

Project of an entity relationship diagram of a university with Big Query

Using **Big Query**, generate an entity relationship diagram of a university needing a system to manage academic information, including students, faculty, courses, enrollment, and grades. Allow to register the subjects that each student takes and the grades obtained, as well as manage the teachers in charge. An example describes an SQL query that returns the name of the course and the name of the student who obtained the best grade in the course.

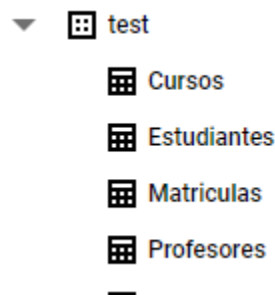
Table creation

The screenshot shows the Google Cloud BigQuery console interface. On the left, the 'Explorador' (Explorer) pane displays a search bar and a list of resources under the 'test' dataset, including 'Cursos' and 'Estudiantes'. The main pane shows a SQL query titled 'Consulta sin título' with the following code:

```

1 CREATE TABLE `subtle-fulcrum-434718-d2.test.Estudiantes` (
2   id_estudiante INT,
3   nombre STRING,
4   apellido STRING
5 );
6
7 CREATE TABLE `subtle-fulcrum-434718-d2.test.Cursos` (
8   id_curso INT64,
9   nombre_curso STRING
10 );
11
12 CREATE TABLE `subtle-fulcrum-434718-d2.test.Profesores` (
13   id_profesor INT,
14   nombre STRING,
15   apellido STRING
16 );
17
18 CREATE TABLE `subtle-fulcrum-434718-d2.test.Matriculas` (
19   id_matricula INT64,
20   id_estudiante INT64,
21   id_curso INT64,
22   calificacion FLOAT64

```



INSERT INTO `subtle-fulcrum-434718-d2.test.Estudiantes` (id_estudiante, nombre, apellido)

VALUES

```
(1, 'Juan', 'Pérez'),  
(2, 'Ana', 'Gómez'),  
(3, 'Luis', 'Martínez'),  
(4, 'Sofía', 'López'),  
(5, 'Carlos', 'Navarro'),  
(6, 'María', 'Díaz'),  
(7, 'Jorge', 'Morales'),  
(8, 'Patricia', 'Castro'),  
(9, 'Roberto', 'Fernández'),  
(10, 'Lucía', 'Pérez');
```

```
INSERT INTO `subtle-fulcrum-434718-d2.test.Cursos` (id_curso, nombre_curso)
```

VALUES

```
(202401, 'Matematicas'),  
(202402, 'Naturales'),  
(202403, 'Lenguajes');
```

```
INSERT INTO `subtle-fulcrum-434718-d2.test.Profesores` (id_profesor,  
nombre, apellido)
```

VALUES

```
(1001, 'Alonso', 'Jimenez'),  
(1002, 'Alicia', 'Garcia'),  
(1003, 'Gris', 'Fernandez');
```

```
INSERT INTO `subtle-fulcrum-434718-d2.test.Matriculas` (id_matricula,  
id_estudiante, id_curso, calificacion)
```

```
VALUES
```

```
(20241001, 1, 202401, 8.0),  
(20241002, 1, 202402, 9.2),  
(20241003, 1, 202403, 10.0),  
(20241004, 2, 202401, 7.2),  
(20241005, 2, 202402, 6.8),  
(20241006, 2, 202403, 9.9),  
(20241007, 3, 202401, 7.5),  
(20241008, 3, 202402, 7.2),  
(20241009, 3, 202403, 7.8),  
(20241010, 4, 202401, 9.3),  
(20241011, 4, 202402, 9.1),  
(20241012, 4, 202403, 9.8),  
(20241013, 5, 202401, 8.2),  
(20241014, 5, 202402, 9.0),  
(20241015, 5, 202403, 10.0),  
(20241016, 6, 202401, 8.0),  
(20241017, 6, 202402, 8.5),  
(20241018, 6, 202403, 8.4),  
(20241019, 7, 202401, 6.2),  
(20241019, 7, 202402, 7.5),  
(20241019, 7, 202403, 8.6),  
(20241020, 8, 202401, 6.9),
```

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(20241021, 8, 202402, 6.1),
(20241022, 8, 202403, 6.9),
(20241023, 9, 202401, 6.8),
(20241024, 9, 202402, 7.8),
(20241025, 9, 202403, 7.7),
(20241026, 10, 202401, 6.8),
(20241027, 10, 202402, 6.6),
(20241028, 10, 202403, 7.9);

Project of an entity relationship diagram of a university with Big Query

The screenshot displays the Google Cloud BigQuery interface. Three tables are visible: **Matriculas**, **Cursos**, and **Estudiantes**. Each table's details are shown, including its ID, creation date, and schema. A SQL query is written in the central console, which joins the **Matriculas**, **Cursos**, and **Estudiantes** tables to find the highest grade for each course.

```

1 SELECT
2   c.nombre_curso,
3   e.nombre,
4   e.apellido,
5   cal.calificacion
6 FROM
7   `subtle-fulcrum-434718-d2.test.Matriculas` cal
8 JOIN
9   `subtle-fulcrum-434718-d2.test.Cursos` c ON cal.id_curso = c.id_curso
10 JOIN
11   `subtle-fulcrum-434718-d2.test.Estudiantes` e ON cal.id_estudiante = e.id_estudiante
12 WHERE
13   (cal.calificacion) IN (
14     SELECT
15       MAX(calificacion)
16     FROM
17       `subtle-fulcrum-434718-d2.test.Matriculas`
18     GROUP BY
19       id_curso
20   );
  
```

MEJORES_CALIFICACION... **EJECUTAR** **GUARDAR CONSULTA** **DESCARGAR** **COMPARAR**

```

1 SELECT
2   c.nombre_curso,
3   e.nombre,
4   e.apellido,
5   cal.calificacion
6 FROM
7   `subtle-fulcrum-434718-d2.test.Matriculas` cal
8 JOIN
9   `subtle-fulcrum-434718-d2.test.Cursos` c ON cal.id_curso = c.id_curso
10 JOIN
11   `subtle-fulcrum-434718-d2.test.Estudiantes` e ON cal.id_estudiante = e.id_estudiante
12 WHERE
13   (cal.calificacion) IN (
14     SELECT
15       MAX(calificacion)
16     FROM
17       `subtle-fulcrum-434718-d2.test.Matriculas`
18     GROUP BY
19       id_curso
20   );
  
```

Resultados de la consulta

INFORMACIÓN DEL TRABAJO	RESULTADOS	GRÁFICO	JSON	DETALLES DE LA EJECUCIÓN	GR
Fila	nombre_curso	nombre	apellido	calificacion	
1	Matematicas	Sofía	López	9.3	
2	Naturales	Juan	Pérez	9.2	
3	Lenguajes	Juan	Pérez	10.0	
4	Lenguajes	Carlos	Navarro	10.0	