Exercise 1

Large objects (photos, videos, CAD files, etc.) are stored as a large object:

• blob: binary large object -- object is a large collection of uninterpreted binary data (whose interpretation is left to an application outside of the database system)

• clob: character large object -- object is a large collection of character data

When a query returns a large object, a pointer is returned rather than the large object itself.

Exercise 2

a)

Privileges control the ability to run SQL statements. A role is a group of privileges. Granting a role to a user gives them the privileges contained in the role.

A role is a way to distinguish among various users as far as what these users can access/update in the database. Once a role is created, we can assign "users" to the role.

```sql
--b)
CREATE ROLE accountant;
CREATE ROLE administrator;
CREATE ROLE support;

GRANT SELECT ON transactions TO accountant;
GRANT ALL PRIVILEGES ON ALL TABLES IN SCHEMA public TO administrator;
GRANT SELECT ON customers,accounts TO support;

--c)
CREATE USER Uali;
CREATE USER Max;
CREATE USER Ualimax;

GRANT Uali TO accountant;
GRANT Max TO administrator;
GRANT Ualimax TO support;

--d)
GRANT ALL PRIVILEGES ON ALL TABLES IN SCHEMA public TO Max WITH GRANT OPTION;
GRANT SELECT ON transactions TO Ualimax WITH GRANT OPTION;

--e)
REVOKE SELECT ON transactions FROM Ualimax;


--Exercise 3
--b)
ALTER TABLE accounts ALTER COLUMN currency SET NOT NULL ;
ALTER TABLE customers ALTER COLUMN birth_date SET NOT NULL;


--Exercise 5
--a)
CREATE UNIQUE INDEX a ON accounts(account_id,currency);
```

```sql
--b)
CREATE INDEX b ON accounts(currency,balance);


--Exercise 6
--a)
BEGIN TRANSACTION;

--b)
UPDATE accounts SET balance=balance+500 WHERE account_id='AB10203';
UPDATE accounts SET balance=balance-500 WHERE account_id='RS88012';
```