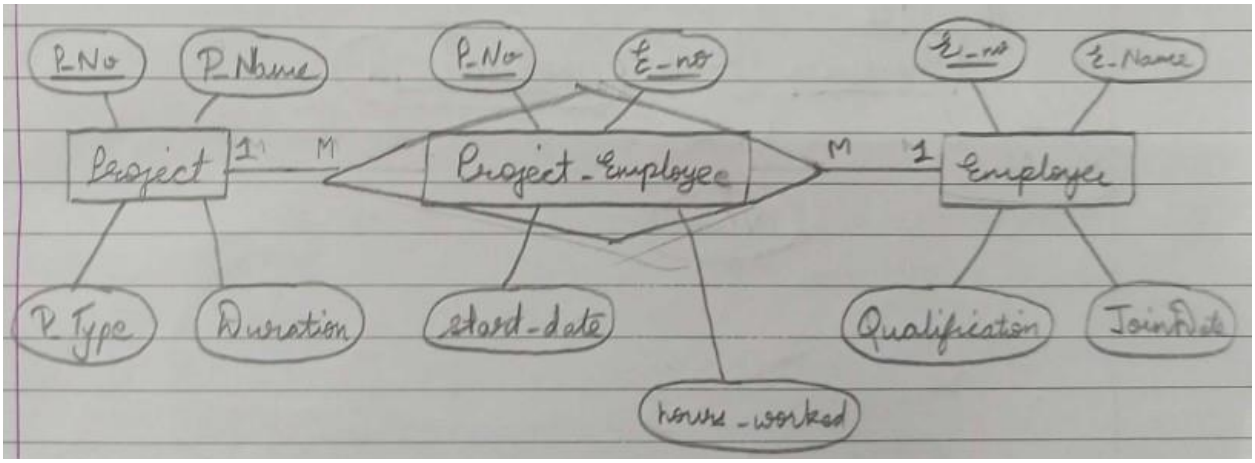
Q1) Practical Questions on PostgresSQL

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), P_Type VARCHAR(50), Duration INTEGER);

CREATE TABLE Employee (E_No SERIAL PRIMARY KEY, E_Name VARCHAR(100), Qualification VARCHAR(50), JoinDate DATE);

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

INSERT INTO Project (P_Name, P_Type, Duration) VALUES ('Robotics', 'Research', 5), ('AI Chatbot', 'Development', 3), ('Smart Home Automation', 'Integration', 7);

INSERT INTO Employee (E_Name, Qualification, JoinDate) VALUES ('John Doe', 'M.Sc', '2010-05-15'), ('Jane Smith', 'B.E', '2015-08-20'), ('Alice Johnson', 'Ph.D', '2012-03-10');

INSERT INTO Project_Employee (P_No, E_No, Start_Date, No_of_Hours_Worked) VALUES (1, 1, '2020-01-01', 50), (1, 2, '2021-02-01', 45), (2, 3, '2019-03-01', 60), (3, 1, '2018-06-01', 30), (3, 3, '2020-10-01', 55);
```

Q2) Using above database, solve the following queries:

a) Find the names of the employees whose duration is more than 10 years

```
SELECT E_Name FROM Employee WHERE EXTRACT(YEAR FROM AGE(JoinDate)) > 10;
```

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

```
SELECT Employee.* FROM Employee INNER JOIN Project_Employee ON Employee.E_No = Project_Employee.E_No INNER JOIN Project ON Project_Employee.P_No = Project.P_No WHERE Project.P_Name = 'Robotics';
```

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

```
SELECT E_Name FROM Employee ORDER BY E_Name ASC;
```

d) Delete the information of employee whose qualification is B.E.

```
DELETE FROM project_employee WHERE e_no = 2;
DELETE FROM Employee WHERE Qualification = 'B.E';
```