

Ex1

How we can store large-object types:

blob: binary large object and collection of binary data

clob: character large object – collection of character data

```
create table customers (  
    id integer primary key,  
    name varchar(255),  
    birth_date date  
);  
  
create table accounts(  
    account_id varchar(40) primary key ,  
    customer_id integer references customers(id),  
    currency varchar(3),  
    balance float,  
    "limit" float  
);  
  
create table transactions (  
    id serial primary key ,  
    date timestamp,  
    src_account varchar(40) references accounts(account_id),  
    dst_account varchar(40) references accounts(account_id),  
    amount float,  
    status varchar(20)  
);  
  
INSERT INTO customers VALUES (201, 'John', '2021-11-05');  
INSERT INTO customers VALUES (202, 'Anny', '2021-11-02');  
INSERT INTO customers VALUES (203, 'Rick', '2021-11-24');  
  
INSERT INTO accounts VALUES ('NT10204', 201, 'KZT', 1000, null);  
INSERT INTO accounts VALUES ('AB10203', 202, 'USD', 100, 0);  
INSERT INTO accounts VALUES ('DK12000', 203, 'EUR', 500, 200);  
INSERT INTO accounts VALUES ('NK90123', 201, 'USD', 400, 0);  
INSERT INTO accounts VALUES ('RS88012', 203, 'KZT', 5000, -100);  
  
INSERT INTO transactions VALUES (1, '2021-11-05 18:00:34.000000',  
'NT10204', 'RS88012', 1000, 'committed');  
INSERT INTO transactions VALUES (2, '2021-11-05 18:01:19.000000',  
'NK90123', 'AB10203', 500, 'rollback');  
INSERT INTO transactions VALUES (3, '2021-06-05 18:02:45.000000',  
'RS88012', 'NT10204', 400, 'init');
```

```

--Ex2
create role accountant;
create role administrator;
create role support;
create user Boss;
create user admin;
grant accountant to administrator;
grant support to accountant;
grant accountant to boss;
grant administrator to admin;
grant accountant to admin;
revoke boss from accountant;

--Ex5
-- 1
create unique index test11 on accounts(account_id);
-- 2
create index test22 on accounts
(balance);

-- ex6
begin transaction
update accounts
set balance = a.balance + 100.00
from accounts a, transactions t
where a.account_id = t.dst_account
savepoint s1
update accounts
set balance = a.balance - 100.00
from accounts a, transactions t
where a.account_id = t.src_account and a.balance - 100 > a.limit
commit;
rollback;

```