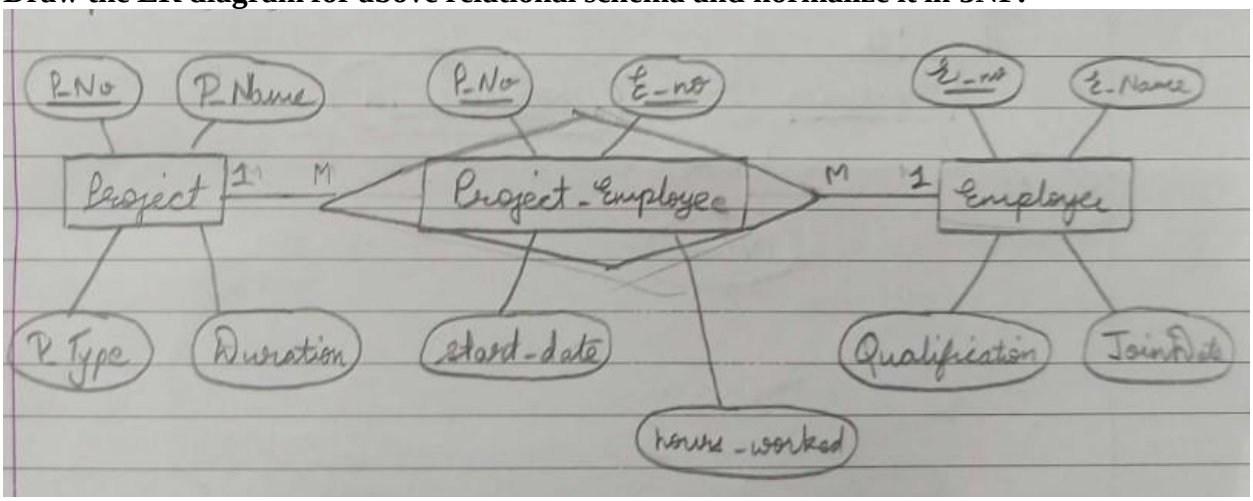
Q1) Practical Questions on PostgresSQL

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) NOT NULL, Duration INTEGER NOT NULL);

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

CREATE TABLE Project_Employee (P_No INTEGER REFERENCES Project(P_No), E_No INTEGER REFERENCES Employee(E_No), start_date DATE NOT NULL, no_of_hours_worked INTEGER NOT NULL, PRIMARY KEY (P_No, E_No));

INSERT INTO Project (P_Name, P_Type, Duration) VALUES ('Robotics', 'Research', 2), ('AI Chatbot', 'Development', 4), ('Data Analysis', 'Analysis', 3);

INSERT INTO Employee (E_Name, Qualification, JoinDate) VALUES ('John Doe', 'Computer Science', '2020-01-01'), ('Jane Smith', 'Electrical Engineering', '2019-05-15'), ('David Johnson', 'Data Science', '2021-03-10');

INSERT INTO Project_Employee (P_No, E_No, start_date, no_of_hours_worked) VALUES (1, 1, '2020-01-01', 8), (2, 2, '2019-05-15', 12), (3, 3, '2021-03-10', 10), (2, 3, '2021-03-10', 6);
```

Q2) Using above database, solve the following queries:

a) Find the employee numbers of the employees, who do not work on project “Robotics”.

```
SELECT DISTINCT E_No FROM Employee WHERE E_No NOT IN (SELECT E_No FROM Project_Employee WHERE P_No = (SELECT P_No FROM Project WHERE P_Name = 'Robotics'));
```

b) Find the names of the employees whose duration is more than three years.

```
SELECT E_Name FROM Employee WHERE EXTRACT(YEAR FROM NOW()) - EXTRACT(YEAR FROM JoinDate) > 3;
```

c) List the names of employees who is worked for more than 10 hrs on at least one project

```
SELECT DISTINCT E.E_Name FROM Employee E JOIN Project_Employee PE ON E.E_No = PE.E_No WHERE PE.no_of_hours_worked > 10;
```

d) Delete the details of the employees starting with ‘S’.

```
DELETE FROM Employee WHERE E_Name LIKE 'S%';
```