

인문정보 데이터베이스

## 제7강: SQL 실습(3)-DML/DDI

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1. SQL 어휘

2. 테이블 생성

3. 데이터 입력

4. 데이터 수정/삭제

5. 뷰(VIEW)

### ❖ DML : Data Manipulation Language

- 데이터 검색: **select**
- 데이터 삽입: **insert**
- 데이터 삭제: **delete**
- 데이터 수정: **update**

### ❖ DDL : Data Definition Language

- 테이블 생성: **create table**
- 테이블 변경: **alter table**
- 테이블 삭제: **drop table**
- 뷰 생성: **create view**
- 뷰 삭제: **drop view**



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## 테이블 schema 조회

## ❖ schema 조회: institute

```
SELECT column_name, data_type, character_maximum_length  
FROM INFORMATION_SCHEMA.COLUMNS  
WHERE TABLE_NAME = 'institute'
```

column_name	data_type	character_maximum_length
institute_id	float	NULL
institute_name	nvarchar	255
type	nvarchar	255
zone	float	NULL
state	float	NULL
state_name	nvarchar	255
hasGis	float	NULL
latitude	float	NULL
longitude	float	NULL

## 테이블 스키마 조회

## ❖ schema 조회: program

```
SELECT column_name, data_type, character_maximum_length,
       FROM INFORMATION_SCHEMA.COLUMNS
       WHERE TABLE_NAME = 'program'
```

column_name	data_type	character_maximum_length
program_id	float	NULL
institute_id	float	NULL
hasPart	float	NULL
program_name	nvarchar	255
department	nvarchar	255
establishment	float	NULL
language	float	NULL
major_ba	float	NULL
minor_ba	float	NULL
ma	float	NULL
phd	float	NULL
address	nvarchar	255
phone	nvarchar	255
fax	nvarchar	255
email	nvarchar	255
homepage	nvarchar	255
representative	nvarchar	255

## 새 테이블 생성

## ❖ Create table: institute\_asia

```
CREATE TABLE institute_asia (  
    institute_id      float      NOT NULL,  
    institute_name    nvarchar(255) NULL,  
    type              nvarchar(255) NULL,  
    zone              float      NULL,  
    state             float      NULL,  
    state_name        nvarchar(255) NULL,  
    hasGis            float      NULL,  
    latitude          float      NULL,  
    longitude         float      NULL,  
    primary key(institute_id)  
)
```

## ❖ Create table: program\_asia

```

CREATE TABLE program_asia (
    program_id          float          NOT NULL,
    institute_id        float          NULL,
    hasPart              float          NULL,
    program_name         nvarchar(255) NULL,
    department           nvarchar(255) NULL,
    establishment        float          NULL,
    language             float          NULL,
    major_ba             float          NULL,
    minor_ba             float          NULL,
    ma                   float          NULL,
    phd                  float          NULL,
    address              nvarchar(255) NULL,
    phone                nvarchar(255) NULL,
    fax                  nvarchar(255) NULL,
    email                nvarchar(255) NULL,
    homepage             nvarchar(255) NULL,
    representative       nvarchar(255) NULL,
    primary key(program_id)
)

```





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- ❖ 기존 테이블의 내용을 copy: **institute\_asia** ... 아시아 지역 기관

```
INSERT INTO institute_asia ( institute_id, institute_name, type,  
                             zone, state, state_name, hasGis, latitude, longitude )  
  SELECT institute_id, institute_name, type, zone, state,  
         state_name, hasGis, latitude, longitude  
  FROM institute  
 WHERE zone = 4
```

```
INSERT INTO institute_asia  
  SELECT *  
  FROM institute  
 WHERE zone = 4
```

- ❖ 결과 조회

```
SELECT * FROM institute_asia
```

- ❖ 기존 테이블 copy: `program_asia` .... 아시아 지역 프로그램

```
INSERT INTO program_asia
    SELECT program.* FROM program
    JOIN institute_asia
    ON program.institute_id = institute_asia.institute_id
```

- ❖ 결과 조회

```
SELECT * FROM program_asia
```

### ❖ 새로운 데이터 입력

```
INSERT INTO institute_asia ( institute_id, institute_name, type, zone, state,
                           state_name, hasGis, latitude, longitude )
VALUES (
    200001,
    'The Academy of Korean Studies',
    'EDU',
    4,
    4100,
    '대한민국',
    1,
    37.391892,
    127.053372
)

SELECT * FROM institute_asia ORDER BY state DESC
```

### ❖ 새로운 데이터 입력

```
INSERT INTO program_asia ( program_id, institute_id, hasPart, program_name,  
    department, establishment, language, major_ba, minor_ba, ma,phd,  
    address, phone, fax, email, homepage, representative )  
VALUES (  
    2000010001,  
    200001,  
    1,  
    'The Graduate School of Korean Studies',  
    'Korean Classics and Global Communication',  
    2016,  
    0, 0, 0, 1, 1,  
    'Unjung-dong, Seongnam-si, Gyeonggi-do, Republic of Korea',  
    '(82) 31 709 8111',  
    NULL,  
    'classic@aks.ac.kr',  
    'http://classic.aks.ac.kr',  
    'Choi Jin-Deok'  
)
```

### ❖ 새로운 데이터 입력

```
INSERT INTO program_asia
VALUES (
    2000010002,
    200001,
    1,
    'Center for International Affairs at AKS',
    'Promotion of Korean Studies Abroad',
    1978,
    0, 0, 0, 0, 0,
    'Unjung-dong, Seongnam-si, Gyeonggi-do, Republic of Korea',
    '(82) 31 709 8111',
    NULL,
    'cefia@aks.ac.kr',
    'http://cefia.aks.ac.kr',
    'Kim Hyeon'
)
```



1. SQL 어휘

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3. 데이터 입력

4. 데이터 수정/삭제

5. 뷰(VIEW)

#### ❖ 데이터 수정

```
SELECT * FROM program_asia WHERE institute_id=200001
```

```
UPDATE program_asia  
  SET address=  
    '323 Haogae-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, 463-791, Republic of Korea'  
  WHERE institute_id=200001
```

```
SELECT * FROM program_asia WHERE institute_id=200001
```



## 테이블 스키마 변경: 속성(열) 추가

❖ 새로운 데이터 입력속성(열) 추가: ALTER TABLE ..... ADD .....

```
ALTER TABLE institute_asia ADD city nvarchar(255)
```

```
UPDATE institute_asia  
    SET city = 'Seongnam-si'  
    WHERE institute_id=200001
```

```
SELECT * FROM institute_asia ORDER BY state DESC
```

## 테이블 스키마 변경: 속성(열) 삭제

❖ 속성 (열) 삭제: `ALTER TABLE ..... DROP COLUMN.....`

```
SELECT * FROM institute_asia ORDER BY state DESC
```

```
ALTER TABLE institute_asia DROP COLUMN city
```

```
SELECT * FROM institute_asia ORDER BY state DESC
```

## 데이터(행) 삭제

❖ 데이터 (행) 삭제: `DELETE FROM ..... WHERE .....`

```
DELETE FROM program_asia  
WHERE program_id = 2000010001
```

```
DELETE FROM program_asia  
WHERE program_id = 2000010002
```

```
DELETE FROM institute_asia  
WHERE institute_id = 200001
```

```
SELECT * FROM program_asia ORDER BY institute_id DESC
```

```
SELECT * FROM institute_asia ORDER BY institute_id DESC
```

❖ 테이블 삭제: DROP TABLE

```
DROP TABLE program_asia
```

```
DROP TABLE institute_asia
```

```
SELECT * FROM program_asia
```

개체 이름 'program\_asia'이(가) 잘못되었습니다.

```
SELECT * FROM institute_asia
```

개체 이름 'institute\_asia'이(가) 잘못되었습니다.



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5. 뷰(VEIW)

### ❖ 물리적 테이블의 생성

- `SELECT institute_id, state_name, type, institute_name`  
`INTO institute_asia`  
`FROM institute`  
`WHERE zone= 4`

### ❖ 가상 테이블(뷰)의 생성

- `CREATE VIEW institute_asian AS`  
`SELECT institute_id, state_name, type, institute_name`  
`FROM institute WHERE zone= 4`
- `ALTER VIEW institute_asian AS`  
`SELECT institute_id, state_name, type, institute_name , longitude, latitude`  
`FROM institute`  
`WHERE zone= 4 and hasGIS=1`
- `SELECT * FROM institute_asian`

## 조회 결과의 보존(조인 뷰)

### ❖ 조인 뷰의 생성

- **CREATE VIEW** institute\_phd **AS**

```
SELECT state_name, institute_name, type, program_name, homepage  
FROM institute  
JOIN program  
ON institute.institute_id = program.institute_id  
WHERE phd=1
```

- **SELECT \*** FROM institute\_phd