

# **LABORATORIO 1**

## **Diseño Conceptual General. SQL-DQL Basico**

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**Laboratorio-Modelos de bases de datos  
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## PARTE UNO. CONOCIENDO LA ORGANIZACIÓN

### 1. ¿Cuántos músicos tenemos?

1.

Give the organiser's name of the concert in the Assembly Rooms after the first of Feb, 1997.

```
SELECT COUNT(m_no) AS CANT_MUSICOS
FROM musician
```

Submit SQL

restore default

Result:

CANT_MUSICOS
22

SELECT COUNT(m\_no) AS CANT\_MUSICOS  
FROM musician

### ¿Cuántos son compositores?

1.

Give the organiser's name of the concert in the Assembly Rooms after the first of Feb, 1997.

```
SELECT COUNT(comp_no) AS CANT_COMPOSITORES
FROM composer
```

Submit SQL

restore default

Result:

CANT_COMPOSIT.
12

SELECT COUNT(comp\_no) AS CANT\_COMPOSITORES  
FROM composer

### ¿Cuántos son intérpretes?

```
SELECT COUNT(DISTINCT perf_is)
FROM performer
```

Submit SQL

restore default

Result:

COUNT(DISTINC..
13

```
SELECT COUNT(DISTINCT perf_is)
FROM performer
```

## 2. ¿Cuales bandas tenemos?

1.

Give the organiser's name of the concert in the Assembly Rooms after the first of Feb, 1997.

```
SELECT band_name
FROM band
```

Submit SQL

restore default

band_name
ROP
AASO
The J Bs
BBSO
The left Overs
Somebody Loves this
Oh well
Swinging strings
The Rest

```
SELECT band_name
FROM band
```

## ¿Cuántas bandas de cada tipo?

1.

Give the organiser's name of the concert in the Assembly Rooms after the first of Feb, 1997.

```
SELECT band_type,COUNT(band_type) AS BANDAS_CTIPO
FROM band
GROUP BY band_type
```

Submit SQL

restore default

Result:

band_type	BANDAS_CTIPO
classical	5
jazz	4

```
SELECT band_type,COUNT(band_type)
FROM band
GROUP BY band_type
```

3.¿Cuál es la fecha de composición más antigua?

1.

Give the organiser's name of the concert in the Assembly Rooms after the first of Feb, 1997.

```
SELECT MIN(comp_date)
FROM composition
```

Submit SQL

restore default

Result:

MIN(comp_date)
Sat, 14 Sep 1968 00:00:00 GMT

```
SELECT MIN(comp_date)
FROM composition
```

¿Y de la más reciente?

1.

Give the organiser's name of the concert in the Assembly Rooms after the first of Feb, 1997.

```
SELECT MAX(comp_date)
FROM composition
```

Submit SQL

restore default

Result:

MAX(comp_date)
Thu, 12 Jul 1990 00:00:00 GMT

```
SELECT MAX(comp_date)
FROM composition
```

#### 4. ¿Cuántos conciertos ha ofrecido? ¿En qué fechas?

```
SELECT SUM(concert_in), MIN(con_date), MAX(con_date)
FROM concert
```

Submit SQL
restore default

Result:

SUM(concert_i..	MIN(con_date)	MAX(con_date)
29	Mon, 12 Apr 1993 00:00:00 GMT	Sat, 20 Sep 1997 00:00:00 GMT

```
SELECT SUM(concert_in), MIN(con_date), MAX(con_date)
FROM concert
```

#### 5. ¿Cuál es la canción que se ha interpretado más veces?

1.

Give the organiser's name of the concert in the Assembly Rooms after the first of Feb, 1997.

```
select c_title
from composition
where c_no=(SELECT performed
FROM performance
GROUP BY performed
ORDER BY COUNT(*) DESC
```

Submit SQL
restore default

Result:

c_title
Slow Song

```
SELECT c_title
FROM composition
WHERE c_no=(SELECT performed
FROM performance
GROUP BY performed
ORDER BY COUNT(*) DESC
LIMIT 1)
```

#### 6. PREGUNTA PROPUESTA

¿En cuál ciudad y país está viviendo cada músico?

```
SELECT musician.m_name, place.place_town, place.place_country
FROM musician
JOIN place
ON musician.living_in = place.place_no
ORDER BY m_name
```

Submit SQL

restore default

Result:

m_name	place_town	place_country
Alan Fluff	Edinburgh	Scotland
Andy Jones	Glasgow	Scotland
Davis Heaven	New York	USA
Elsie James	Birmingham	England
Fred Bloggs	Edinburgh	Scotland
Freda Miles	Salzburg	Austria
Harriet Smithson	Glasgow	Scotland

```
SELECT musician.m_name, place.place_town, place.place_country
FROM musician
JOIN place
ON musician.living_in = place.place_no
ORDER BY m_name
```

## B. CONTEXTO

### 1.MISIÓN. ¿Cuál creen que es la misión de la organización?

La misión de la organización de la base de datos “Musician” es:

“Fabricar y distribuir las grabaciones de nuestros músicos afiliados, además de organizar conciertos y eventos de las canciones grabadas bajo nuestro sello.”

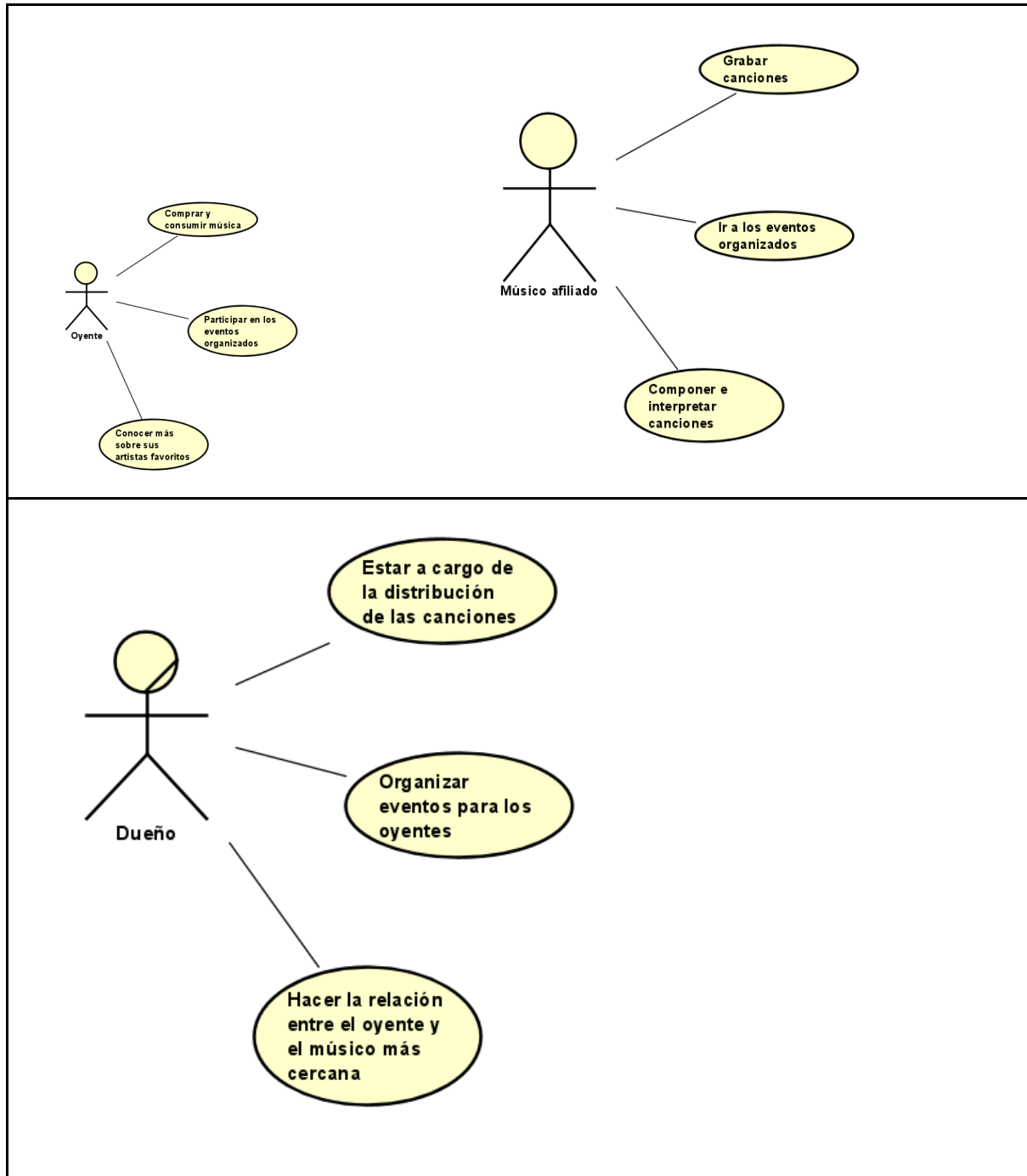
### 2.SERVICIOS ¿Qué ofreces a sus clientes?

Lo que se está ofreciendo a los clientes es el acceso directo a sus músicos afiliados con la distribución de grabaciones y organización de eventos, para generar esa afinidad entre músico y oyente.

De igual manera, se le da la oportunidad al oyente de conocer de primera mano los registros y datos sobre sus bandas y músicos favoritos.

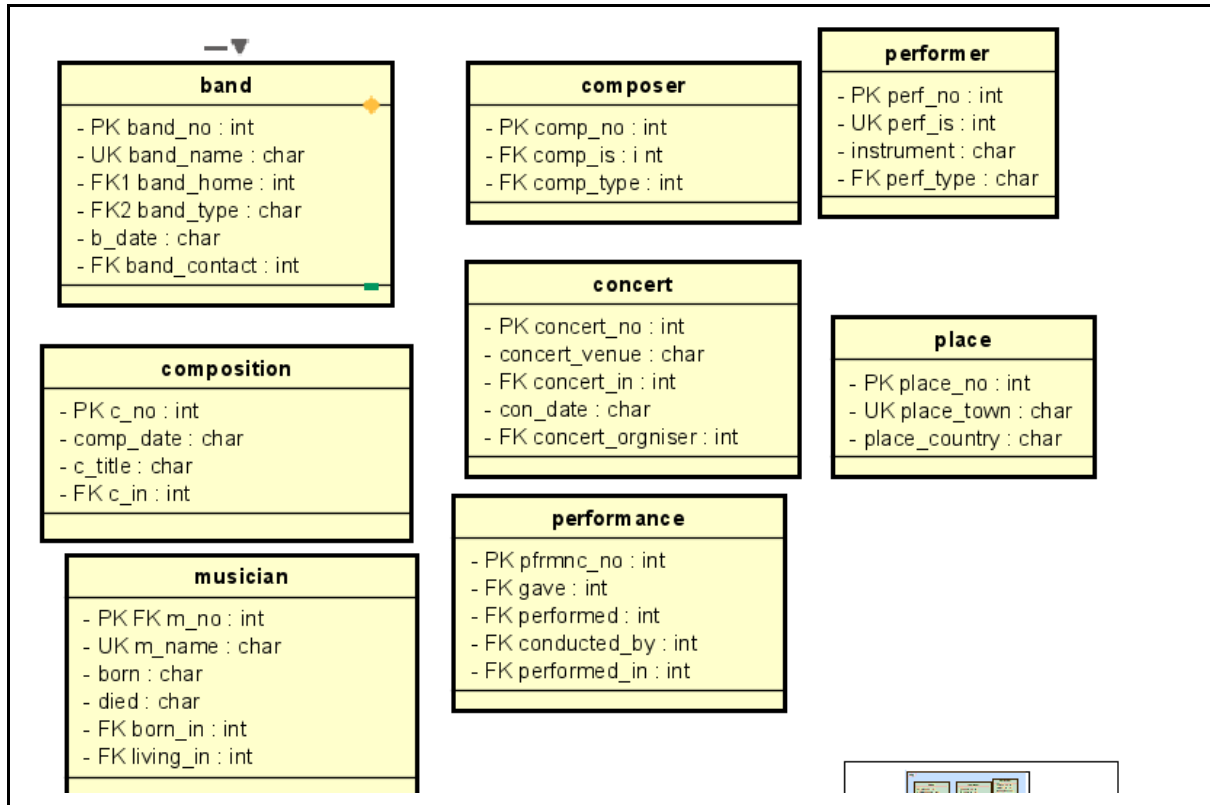
## C. Usuarios

1) ¿Cuáles son tres posibles usuarios de esta información? ¿Qué responsabilidades asumen en la organización?

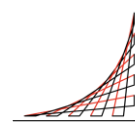


#### D. Ingeniería reversa

1. Realicen el modelo lógico mínimo. Inicien con el propuesto, valiéndolo con la base de datos e incluyan las restricciones de PK, FK, UK.







FK6 FK1 FK2 FK3  
band(band\_no, band\_name, band\_home, band\_type, b\_date, band\_contact)

FK4 FK2  
composer(comp\_no, comp\_is, comp\_type)

FK5 FK1  
composition(c\_no, comp\_date, c\_title, c\_in)

FK1 FK3  
concert(concert\_no, concert\_venue, concert\_in, con\_date, concert\_organiser)

FK3  
musician(m\_no, m\_name, born, died, born\_in, living\_in)  
FK4 FK1 FK1

FK6 FK5 FK3 FK1  
performance(prfmnc\_no, gave, performed, conducted\_by, performed\_in)

FK2  
performer(perf\_no, perf\_is, instrument, perf\_type)

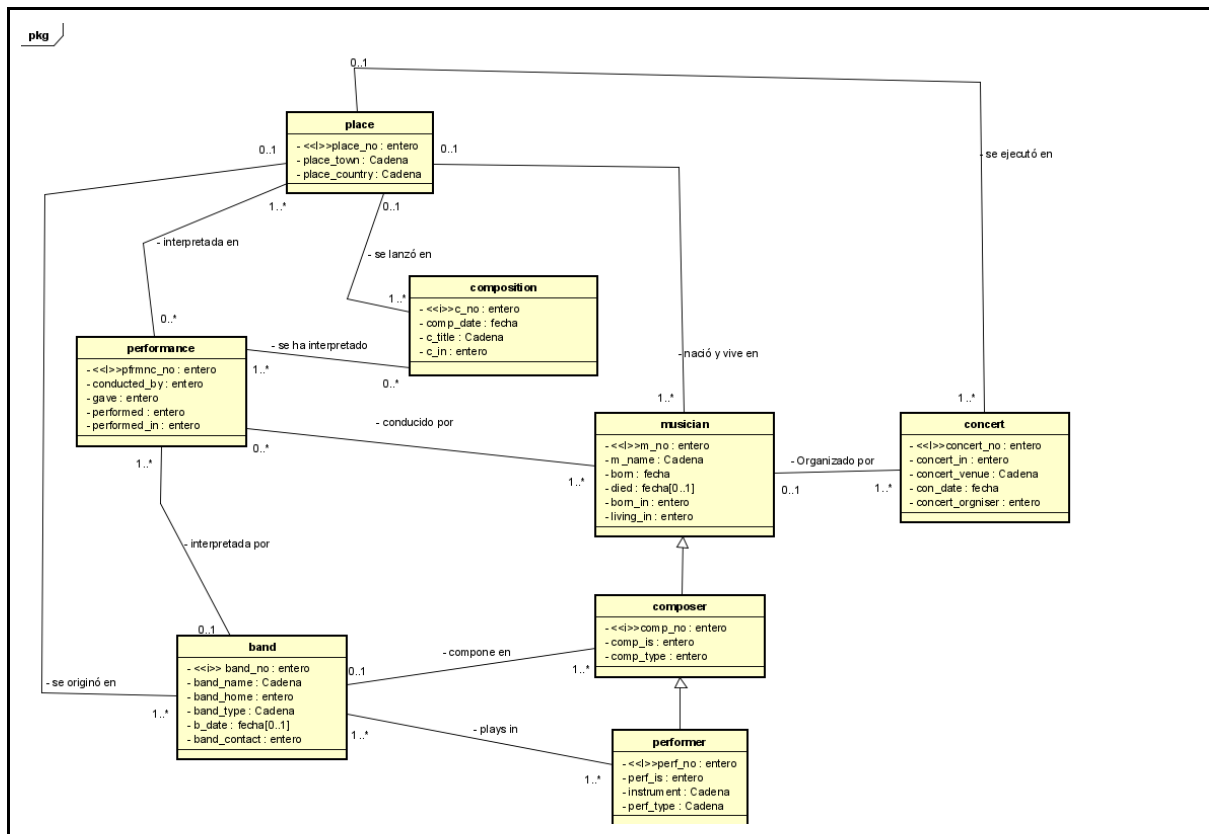
FK1  
place(place\_no, place\_town, place\_country)

#### = PK

#### = UK

#### = FK

## 2. Realicen el diagrama de conceptos.



## PARTE DOS

1. Implementen las consultas propuestas en Easy questions: 1..5 en álgebra o cálculo y en SQL. (NOTA: Se escogió cálculo relacional)

### 1.

Give the organiser's name of the concert in the Assembly Rooms after the first of Feb, 1997.

```

SELECT m_name
FROM concert JOIN musician ON concert_organiser = m_no
WHERE concert_venue = "Assembly Rooms" AND con_date > "01-02-97"
        
```

Submit SQL restore default

Result:

m_name
James Steeple

```

SELECT m_name
FROM concert JOIN musician ON concert_organiser = m_no
WHERE concert_venue = "Assembly Rooms" AND con_date > "01-02-97"
        
```

```

{w:{z:{x: concert, y: musician||:x++y}}|x.concert_venue = 'Assembly Rooms' , x.con_date > '01-02-97': z}|z:m_name}
        
```

2.

Find all the performers who played guitar or violin and were born in England.

```
SELECT m_name, place_town
FROM performer JOIN musician ON perf_is = m_no JOIN place
ON born_in = place_no
WHERE (instrument = "violin" OR instrument = "guitar") AND
place_country = "England"
```

Submit SQL

restore default

Result:

m_name	place_town
Harry Forte	Manchester
Davis Heaven	Birmingham
Alan Fluff	London
Theo Mengel	London
James First	London
Harriet Smithson	Birmingham

```
SELECT m_name, place_town
FROM performer JOIN musician ON perf_is = m_no JOIN place ON born_in = place_no
WHERE (instrument = "violin" OR instrument = "guitar") AND place_country = "England"
```

```
{w:{k:{x: performer, y: musician, z: place|:x++y++z}|x.instrument = 'violin' or x.instrument=
'guitar, z.place_country = 'England'}} : k.m_name, k.place_town}
```

3.

List the names of musicians who have conducted concerts in USA together with the towns and dates of these concerts.

```
SELECT m_name, place_town, con_date
FROM concert JOIN musician ON concert_orgrniser = m_no JOIN place
ON concert_in = place_no
WHERE place_country = "USA"
```

Submit SQL

restore default

Result:

m_name	place_town	con_date
James Steeple	New York	Sun, 15 Jun 1997 00:00:00 GMT

```
SELECT m_name, place_town, con_date
FROM concert JOIN musician ON concert_orgrniser = m_no JOIN place ON concert_in =
place_no
WHERE place_country = "USA"
```

```
{w:{k:{x: concert, y: musician, z: place|:x++y++z} |z.place_country = 'USA'}} : k.m_name,
k.place_town, k.con_date}
```

4.

How many concerts have featured at least one composition by Andy Jones? List concert date, venue and the composition's title.

```
SELECT ROW_NUMBER() OVER (ORDER BY con_date) AS
num_con, con_date, concert_venue, c_title
FROM musician
JOIN composition ON m_no = c_no
JOIN performance ON c_no = performed
JOIN concert ON performed_in = concert_no
```

Submit SQL

restore default

Result:

num_con	con_date	concert_venue	c_title
1	Sat, 03 Jun 1995 00:00:00 GMT	Usher Hall	Eastern Wind
2	Sun, 15 Jun 1997 00:00:00 GMT	Metropolitan	Eastern Wind

```
SELECT ROW_NUMBER() OVER (ORDER BY con_date) AS
num_con, con_date, concert_venue, c_title
FROM musician
JOIN composition ON m_no = c_no
JOIN performance ON c_no = performed
JOIN concert ON performed_in = concert_no
WHERE m_name = 'Andy Jones'
```

{m:{k:{x: musician, y: composition, z: performance, w: concert ||:x++y++z++w} |x.m\_name = 'Andy Jones'}} : k.num\_con, k.con\_date, k.concert\_venue, k.c\_title }

5.

list the different instruments played by the musicians and avg number of musicians who play the instrument.

```
SELECT ROW_NUMBER() OVER (ORDER BY instrument) AS n_inst,
instrument, COUNT(perf_no)/(SELECT COUNT(m_no)
FROM musician)AS AVG
FROM performer
GROUP BY instrument
```

Submit SQL

restore default

Result:

n_inst	instrument	AVG
1	banjo	0.0455
2	bass	0.1364
3	cello	0.1364
4	clarinet	0.0455
5	cornet	0.0455
6	drums	0.0909
7	flute	0.0909

```
SELECT ROW_NUMBER() OVER (ORDER BY instrument) AS n_inst, instrument,
COUNT(perf_no)/(SELECT COUNT(m_no)
FROM musician)AS AVG
FROM performer
GROUP BY instrument
```

{w:{z:{x: musician, y: performer||x++y} | n\_inst, instrument, COUNT(y.perf\_no)/COUNT(x.m\_no) AS AVG}: z.n\_inst, z.instrument, z.AVG}

## 2. Implementen las consultas Medium Questions en SQL

## Musicians: medium questions

6.

List the names, dates of birth and the instrument played of living musicians who play a instrument which Theo also plays.

```
SELECT m_name, born, instrument
FROM musician JOIN performer ON m_no = perf_is
WHERE instrument IN (SELECT instrument
FROM musician JOIN performer ON m_no = perf_is
WHERE m_name LIKE '%Theo%') AND m_name != "Theo Mengel"
```

Submit SQL

restore default

Result:

m_name	born	instrument
John Smith	Fri, 03 Mar 1950 00:00:00 GMT	violin
Harry Forte	Wed, 28 Feb 1951 00:00:00 GMT	violin
Alan Fluff	Tue, 15 Jan 1935 00:00:00 GMT	violin
Harry Forte	Wed, 28 Feb 1951 00:00:00 GMT	drums

```
SELECT m_name, born, instrument
FROM musician JOIN performer ON m_no = perf_is
WHERE instrument IN (SELECT instrument
FROM musician JOIN performer ON m_no = perf_is
WHERE m_name LIKE '%Theo%') AND m_name != "Theo Mengel"
```

7.

List the name and the number of players for the band whose number of players is greater than the average number of players in each band.

```
SELECT band_name, COUNT(*) as num
FROM musician
JOIN performer
  on (m_no = perf_is)
JOIN plays_in
  on (perf_no=player)
JOIN band
  on (band_id=band_no)
GROUP BY band_name
HAVING num > (SELECT avg(num) FROM (SELECT band_name,
COUNT(*) as num
FROM musician
JOIN performer on (m_no = perf_is)
JOIN plays_in on (perf_no=player)
JOIN band on (band_id=band_no)
GROUP BY band_name) as a)
```

Result:

band_name	num
AASO	7
Oh well	6
ROP	7

```
SELECT band_name, COUNT(*) as num
FROM musician
JOIN performer
  on (m_no = perf_is)
JOIN plays_in
  on (perf_no=player)
JOIN band
  on (band_id=band_no)
GROUP BY band_name
HAVING num > (SELECT avg(num) FROM (SELECT band_name, COUNT(*) as num
FROM musician
JOIN performer on (m_no = perf_is)
JOIN plays_in on (perf_no=player)
JOIN band on (band_id=band_no)
```

GROUP BY band\_name) as a)

8.

List the names of musicians who both conduct and compose and live in Britain.

```
SELECT DISTINCT m_name, place_country
FROM musician m JOIN performance p ON m.m_no =
p.conducted_by
JOIN composer c ON m.m_no = c.comp_is
JOIN place pl ON m.living_in = pl.place_no
WHERE (place_country = 'England') OR (place_country =
'Scotland')
```

Submit SQL

restore default

Result:

m_name	place_country
Fred Bloggs	Scotland
Phil Hot	England
Jeff Dawn	Scotland
Rose Spring	England
Tony Smythe	England

```
SELECT DISTINCT m_name, place_country
FROM musician m
JOIN performance p ON m.m_no = p.conducted_by
JOIN composer c ON m.m_no = c.comp_is
JOIN place pl ON m.living_in = pl.place_no
WHERE (place_country = 'England') OR (place_country = 'Scotland')
```

9.

Show the least commonly played instrument and the number of musicians who play it.

```
SELECT instrument, COUNT(m_name) as num
FROM musician
JOIN performer
on (m_no = perf_is)
GROUP BY instrument
HAVING num = (SELECT min(num) FROM (SELECT instrument,
COUNT(m_name) as num
FROM musician
JOIN performer on (m_no = perf_is)
GROUP BY instrument) as a)
```

Result:

instrument	num
banjo	1
clarinet	1
cornet	1
horn	1
trombone	1
trumpet	1

```
SELECT instrument, COUNT(m_name) as num
FROM musician
JOIN performer
on (m_no = perf_is)
GROUP BY instrument
HAVING num = (SELECT min(num) FROM (SELECT instrument, COUNT(m_name) as
num
FROM musician
JOIN performer on (m_no = perf_is)
```

GROUP BY instrument) as a)

10.

List the bands that have played music composed by Sue Little;  
Give the titles of the composition in each case.

```
SELECT band_name, c_title
FROM performance
JOIN band
  on (gave = band_no)
JOIN composition
  on (performed = c_no)
JOIN has_composed
  on (cmpn_no=c_no)
JOIN composer
  on (cmpr_no=comp_no)
JOIN musician
  on (m_no = comp_is)
WHERE m_name = 'Sue Little'
ORDER BY band_name
```

Result:

band_name	c_title
BBSO	Slow Symphony Blowing
BBSO	Slow Song
Somebody Loves this	Slow Symphony Blowing
Swinging strings	Slow Song
The left Overs	Slow Song

```
SELECT band_name, c_title
FROM performance
JOIN band
  on (gave = band_no)
JOIN composition
  on (performed = c_no)
JOIN has_composed
  on (cmpn_no=c_no)
JOIN composer
  on (cmpr_no=comp_no)
JOIN musician
  on (m_no = comp_is)
WHERE m_name = 'Sue Little'
ORDER BY band_name
```

### PARTE TRES

1. Considerando la misión propuesta (si lo requieren redefínanla) , definan e implementen la consulta más adecuada para que la organización conozca que tan bien está cumpliendo su misión. Justifíquela como la mejor consulta

### DEFINICIÓN DE LA CONSULTA

11.

List the name and town of birth of any performer born in the same city as James First.

```
SELECT (SELECT COUNT(m_no) FROM musician) AS AFILIADOS
, (SELECT COUNT(c_no) FROM composition) AS GRABACIONES
, (SELECT COUNT(concert_no) FROM concert) AS CONCIERTOS
```

Submit SQL

restore default

Result:

AFILIADOS	GRABACIONES	CONCIERTOS
22	21	8

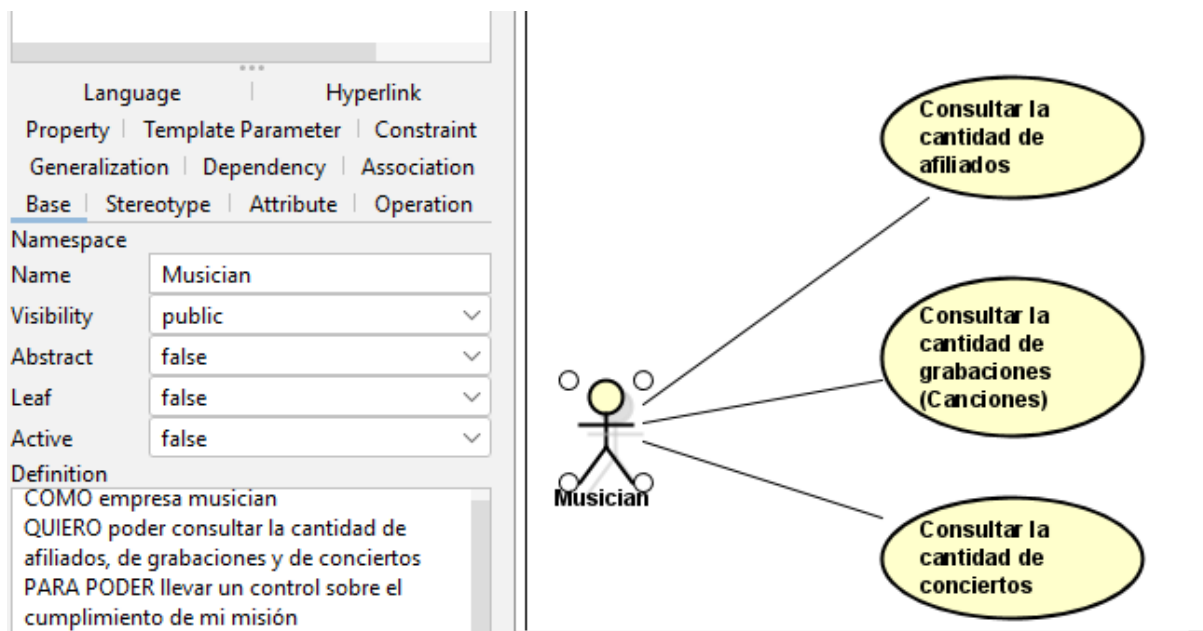
Esta consulta es adecuada porque proporciona una visión cuantitativa clara del impacto de la plataforma en tres aspectos fundamentales para el éxito de la misión:

- Ver el alcance de la empresa, y a cuantos músicos ha llegado.
- Ver el número de composiciones creadas.
- Ver el número de conciertos que se han organizado

Al centrarse en estos tres elementos, la organización puede evaluar si está cumpliendo su misión de apoyar la producción musical, la distribución de contenidos y la promoción de sus músicos.

Es la mejor consulta porque estos indicadores son medibles, permiten realizar un seguimiento a lo largo del tiempo y ofrecen una base sólida para tomar decisiones estratégicas que sigan alineadas con la misión.

## IMPLEMENTACIÓN DE LA CONSULTA

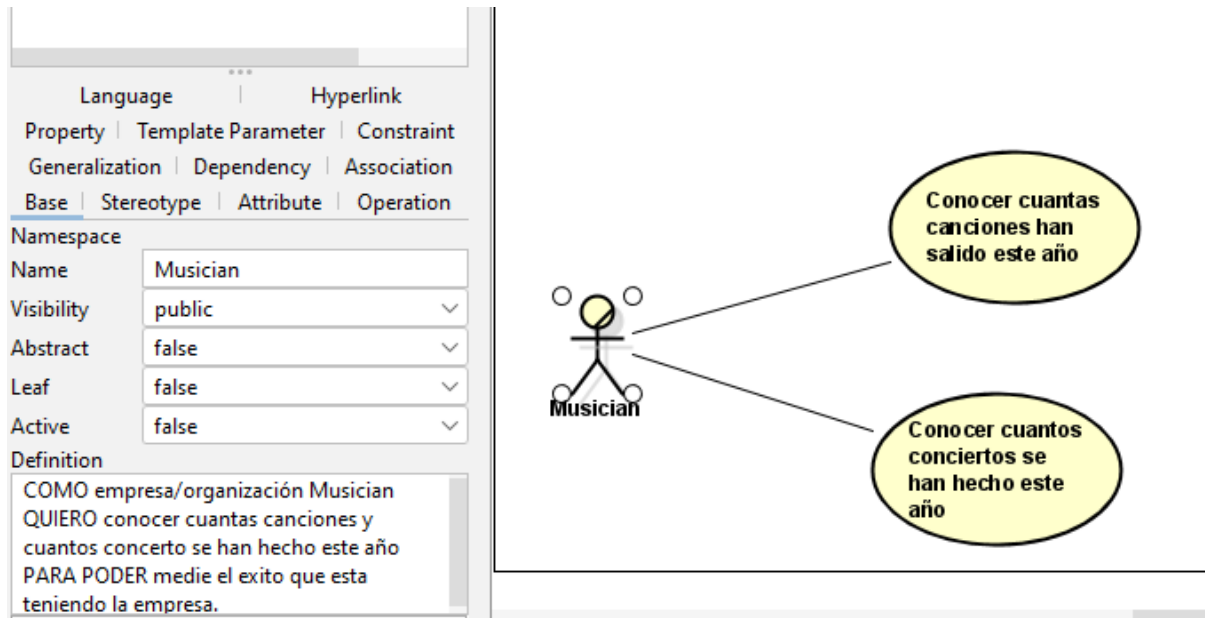


### 2. Proponga una pregunta, orientada a validar el logro en el cumplimiento de la misión, que no se pueda contestar actualmente. ¿Qué cambios se deberían incluir en el modelo para poder responder?

¿Cómo sabemos cuántas canciones se crearon, y cuantos conciertos se realizaron en menos de un año?

Para responder esta pregunta, necesitamos modificar nuestra consulta para restringir los conciertos y canciones que fueron creada hace más de un año, esto debido a que a través de esto podemos asegurar que la empresa si esta creciendo, y no se camufla con epocas de oro (Años a donde la empresa le fue super bien).





3. Considerando uno de los tres usuarios detectados anteriormente, defina e implemente una consulta que le de información útil para cumplir con sus responsabilidades o satisfacer una necesidad.

**DUEÑO**

11.

List the name and town of birth of any performer born in the same city as James First.

```
SELECT m_name AS NOMBRE, COUNT(cmpn_no) AS
COMPOSICIONES, MAX(comp_date)
FROM musician JOIN has_composed ON cmpn_no = m_no JOIN
composition ON c_no = cmpn_no
WHERE born = (SELECT MAX(born) FROM musician)
GROUP BY m_name
```

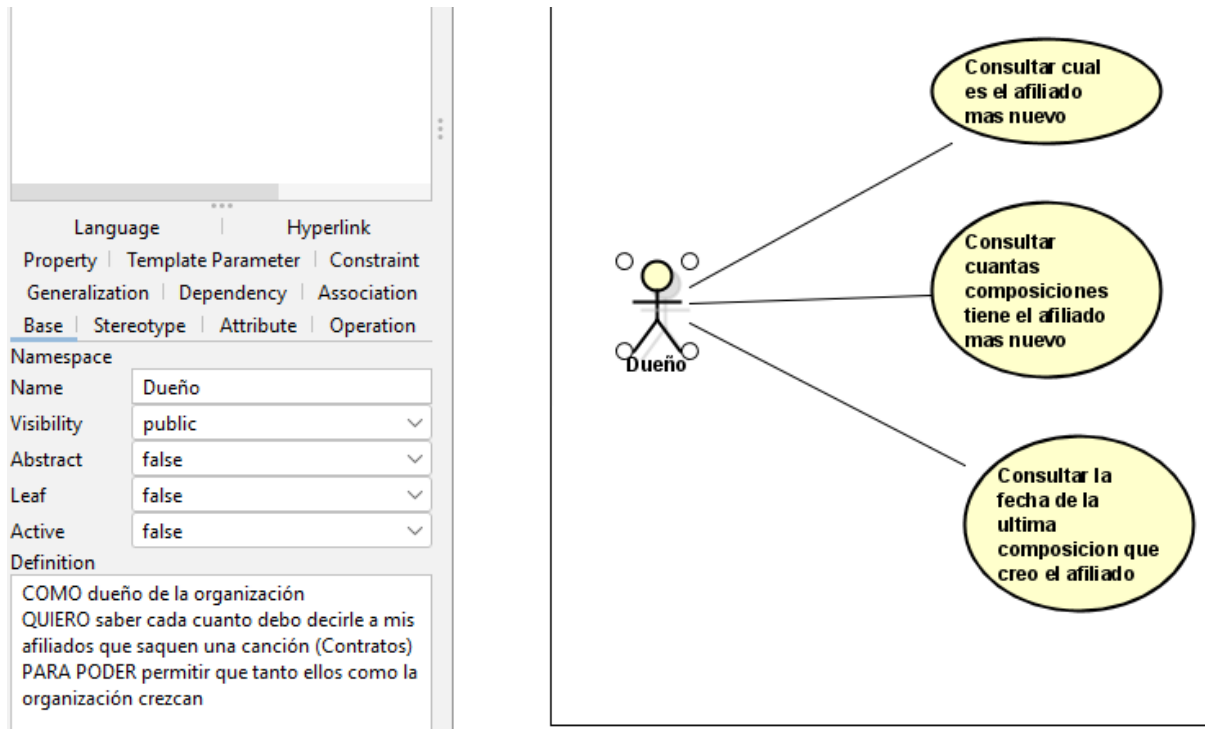
Submit SQL

restore default

Result:

NOMBRE	COMPOSICIONES	MAX(comp_date)
Davis	2	Fri, 12 Feb 1988 00:00:00
Heavan		GMT

Esta consulta le permite al dueño, visualizar quien es el músico más nuevo, ver cuantas composiciones ha hecho, y ver la fecha de la última composición que creó. Esto será de gran ayuda para saber más o menos cada cuanto el músico debe crear nuevas composiciones.



## RETROSPECTIVA

1. **¿Cuál fue el tiempo total invertido en el laboratorio por cada uno de ustedes?(Horas/Nombre)**
  - Anderson Garcia: Por mi parte me demoré más o menos 6 horas
  - Ignacio Castillo: Por mi parte me demoré más o menos 6 horas aproximadamente.
2. **¿Cuál es el estado actual del laboratorio? ¿Por qué?**
  - Ya se están puliendo los últimos detalles antes de enviar el laboratorio, se logró acabar con tiempo porque se fue trabajando poco a poco para evitar estar corriendo el mismo día de la entrega.
  - Para este trabajo influyó el paro de camioneros, que por todo lo que causó nos tuvimos que quedar en casa y eso facilitó el trabajar en esta tarea.
3. **¿Cuál consideran fue el mayor logro? ¿Por qué?**
  - Acabar el trabajo sin tener que sacrificar horas de sueño. Es el mayor logro porque representa el compromiso.
4. **¿Cuál consideran que fue el mayor problema técnico? ¿Qué hicieron para resolverlo?**
  - El mayor problema técnico consideramos fue el uso del aplicativo astah, debido a que no era muy intuitivo. Para solucionarlo recurrimos a ver tutoriales de youtube.
  - Un poco de confusión a la hora de leer la guía de laboratorio.
5. **¿Qué hicieron bien como equipo? ¿Qué se comprometen a hacer para mejorar los resultados?**
  - Nos dividimos el trabajo pero no fue que cada uno estuviera trabajando por aparte sino que entre ambos íbamos resolviendo dudas que nos dejaba algunos enunciados o algunos ejercicios.