

INSTITUTO TECNOLOGICO DE MEXICALI

Carrera:  
ING. en Sistemas.

Materia:  
Fundamento de base de datos.

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1. Componentes del esquema inicial (sin SQL, solo listado de lo que debe contener cada tabla)

Tabla Students

Campos

student\_id (PK, entero autoincremental)

first\_name (texto, no nulo)

last\_name (texto, no nulo)

email (texto, único, no nulo)

Tabla Courses

Campos

course\_id (PK, entero autoincremental)

title (texto, no nulo)

credits (entero, no nulo, > 0)

Tabla Enrollments

Campos

enrollment\_id (PK, entero autoincremental)

student\_id (FK → Students.student\_id, no nulo)

course\_id (FK → Courses.course\_id, no nulo)

enrolled\_on (fecha, valor por defecto = fecha actual)

Restricciones adicionales

Par único (student\_id, course\_id)

### **Mis Querys:**

```
CREATE TABLE Students (  
    student_id SERIAL PRIMARY KEY,  
    first_name VARCHAR NOT NULL,  
    last_name VARCHAR NOT NULL,  
    email VARCHAR NOT NULL UNIQUE  
);  
  
CREATE TABLE Courses (  
    course_id SERIAL PRIMARY KEY,  
    title VARCHAR NOT NULL,  
    credits INTEGER NOT NULL CHECK (credits > 0)  
);  
  
CREATE TABLE Enrollments (  
    enrollment_id SERIAL PRIMARY KEY,  
    student_id INTEGER NOT NULL REFERENCES Students(student_id),  
    course_id INTEGER NOT NULL REFERENCES Courses(course_id),  
    enrolled_on DATE DEFAULT CURRENT_DATE,  
    UNIQUE (student_id, course_id) );
```

## 2. Modificaciones al esquema con DDL (solo descripción de qué hacer, no SQL)

Agregar columna birth\_date (fecha) a Students.

R =

```
ALTER TABLE Students  
ADD COLUMN birth_date DATE;
```

Cambiar el tipo de credits en Courses de entero estándar a entero pequeño.

R =

```
ALTER TABLE Courses  
ALTER COLUMN credits TYPE SMALLINT;
```

Renombrar la tabla Enrollments a Registrations.

R =

```
ALTER TABLE Enrollments  
RENAME TO Registrations;
```

Eliminar la columna birth\_date de Students.

R =

```
ALTER TABLE Students  
DROP COLUMN birth_date;
```

Eliminar la tabla Registrations.

R = DROP TABLE Registrations;

## 3. Consultas complejas a resolver (sin mostrar la sintaxis completa)

Consulta con INNER JOIN

R =

```
SELECT s.student_id, (s.first_name || ' ' || s.last_name) AS full_name,  
c.title AS course_title, r.enrolled_on FROM Students s  
INNER JOIN Registrations r ON s.student_id = r.student_id  
INNER JOIN Courses c ON r.course_id = c.course_id;
```

Quiero obtener el nombre completo del alumno, el título del curso y la fecha de inscripción, pero solo para aquellos cursos que tengan 4 o más créditos.

R =

```
SELECT s.student_id, (s.first_name || ' ' || s.last_name) AS full_name,  
c.title AS course_title, r.enrolled_on FROM Students s  
INNER JOIN Registrations r ON s.student_id = r.student_id  
INNER JOIN Courses c ON r.course_id = c.course_id  
WHERE c.credits >= 4;
```

Debes usar explícitamente la cláusula INNER JOIN entre las tablas correspondientes.  
Consulta con CTE (Common Table Expression)

Primero, dentro de un CTE, calcula cuántas inscripciones (enrollments) tiene cada estudiante.

R =

```
WITH EnrollmentCounts AS (  
SELECT s.student_id, s.first_name, s.last_name,  
COUNT(r.enrollment_id) AS total_enrollments  
FROM Students s  
INNER JOIN Registrations r ON s.student_id = r.student_id  
GROUP BY s.student_id, s.first_name, s.last_name  
)  
SELECT * FROM EnrollmentCounts;
```

A continuación, selecciona el nombre completo de aquellos estudiantes cuya cantidad de inscripciones sea mayor a uno, ordenándolos de mayor a menor por su total.  
Debes definir y usar la sintaxis de WITH ... AS (...) para el CTE.

R =

```
WITH EnrollmentCounts AS (  
SELECT s.student_id, s.first_name, s.last_name,  
COUNT(r.enrollment_id) AS total_enrollments  
FROM Students s  
INNER JOIN Registrations r ON s.student_id = r.student_id  
GROUP BY s.student_id, s.first_name, s.last_name  
)  
SELECT (first_name || ' ' || last_name) AS full_name, total_enrollments  
FROM EnrollmentCounts  
WHERE total_enrollments > 1  
ORDER BY total_enrollments DESC;
```