOIN NgoaiNgu NN

ON NN.MaSoNN = NVNN.MaSoNN

GROUP BY TenNN, TrinhDoNN

HAVING TrinhDoNN = 'B1' AND TenNN = 'Tieng Anh'

DELETE FROM NhanVien\_NgoaiNgu NVNN

WHERE NVNN.MaSoNV = 'NV3' AND NVNN.MaSoNN ='NN05';

-- **MO HINH QUAN HE – DOI TUONG VOI VARRAY**

CREATE OR REPLACE TYPE TrinhDoNN AS OBJECT(TenNgoaiNgu VARCHAR(20), TrinhDo CHAR(20));/

CREATE OR REPLACE TYPE Kieu\_bang\_ngoai\_ngu AS VARRAY(5) OF TrinhDoNN ;

CREATE TABLE Tbl\_Giang\_vien(MaGV NUMBER(10), Ho\_ten\_GV VARCHAR(20), Namsinh NUMBER(10), Ngoai\_ngu Kieu\_bang\_ngoai\_ngu ) ;/

--CRUD CHO MO HINH QUAN HE – DOI TUONG VOI VARRAY

INSERT INTO Tbl\_Giang\_vien VALUES ( 1, 'Cao Thanh Son', 1997, ( Kieu\_bang\_ngoai\_ngu(TrinhDoNN ('Anh','A1'), TrinhDoNN ('Đức','A2'), TrinhDoNN ('Pháp','B1') ) ) )

INSERT INTO Tbl\_Giang\_vien VALUES ( 2, 'Nguyen Hoai Linh', 1999, ( Kieu\_bang\_ngoai\_ngu(TrinhDoNN ('Trung','B2'), TrinhDoNN ('Đức','A2') ) ) )

INSERT INTO Tbl\_Giang\_vien VALUES ( 3, 'Le Van B', 1998, ( Kieu\_bang\_ngoai\_ngu(TrinhDoNN ('Đức','B2'), TrinhDoNN ('Anh','A2') ) ) )

INSERT INTO Tbl\_Giang\_vien VALUES ( 4, 'Nguyen Dinh Hieu', 1999, ( Kieu\_bang\_ngoai\_ngu(TrinhDoNN ('Anh','B1'), TrinhDoNN ('Đức','A2') ) ) )

INSERT INTO Tbl\_Giang\_vien VALUES ( 5, 'Nguyen Van C', 1999, ( Kieu\_bang\_ngoai\_ngu(TrinhDoNN ('Pháp','B2'), TrinhDoNN ('Đức','A2') ) ) )

--CHO BIET HO TEN, TEN NGOAI NGU VA TRINH DO CUA CAC GV

SELECT gv.Ho\_ten\_GV, nn.TenNgoaiNgu, nn.TrinhDo

FROM Tbl\_Giang\_vien gv, table(gv.Ngoai\_ngu) nn

--BO SUNG NGOAI NGU VA TRINH DO CHO 1 NHAN VIEN DUA VAO MA SO GV

UPDATE Tbl\_Giang\_vien gv

SET gv.Ngoai\_ngu = Kieu\_bang\_ngoai\_ngu(TrinhDoNN ('Anh','C2'), TrinhDoNN ('Đức','A2'))

WHERE gv.MaGV = 2;

--CHO BIET SO LUONG NHAN VIEN CO TRINH DO TIENG DUC A2

SELECT nn.TrinhDo, nn.TenNgoaiNgu, COUNT(gv.MaGV) soGV

FROM Tbl\_Giang\_vien gv, table(gv.Ngoai\_ngu) nn

WHERE nn.TrinhDo = 'A2' AND nn.TenNgoaiNgu = 'Đức'

GROUP BY TrinhDo, nn.TenNgoaiNgu

DELETE FROM Tbl\_Giang\_vien gv

WHERE gv.MaGV = 2

-- **MO HINH QUAN HE – DOI TUONG VOI** **NESTED TABLE**

CREATE OR REPLACE TYPE TrinhDoNN AS OBJECT(TenNgoaiNgu VARCHAR(20), TrinhDo CHAR(20));/

CREATE OR REPLACE TYPE Kieu\_Nested\_Table\_ngoai\_ngu IS TABLE OF TrinhDoNN ;/

CREATE TABLE TBL\_NHANVIEN(MaNV NUMBER(10), Ho\_ten\_NV VARCHAR(20), Namsinh NUMBER(10), Ngoai\_ngu Kieu\_Nested\_Table\_ngoai\_ngu )

NESTED TABLE Ngoai\_ngu STORE AS nested\_tab\_nv;

--CRUD CHO MO HINH QUAN HE – DOI TUONG VOI NESTED TABLE

INSERT INTO TBL\_NHANVIEN VALUES ( 1, 'Tran Van B', 1999, ( Kieu\_Nested\_Table\_ngoai\_ngu (TrinhDoNN ('Đức','A1'), TrinhDoNN ('Pháp','A2')) ) )

INSERT INTO TBL\_NHANVIEN VALUES ( 2, 'Tran Van C', 1999, ( Kieu\_Nested\_Table\_ngoai\_ngu (TrinhDoNN ('Anh','C1'), TrinhDoNN ('Đức','A2')) ) )

INSERT INTO TBL\_NHANVIEN VALUES ( 3, 'Tran Van D', 1997, ( Kieu\_Nested\_Table\_ngoai\_ngu (TrinhDoNN ('Pháp','A1'), TrinhDoNN ('Anh','A2')) ) )

INSERT INTO TBL\_NHANVIEN VALUES ( 4, 'Tran Van E', 1995, ( Kieu\_Nested\_Table\_ngoai\_ngu (TrinhDoNN ('Đức','A1'), TrinhDoNN ('Anh','A1')) ) )

INSERT INTO TBL\_NHANVIEN VALUES ( 5, 'Tran Van F', 1991, ( Kieu\_Nested\_Table\_ngoai\_ngu (TrinhDoNN ('Anh','B1'), TrinhDoNN ('Trung','A2')) ) )

--CHO BIET HO TEN, TEN NGOAI NGU VA TRINH DO CUA CAC NHAN VIEN

SELECT nv.MaNV, nv.Ho\_ten\_NV, nn.\* FROM TBL\_NHANVIEN nv, table(nv.Ngoai\_ngu) nn

--BO SUNG NGOAI NGU VA TRINH DO CHO 1 NHAN VIEN DUA VAO MA SO NHAN VIEN

UPDATE TBL\_NHANVIEN nv

SET nv.Ngoai\_ngu = Kieu\_Nested\_Table\_ngoai\_ngu(TrinhDoNN ('Trung','C1'))

WHERE nv.MaNV = 3;

UPDATE TABLE (SELECT Ngoai\_ngu FROM TBL\_NHANVIEN nv WHERE nv.MaNV=5) A

SET A.TrinhDo ='B2'

WHERE A.TrinhDo ='C1' AND A.TenNgoaiNgu = 'Trung'

--CHO BIET SO LUONG NHAN VIEN CO TRINH DO TIENG TRUNG B2

SELECT nn.TrinhDo, nn.TenNgoaiNgu, COUNT(nv.MaNV) soNV

FROM TBL\_NHANVIEN nv, table(nv.Ngoai\_ngu) nn

WHERE nn.TrinhDo = 'B2' AND nn.TenNgoaiNgu = 'Trung'

GROUP BY TrinhDo, nn.TenNgoaiNgu

DELETE FROM TBL\_NHANVIEN nv

WHERE nv.MaNV = 5