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1.- Diseño del esquema inicial (DDL)

```
-- Creación de la tabla Employees
CREATE TABLE Employees (
employee_id SERIAL PRIMARY KEY,
first_name varchar(50) NOT NULL,
last_name varchar(50) NOT NULL,
email Varchar(50) UNIQUE NOT NULL,
"position" varchar(50)
);

-- Creación de la tabla Projects
CREATE TABLE Projects (
project_id SERIAL PRIMARY KEY,
project_name Varchar(50) NOT NULL,
start_date DATE,not null,
end_date DATE
);

-- Creación de la tabla Assignments
CREATE TABLE Assignments (
assignment_id SERIAL PRIMARY KEY,
employee_id INTEGER,
project_id INTEGER,
assigned_date DATE DEFAULT CURRENT_DATE,
foreign key (employee_id) references Employees(employee_id),
foreign key (project_id) references Projects(project_id)
);
```

2.- Modificaciones al Esquema (DDL)

```sql
-- Agregar columna salary a Employees
ALTER TABLE Employees ADD COLUMN salary DECIMAL;

-- Cambiar tipo de la columna position
ALTER TABLE Employees ALTER COLUMN position TYPE VARCHAR(100);

-- Renombrar tabla Assignments a TeamAssignments
ALTER TABLE Assignments RENAME TO TeamAssignments;

-- Eliminar columna salary de Employees
ALTER TABLE Employees DROP COLUMN salary;

-- Eliminar tabla TeamAssignments
DROP TABLE TeamAssignments;
```

3.- CRUD con DDL

create

```sql
-- Insertar empleados
INSERT INTO Employees (first_name, last_name, email, position) VALUES
('Juan', 'Pérez', 'juan.perez@company.com', 'Backend Developer'),
('María', 'Gómez', 'maria.gomez@company.com', 'Frontend Developer'),
('Carlos', 'López', 'carlos.lopez@company.com', 'QA Engineer');

-- Insertar proyectos
INSERT INTO Projects (project_name, start_date, end_date) VALUES
('Sistema de Gestión', '2023-02-15', '2023-08-30'),
('App Móvil', '2023-03-10', NULL);

-- Asignar empleados a proyectos
INSERT INTO Assignments (employee_id, project_id) VALUES
(1, 1), -- Juan Pérez al Sistema de Gestión
(2, 1), -- María Gómez al Sistema de Gestión
(3, 2); -- Carlos López a la App Móvil
```

Read

```sql
-- Empleados asignados a un proyecto específico (proyecto 1)
SELECT e.first_name, e.last_name
FROM Employees e
JOIN Assignments a ON e.employee_id = a.employee_id
WHERE a.project_id = 1;
```

```sql
-- Empleados con correos que terminan en @company.com
SELECT * FROM Employees
WHERE email LIKE '%@company.com';
```

update

```sql
-- Cambiar email de un empleado
UPDATE Employees
SET email = 'juan.p.new@company.com'
WHERE employee_id = 1;

-- Actualizar nombre de un proyecto
UPDATE Projects
SET project_name = 'Sistema de Gestión Empresarial'
WHERE project_id = 1;
```

delete

```sql
-- Eliminar una asignación específica
DELETE FROM Assignments
WHERE employee_id = 2 AND project_id = 1;

-- Eliminar empleados sin asignaciones
DELETE FROM Employees
WHERE employee_id NOT IN (SELECT employee_id FROM Assignments);
```

4.- Consultas Complejas

Inner join

```
SELECT
e.first_name || ' ' || e.last_name AS full_name,
p.project_name,
a.assigned_date
FROM
Employees e
INNER JOIN
Assignments a ON e.employee_id = a.employee_id
INNER JOIN
Projects p ON a.project_id = p.project_id
WHERE
p.start_date > '2023-01-31';
```

CTE

```
WITH ProjectCount AS (
SELECT
e.employee_id,
e.first_name || ' ' || e.last_name AS full_name,
COUNT(a.project_id) AS project_count
FROM
Employees e
LEFT JOIN
Assignments a ON e.employee_id = a.employee_id
GROUP BY
e.employee_id, e.first_name, e.last_name
)
SELECT
full_name,
project_count
FROM
ProjectCount
WHERE
project_count > 1
ORDER BY
project_count DESC;
```