JOINS ASSIGNMENT

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Q. Create the following tables and insert records into it.

(1) locations table -

```
create table locations (
   location_id serial primary key,
   city varchar(50) not null
);
insert into locations (city) values
('Mumbai'),
('Delhi'),
('Bangalore');
```

(2) departments table -

```
create table departments ( department_id serial primary key,
  department_name varchar(100) not null,
   location_id int references locations(location_id)
);
```

```
insert into departments (department_name, location_id) values
('HR', 1), ('IT', 2), ('Sales', 3);
```

(3) jobs table -

```
create table jobs ( job_id serial primary key,
 job_title varchar(50) not null,
 min_salary numeric(10,2),
 max_salary numeric(10,2)
);
insert into jobs (job_title, min_salary, max_salary) values
('Hr Manager', 40000.00, 70000.00), ('Accountant', 30000.00, 60000.00),
 ('Software Engineer', 50000.00, 120000.00), ('Marketing Exec', 35000.00, 75000.00),
('Sales Rep', 30000.00, 65000.00), ('Support Lead', 40000.00, 80000.00);
```

(4) employees table -

```
create table employees ( employee_id serial primary key,
 first_name varchar(50),
 last_name varchar(50) not null,
 email varchar(100) unique not null,
 phone_number varchar(20),
```

```
 hire_date date not null,
 job_id int references jobs(job_id),
 salary numeric(10,2) not null,
 manager_id int references employees(employee_id),
 department_id int references departments(department_id)
);
insert into employees (first_name, last_name, email, phone_number,
 hire_date, job_id, salary, manager_id, department_id) values
('Amit', 'Verma', 'amitv@gmail.com', '9876543210', '2017-12-15', 1, 65000,
null, 1),
('Priya', 'Sharma', 'priyas@gmail.com', '9876543211', '2019-03-10', 2, 58000,
1, 1),
('Rahul', 'Joshi', 'rahulj@gmail.com', '9876543212', '2018-06-20', 3, 90000, 1,
2),
('Sneha', 'Reddy', 'snehar@gmail.com', '9876543213', '2016-07-11', 4, 70000,
3, 2),
('Arjun', 'Mehta', 'arjunm@gmail.com', '9876543214', '2019-09-05', 5, 60000,
3, 3),
('Neha', 'Patil', 'nehap@gmail.com', '9876543215', '2015-01-18', 6, 78000, 3,
3),
('Ravi', 'Iyer', 'ravii@gmail.com', '9876543216', '2017-08-23', 6, 55000, 3, 3),
 ('Kiran', 'Rao', 'kiranr@gmail.com', '9876543217', '2018-10-30', 5, 50000, 4,
null),
```

('Sonal', 'Desai', 'sonald@gmail.com', '9876543218', '2016-04-12', 2, 85000, 4, 1),

('Deepak', 'Kumar', 'deepakk@gmail.com', '9876543219', '2020-01-15', null, 98000, 2, 2);

(5) job history table -

```
create table job_history ( employee_id int references
 employees(employee_id),
 start_date date not null,
 end_date date not null,
 job_id int references jobs(job_id),
 department_id int references departments(department_id),
 primary key (employee_id, start_date)
);
insert into job_history (employee_id, start_date, end_date, job_id,
 department_id) values
(1, '2018-01-01', '2020-01-14', 1, 1), (2, '2020-01-01', '2021-03-21', 2, 1),
(4, '2017-04-01', '2019-06-15', 4, 2), (6, '2016-02-01', '2018-11-12', 6, 3);
```

Answers for first 4 questions given in the table:

Q.1. Retrieve employee names and their job titles (INNER JOIN)

Ans:

```
select e.first_name, e.last_name, j.job_title

from employees e

inner join jobs j on e.job_id = j.job_id;
```

	first_name character varying (50)	last_name character varying (50)	job_title character varying (50)
1	Amit	Verma	Hr Manager
2	Sonal	Desai	Accountant
3	Priya	Sharma	Accountant
4	Rahul	Joshi	Software Engineer
5	Sneha	Reddy	Marketing Exec
6	Kiran	Rao	Sales Rep
7	Arjun	Mehta	Sales Rep
8	Ravi	Iyer	Support Lead
9	Neha	Patil	Support Lead

Q.2. List all employees and their department names (LEFT JOIN)

Ans:

```
select e.first_name, e.last_name, d.department_name

from employees e

left join departments d on e.department_id = d.department_id;
```

	first_name character varying (50)	last_name character varying (50)	department_name character varying (100)
1	Sonal	Desai	HR
2	Priya	Sharma	HR
3	Amit	Verma	HR
4	Deepak	Kumar	IT
5	Sneha	Reddy	IT
6	Rahul	Joshi	IT
7	Ravi	Iyer	Sales
8	Neha	Patil	Sales
9	Arjun	Mehta	Sales
10	Kiran	Rao	[null]

Q.3. Show job history with employee names, previous jobs, and department names (INNER JOIN)

Ans:

```
select e.first_name, e.last_name, j.job_title as previous_job,
 d.department_name, jh.start_date, jh.end_date
from job_history jh
inner join employees e on jh.employee_id = e.employee_id
inner join jobs j on jh.job_id = j.job_id
inner join departments d on jh.department_id = d.department_id;
```

	first_name character varying (50)	last_name character varying (50)	previous_job character varying (50)	department_name character varying (100)	start_date date	end_date date
1	Amit	Verma	Hr Manager	HR	2018-01-01	2020-01-14
2	Priya	Sharma	Accountant	HR	2020-01-01	2021-03-21
3	Sneha	Reddy	Marketing Exec	IT	2017-04-01	2019-06-15
4	Neha	Patil	Support Lead	Sales	2016-02-01	2018-11-12

Q.4. Display employees and department names where salary is above average (INNER JOIN)

Ans:

```
select e.first_name, e.last_name, e.salary, d.department_name

from employees e

inner join departments d on e.department_id = d.department_id

where e.salary > (select avg(salary) from employees);
```

	first_name character varying (50)	last_name character varying (50)	salary numeric (10,2)	department_name character varying (100)
1	Sonal	Desai	85000.00	HR
2	Deepak	Kumar	98000.00	IT
3	Rahul	Joshi	90000.00	IT
4	Neha	Patil	78000.00	Sales

Answers for 8 tasks given:

Q.1. Retrieve all departments and their locations (RIGHT JOIN)

Ans:

```
select d.department_name, l.city

from locations l

right join departments d on l.location_id = d.location_id;
```

	department_name character varying (100)	city character varying (50)
1	HR	Mumbai
2	IT	Delhi
3	Sales	Bangalore

Q.2. Get the employees who have job history records (INNER JOIN)

Ans:

```
select e.employee_id, e.first_name, e.last_name, jh.start_date, jh.end_date

 from employees e

inner join job_history jh on e.employee_id = jh.employee_id;
```

	employee_id integer	first_name character varying (50)	last_name character varying (50)	start_date date	end_date date
1	1	Amit	Verma	2018-01-01	2020-01-14
2	2	Priya	Sharma	2020-01-01	2021-03-21
3	4	Sneha	Reddy	2017-04-01	2019-06-15
4	6	Neha	Patil	2016-02-01	2018-11-12

Q.3. Display all employees and their job titles (NATURAL JOIN)

Ans:

```
select first_name, last_name, job_title

from employees

natural join jobs;
```

	first_name character varying (50)	last_name character varying (50)	job_title character varying (50)
1	Amit	Verma	Hr Manager
2	Sonal	Desai	Accountant
3	Priya	Sharma	Accountant
4	Rahul	Joshi	Software Engineer
5	Sneha	Reddy	Marketing Exec
6	Kiran	Rao	Sales Rep
7	Arjun	Mehta	Sales Rep
8	Ravi	Iyer	Support Lead
9	Neha	Patil	Support Lead

Q.4. Get employees' names, job titles, and department names (INNER JOIN)

Ans:

```
select e.first_name, e.last_name, j.job_title, d.department_name

from employees e

inner join jobs j on e.job_id = j.job_id

inner join departments d on e.department_id = d.department_id;
```

	first_name character varying (50)	last_name character varying (50)	job_title character varying (50)	department_name character varying (100)
1	Amit	Verma	Hr Manager	HR
2	Sonal	Desai	Accountant	HR
3	Priya	Sharma	Accountant	HR
4	Rahul	Joshi	Software Engineer	IT
5	Sneha	Reddy	Marketing Exec	IT
6	Arjun	Mehta	Sales Rep	Sales
7	Ravi	Iyer	Support Lead	Sales
8	Neha	Patil	Support Lead	Sales

Q.5. List employees along with their managers and department names (LEFT JOIN)

Ans:

```
select e.first_name as employee, m.first_name as manager,
d.department_name

from employees e

left join employees m on e.manager_id = m.employee_id

left join departments d on e.department_id = d.department_id;
```

	employee character varying (50)	manager character varying (50)	department_name character varying (100)
1	Sonal	Sneha	HR
2	Priya	Amit	HR
3	Amit	[null]	HR
4	Deepak	Priya	IT
5	Sneha	Rahul	IT
6	Rahul	Amit	IT
7	Ravi	Rahul	Sales
8	Neha	Rahul	Sales
9	Arjun	Rahul	Sales
10	Kiran	Sneha	[null]

Q.6. Show job history with employee names, previous jobs, and department names (INNER JOIN)

Ans:

```
select e.first_name, e.last_name, j.job_title, d.department_name,
jh.start_date, jh.end_date

from job_history jh

inner join employees e on jh.employee_id = e.employee_id

inner join jobs j on jh.job_id = j.job_id

inner join departments d on jh.department_id = d.department_id;
```

	first_name character varying (50)	last_name character varying (50)	job_title character varying (50)	department_name character varying (100)	start_date date	end_date date
1	Amit	Verma	Hr Manager	HR	2018-01-01	2020-01-14
2	Priya	Sharma	Accountant	HR	2020-01-01	2021-03-21
3	Sneha	Reddy	Marketing Exec	IT	2017-04-01	2019-06-15
4	Neha	Patil	Support Lead	Sales	2016-02-01	2018-11-12

Q.7. Display employees and department names where salary is above average (INNER JOIN)

Ans:

```
select e.first_name, e.last_name, e.salary, d.department_name

from employees e

inner join departments d on e.department_id = d.department_id

where e.salary > (select avg(salary) from employees);
```

	first_name character varying (50)	last_name character varying (50)	salary numeric (10,2)	department_name character varying (100)
1	Sonal	Desai	85000.00	HR
2	Deepak	Kumar	98000.00	IT
3	Rahul	Joshi	90000.00	IT
4	Neha	Patil	78000.00	Sales

Q.8. List employees with their current and past job titles (LEFT JOIN)

Ans:

```
select e.first_name, e.last_name, j_current.job_title as current_job,
j_prev.job_title as previous_job

from employees e
```

left join jobs j_current on e.job_id = j_current.job_id

left join job_history jh on e.employee_id = jh.employee_id

left join jobs j_prev on jh.job_id = j_prev.job_id;

	first_name character varying (50)	last_name character varying (50)	current_job character varying (50)	previous_job character varying (50)
1	Amit	Verma	Hr Manager	Hr Manager
2	Priya	Sharma	Accountant	Accountant
3	Sneha	Reddy	Marketing Exec	Marketing Exec
4	Neha	Patil	Support Lead	Support Lead
5	Deepak	Kumar	[null]	[null]
6	Arjun	Mehta	Sales Rep	[null]
7	Kiran	Rao	Sales Rep	[null]
8	Rahul	Joshi	Software Engineer	[null]
9	Sonal	Desai	Accountant	[null]
10	Ravi	Iyer	Support Lead	[null]