SQL Shell (psql)

```
Server [localhost]:
Database [postgres]: university
Port [5432]:
Username [postgres]:
postgres 사용자의 암호:
psql (12.2)
도움말을 보려면 "help"를 입력하십시오.

university=# ₩d
        릴레이션(relation) 목록
 스키마 |    이름    |  종류  |  소유주
--------+------------+--------+----------
 public | advisor    | 테이블 | postgres
 public | classroom  | 테이블 | postgres
 public | course     | 테이블 | postgres
 public | department | 테이블 | postgres
 public | instructor | 테이블 | postgres
 public | prereq     | 테이블 | postgres
 public | section    | 테이블 | postgres
 public | student    | 테이블 | postgres
 public | takes      | 테이블 | postgres
 public | teaches    | 테이블 | postgres
 public | time_slot  | 테이블 | postgres
(11개 행)


university=# ₩d advisor
            "public.advisor" 테이블
 필드명 |  종류   | Collation | NULL허용 | 초기값
--------+---------+-----------+----------+--------
 s_id   | integer |           | not null |
 i_id   | integer |           |          |
인덱스들:
    "advisor_pkey" PRIMARY KEY, btree (s_id)
참조키 제약 조건:
    "advisor_i_id_fkey" FOREIGN KEY (i_id) REFERENCES instructor(id)
    "advisor_s_id_fkey" FOREIGN KEY (s_id) REFERENCES student(id)


university=# ₩d classroom
                  "public.classroom" 테이블
  필드명   |         종류          | Collation | NULL허용 | 초기값
-----------+-----------------------+-----------+----------+--------
 building  | character varying(30) |           | not null |
 room_no   | character varying(4)  |           | not null |
 capacity  | integer               |           |          |
인덱스들:
    "classroom_pkey" PRIMARY KEY, btree (building, room_no)
```

SQL Shell (psql)

```
university=# ₩d classroom
                  "public.classroom" 테이블
  필드명   |         종류          | Collation | NULL허용 | 초기값
-----------+-----------------------+-----------+----------+--------
 building  | character varying(30) |           | not null |
 room_no   | character varying(4)  |           | not null |
 capacity  | integer               |           |          |
인덱스들:
    "classroom_pkey" PRIMARY KEY, btree (building, room_no)
다음에서 참조됨:
    TABLE "section" CONSTRAINT "section_building_room_no_fkey" FOREIGN KEY (building, room_no) REFERENCES classroom(building, room_no)


university=# ₩d course
                   "public.course" 테이블
  필드명    |         종류          | Collation | NULL허용 | 초기값
------------+-----------------------+-----------+----------+--------
 course_id  | character(7)          |           | not null |
 title      | character varying(30) |           |          |
 dept_name  | character varying(30) |           |          |
 credits    | integer               |           |          |
인덱스들:
    "course_pkey" PRIMARY KEY, btree (course_id)
참조키 제약 조건:
    "course_dept_name_fkey" FOREIGN KEY (dept_name) REFERENCES department(dept_name)
다음에서 참조됨:
    TABLE "prereq" CONSTRAINT "prereq_course_id_fkey" FOREIGN KEY (course_id) REFERENCES course(course_id)


university=# ₩d department
                  "public.department" 테이블
  필드명    |         종류          | Collation | NULL허용 | 초기값
------------+-----------------------+-----------+----------+--------
 dept_name  | character varying(20) |           | not null |
 building   | character varying(30) |           |          |
 budget     | integer               |           |          |
인덱스들:
    "department_pkey" PRIMARY KEY, btree (dept_name)
다음에서 참조됨:
    TABLE "course" CONSTRAINT "course_dept_name_fkey" FOREIGN KEY (dept_name) REFERENCES department(dept_name)
    TABLE "instructor" CONSTRAINT "instructor_dept_name_fkey" FOREIGN KEY (dept_name) REFERENCES department(dept_name)
    TABLE "student" CONSTRAINT "student_dept_name_fkey" FOREIGN KEY (dept_name) REFERENCES department(dept_name)
```

```
university=# ₩d instructor
                  "public.instructor" 테이블
  필드명   |         종류          | Collation | NULL허용 | 초기값
-----------+-----------------------+-----------+----------+--------
 id        | integer               |           | not null |
 name      | character varying(30) |           |          |
 dept_name | character varying(30) |           |          |
 salary    | integer               |           |          |
인덱스들:
    "instructor_pkey" PRIMARY KEY, btree (id)
참조키 제약 조건:
    "instructor_dept_name_fkey" FOREIGN KEY (dept_name) REFERENCES department(dept_name)
다음에서 참조됨:
    TABLE "advisor" CONSTRAINT "advisor_i_id_fkey" FOREIGN KEY (i_id) REFERENCES instructor(id)
    TABLE "teaches" CONSTRAINT "teaches_id_fkey" FOREIGN KEY (id) REFERENCES instructor(id)


university=# ₩d prereq
                "public.prereq" 테이블
  필드명   |     종류     | Collation | NULL허용 | 초기값
-----------+--------------+-----------+----------+--------
 course_id | character(7) |           |          |
 prereq_id | character(7) |           | not null |
인덱스들:
    "prereq_pkey" PRIMARY KEY, btree (prereq_id)
참조키 제약 조건:
    "prereq_course_id_fkey" FOREIGN KEY (course_id) REFERENCES course(course_id)


university=# ₩d section
                    "public.section" 테이블
    필드명    |         종류          | Collation | NULL허용 | 초기값
--------------+-----------------------+-----------+----------+--------
 course_id    | character(7)          |           | not null |
 sec_id       | character varying(10) |           | not null |
 semester     | character varying(6)  |           | not null |
 year         | integer               |           | not null |
 building     | character varying(30) |           |          |
 room_no      | character varying(4)  |           |          |
 time_slot_id | character varying(10) |           |          |
인덱스들:
    "section_pkey" PRIMARY KEY, btree (course_id, sec_id, semester, year)
참조키 제약 조건:
    "section_building_room_no_fkey" FOREIGN KEY (building, room_no) REFERENCES classroom(building, room_no)
    "section_time_slot_id_fkey" FOREIGN KEY (time_slot_id) REFERENCES time_slot(time_slot_id)
다음에서 참조됨:
    TABLE "teaches" CONSTRAINT "teaches_course_id_sec_id_semester_year_fkey" FOREIGN KEY (course_id, sec_id, semester, year) REFERENCES section(course_id, sec_id, semester,
```

SQL Shell (psql)

```
university=# ₩d section
                    "public.section" 테이블
    필드명    |         종류          | Collation | NULL허용 | 초기값
--------------+-----------------------+-----------+----------+--------
 course_id    | character(7)          |           | not null |
 sec_id       | character varying(10) |           | not null |
 semester     | character varying(6)  |           | not null |
 year         | integer               |           | not null |
 building     | character varying(30) |           |          |
 room_no      | character varying(4)  |           |          |
 time_slot_id | character varying(10) |           |          |
인덱스들:
    "section_pkey" PRIMARY KEY, btree (course_id, sec_id, semester, year)
참조키 제약 조건:
    "section_building_room_no_fkey" FOREIGN KEY (building, room_no) REFERENCES classroom(building, room_no)
    "section_time_slot_id_fkey" FOREIGN KEY (time_slot_id) REFERENCES time_slot(time_slot_id)
다음에서 참조됨:
    TABLE "teaches" CONSTRAINT "teaches_course_id_sec_id_semester_year_fkey" FOREIGN KEY (course_id, sec_id, semester, year) REFERENCES section(course_id, sec_id, semester,
year)
    TABLE "takes" CONSTRAINT "test_course_id_sec_id_semester_year_fkey" FOREIGN KEY (course_id, sec_id, semester, year) REFERENCES section(course_id, sec_id, semester, year)



university=# ₩d student
                    "public.student" 테이블
  필드명   |         종류          | Collation | NULL허용 | 초기값
-----------+-----------------------+-----------+----------+--------
 id        | integer               |           | not null |
 name      | character varying(30) |           |          |
 dept_name | character varying(30) |           |          |
 tot_cred  | integer               |           |          |
인덱스들:
    "student_pkey" PRIMARY KEY, btree (id)
참조키 제약 조건:
    "student_dept_name_fkey" FOREIGN KEY (dept_name) REFERENCES department(dept_name)
다음에서 참조됨:
    TABLE "advisor" CONSTRAINT "advisor_s_id_fkey" FOREIGN KEY (s_id) REFERENCES student(id)
    TABLE "takes" CONSTRAINT "test_id_fkey" FOREIGN KEY (id) REFERENCES student(id)
```

SQL Shell (psql)

```
university=# ₩d takes
                    "public.takes" 테이블
  필드명   |         종류          | Collation | NULL허용 | 초기값
-----------+-----------------------+-----------+----------+--------
 id        | integer               |           | not null |
 course_id | character(7)          |           |          |
 sec_id    | character varying(10) |           |          |
 semester  | character varying(6)  |           |          |
 year      | integer               |           |          |
 grade     | integer               |           |          |
인덱스들:
    "test_pkey" PRIMARY KEY, btree (id)
참조키 제약 조건:
    "test_course_id_sec_id_semester_year_fkey" FOREIGN KEY (course_id, sec_id, semester, year) REFERENCES section(course_id, sec_id, semester, year)
    "test_id_fkey" FOREIGN KEY (id) REFERENCES student(id)


university=# ₩d teaches
                   "public.teaches" 테이블
  필드명   |         종류          | Collation | NULL허용 | 초기값
-----------+-----------------------+-----------+----------+--------
 id        | integer               |           | not null |
 course_id | character(7)          |           |          |
 sec_id    | character varying(10) |           |          |
 semester  | character varying(6)  |           |          |
 year      | integer               |           |          |
인덱스들:
    "teaches_pkey" PRIMARY KEY, btree (id)
참조키 제약 조건:
    "teaches_course_id_sec_id_semester_year_fkey" FOREIGN KEY (course_id, sec_id, semester, year) REFERENCES section(course_id, sec_id, semester, year)
    "teaches_id_fkey" FOREIGN KEY (id) REFERENCES instructor(id)


university=# ₩d time_slot
                   "public.time_slot" 테이블
    필드명    |         종류          | Collation | NULL허용 | 초기값
--------------+-----------------------+-----------+----------+--------
 time_slot_id | character varying(10) |           | not null |
 day          | character varying(10) |           |          |
 start_time   | character varying(5)  |           |          |
 end_time     | character varying(5)  |           |          |
인덱스들:
    "time_slot_pkey" PRIMARY KEY, btree (time_slot_id)
다음에서 참조됨:
    TABLE "section" CONSTRAINT "section_time_slot_id_fkey" FOREIGN KEY (time_slot_id) REFERENCES time_slot(time_slot_id)
```

SQL Shell (psql)

```
university=# seelct * from advisor;
오류:  구문 오류, "seelct" 부근
줄 1: seelct * from advisor;
      ^
university=# select * from advisor;
    s_id    |   i_id
------------+----------
 2015131406 | 10101010
 2015131414 | 12345678
  201600801 | 12345678
  201503614 | 87654321
 2014130920 | 38471923
 2015003763 | 11111111
(6개 행)


university=# select * from classroom;
      building       | room_no | capacity
---------------------+---------+----------
 Gangwondo           | 609     |        1
 secondgonghakgwan   | 222A    |      222
 samsung             | 333B    |      300
 hyeopgok of sohwansa | 1101    |       10
(4개 행)


university=# select * from course;
 course_id |          title           |     dept_name      | credits
-----------+--------------------------+--------------------+---------
 FASH000   | How to dress well        | fashion business   |       3
 MACH001   | LEGO                     | machine engineering |       3
 MILI002   | Samgookji                | military           |       3
 FASH003   | celebrity airport fashion | fashion business   |       3
 DIPL004   | league of legends        | diplomatic         |       3
(5개 행)
```

SQL Shell (psql)

```
university=# select * from department;
     dept_name      |      building      | budget
--------------------+--------------------+--------
 law                | CJ                 | 100000
 spanish            | WestGwan           | 110000
 military           | Gangwondo          | 120000
 machine engineering | secondgonghakgwan | 200000
 computer science   | Friendship         | 250000
 international trade | six               | 150000
 korean education   | jiphyeonjeon       | 130000
 fashion business   | pradagucci         | 300000
 electronic         | samsung            | 400000
 korean medicine    | heojun             | 200000
 german             | berlin             | 140000
 english            | newyork            | 130000
 kids education     | disney             | 140000
 diplomatic         | hyeopgok of sohwansa | 300000
(14개 행)


university=# select * from prereq;
 course_id | prereq_id
-----------+-----------
 FASH000   | FASH003
(1개 행)
```

SQL Shell (psql)

```
university=# select * from student;
     id     |       name       |      dept_name      | tot_cred
------------+------------------+---------------------+----------
   12132160 | Kim Shin         | international trade |      160
 2014130920 | Choi Chang Yoon  | law                 |      200
 2014130901 | Son Beom Jin     | military            |      160
 2015131414 | Kim Ji Hoo       | spanish             |      140
 2015131406 | Park Ga Eun      | computer science    |      180
 2016131438 | Kim Hui          | machine engineering |      140
  201600801 | Kim Ji Soo       | spanish             |      140
  201503614 | Han Hye Rin      | korean education    |      160
 2014130914 | Baek Seung Hun   | fashion business    |      140
 2015105326 | Lee Ju Young     | korean medicine     |      200
 2015003763 | Jo Seong Hyeon   | electronic          |      140
 2015140906 | Jo Young Il      | german              |      120
   20154088 | Kim Ji Hyo       | english             |      180
  201514046 | Hwang Young Yoon | fashion business    |      200
  201939503 | Yang Shin Young  | kids education      |      140
 2020089271 | Saenaegi         | computer science    |       20
  201918726 | Heonnaegi        | machine engineering |       60
  201820137 | Samangnyeon      | international trade |      100
 2017382938 | AlreadyDead      | military            |      140
 2016381939 | Chuijunsaeng     | korean education    |      180
(20개 행)


university=# select  * from takes;
     id     | course_id | sec_id | semester | year | grade
------------+-----------+--------+----------+------+-------
 2014130901 | MILI002   | MILI   | spring   | 2020 |     4
  201514046 | FASH000   | FASH   | spring   | 2020 |     4
 2016131438 | MACH001   | MACH   | spring   | 2020 |     3
(3개 행)


university=# select * from teaches;
    id    | course_id | sec_id | semester | year
----------+-----------+--------+----------+------
 10101010 | MACH001   | MACH   | spring   | 2020
  2837615 | DIPL004   | DIPL   | spring   | 2020
 12345678 | FASH000   | FASH   | spring   | 2020
(3개 행)
```

SQL Shell (psql)

```
university=# select * from section;
 course_id | sec_id | semester | year |      building       | room_no | time_slot_id
-----------+--------+----------+------+---------------------+---------+--------------
 FASH000   | FASH   | spring   | 2020 | Gangwondo           | 609     | slot1
 MACH001   | MACH   | spring   | 2020 | secondgonghakgwan   | 222A    | slot2
 MILI002   | MILI   | spring   | 2020 | Gangwondo           | 609     | slot3
 DIPL004   | DIPL   | spring   | 2020 | hyeopgok of sohwansa | 1101   | slot1
 FASH003   | FASH   | spring   | 2020 | Gangwondo           | 609     | slot2
 FASH000   | FASH   | fall     | 2019 | secondgonghakgwan   | 222A    | slot3
 MACH001   | MACH   | fall     | 2019 | hyeopgok of sohwansa | 1101   | slot2
 MILI002   | MILI   | fall     | 2019 | Gangwondo           | 609     | slot1
 FASH003   | FASH   | fall     | 2019 | secondgonghakgwan   | 222A    | slot3
 DIPL004   | DIPL   | fall     | 2019 | hyeopgok of sohwansa | 1101   | slot1
(10개 행)


university=# select * from instructor;
    id    |       name        |    dept_name     |  salary
----------+-------------------+------------------+-----------
 10101010 | John von Neumann  | computer science |  10010101
 12345678 | Don Quijote       | spanish          |      3000
 87654321 | SeJong            | korean education |    100000
 38471923 | Justice           | law              |         0
 11111111 | Alexander Fleming | electronic       |    200000
  2837615 | Faker             | diplomatic       |   5000000
        0 | Dennis Ritchie    | computer science |  10000000
        1 | Steven Jobs       | computer science |  11000000
  3929282 | Bangi             | diplomatic       |   4000000
 28171527 | Gdragon           | fashion business | 100000000
(10개 행)


university=# select * from time_slot;
 time_slot_id |    day    | start_time | end_time
--------------+-----------+------------+----------
 slot1        | monday    | 09:00      | 10:15
 slot2        | tuesday   | 10:30      | 11:45
 slot3        | wednesday | 12:00      | 13:15
(3개 행)
```

SQL Shell (psql)

```
    TABLE "section" CONSTRAINT "section_time_slot_id_fkey" FOREIGN KEY (time_slot_id) REFERENCES time_slot(time_slot_id)
university=# select distinct dept_name from instructor;
    dept_name
------------------
 diplomatic
 law
 fashion business
 computer science
 korean education
 electronic
 spanish
(7개 행)


university=# select all dept_name from instructor;
    dept_name
------------------
 computer science
 spanish
 korean education
 law
 electronic
 diplomatic
 computer science
 computer science
 diplomatic
 fashion business
(10개 행)


university=# select * from course;
 course_id |           title           |      dept_name      | credits
-----------+---------------------------+---------------------+---------
 FASH000   | How to dress well         | fashion business    |       3
 MACH001   | LEGO                      | machine engineering |       3
 MILI002   | Samgookji                 | military            |       3
 FASH003   | celebrity airport fashion | fashion business    |       3
 DIPL004   | league of legends         | diplomatic          |       3
(5개 행)
```

Instructor relation의 dept_name attribute에 존재하는 value를 중복 없이 출력.
Instructor relation의 dept_name attribute에 존재하는 value를 중복 포함 출력.
Course의 모든 tuple 출력

```
university=# select name, ID, salary from instructor;
       name        |    id    |  salary
-------------------+----------+-----------
 John von Neumann  | 10101010 |  10010101
 Don Quijote       | 12345678 |      3000
 SeJong            | 87654321 |    100000
 Justice           | 38471923 |         0
 Alexander Fleming | 11111111 |    200000
 Faker             |  2837615 |   5000000
 Dennis Ritchie    |        0 |  10000000
 Steven Jobs       |        1 |  11000000
 Bangi             |  3929282 |   4000000
 Gdragon           | 28171527 | 100000000
(10개 행)


university=# select name from instructor where dept_name = 'computer science' and salary > 10000;
       name
------------------
 John von Neumann
 Dennis Ritchie
 Steven Jobs
(3개 행)


university=# select name from instructor where salary >= 1000000 or name = 'Faker';
       name
------------------
 John von Neumann
 Faker
 Dennis Ritchie
 Steven Jobs
 Bangi
 Gdragon
(6개 행)
```

Insturctor에서 name, ID, salary attribute만 출력
Instructor에서 computer science 소속이고 연봉이 10000이 넘는 교수의 이름 출력
instructor에서 이름이 Faker이거나 연봉이 10000000이 넘는 교수의 이름 출력

SQL Shell (psql)

```
university=# select * from instructor, teaches;
    id    |       name        |    dept_name     |  salary   |    id    | course_id | sec_id | semester | year
----------+-------------------+------------------+-----------+----------+-----------+--------+----------+------
 10101010 | John von Neumann  | computer science |  10010101 | 10101010 | MACH001   | MACH   | spring   | 2020
 12345678 | Don Quijote       | spanish          |      3000 | 10101010 | MACH001   | MACH   | spring   | 2020
 87654321 | SeJong            | korean education |    100000 | 10101010 | MACH001   | MACH   | spring   | 2020
 38471923 | Justice           | law              |         0 | 10101010 | MACH001   | MACH   | spring   | 2020
 11111111 | Alexander Fleming | electronic       |    200000 | 10101010 | MACH001   | MACH   | spring   | 2020
  2837615 | Faker             | diplomatic       |   5000000 | 10101010 | MACH001   | MACH   | spring   | 2020
        0 | Dennis Ritchie    | computer science |  10000000 | 10101010 | MACH001   | MACH   | spring   | 2020
        1 | Steven Jobs       | computer science |  11000000 | 10101010 | MACH001   | MACH   | spring   | 2020
  3929282 | Bangi             | diplomatic       |   4000000 | 10101010 | MACH001   | MACH   | spring   | 2020
 28171527 | Gdragon           | fashion business | 100000000 | 10101010 | MACH001   | MACH   | spring   | 2020
 10101010 | John von Neumann  | computer science |  10010101 |  2837615 | DIPL004   | DIPL   | spring   | 2020
 12345678 | Don Quijote       | spanish          |      3000 |  2837615 | DIPL004   | DIPL   | spring   | 2020
 87654321 | SeJong            | korean education |    100000 |  2837615 | DIPL004   | DIPL   | spring   | 2020
 38471923 | Justice           | law              |         0 |  2837615 | DIPL004   | DIPL   | spring   | 2020
 11111111 | Alexander Fleming | electronic       |    200000 |  2837615 | DIPL004   | DIPL   | spring   | 2020
  2837615 | Faker             | diplomatic       |   5000000 |  2837615 | DIPL004   | DIPL   | spring   | 2020
        0 | Dennis Ritchie    | computer science |  10000000 |  2837615 | DIPL004   | DIPL   | spring   | 2020
        1 | Steven Jobs       | computer science |  11000000 |  2837615 | DIPL004   | DIPL   | spring   | 2020
  3929282 | Bangi             | diplomatic       |   4000000 |  2837615 | DIPL004   | DIPL   | spring   | 2020
 28171527 | Gdragon           | fashion business | 100000000 |  2837615 | DIPL004   | DIPL   | spring   | 2020
 10101010 | John von Neumann  | computer science |  10010101 | 12345678 | FASH000   | FASH   | spring   | 2020
 12345678 | Don Quijote       | spanish          |      3000 | 12345678 | FASH000   | FASH   | spring   | 2020
 87654321 | SeJong            | korean education |    100000 | 12345678 | FASH000   | FASH   | spring   | 2020
 38471923 | Justice           | law              |         0 | 12345678 | FASH000   | FASH   | spring   | 2020
 11111111 | Alexander Fleming | electronic       |    200000 | 12345678 | FASH000   | FASH   | spring   | 2020
  2837615 | Faker             | diplomatic       |   5000000 | 12345678 | FASH000   | FASH   | spring   | 2020
        0 | Dennis Ritchie    | computer science |  10000000 | 12345678 | FASH000   | FASH   | spring   | 2020
        1 | Steven Jobs       | computer science |  11000000 | 12345678 | FASH000   | FASH   | spring   | 2020
  3929282 | Bangi             | diplomatic       |   4000000 | 12345678 | FASH000   | FASH   | spring   | 2020
 28171527 | Gdragon           | fashion business | 100000000 | 12345678 | FASH000   | FASH   | spring   | 2020
(30개 행)
```

Instructor와 teaches relation join. (즉 instructor가 teaches에 존재하는 과목을 가르칠 수 있는 모든 경우의 수 출력)

SQL Shell (psql)

```
줄 1: ...ct name, course_id from instructor, teaches where insturctor...
                                                           ^

university=# select name, course_id from instructor, teaches where instructor.ID = teaches.ID;
       name       | course_id
------------------+-----------
 John von Neumann | MACH001
 Faker            | DIPL004
 Don Quijote      | FASH000
(3개 행)


university=# select ID, semester, year, title from section, course, where section.course_id = course.course_id and dept_name = 'diplomatic';
오류:  구문 오류, "where" 부근
줄 1: ...t ID, semester, year, title from section, course, where sect...
                                                           ^

university=# select ID, semester, year, title from section, course where section.course_id = course.course_id and dept_name = 'diplomatic';
오류:  "id" 이름의 칼럼은 없습니다
줄 1: select ID, semester, year, title from section, course where ...
             ^

university=# select course_id, semester, year, title from section, course where section.course_id = course.course_id and dept_name = 'diplomatic';
오류:  칼럼 참조 "course_id" 가 모호합니다.
줄 1: select course_id, semester, year, title from section, course...
             ^

university=# select section.course_id, semester, year, title from section, course where section.course_id = course.course_id and dept_name = 'diplomatic';
 course_id | semester | year |       title
-----------+----------+------+-------------------
 DIPL004   | spring   | 2020 | league of legends
 DIPL004   | fall     | 2019 | league of legends
(2개 행)


university=# select * from instructor natural join teaches;
    id    |       name       |    dept_name     |  salary  | course_id | sec_id | semester | year
----------+------------------+------------------+----------+-----------+--------+----------+------
 10101010 | John von Neumann | computer science | 10010101 | MACH001   | MACH   | spring   | 2020
  2837615 | Faker            | diplomatic       |  5000000 | DIPL004   | DIPL   | spring   | 2020
 12345678 | Don Quijote      | spanish          |     3000 | FASH000   | FASH   | spring   | 2020
(3개 행)


university=# select name, title from instructor natural join teaches natural join course;
 name  |       title
-------+-------------------
 Faker | league of legends
(1개 행)
```

교수가 담당하는 과목의 교수 이름과 코스 id 출력.
정치외교학과 과목의 course_id, semester, year, title 모두 출력
instructor와 teaches의 natural join
natural join의 잘못된 예시

```
SQL Shell (psql)
힌트:  아마 "teaches.course_id" 칼럼을 참조하는 것 같습니다.
university=# select name, title from instructor natural join teaches, course where teaches.course_id = course.course_id;
       name       |       title
------------------+-------------------
 John von Neumann | LEGO
 Faker            | league of legends
 Don Quijote      | How to dress well
(3개 행)


university=# select ID, name, salary/12 as monthly_salary from instructor;
    id    |       name        | monthly_salary
----------+-------------------+----------------
 10101010 | John von Neumann  |         834175
 12345678 | Don Quijote       |            250
 87654321 | SeJong            |           8333
 38471923 | Justice           |              0
 11111111 | Alexander Fleming |          16666
  2837615 | Faker             |         416666
        0 | Dennis Ritchie    |         833333
        1 | Steven Jobs       |         916666
  3929282 | Bangi             |         333333
 28171527 | Gdragon           |        8333333
(10개 행)


university=# select distinct T.name from instructor as T, instrutor as S where T.salary > S.salary and S.dept_name = 'machine engineering';
오류:  "instrutor" 이름의 릴레이션(relation)이 없습니다
줄 1: select distinct T.name from instructor as T, instrutor as S ...
                                                   ^
university=# select distinct T.name from instructor as T, instructor as S where T.salary > S.salary and S.dept_name = 'machine engineering';
 name
------
(0개 행)


university=# select name from student where name like 'Kim%';
    name
------------
 Kim Shin
 Kim Ji Hoo
 Kim Hui
 Kim Ji Soo
 Kim Ji Hyo
(5개 행)
```

Natural join의 올바른 예시.
As를 사용하여 salary / 12 를 월급으로 명명.
Machine engineering에서 어떤 교수보다 연봉이 높은 교수 출력 (기계과 교수를 한 명 등록해서 결과가 나오지 않음)
학생 성이 kim인 경우 출력

SQL Shell (psql)

```
university=# select name from student where ID between 2015000000 and 2017000000;
      name
---------------
 Kim Ji Hoo
 Park Ga Eun
 Kim Hui
 Lee Ju Young
 Jo Seong Hyeon
 Jo Young Il
 Chuijunsaeng
(7개 행)


university=# select name, course_id frm instructor, teaches where (instructor.ID, dept_name) = (teaches.ID, 'fashion business');
오류:  구문 오류, "instructor" 부근
줄 1: select name, course_id frm instructor, teaches where (instru...
                                ^
university=# select name, course_id from instructor, teaches where (instructor.ID, dept_name) = (teaches.ID, 'fashion business');
 name | course_id
------+-----------
(0개 행)


university=# select name, course_id from instructor, teaches where (instructor.iD, dept_name) = (teaches.ID, 'diplomatic');
 name  | course_id
-------+-----------
 Faker | DIPL004
(1개 행)
```

15학번, 16학번, 17학번의 학생 이름 출력.
Fashion business 과목을 가르치는 교수 의 이름과 과목 아이디 출력 (존재하지 않음)
정치외교학과 과목을 가르치는 교수의 이름과 코스 아이디 출력