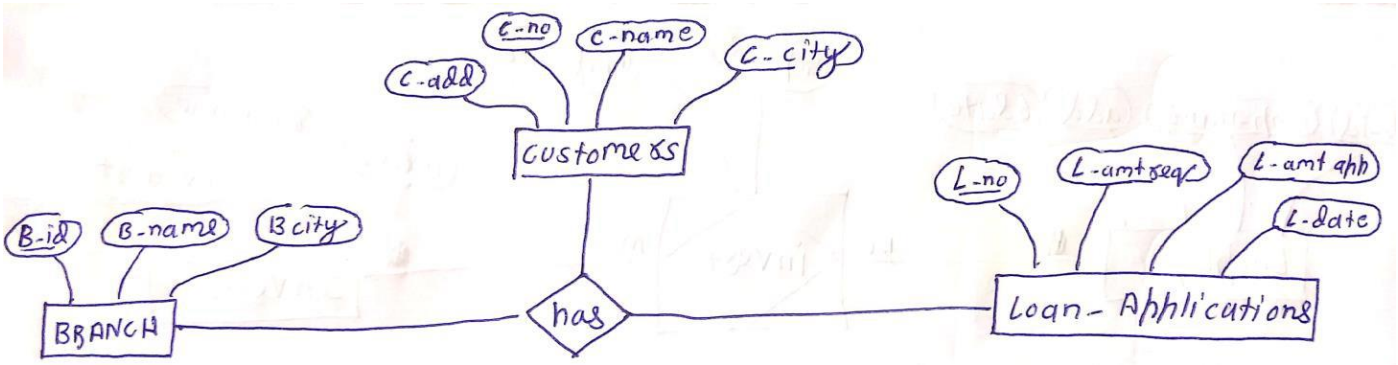
Q1) Practical Questions on PostgresSQL

Branch (B_id, Brname, Brcity) Customer (C_no, Cname, Caddress, City) Loan_Application (L_no, L_amt_required, L_amt_approved,L_date) Branch, Customer, Loan_Application are related with ternary relationship. Ternary (B_id, C_no, L_no) Assume appropriate data types for all the attributes.

a) Draw the ER diagram for above relational schema and normalize it in 3NF.



b) Create the above database in 3NF form in PostgresSQL using constraints.

```
CREATE TABLE Branch (B_id INT PRIMARY KEY,Brname VARCHAR(50) NOT NULL UNIQUE, Brcity VARCHAR(50) NOT NULL);

CREATE TABLE Customer (C_no INT PRIMARY KEY, Cname VARCHAR(50) NOT NULL,Caddress VARCHAR(255) NOT NULL,City VARCHAR(50) NOT NULL);

CREATE TABLE Loan_Application (L_no INT PRIMARY KEY, L_amt_required DECIMAL(10,2) NOT NULL, L_amt_approved DECIMAL(10,2) NOT NULL,L_date DATE NOT NULL);

CREATE TABLE Ternary (B_id INT,C_no INT,L_no INT,PRIMARY KEY (B_id, C_no, L_no),FOREIGN KEY (B_id) REFERENCES Branch(B_id),FOREIGN KEY (C_no) REFERENCES Customer(C_no),FOREIGN KEY (L_no) REFERENCES Loan_Application(L_no));

INSERT INTO Branch (B_id, Brname, Brcity) VALUES (1, 'Aundh', 'Pune'), (2, 'Deccan', 'Pune'), (3, 'Borivali', 'Mumbai');

INSERT INTO Customer (C_no, Cname, Caddress, City) VALUES (101, 'John Doe', '123 Main St', 'Pune'), (102, 'Jane Smith', '456 Elm St', 'Mumbai'), (103, 'Alice Miller', '789 Oak Ave', 'Pune'), (104, 'Sunil Sharma', '400 Park Lane', 'Mumbai');

INSERT INTO Loan_Application (L_no, L_amt_required, L_amt_approved, L_date) VALUES (2001, 100000.00, 80000.00, '2024-03-20'), (2002, 50000.00, 45000.00, '2024-03-25'), (2003, 150000.00, 120000.00, '2024-09-10'), (2004, 75000.00, 60000.00, '2024-09-15');

INSERT INTO Ternary (B_id, C_no, L_no) VALUES (1, 101, 2001), (2, 102, 2002), (1, 103, 2003), (3, 104, 2004);
```

Q2) Using above database, solve the following queries:

a) List the details of customers whose name starts with „S“.

```
SELECT * FROM Customer WHERE Cname LIKE 'S%';
```

b) List the names of the customer along with the branch names who have applied for loan in the month of September.

```
SELECT C.Cname, B.Brname FROM Customer C INNER JOIN Ternary T ON C.C_no = T.C_no INNER JOIN Branch B ON T.B_id = B.B_id INNER JOIN Loan_Application LA ON LA.L_no = T.L_no WHERE EXTRACT(MONTH FROM LA.L_date) = 9;
```

c) Find the maximum loan amount approved.

```
SELECT MAX(L_amt_approved) AS Max_Approved_Loan FROM Loan_Application;
```

d) List the branch details of “Mumbai” city

```
SELECT * FROM Branch WHERE Brcity = 'Mumbai';
```