

BÀI THỰC HÀNH SỐ 2. TẠO DATABASE LINK TRÊN RADMIN MẠNG VPN

Trần Văn Thế, 20520770,

Lưu Vĩnh Phát 20521733,

Đỗ Huỳnh Mỹ Tâm 20520746,

Nguyễn Minh Duy 21522005,

20520770@gm.uit.edu.vn

20521733@gm.uit.edu.vn

20520746@gm.uit.edu.vn

21522005@gm.uit.edu.vn,

TÓM TẮT NỘI DUNG THỰC HÀNH

Sinh viên tìm hiểu việc thiết lập kết nối giữa các cơ sở dữ liệu Oracle qua sự hướng dẫn của giảng viên thực hành. Trong đó, các kiến thức cần lưu ý bao gồm:

- o Database link là gì?
- o Các loại database link
- o Cú pháp tạo, xóa database link.

Ngoài ra có thể tham khảo thêm chi tiết tại đường dẫn https://docs.oracle.com/cd/B28359_01/server.111/b28310/ds_concepts002.htm hoặc video hướng dẫn thực hiện kết nối tại đường dẫn <https://www.youtube.com/watch?v=N-NShW9cusQ>.

Keywords: Database Link, Oracle, Role, Grant, Connect, ...

NỘI DUNG THỰC HÀNH

1.1. Data Definition Language (DDL)

Tai chi nhánh 1

```
ALTER SESSION SET NLS_DATE_FORMAT = 'DD/MM/YY HH24:MI:SS';
```

```
CREATE TABLE SACH
```

```
(  
  MaSach VARCHAR2(5) CONSTRAINT PK_SACH PRIMARY KEY,  
  TenSach VARCHAR2(50),  
  NgayXB DATE,  
  TacGia VARCHAR2(50),  
  GiaTien INT,  
  NhaXuatBan VARCHAR2(20),  
  LanIn NUMBER  
);
```

```
CREATE TABLE CHINHANH
```

```
(  
  MaChiNhanh VARCHAR2(4) CONSTRAINT PK_CHINHANH PRIMARY KEY,  
  TenChiNhanh VARCHAR2(50),  
  SoDT VARCHAR2(12)  
);
```

```
CREATE TABLE KHOSACH_QLKHO
```

```
(  
  MaChiNhanh VARCHAR2(4),  
  MaSach VARCHAR2(5),  
  SoLuong NUMBER,  
  NgayCapNhat DATE,  
  CONSTRAINT PK_KS_QLK PRIMARY KEY (MaChiNhanh, MaSach)  
);
```

```
CREATE TABLE KHOSACH_NVBH (
```

```
  MaChiNhanh VARCHAR(4),  
  MaSach VARCHAR(5),  
  TinhTrang VARCHAR (10),  
  KhuyenMai NUMBER ,  
  CONSTRAINT PK_KHOSACH_NVBH PRIMARY KEY (MaChiNhanh, MaSach)  
);
```

```
CREATE TABLE NHANVIEN (
```

```
  MaNV VARCHAR(4) CONSTRAINT PK_NV PRIMARY KEY,  
  TenNV VARCHAR(50),  
  DiaChi VARCHAR(30),  
  SoDT VARCHAR(20),  
  Luong NUMBER ,  
  MaChiNhanh VARCHAR(4)  
);
```

--SACH

INSERT INTO SACH VALUES('Book1', 'SpyxFamily T.6', '29/10/2021', 'Endou Tatsuya', 25000, 'Kim Dong', 1);

INSERT INTO SACH VALUES('Book2', 'S. Family T.6 L', '29/10/2021', 'Endou Tatsuya', 45000, 'Kim Dong', 1);

INSERT INTO SACH VALUES('Book3', 'Th.L?ng B.H', Null, 'Agatha Christie', 120000, 'Tre', 1);

INSERT INTO SACH VALUES('Book4', 'Black Jack 3', '25/10/2021', 'Osamu Tezuka', 30000, 'Tre', 1);

INSERT INTO SACH VALUES('Book5', 'One Piece 90', '11/10/2021', 'Eiichiro Oda', 19500, 'Kim Dong', 2);

-- CHINHANH

INSERT INTO CHINHANH VALUES('CN01', 'Quan 3, TPHCM', '0939013914');

-- KHOSACH_QLKHO

INSERT INTO KHOSACH_QLKHO VALUES('CN01', 'Book1', 0, '29/10/2021');

INSERT INTO KHOSACH_QLKHO VALUES('CN01', 'Book3', 510, '30/10/2021');

INSERT INTO KHOSACH_QLKHO VALUES('CN01', 'Book5', 100, '30/10/2021');

-- KHOSACH_NVBH

INSERT INTO KHOSACH_NVBH VALUES ('CN01', 'Book1', 'Het Hang', 0);

INSERT INTO KHOSACH_NVBH VALUES ('CN01', 'Book3', 'Con Hang', 20);

INSERT INTO KHOSACH_NVBH VALUES ('CN01', 'Book5', 'Con Hang', 20);

-- NHANVIEN

INSERT INTO NHANVIEN VALUES('NV03', 'Ho Trong Khang', 'Binh Dinh', '0858595208', 5200000, 'CN01');

INSERT INTO NHANVIEN VALUES('NV04', 'Ho Huu Thang', 'Bien Hoa', Null, 5200000, 'CN01');

INSERT INTO NHANVIEN VALUES('NV06', 'Tran Thi Ngoc An', 'Binh Dinh', '0944052874', 5200000, 'CN01');

Tại chi nhánh 2

ALTER SESSION SET NLS_DATE_FORMAT = 'DD/MM/YY HH24:MI:SS';

CREATE TABLE SACH

(
 MaSach VARCHAR2(5) CONSTRAINT PK_SACH PRIMARY KEY,
 TenSach VARCHAR2(50),
 NgàyXB DATE,
 TacGia VARCHAR2(50),
 GiaTien INT,
 NhaXuatBan VARCHAR2(20),
 LanIn NUMBER
);

CREATE TABLE CHINHANH

(
 MaChiNhanh VARCHAR2(4) CONSTRAINT PK_CHINHANH PRIMARY KEY,
 TenChiNhanh VARCHAR2(50),

```
SoDT VARCHAR2(12)
);
```

```
CREATE TABLE KHOSACH_QLKHO
(
    MaChiNhanh VARCHAR2(4),
    MaSach VARCHAR2(5),
    SoLuong NUMBER,
    NgayCapNhat DATE,
    CONSTRAINT PK_KS_QLK PRIMARY KEY (MaChiNhanh,MaSach)
);
```

```
CREATE TABLE KHOSACH_NVBH (
    MaChiNhanh VARCHAR(4),
    MaSach VARCHAR(5),
    TinhTrang VARCHAR (10),
    KhuyenMai NUMBER ,
    CONSTRAINT PK_KHOSACH_NVBH PRIMARY KEY(MaChiNhanh,MaSach)
);
```

```
CREATE TABLE NHANVIEN (
    MaNV VARCHAR(4) CONSTRAINT PK_NV PRIMARY KEY,
    TenNV VARCHAR(50),
    DiaChi VARCHAR(30),
    SoDT VARCHAR(20),
    Luong NUMBER ,
    MaChiNhanh VARCHAR(4)
);
```

--SACH

```
INSERT INTO SACH VALUES('Book1', 'SpyxFamily T.6', '29/10/2021', 'Endou Tatsuya', 25000, 'Kim Dong', 1);
INSERT INTO SACH VALUES('Book2', 'S. Family T.6 L', '29/10/2021', 'Endou Tatsuya', 45000, 'Kim Dong', 1);
INSERT INTO SACH VALUES('Book3','Th.L?ng B.H', Null, 'Agatha Christie', 120000, 'Tre', 1);
INSERT INTO SACH VALUES('Book4', 'Black Jack 3', '25/10/2021', 'Osamu Tezuka', 30000, 'Tre', 1);
INSERT INTO SACH VALUES('Book5', 'One Piece 90', '11/10/2021', 'Eiichiro Oda', 19500, 'Kim Dong', 2);
```

-- CHINHANH

```
INSERT INTO CHINHANH VALUES('CN02', 'Quan Hoang Kiem, Ha Noi', '0907979815');
```

-- KHOSACH_QLKHO

```
INSERT INTO KHOSACH_QLKHO VALUES('CN02', 'Book1', 500, '29/10/2021');
INSERT INTO KHOSACH_QLKHO VALUES('CN02', 'Book2', 0, '29/10/2021');
INSERT INTO KHOSACH_QLKHO VALUES('CN02', 'Book4', 180, '30/10/2021');
INSERT INTO KHOSACH_QLKHO VALUES('CN02', 'Book5', 187, '30/10/2021');
```

```

-- KHOSACH_NVBH
INSERT INTO KHOSACH_NVBH VALUES ('CN02','Book1','Con Hang',10);
INSERT INTO KHOSACH_NVBH VALUES ('CN02','Book2','Het Hang',0);
INSERT INTO KHOSACH_NVBH VALUES ('CN02','Book4','Con Hang',10);
INSERT INTO KHOSACH_NVBH VALUES ('CN02','Book5','Con Hang',15);

-- NHANVIEN
INSERT INTO NHANVIEN VALUES('NV01','Nguyen Thi Thuy Nga','Dak Lak','0943058578',4900000,
'CN02');
INSERT INTO NHANVIEN VALUES('NV02','Le Huynh Lan Ha','An
Giang','0823664648',4900000,'CN02');
INSERT INTO NHANVIEN VALUES('NV05','Phan Pham Quynh Hoa','Binh Thuan',Null,4900000,
'CN02');

```

1.2. Six query

*Tại chi nhánh 1

Database link tại chi nhánh 1

```

SQL> create public database link cn2_link connect to cn1 identified by cn1 using 'cn2';

Database link created.

SQL> create public database link cn2_link_giamdoc connect to giamdoc identified by giamdoc using 'cn2';

Database link created.

SQL> create public database link cn2_link_nhanvien connect to nhanvien identified by nhanvien using 'cn2';

Database link created.

```

Query 1

```

SQL> conn nhanvien/nhanvien
Connected.

SQL> SELECT MACHINHANH, NVBH1.MASACH, TENSACH FROM cn1.KHOSACH_NVBH NVBH1, cn1.SACH S1 WHERE NVBH1.MASACH = S1.MASACH AND TINHTRANG = 'Het Hang'
2 UNION
3 SELECT MACHINHANH, NVBH2.MASACH, TENSACH FROM cn2.KHOSACH_NVBH@cn2_link_nhanvien NVBH2, cn2.SACH@cn2_link_nhanvien S2 WHERE NVBH2.MASACH = S2.MASACH AND TINHTRANG = 'Het Hang';

MACH MASAC TENSACH
-----
CN01 Book1 SpyxFamily T.6
CN02 Book2 S. Family T.6 L

```

Query 2

```
SQL> conn giamdoc/giamdoc
Connected.
SQL> SELECT A.MASACH, TENSACH, C.TINHTRANG
  2 FROM cn1.SACH A, cn1.KHOSACH_QLKHO B, cn1.KHOSACH_NVBH C
  3 WHERE A.MASACH = B.MASACH AND A.MASACH = C.MASACH AND B.MACHINHANH = C.MACHINHANH AND B.MASACH = C.MASACH AND SOLUONG >120 AND TINHTRANG = 'Con Hang'
  4 UNION
  5 SELECT D.MASACH, TENSACH, F.TINHTRANG
  6 FROM cn2.SACH@cn2_link_giamdoc D, cn2.KHOSACH_QLKHO@cn2_link_giamdoc E, cn2.KHOSACH_NVBH@cn2_link_giamdoc F
  7 WHERE D.MASACH = E.MASACH AND D.MASACH = F.MASACH AND E.MACHINHANH = F.MACHINHANH AND E.MASACH = F.MASACH AND SOLUONG >120 AND TINHTRANG = 'Con Hang';
```

| MASACH | TENSACH | TINHTRANG |
|--------|----------------|-----------|
| Book3 | Th.Long B.H | Con Hang |
| Book1 | SpyxFamily T.6 | Con Hang |
| Book4 | Black Jack 3 | Con Hang |
| Book5 | One Piece 90 | Con Hang |

Query 3

```
SQL> conn qlk1/quanlykho
Connected.
SQL> SELECT TENSACH, NGAYXB, TACGIA, GIATIENT, SOLUONG, LANIN, NGAYCAPNHAT
  2 FROM CN1.SACH S1 JOIN CN1.KHOSACH_QLKHO QL1 ON S1.MASACH=QL1.MASACH
  3 WHERE NHAXUATBAN = 'Kim Dong';
```

| TENSACH | NGAYXB | |
|----------------|-----------|---------|
| TACGIA | GIATIENT | SOLUONG |
| LANIN | NGAYCAPNH | |
| SpyxFamily T.6 | 29-OCT-21 | |
| Endou Tatsuya | 25000 | 0 |
| 1 29-OCT-21 | | |
| One Piece 90 | 11-OCT-21 | |
| Eiichiro Oda | 19500 | 100 |
| 2 30-OCT-21 | | |
| TENSACH | NGAYXB | |
| TACGIA | GIATIENT | SOLUONG |
| LANIN | NGAYCAPNH | |

Query 4

```
SQL> conn giamdoc/giamdoc
Connected.
SQL> SELECT S1.MASACH, S1.TENSACH FROM CN1.SACH S1 JOIN CN1.KHOSACH_NVBH NVBH1 ON S1.MASACH = NVBH1.MASACH AND NVBH1.TINHTRANG = 'Con Hang'
  2 INTERSECT
  3 SELECT S2.MASACH, S2.TENSACH FROM CN2.SACH@cn2_link_giamdoc S2 JOIN CN2.KHOSACH_NVBH@cn2_link_giamdoc NVBH2 ON S2.MASACH = NVBH2.MASACH AND NVBH2.TINHTRANG = 'Con Hang';
```

| MASACH | TENSACH |
|--------|--------------|
| Book5 | One Piece 90 |

Query 5

```
SQL> SELECT QL1.MASACH FROM CN1.KHOSACH_QLKHO QL1
2 INTERSECT
3 SELECT QL2.MASACH FROM CN2.KHOSACH_QLKHO@cn2_link_giamdoc QL2;

MASACH
-----
Book1
Book5
```

*Tai chi nhánh 2

Database link tại chi nhánh 2

```
SQL> create public database link cn1_link connect to cn2 identified by cn2 u
sing 'cn1';

Database link created.

SQL> create public database link cn1_link_giamdoc connect to giamdoc identif
ied by giamdoc using 'cn1';

Database link created.

SQL> create public database link cn1_link_nhanvien connect to nhanvien ident
ified by nhanvien using 'cn1';

Database link created.
```

Query 6

```
SQL> SELECT S.MASACH, TENSACH, MAX(KHUYENMAI), COUNT (MACHINHANH) FROM (SELE
CT MACHINHANH, NVBH2.MASACH, TENSACH, KHUYENMAI FROM CN2.SACH S2, CN2.KHOSAC
H_NVBH NVBH2
2 WHERE S2.MASACH = NVBH2.MASACH AND NHAXUATBAN = 'Kim Dong'
3 UNION
4 SELECT MACHINHANH, NVBH1.MASACH, TENSACH, KHUYENMAI
5 FROM CN1.SACH@cn1_link_nhanvien S1, CN1.KHOSACH_NVBH@cn1_link_nhanvien
NVBH1 WHERE S1.MASACH = NVBH1.MASACH AND NHAXUATBAN = 'Kim Dong') S
6 GROUP BY S.MASACH, TENSACH;
```

| MASACH | TENSACH | MAX(KHUYENMAI) |
|--------|-----------------|----------------|
| Book1 | SpyxFamily T.6 | 10 |
| | 2 | |
| Book2 | S. Family T.6 L | 0 |
| | 1 | |
| Book5 | One Piece 90 | 20 |
| | 2 | |

1.3. Kiến thức phân mảnh

Tại chi nhánh 1:

- SACH
- $CN1.CHINHANH = \delta_{(MaChiNhanh = 'CN1')} CHINHANH$
- $CN1.KHOSACH = KHOSACH \bowtie_{MaChiNhanh} CN1.CHINHANH$
- CN1.KHOSACH tách thành:
 - + CN1.KHOSACH_QLKHO (MaChiNhanh, MaSach, SoLuong, NgayCapNhat)
 - + CN1.KHOSACH_NVBH (MaChiNhanh, MaSach, TinhTrang, KhuyenMai)
- $CN1.NHANVIEN = NHANVIEN \bowtie_{MaChiNhanh} CN1.CHINHANH$

Tại chi nhánh 2:

- SACH
- $CN2.CHINHANH = \delta_{(MaChiNhanh = 'CN2')} CHINHANH$
- $CN2.KHOSACH = KHOSACH \bowtie_{MaChiNhanh} CN2.CHINHANH$
- CN2.KHOSACH tách thành:
 - + CN2.KHOSACH_QLKHO (MaChiNhanh, MaSach, SoLuong, NgayCapNhat)
 - + CN2.KHOSACH_NVBH (MaChiNhanh, MaSach, TinhTrang, KhuyenMai)
- $CN2.NHANVIEN = NHANVIEN \bowtie_{MaChiNhanh} CN2.CHINHANH$

1.4. Kiến trúc phân quyền

*Tại chi nhánh 1

User **cn1**

```
SQL> alter session set "_ORACLE_SCRIPT" = true;
Session altered.
SQL> create user cn1 identified by cn1;
User created.
SQL> grant connect, dba to cn1;
Grant succeeded.
```


User GiamDoc

```
SQL> create user giamdoc identified by giamdoc;

User created.

SQL> create role r_giamdoc;

Role created.
```

```
SQL> GRANT CREATE SESSION, DBA, CONNECT to r_giamdoc;
Grant succeeded.

SQL> grant select on cn1.khosach_NVBH to r_giamdoc;
Grant succeeded.

SQL> grant select on cn1.khosach_QLKHO to r_giamdoc;
Grant succeeded.

SQL> grant select on cn1.SACH to r_giamdoc;
Grant succeeded.

SQL> grant select on cn1.NHANVIEN to r_giamdoc;
Grant succeeded.

SQL> Grant r_giamdoc to giamdoc;
```

User QuanLyKho

```
SQL> create user qlk1 identified by quanlykho;

User created.

SQL> Create role r_qlk;

Role created.
```

```
SQL> grant select on cn1.SACH to r_qlk;
Grant succeeded.

SQL> grant select on cn1.KHOSACH_QLKHO to r_qlk;
Grant succeeded.

SQL> grant connect to r_qlk;
Grant succeeded.

SQL> grant r_qlk to qlk1;
```

User NhanVien

```
SQL> create user nhanvien identified by nhanvien;
User created.

SQL> Create role r_nv;
Role created.
```

```
SQL> grant select on cn1.SACH to r_nv;
Grant succeeded.

SQL> grant select on cn1.KHOSACH_nvbh to r_nv;
Grant succeeded.

SQL> grant connect to r_nv;
Grant succeeded.

SQL> grant r_nv to nhanvien;
Grant succeeded.
```

User **cn2**

```
SQL> create user cn2 identified by cn2;
User created.

SQL> grant connect to cn2;
Grant succeeded.
```

```
SQL> grant create session to cn2;
Grant succeeded.

SQL> grant select on cn1.SACH to cn2;
Grant succeeded.

SQL> grant select on cn1.CHINHANH to cn2;
Grant succeeded.

SQL> grant select on cn1.KHOSACH_QLKHO to cn2;
Grant succeeded.

SQL> grant select on cn1.KHOSACH_NVBH to cn2;
Grant succeeded.

SQL> grant select on cn1.NHANVIEN to cn2;
Grant succeeded.
```

**Tại chi nhánh 2*

User **cn2**

```
SQL> create user cn2 identified by cn2;
User created.

SQL> grant connect to cn2;
Grant succeeded.
```

User GiamDoc

```
SQL> create user giamdoc identified by giamdoc;
User created.

SQL> create role r_giamdoc;
Role created.
```

```
SQL> GRANT CREATE SESSION, DBA, CONNECT to r_giamdoc;
Grant succeeded.

SQL> grant select on cn2.khosach_NVBH to r_giamdoc;
Grant succeeded.

SQL> grant select on cn2.khosach_QLKHO to r_giamdoc;
Grant succeeded.

SQL> grant select on cn2.SACH to r_giamdoc;
Grant succeeded.

SQL> grant select on cn2.NHANVIEN to r_giamdoc;
Grant succeeded.

SQL> Grant r_giamdoc to giamdoc;
Grant succeeded.
```

User QuanLyKho

```
SQL> create user qlk2 identified by quanlykho;
User created.

SQL> create role r_qlk;
Role created.
```

```
SQL> grant select on cn2.SACH to r_qlk;
Grant succeeded.

SQL> grant select on cn2.KHOSACH_QLKHO to r_qlk;
Grant succeeded.

SQL> grant connect to r_qlk;
Grant succeeded.

SQL> grant r_qlk to qlk2;
Grant succeeded.
```

User NhanVien

```
SQL> create user nhanvien identified by nhanvien;  
User created.  
SQL> create role r_nv;  
Role created.
```

```
SQL> grant select on cn2.SACH to r_nv;  
Grant succeeded.  
SQL> grant select on cn2.KHOSACH_NVBH to r_nv;  
Grant succeeded.  
SQL> grant connect to r_nv;  
Grant succeeded.  
SQL> grant r_nv to nhanvien;  
Grant succeeded.
```

User cn1

```
SQL> create user cn1 identified by cn1;  
User created.  
SQL> grant create session to cn1;  
Grant succeeded.
```

```
SQL> grant select on cn2.SACH to cn1;  
Grant succeeded.  
SQL> grant select on cn2.CHINHANH to cn1;  
Grant succeeded.  
SQL> grant select on cn2.KHOSACH_QLKHO to cn1;  
Grant succeeded.  
SQL> grant select on cn2.KHOSACH_NVBH to cn1;  
Grant succeeded.
```