CS224p - Assignment 1

Instructions: Execute the following SQL commands first to create the database instance. Use MySQL or PostgreSQL on your laptop, Aurora MySQL, or another SQL system.

```
CREATE TABLE Employee (id int, name varchar(255), email varchar(255),
salary int, managerId int, experience_years int);

# note that managerid is the id of a record (a manager) in the Employee
table

INSERT INTO Employee (id, name, email, salary, managerId,
experience_years) values (1, 'Tom', 'a@b.com', 70000, 3, 3);

INSERT INTO Employee (id, name, email, salary, managerId,
experience_years) values (2, 'John', 'c@d.com', 80000, 4, 2);

INSERT INTO Employee (id, name,email, salary, managerId,
experience_years) values (3, 'Katrina', 'a@b.com', 98000, NULL, 1);

INSERT INTO Employee (id, name,email, salary, managerId,
experience_years) values (4, 'Namy', 't@b.com', 90000, NULL, 2);

INSERT INTO Employee (id, name, email, salary, managerId,
experience_years) values (5, 'Jim', 'j@d.com', 100000, 4, 15);


CREATE TABLE Project (project_id int, employee_id int);

INSERT INTO Project (project_id, employee_id) values (1, 1);

INSERT INTO Project (project_id, employee_id) values (1, 2);

INSERT INTO Project (project_id, employee_id) values (1, 3);

INSERT INTO Project (project_id, employee_id) values (2, 1);

INSERT INTO Project (project_id, employee_id) values (2, 4);



CREATE TABLE departments( department_id int NOT NULL, department_name
char(50) NOT NULL, CONSTRAINT PRIMARY KEY (department_id));

INSERT INTO departments(department_id,department_name) VALUES(10,
'sales');

INSERT INTO departments(department_id,department_name) VALUES(20,
'marketing');
```

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INSERT INTO departments(department_id,department_name) VALUES(30,
'accounting');


CREATE TABLE DepartmentProjects (department_id, project_id);

INSERT INTO DepartmentProjects (department_id, project_id) VALUES (10,
1);
INSERT INTO DepartmentProjects (department_id, project_id) VALUES (20,
2);
```

Questions. For questions that require writing a SELECT query, show the query and the result table based on the above instance.

Each question is worth 7 points. Question 12 is worth 9 points.

Total Points: 100

1. What Primary and Foreign keys would you add to this schema to protect the quality of the inserted data? Show the updated CREATE TABLE commands.
2. Write an SQL query to find the names of employees with salary higher than the average salary.
3. Write an SQL query to find the second highest distinct salary in the Employee table.
4. What index would you create to improve the performance of the above query and why? Show SQL command.
5. Write an SQL query to find all duplicate emails in the Employee table.
6. Write an SQL query to find the employees who earn more than their managers.
7. Write an SQL query that reports the average experience years of all the employees for each project.
8. Write an SQL query to list employee names, their manager names and the number of projects the employees are associated with.
9. Write an SQL query that lists the names of managers of employees who are working on projects under more than 1 department.
10. Based on the departments table, create an SQL table called *employeeDepts* that matches employees to departments. Assume (and enforce) that an employee can work in a single department. Don't forget to add the right primary and foreign keys.
11. Show SQL code to create a table to import the csv data in https://drive.google.com/file/d/1Uwpit1sCWyw0rKCYWepMy1wE1U_-lovN/
12. Import the csv data in the previous problem into your database. Show your code.
13. Write SQL query to show for each type of product name the average number of days between the date when a complaint is received and the date it is sent to the company, sorted by decreasing difference.

14. What index(es) would you create to improve the performance of the above query and why? Show SQL command(s). (Hint: Is an index on DateSubmitted or on DateReceived useful?)