Q.1) Practical Questions on PostgresSQL Consider the following database
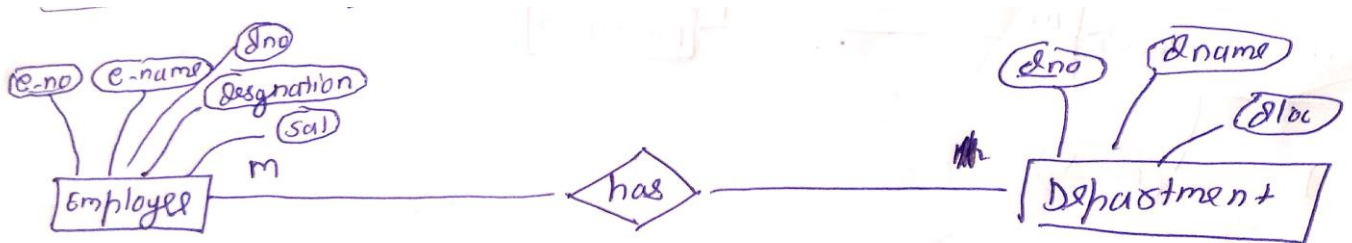
Employee (eno, ename, designation, sal)Department
(dno, dname, dloc)

There exists a one-to-many relationship between department and employee. Create the Relations accordingly, so that the relationship is handled properly and the relations are in normalized form(3NF).

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 Department (dno INT PRIMARY KEY, dname VARCHAR(50) NOT NULL, dloc VARCHAR(50) NOT NULL);

CREATE TABLE Employee (eno INT PRIMARY KEY, ename VARCHAR(50) NOT NULL, designation VARCHAR(50) NOT NULL, sal DECIMAL(10,2), dno INT, FOREIGN KEY (dno) REFERENCES Department(dno));

INSERT INTO Department (dno, dname, dloc) VALUES (101, 'Marketing', 'Mumbai'), (102, 'Sales', 'Delhi'), (103, 'Finance', 'Chennai'), (104, 'IT', 'Pune');

INSERT INTO Employee (eno, ename, designation, sal, dno) VALUES (2001, 'Alice Smith', 'Manager', 35000.00, 101), (2002, 'Bob Brown', 'Sales Representative', 22000.00, 102), (2003, 'Charlie Chen', 'Accountant', 28000.00, 103), (2004, 'David Davis', 'H.O.D.', 50000.00, 101), (2005, 'Emily Evans', 'Marketing Associate', 18000.00, 101);

Q2.) Using above database, solve the following queries:

a) List the employees and the department details location in 'Mumbai'

SELECT E.eno, E.ename, E.designation, E.sal, D.dname, D.dloc FROM Employee E INNER JOIN Department D ON E.dno = D.dno WHERE D.dloc = 'Mumbai';

b) List employee details whose designation is 'HR' and location in 'Pune'

SELECT E.eno, E.ename, E.designation, E.sal, D.dname, D.dloc FROM Employee E INNER JOIN Department D ON E.dno = D.dno WHERE E.designation = 'HR' AND D.dloc = 'Pune';

c) Update all employee's salary increase by 15%

UPDATE Employee SET sal = sal * 1.15;

d) Find the maximum salary of employee from each department located at 'Pune'

SELECT D.dname, MAX(E.sal) AS max_salary FROM Department D INNER JOIN Employee E ON E.dno = D.dno WHERE D.dloc = 'Pune' GROUP BY D.dname;