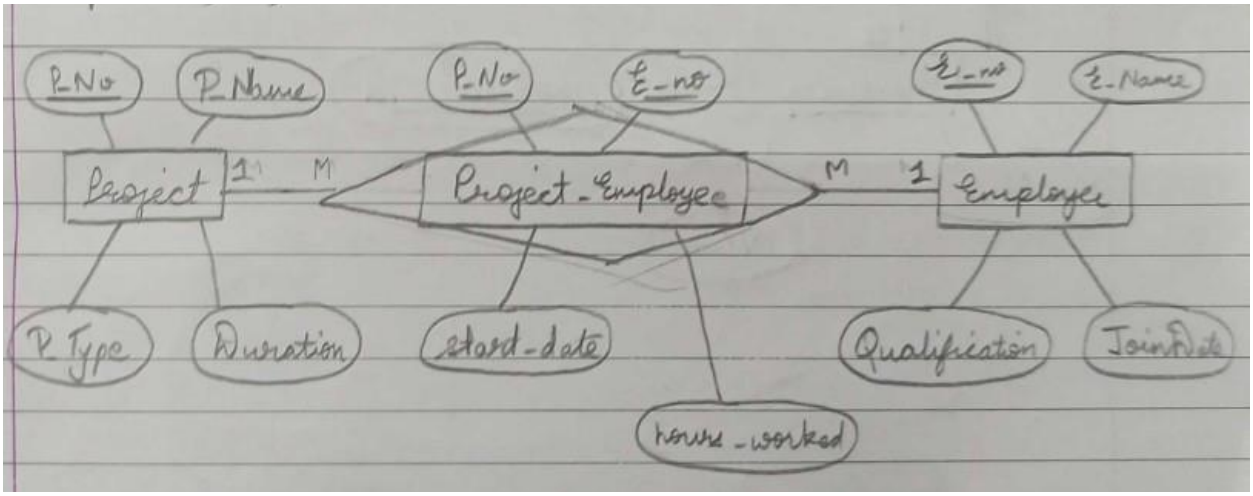
Q1) Practical Questions on PostgresSQL

Project (P_No, P_Name,P_Type,Duration) Employee (E_no, E_Name,Qualification,JoinDate)

Project and Employee: M-M relationship, with descriptive attributes as start_date(date), no_of_hours_worked(integer).

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 Project (P_No SERIAL PRIMARY KEY, P_Name VARCHAR(100) NOT NULL, P_Type VARCHAR(50), Duration INTEGER);

CREATE TABLE Employee (E_No SERIAL PRIMARY KEY, E_Name VARCHAR(100) NOT NULL, Qualification VARCHAR(100), JoinDate DATE);

CREATE TABLE Project_Employee (Project_No INTEGER REFERENCES Project(P_No), Employee_No INTEGER REFERENCES Employee(E_No), Start_Date DATE, No_of_Hours_Worked INTEGER, PRIMARY KEY (Project_No, Employee_No));

INSERT INTO Project (P_Name, P_Type, Duration) VALUES ('System', 'Type A', 3), ('Database', 'Type B', 6), ('Web App', 'Type C', 4);

INSERT INTO Employee (E_Name, Qualification, JoinDate) VALUES ('Alice', 'Bachelor', '2019-01-01'), ('Bob', 'Master', '2020-03-15'), ('Charlie', 'PhD', '2018-05-20');

INSERT INTO Project_Employee (Project_No, Employee_No, Start_Date, No_of_Hours_Worked) VALUES (1, 1, '2019-01-01', 40), (1, 2, '2020-03-15', 35), (2, 3, '2018-05-20', 45), (3, 1, '2019-01-01', 30);
```

Q2) Using above database, solve the following queries:

a) Find the employees whose name starts with ‘A’.

```
SELECT * FROM Employee WHERE E_Name LIKE 'A%';
```

b) Find the details of employees working on the project “System”.

```
SELECT E.* FROM Employee E JOIN Project_Employee PE ON E.E_No = PE.Employee_No JOIN Project P ON P.P_No = PE.Project_No WHERE P.P_Name = 'System';
```

c) List the names of the first three employees in alphabetical order.

```
SELECT E_Name FROM Employee ORDER BY E_Name LIMIT 3;
```

d) Find the names of the employees whose duration is more than five years.

```
SELECT E.* FROM Employee E JOIN Project_Employee PE ON E.E_No = PE.Employee_No JOIN Project P ON P.P_No = PE.Project_No WHERE P.Duration > 5;
```