SQL DB ASSIGNMENT

EmployeeInfo Table:

EmpID	EmpFname	EmpLname	Department	Project	Address	DOB	Gender
1	Sanjay	Mehra	HR	P1	Hyderabad(HYD)	01/12/1976	M
2	Ananya	Mishra	Admin	P2	Delhi(DEL)	02/05/1968	F
3	Rohan	Diwan	Account	P3	Mumbai(BOM)	01/01/1980	M
4	Sonia	Kulkarni	HR	P1	Hyderabad(HYD)	02/05/1992	F
5	Ankit	Kapoor	Admin	P2	Delhi(DEL)	03/07/1994	M

EmployeePosition Table:

EmpID	EmpPosition	DateOfJoining	Salary
1	Manager	01/05/2022	500000
2	Executive	02/05/2022	75000
3	Manager	01/05/2022	90000
4	Lead	02/05/2022	85000
5	Executive	01/05/2022	300000

Before creating database:

```
postgres=# \l
                                  List of databases
   Name    |  Owner   | Encoding | Collate | Ctype |   Access privileges
-----------+----------+----------+---------+-------+-----------------------
 postgres  | postgres | UTF8     | en_IN   | en_IN |
 template0 | postgres | UTF8     | en_IN   | en_IN | =c/postgres          +
           |          |          |         |       | postgres=CTc/postgres
 template1 | postgres | UTF8     | en_IN   | en_IN | =c/postgres          +
           |          |          |         |       | postgres=CTc/postgres
(3 rows)
```

After creating database:

```
postgres=# CREATE DATABASE mydb;
CREATE DATABASE
postgres=# \l
                                  List of databases
   Name    |  Owner   | Encoding | Collate | Ctype |   Access privileges
-----------+----------+----------+---------+-------+-----------------------
 mydb      | postgres | UTF8     | en_IN   | en_IN |
 postgres  | postgres | UTF8     | en_IN   | en_IN |
 template0 | postgres | UTF8     | en_IN   | en_IN | =c/postgres          +
           |          |          |         |       | postgres=CTc/postgres
 template1 | postgres | UTF8     | en_IN   | en_IN | =c/postgres          +
           |          |          |         |       | postgres=CTc/postgres
(4 rows)
```

Create Table in database:

Employee_Info Table:

```
You are now connected to database "mydb" as user "postgres".
mydb=# CREATE TABLE employee_info (
mydb(# EmpID INT NOT NULL PRIMARY KEY,
mydb(# EmpFname VARCHAR(50) NOT NULL,
mydb(# EmpLname VARCHAR(50) NOT NULL,
mydb(#
mydb(# Department VARCHAR(50) NOT NULL,
mydb(# Project VARCHAR(20) NOT NULL,
mydb(# Address VARCHAR(50) NOT NULL,
mydb(# DOB DATE NOT NULL,
mydb(# Gender VARCHAR(20));
```

```
mydb=# \d employee_info
                Table "public.employee_info"
   Column   |          Type          | Collation | Nullable | Default
------------+------------------------+-----------+----------+---------
 empid      | integer                |           | not null |
 empfname   | character varying(50)  |           | not null |
 emplname   | character varying(50)  |           | not null |
 department | character varying(50)  |           | not null |
 project    | character varying(20)  |           | not null |
 address    | character varying(50)  |           | not null |
 dob        | date                   |           | not null |
 gender     | character varying(20)  |           |          |
Indexes:
    "employee_info_pkey" PRIMARY KEY, btree (empid)
```

Insert data in Employee_Info Table :

```
mydb=# INSERT INTO employee_info (empid,empfname,emplname,department,project,address,dob,gender)
values(1,'Sanjay','Mehra','HR','P1','Hyderabad(HYD)','1976-12-01','M');
INSERT 0 1
mydb=# INSERT INTO employee_info (empid,empfname,emplname,department,project,address,dob,gender)
values(2,'Ananya','Mishra','Admin','P2','Delhi(DEL)','1968-05-02','F');
INSERT 0 1
mydb=# INSERT INTO employee_info (empid,empfname,emplname,department,project,address,dob,gender)
values(3,'Rohan','Diwan','Account','P3','Mumbai(BOM)','1980-01-01','M');
INSERT 0 1
mydb=# INSERT INTO employee_info (empid,empfname,emplname,department,project,address,dob,gender)
values(4,'Sonia','Kulkarni','HR','P1','Hyderabad(HYD)','1992-05-02','F');
INSERT 0 1
mydb=# INSERT INTO employee_info (empid,empfname,emplname,department,project,address,dob,gender)
values(5,'Ankit','Kapoor','Admin','P2','Delhi(DEL)','1994-07-03','M');
INSERT 0 1
```

Display data of Employee_Info Table

```
mydb=# SELECT * FROM employee_info;
 empid | empfname | emplname | department | project |    address     |    dob     | gender
-------+----------+----------+------------+---------+----------------+------------+--------
     1 | Sanjay   | Mehra    | HR         | P1      | Hyderabad(HYD) | 1976-12-01 | M
     2 | Ananya   | Mishra   | Admin      | P2      | Delhi(DEL)     | 1968-05-02 | F
     3 | Rohan    | Diwan    | Account    | P3      | Mumbai(BOM)    | 1980-01-01 | M
     4 | Sonia    | Kulkarni | HR         | P1      | Hyderabad(HYD) | 1992-05-02 | F
     5 | Ankit    | Kapoor   | Admin      | P2      | Delhi(DEL)     | 1994-07-03 | M
(5 rows)
```

Create Employee_Position Table:

```
mydb=# CREATE TABLE Employee_Position(
mydb(# EmpId INT NOT NULL,
mydb(# EmpPosition VARCHAR(50) NOT NULL,
mydb(# DateOfJoining DATE NOT NULL,
mydb(# Salary INT NOT NULL);
CREATE TABLE
mydb=# \d employee_position
                  Table "public.employee_position"
    Column     |         Type          | Collation | Nullable | Default
---------------+-----------------------+-----------+----------+---------
 empid         | integer               |           | not null |
 empposition   | character varying(50) |           | not null |
 dateofjoining | date                  |           | not null |
 salary        | integer               |           | not null |
```

Add foreign key constraint

```
mydb=# alter table employee_position
mydb-# add constraint fk_eid foreign key(empid) references employee_info(empid);
ALTER TABLE
mydb=# \d employee_position
                  Table "public.employee_position"
    Column     |         Type          | Collation | Nullable | Default
---------------+-----------------------+-----------+----------+---------
 empid         | integer               |           | not null |
 empposition   | character varying(50) |           | not null |
 dateofjoining | date                  |           | not null |
 salary        | integer               |           | not null |
Foreign-key constraints:
    "fk_eid" FOREIGN KEY (empid) REFERENCES employee_info(empid)
```

Insert data into Employee_Position Table:

```
mydb=# insert into employee_position (EmpId,EmpPosition,DateOfJoining,Salary)
values (1,'Manager','2022/05/01',500000);
INSERT 0 1
mydb=# insert into employee_position (EmpId,EmpPosition,DateOfJoining,Salary)
values (2,'Executive','2022/05/02',75000);
INSERT 0 1
mydb=# insert into employee_position (EmpId,EmpPosition,DateOfJoining,Salary)
values (3,'Manager','2022/05/01',90000);
INSERT 0 1
mydb=# insert into employee_position (EmpId,EmpPosition,DateOfJoining,Salary)
values (4,'Lead','2022/05/02',85000);
INSERT 0 1
mydb=# insert into employee_position (EmpId,EmpPosition,DateOfJoining,Salary)
values (5,'Executive','2022/05/01',300000);
INSERT 0 1
mydb=# select * from employee_position;
 empid | empposition | dateofjoining | salary
-------+-------------+---------------+--------
     1 | Manager     | 2022-05-01    | 500000
     2 | Executive   | 2022-05-02    |  75000
     3 | Manager     | 2022-05-01    |  90000
     4 | Lead        | 2022-05-02    |  85000
     5 | Executive   | 2022-05-01    | 300000
(5 rows)
```

Queries:

1. Write a query to fetch the number of employees working in the department 'Admin'

select count(*) as employee_count from employee_info where department = 'Admin';

```
mydb=# select count(*) as employee_count from employee_info where department = 'Admin';
 employee_count
----------------
              2
(1 row)
```

2. Write a query to retrieve the first four characters of EmpLname from the EmployeeInfo table.

select substring(emplname , 1,4) from employee_info;

```
mydb=# select substring(emplname , 1,4) from employee_info;
 substring
-----------
 Mehr
 Mish
 Diwa
 Kulk
 Kapo
(5 rows)
```

3. Write q query to find all the employees whose salary is between 50000 to 100000.

select e.empfname,e.emplname,p.salary from employee_info e inner join employee_position p on e.empid = p.empid and p.salary between 50000 and 100000;

```
mydb=# select e.empfname,e.emplname,p.salary from employee_info e inner join employee_position p on e.empid = p.empid
 and p.salary between 50000 and 100000;
 empfname | emplname | salary
----------+----------+--------
 Ananya   | Mishra   |  75000
 Rohan    | Diwan    |  90000
 Sonia    | Kulkarni |  85000
(3 rows)
```

4. Write a query to find the names of employees that begin with 'S'

select emplname,empfname from employee_info where empfname like 'S%';

```
mydb=# select emplname,empfname from employee_info where empfname like 'S%';
 emplname | empfname
----------+----------
 Mehra    | Sanjay
 Kulkarni | Sonia
(2 rows)
```

5. Write a query to fetch top N records order by salary. (ex. top 5 records)

select * from employee_position order by salary desc limit 5;

```
mydb=# select * from employee_position order by salary desc limit 5;
 empid | empposition | dateofjoining | salary
-------+-------------+---------------+--------
     1 | Manager     | 2022-05-01    | 500000
     5 | Executive   | 2022-05-01    | 300000
     3 | Manager     | 2022-05-01    |  90000
     4 | Lead        | 2022-05-02    |  85000
     2 | Executive   | 2022-05-02    |  75000
(5 rows)
```

6. Write a query to fetch details of all employees excluding the employees with first names, “Sanjay” and “Sonia” from the EmployeeInfo table.

select * from employee_info where empfname not in ('Sanjay','Sonia');

```
mydb=# select * from employee_info where empfname not in ('Sanjay','Sonia');
 empid | empfname | emplname | department | project |   address   |    dob     | gender
-------+----------+----------+------------+---------+-------------+------------+--------
     2 | Ananya   | Mishra   | Admin      | P2      | Delhi(DEL)  | 1968-05-02 | F
     3 | Rohan    | Diwan    | Account    | P3      | Mumbai(BOM) | 1980-01-01 | M
     5 | Ankit    | Kapoor   | Admin      | P2      | Delhi(DEL)  | 1994-07-03 | M
(3 rows)
```

7. Write a query to fetch the department-wise count of employees sorted by department’s count in ascending order.

select count(*),department from employee_info group by department order by count(*) desc;

```
mydb=# select count(*),department from employee_info group by department order by count(*) desc;
 count | department
-------+------------
     2 | Admin
     2 | HR
     1 | Account
(3 rows)
```

8. Create indexing for any particular field and show the difference in data fetching before and after indexing

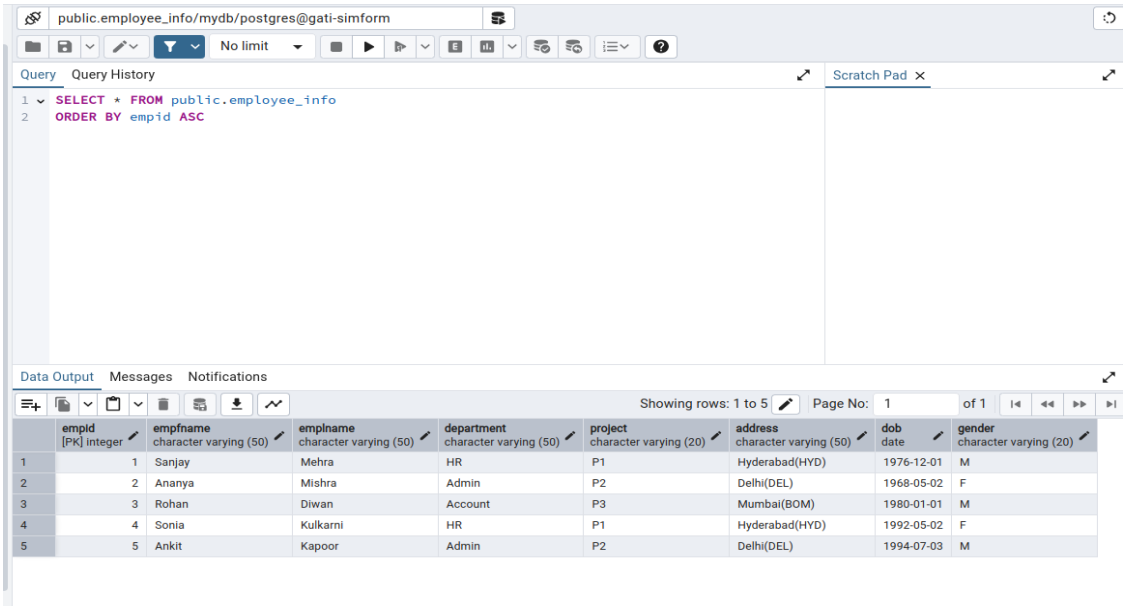
before indexing:

```
mydb=# explain analyze
select * from employee_info where empfname = 'sanjay';
                                                 QUERY PLAN
-------------------------------------------------------------------------------------------------------------
 Seq Scan on employee_info  (cost=0.00..1.06 rows=1 width=596) (actual time=0.017..0.017 rows=0 loops=1)
   Filter: ((empfname)::text = 'sanjay'::text)
   Rows Removed by Filter: 5
 Planning Time: 0.108 ms
 Execution Time: 0.044 ms
(5 rows)
```

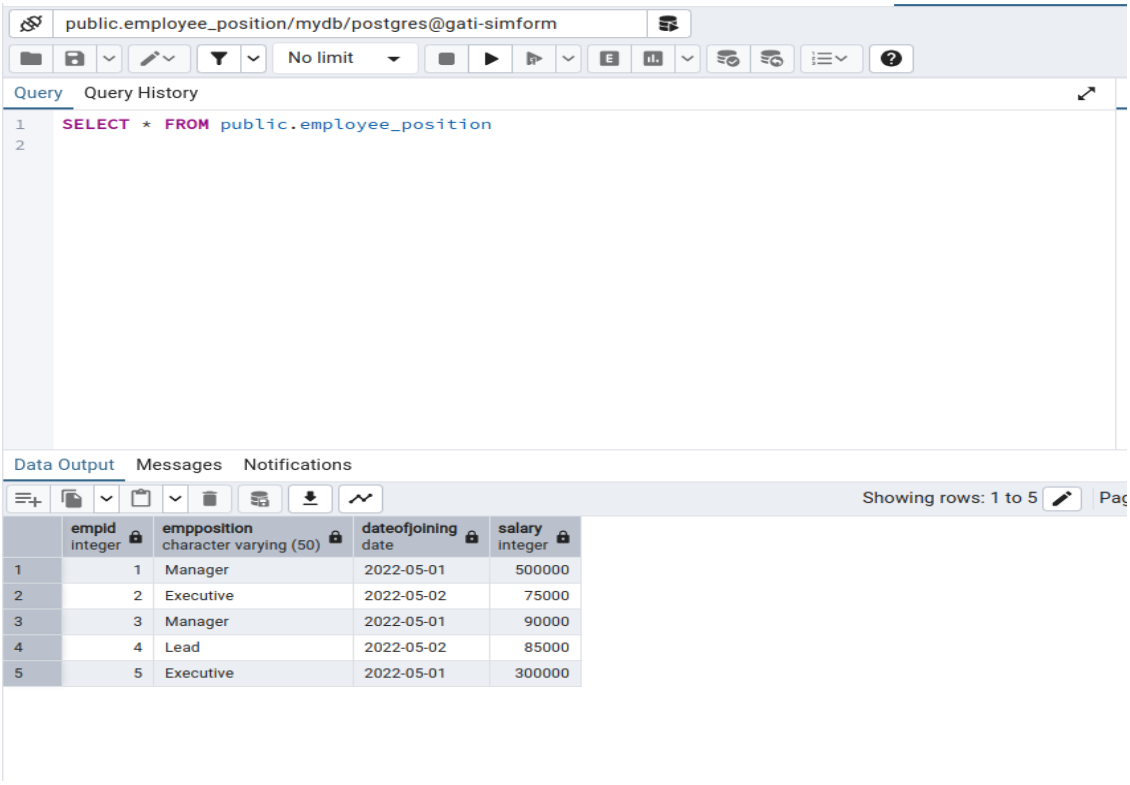
after indexing:

```
mydb=# create index idx_fname on employee_info (empfname);
CREATE INDEX
mydb=# explain analyze
select * from employee_info where empfname = 'sanjay';
                                                 QUERY PLAN
-------------------------------------------------------------------------------------------------------------
 Seq Scan on employee_info  (cost=0.00..1.06 rows=1 width=596) (actual time=0.018..0.019 rows=0 loops=1)
   Filter: ((empfname)::text = 'sanjay'::text)
   Rows Removed by Filter: 5
 Planning Time: 0.357 ms
 Execution Time: 0.046 ms
(5 rows)
```

Pgadmin:



	empid [PK] integer	empfname character varying (50)	emplname character varying (50)	department character varying (50)	project character varying (20)	address character varying (50)	dob date	gender character varying (20)
1	1	Sanjay	Mehra	HR	P1	Hyderabad(HYD)	1976-12-01	M
2	2	Ananya	Mishra	Admin	P2	Delhi(DEL)	1968-05-02	F
3	3	Rohan	Diwan	Account	P3	Mumbai(BOM)	1980-01-01	M
4	4	Sonia	Kulkarni	HR	P1	Hyderabad(HYD)	1992-05-02	F
5	5	Ankit	Kapoor	Admin	P2	Delhi(DEL)	1994-07-03	M



	empid integer	empposition character varying (50)	dateofjoining date	salary integer
1	1	Manager	2022-05-01	500000
2	2	Executive	2022-05-02	75000
3	3	Manager	2022-05-01	90000
4	4	Lead	2022-05-02	85000
5	5	Executive	2022-05-01	300000