

데이터베이스 기초 과제

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1차과제

1번)

```
--- (1) To find all instructors in Comp. Sci. dept with salary > 80000
select name
from instructor
where dept_name = 'Comp. Sci.' and salary > 80000;
```

Result Grid	
	name
▶	Brandt

2번)

```
- (2) Find the names of all instructors in the Art department who have taught some course and the course_id
select name
from instructor as i ,takes as t
where i.ID=t.ID and dept_name = 'Art';
```

Result Grid	
	name

3번)

```
-- (3) Find the names of all instructors who have a higher salary than some instructor in 'Comp. Sci.'.
select name
from instructor as i
where i.dept_name='Comp. Sci.' and salary > (select min(salary) from instructor as e where e.dept_name='Comp. Sci.');
```

Result Grid	
	name
▶	Katz
	Brandt

4번)

- (4) Find courses that ran in spring 2010 and in Fall 2009

```
select course_id
from teaches
where (semester = 'Spring' and year = 2010) or (semester = 'Fall' and year=2009);
```

Result Grid	
	course_id
▶	CS-101
	CS-315
	CS-347
	MU-199
	PHY-101
	HIS-351
	CS-101
	CS-319
	CS-319

5번)

--- (5) Find the average salary of instructors in the Computer Science department

```
select AVG(salary)
from instructor
where dept_name = 'Comp. Sci.';
```

Result Grid	
	AVG(salary)
▶	77333.333333

6번)

- (6) Find the total number of instructors who teach a course in the Spring 2010 semester

```
select count(ID)
from takes
where semester = 'Spring' and year = 2010;
```

Result Grid	
	count(ID)
▶	8

7번)

```
--- (7) Find the names and average salaries of all departments whose average salary is greater than 42000
select dept_name , avg(salary)
from instructor
group by dept_name
having avg(salary) > 42000;
```

	dept_name	avg(salary)
▶	Biology	72000.000000
	Comp. Sci.	77333.333333
	Elec. Eng.	80000.000000
	History	61000.000000
	Physics	91000.000000

8번)

```
-- (8) Find the total number of (distinct) students who have taken course sections taught by the instructor with ID 10101
select count(distinct ID)
from takes
where (course_id, sec_id, semester, year) in (select course_id , sec_id , semester, year from teaches where teaches.ID=10101) ;
```

	count(distinct ID)
▶	6

9번)

```
--- (9) Find the names of all instructors whose salary is greater than the salary of all instructors in the Comp. Sci. department.
select name
from instructor
where salary > all (select salary from instructor where dept_name = 'Comp. Sci.');
```

	name
▶	Einstein

10번)

--- (10) Find all students who have taken all courses offered in the Biology department.

```
select S.ID
from student as S
where not exists (select course_id from teaches
                  where dept_name = 'Biology' and course_id not in (select T.course_id from takes as T where S.ID =T.ID));
```

Result Grid	
	ID
▶	00128
	12345
	54321
	76543
	76653
	98765
	23121
	19991
	55739
	44553
	45678
	70557
★	HULL

11번)

--- (11) Delete all instructors from the Finance department

```
delete from instructor where dept_name = 'Finance';
```

12번)

--- (12) Increase salaries of instructors whose salary is over \$100,000 by 3%, and all others by a 5%

```
update instructor set salary = salary*1.03 where salary > 100000;
update instructor set salary = salary*1.05 where salary <= 100000;
```

2차과제

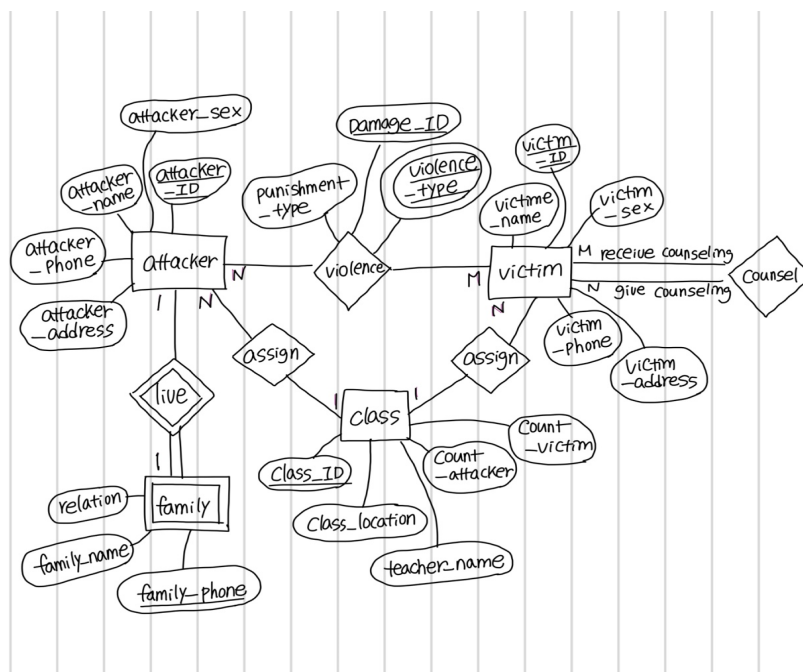
1- 데이터베이스 선택

학교폭력 데이터 베이스

설정 이유

- 1) 피해자와 가해자가 같은 학급에 배정받지 않도록 하기 위함
- 2) 가해자가 계속해서 학교폭력을 발생시켰을 시 가중처벌하기 위함
- 3) 학교폭력 실태를 한눈에 파악하고 효과적인 관리를 위함

2- 문제 정의(ER Diagram)



Attacker(attacker_ID, attacker_name, attacker_phone, attacker_address, attacker_sex, class_ID(FK))

Victim(victim_ID, victim_name, victim_phone, victim_address, victim_sex, class_ID(FK), counsel_SID)

Class(class_ID, class_location, teacher_name, count_attacker, count_victim)

Violence(Damage_ID, attacker_ID(FK), victim_ID(FK))

Violence_type (Damage_ID, violence_type, punishment_type)

Family(family_phone, relation, family_name, attacker_ID)

3- 테이블 정의

Attacker table

Attacker_Name	Class_ID	Attacker_ID	Attacker_sex	Attacker_phone	Attacker_address
이준호	308	30802	male	010-0000-0000	월곡동18번지
박지현	303	30311	female	010-1111-1111	월곡동22번지
박민준	306	30608	male	010-2222-2222	하월곡동12번지
김태영	304	30403	male	010-3333-3333	하월곡동34번지
김수지	308	30811	female	010-4444-4444	하월곡동89번지
이서연	309	30923	female	010-5555-5555	안암동11번지
최지우	306	30612	female	010-6666-6666	안암동89번지
정승우	308	30817	male	010-7777-7777	안암동22번지
황민재	303	30321	female	010-8888-8888	길음동77번지
정지유	304	30411	male	010-9999-9999	길음동2번지

Victim table

victim_Name	Class_ID	victim_ID	victim_sex	victim_phone	victim_address	Counsel_SID
한예린	304	30402	female	010-1234-0000	월곡동12번지	30611
송지혜	306	30611	female	010-0101-0101	월곡동45번지	30718
송재호	307	30718	male	010-0202-0202	월곡동67번지	31022
임나영	310	31022	female	010-0303-0303	하월곡동33번지	30912
강동욱	309	30912	male	010-0404-0404	하월곡동9번지	30501
윤재훈	305	30501	male	010-0505-0505	안암동1번지	30723
윤지원	307	30723	female	010-0606-0606	안암동66번지	30219
임성빈	302	30219	male	010-0707-0707	안암동2번지	30323
강미정	303	30323	female	010-0808-0808	길음동7번지	30822
한승훈	308	30822	male	010-0909-0909	길음동21번지	30402

Violence table

Dagame_ID	Victim_ID	Attacker_ID
01	30402	30802
02	30611	30311
03	30718	30608
04	31022	30403
05	30912	30811
06	30501	30923
07	30723	30612
08	30219	30817
09	30323	30321
10	30822	30411
11	30323	30411

violence_type table

Dagame_ID	Punishment_type	Violence_type
01	4호	금품갈취
02	3호	따돌림
03	5호	신체폭력
03	2호	사이버폭력
04	9호	살인미수
05	1호	언어폭력
06	1호	협박
07	8호	성폭력
08	4호	금품갈취
09	2호	따돌림
10	2호	사이버폭력
11	1호	언어폭력

Class table

<u>Class_ID</u>	<u>Class_location</u>	<u>Teacher_name</u>	<u>Count_attacker</u>	<u>Count_victim</u>
301	신관1층	김선영	0	0
302	신관1층	이현우	0	1
303	신관1층	박지수	2	1
304	신관2층	최영희	2	1
305	신관2층	정민석	0	1
306	신관2층	황미경	2	1
307	본관3층	이가은	0	2
308	본관3층	박준호	3	1
309	본관3층	김민지	1	1
310	본관3층	최성민	0	1

Family table

<u>Attacker_ID</u>	<u>Family_name</u>	<u>relation</u>	<u>Family_phone</u>
30802	박영식	father	010-1111-0000
30311	정태준	father	010-2222-0000
30608	박은정	mother	010-3333-0000
30403	김혜란	mother	010-4444-0000
30811	김성민	father	010-5555-0000
30923	이동훈	brother	010-6666-0000
30612	박지영	sister	010-7777-0000
30817	한미경	mother	010-8888-0000
30321	이지연	sister	010-9999-0000
30411	이준하	father	010-0000-1111

4- SQL 질의문

--- (1) 가장 높은 처벌을 받은 폭력 유형을 검색하시오.

```
SELECT vt.violence_type, vt.punishment_type
FROM violence_type vt
JOIN violence v ON vt.damage_ID = v.damage_ID
ORDER BY vt.punishment_type DESC
LIMIT 1;
```

Result Grid	Filter Rows:
violence_type	punishment_type
살인미수	9호

--- (2) 피해자의 수가 2명 이상인 학급의 학급명과 해당 피해학생의 이름을 검색하시오.

```
SELECT c.class_ID, v.victim_name
FROM class c
JOIN victim v ON c.class_ID = v.class_ID
WHERE c.count_victim >= 2;
```

Result Grid	Filter Rows:
class_ID	victim_name
307	송재호
307	윤지원

--- (3) 연락 가능한 가해자가족의 관계가 '어머니'나 '아버지'가 아닌 학생의 이름과 학번을 검색하시오.

```
SELECT DISTINCT a.attacker_name , a.attacker_ID
FROM attacker a
LEFT JOIN family f ON a.attacker_ID = f.attacker_ID
WHERE f.relation NOT IN ('mother', 'father');
```

Result Grid	Filter Rows:
attacker_name	attacker_ID
이서연	30923
최지우	30612
황민재	30321

--- (4) 평균 피해자보다 피해자 수가 많은 학급을 검색하시오.

```
SELECT c.class_ID
FROM class c
WHERE (SELECT COUNT(*) FROM victim v WHERE v.class_ID = c.class_ID) >
(SELECT AVG(count_victim) FROM class);
```

Result Grid	
	class_ID
▶	307
*	NULL

--- (5) 발생 횟수가 2회 이상인 폭력 유형과 발생 횟수를 검색하시오.

```
SELECT violence_type, COUNT(*) AS occurrence_count
FROM violence_type
GROUP BY violence_type
HAVING COUNT(*) > 1;
```

	violence_type	occurrence_count
▶	금품갈취	2
	따돌림	2
	사이버폭력	2
	언어폭력	2

--- (6) 가해자가 2명 이상인 학급의 가해자 학번과 수를 검색하시오.

```
SELECT class_ID, COUNT(attacker_ID) AS attacker_count
FROM attacker
GROUP BY class_ID
HAVING COUNT(attacker_ID) > 2;
```

Result Grid		
	class_ID	attacker_count
▶	308	3

--- (7) 본관에 위치한 학급의 피해자 이름을 검색하시오.

```
select v.victim_name, v.victim_ID
from class c, victim v
where c.class_ID = v.class_ID and c.class_location like '본관%';
```

Result Grid		
	victim_name	victim_ID
▶	송재호	30718
	윤지원	30723
	한승훈	30822
	강동욱	30912
	임나영	31022

--- (8) 피해자 수보다 가해자 수가 많은 학급명을 검색하시오.

```

SELECT class_ID
FROM class
WHERE (SELECT COUNT(*) FROM attacker WHERE class_ID = class.class_ID) >
(SELECT COUNT(*) FROM victim WHERE class_ID = class.class_ID);

```

Result Grid	
	class_ID
▶	303
	304
	306
	308

--- (9) 안암동에 거주하고 있는 가해자의 가족 성함을 검색하시오.

```

SELECT family_name
FROM family
WHERE attacker_ID IN (
    SELECT attacker_ID
    FROM attacker
    WHERE attacker_address LIKE '안암동%');

```

Result Grid	
	family_name
▶	박지영
	한미경
	이동훈

--- (10) 사이버폭력을 받은 피해학생의 학번을 검색하시오.

```

SELECT victim_ID
FROM violence
WHERE damage_ID IN (
    SELECT damage_ID
    FROM violence_type
    WHERE violence_type = '사이버폭력');

```

Result Grid	
	victim_ID
▶	30718
	30822