integrity constraint

```
practice2-# \d employee
                 Table "public.employee"
   Column    |         Type          | Collation | Nullable | Default
-------------+-----------------------+-----------+----------+---------
 id          | character varying(5)  |           | not null |
 person_name | character varying(10) |           |          |
 street      | character varying(20) |           |          |
 city        | character varying(20) |           |          |
Indexes:
    "employee_pkey" PRIMARY KEY, btree (id)
Referenced by:
    TABLE "works" CONSTRAINT "works_id_fkey" FOREIGN KEY (id) REFERENCES employee(id)
```

concurrently executed transactions

```
practice2=# select * from employee;
  id   | person_name |   street   |    city
-------+-------------+------------+------------
 12345 | Adams       | Spring     | Pittsfield
 11111 | Brooks      | Senator    | Brooklyn
 22222 | Curry       | North      | Rye
 33333 | Glenn       | Sand Hill  | Woodside
 44444 | Green       | Walnut     | Stamford
 55555 | Hayes       | Main       | Harrison
 66666 | Johnson     | Alma       | Palo Alto
 77777 | Jones       | Main       | Harrison
 88888 | Lindsay     | Park       | Pittsfiled
 99999 | Smith       | North      | Rye
 00000 | Turner      | Putnam     | Stamford
 54321 | Williams    | Nassau     | Princeton
 1     | yhw         | street     | city
 2     | yhw2        | street     | city
 3     | yhw3        |            |
(15 rows)
```

```
practice2=# begin transaction;
BEGIN
practice2=*# insert into employee values(4, 'yhw4', 'street', 'city');
INSERT 0 1
```

```
practice2=# select * from employee;
  id   | person_name |   street   |    city
-------+-------------+------------+------------
 12345 | Adams       | Spring     | Pittsfield
 11111 | Brooks      | Senator    | Brooklyn
 22222 | Curry       | North      | Rye
 33333 | Glenn       | Sand Hill  | Woodside
 44444 | Green       | Walnut     | Stamford
 55555 | Hayes       | Main       | Harrison
 66666 | Johnson     | Alma       | Palo Alto
 77777 | Jones       | Main       | Harrison
 88888 | Lindsay     | Park       | Pittsfiled
 99999 | Smith       | North      | Rye
 00000 | Turner      | Putnam     | Stamford
 54321 | Williams    | Nassau     | Princeton
 1     | yhw         | street     | city
 2     | yhw2        | street     | city
 3     | yhw3        |            |
(15 rows)
```

```
practice2=*# commit
practice2-*# ;
COMMIT
```

```
practice2=# select * from employee;
  id   | person_name |   street   |    city
-------+-------------+------------+------------
 12345 | Adams       | Spring     | Pittsfield
 11111 | Brooks      | Senator    | Brooklyn
 22222 | Curry       | North      | Rye
 33333 | Glenn       | Sand Hill  | Woodside
 44444 | Green       | Walnut     | Stamford
 55555 | Hayes       | Main       | Harrison
 66666 | Johnson     | Alma       | Palo Alto
 77777 | Jones       | Main       | Harrison
 88888 | Lindsay     | Park       | Pittsfiled
 99999 | Smith       | North      | Rye
 00000 | Turner      | Putnam     | Stamford
 54321 | Williams    | Nassau     | Princeton
 1     | yhw         | street     | city
 2     | yhw2        | street     | city
 3     | yhw3        |            |
 4     | yhw4        | street     | city
(16 rows)
```

authorization rules

```
practice2=# create user tmp2;
CREATE ROLE
practice2=# grant select on employee to tmp2;
GRANT
practice2=# \du
                             List of roles
 Role name |                         Attributes                         | Member of
-----------+------------------------------------------------------------+-----------
 hyungwook | Superuser, Create role, Create DB, Replication, Bypass RLS | {}
 postgres  | Superuser, Create role, Create DB                          | {}
 tmp       |                                                            | {}
 tmp2      |                                                            | {}
```

```
❯ psql -U tmp2 practice2
psql (14.2)
Type "help" for help.

practice2=> insert into employee values(4, 'yhw4', 'street', 'city');
ERROR:  permission denied for table employee
practice2=>
```

view maintenance

```
practice2=# create view people as select id, person_name from employee;
CREATE VIEW
```

```
practice2=# insert into people values(5, 'yhw5');
INSERT 0 1
practice2=# select * from people;
  id   | person_name
-------+-------------
 12345 | Adams
 11111 | Brooks
 22222 | Curry
 33333 | Glenn
 44444 | Green
 55555 | Hayes
 66666 | Johnson
 77777 | Jones
 88888 | Lindsay
 99999 | Smith
 00000 | Turner
 54321 | Williams
 1     | yhw
 2     | yhw2
 3     | yhw3
 4     | yhw4
 5     | yhw5
(17 rows)
```

```
practice2=# select * from employee;
  id   | person_name |   street   |    city
-------+-------------+------------+-------------
 12345 | Adams       | Spring     | Pittsfield
 11111 | Brooks      | Senator    | Brooklyn
 22222 | Curry       | North      | Rye
 33333 | Glenn       | Sand Hill  | Woodside
 44444 | Green       | Walnut     | Stamford
 55555 | Hayes       | Main       | Harrison
 66666 | Johnson     | Alma       | Palo Alto
 77777 | Jones       | Main       | Harrison
 88888 | Lindsay     | Park       | Pittsfiled
 99999 | Smith       | North      | Rye
 00000 | Turner      | Putnam     | Stamford
 54321 | Williams    | Nassau     | Princeton
 1     | yhw         | street     | city
 2     | yhw2        | street     | city
 3     | yhw3        |            |
 4     | yhw4        | street     | city
 5     | yhw5        |            |
(17 rows)
```

```
practice2=# insert into employee values(6, 'yhw6', 'street', 'city');
INSERT 0 1
practice2=# select * from people;
  id   | person_name
-------+-------------
 12345 | Adams
 11111 | Brooks
 22222 | Curry
 33333 | Glenn
 44444 | Green
 55555 | Hayes
 66666 | Johnson
 77777 | Jones
 88888 | Lindsay
 99999 | Smith
 00000 | Turner
 54321 | Williams
 1     | yhw
 2     | yhw2
 3     | yhw3
 4     | yhw4
 5     | yhw5
 6     | yhw6
(18 rows)
```