PARTE UNO. Conociendo la organización

A. Ingeniería reversa

1. En Astah como diagrama_logico

2. En Astah como diagrama_conceptos

B. Revisando el contenido

1. ¿Cuáles bandas existen? ¿De qué tipo?

```
SELECT band_name,band_type

FROM band
```

2. ¿Cuántos músicos participan? ¿De qué nacionalidades?

```
SELECT place_country,COUNT(place_country) as musicos

FROM musician,place

WHERE born_in = place_no

GROUP BY place_country
```

3. ¿Cuántos conciertos ha ofrecido?¿En qué paises?

```
SELECT place_country,COUNT(concert_in) as num_concert

FROM concert,place

WHERE concert_in=place_no

GROUP BY place_country
```

4. ¿Cuáles músicos son interpretes? ¿Cuántos tocan más de un instrumento?

```
SELECT m_name,number_instruments

FROM (SELECT m_name,COUNT(instrument) as number_instruments

FROM musician,performer

WHERE perf_is=m_no

GROUP BY m_name) as tabla

WHERE number_instruments > 1
```

5. Propongan una pregunta y respondanla

¿Cuáles musico son compositores?¿Que tipo de composición hacen?

SELECT m_name,comp_type

FROM musician,composer

WHERE m_no=comp_no

C. Contexto

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

La misión de la organización es brindar información detallada acerca de la vida artística de los músicos dedicados al Jazz, al Rock y a la música clásica.

2. Servicios. ¿Qué ofrece a sus clientes?

La organización brinda la oportunidad de conocer al detalle los datos básicos de los músicos (fecha de nacimiento , nombre y lugar en donde vive). Además , permite conocer sus composiciones musicales , instrumentos que interpretan , bandas donde tocan así como interpretaciones y conciertos que organizan.

D. Usuarios

En astah como D.1

PARTE DOS. Implementando.

Implementen Easy questions: 1..5 en álgebra, cálculo y SQL.

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

SQL

SELECT m_name

FROM musician,concert

WHERE m_no = concert_orgniser

AND con_date > 19970201

AND concert_venue = 'Assembly Rooms'

CALCULO:
{M: musician, C: concert | C. concert_venue = 'Assembly Rooms' ^ C. con_date > 01/02/1997 ^ C. concert_orgniser = M. m_no : M. m_name }

ALGEBRA:
π m_name (σ concert_venue = 'Assembly Rooms' AND con_date > 01-02-1997 AND concert_orgniser (concert X musician))

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

SQL

SELECT m_name

FROM musician,place,performer

WHERE born_in = place_no and perf_is = m_no

AND (instrument = 'violin' or instrument = 'guitar')

AND place_country = 'England'

CALCULO
{M: musician, P :performer, K: place | P.perf_is = M.m_no ^ (P.instrument = 'guitar' v P.instrument = 'violin') ^ K.place_country = 'England' ^ M.born_in = K.place_no: M.m_name

ALGEBRA
π m_name (σ perf_is = m_no AND (instrument = 'guitar' OR instrument = 'violin') AND place_country = 'England' AND born_in = place_no (musician X performer)

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

SQL

SELECT m_name,place_town,con_date

FROM musician,concert,place

WHERE concert_orgniser = m_no and concert_in = place_no

AND place_country = 'USA'

CALCULO:
{C:concert, M:musician, K:place | K.place_no = C.concert_in ^ M.m_no = C.concert_orgniser ^K.place_country = 'USA': M.m_name, K.place_town ,C.con_date}

ALGEBRA:
π m_name, place_town, con_date σ concert_in = place_no AND m_no = concert_orgniser AND place_country = 'USA' (musician X concert X place)

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

SQL

SELECT con_date,concert_venue,c_title

FROM concert ,performance , composition ,has_composed ,composer ,musician

where concert_no=performed_in and c_no=performed and c_no= cmpn_no

and cmpr_no=comp_no and comp_is=m_no and m_name='Andy Jones'

CALCULO:
{ T:concert ,P:perfomance,C:composition, H: has_composed, S:composer, M:musician | M.m_name = 'Andy Jones' ^ M.m_no = S.comp_is ^ S.comp_no = H.cmpr_no ^ H.cmpn_no = C.c_no ^ C.c_no = P.performed ^ P.performed_in = T.concert_no: T.con_date, T.concert_venue, C.c_title }

ALGEBRA:
π con_date, concert_venue, c_title σ m_name = 'Andy Jones' AND m_no = comp_is AND comp_no = cmpr_no AND cmpn_no = c_no AND c_no = performed AND performed_in = concert_no (composition X musician X composer X has_composed X concert X performance)

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

SQL

SELECT instrument,COUNT(instrument)/(SELECT DISTINCT COUNT(m_name)

FROM musician) as promedio

FROM musician,performer

WHERE perf_is = m_no

GROUP BY instrument

CALCULO
{k: {# x: performer | y.instrument }: x.instrument = y.instrument} |: k.num / (# x.musicians,y.performer | x.m_no = y.perf_is : y.instrument)}

ALGEBRA
π con_date, concert_venue, c_title ((σ m_name = 'Andy Jones' AND m_no = comp_is AND comp_no = cmpr_no AND cmpn_no = c_no AND c_no = performed AND performed_in = concert_no) (composition X musician X composer X has_composed X concert X performance)

Implementen las consultas Medium questions: 6..10 en cálculo y SQL

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

SQL

```
SELECT m_name,born,instrument

FROM musician,performer

WHERE instrument in (SELECT instrument

FROM musician,performer

WHERE m_no = perf_is AND m_name like 'Theo%')

AND m_no = perf_is

AND died is null

AND m_name not like 'Theo%'
```

CALCULO

{m:musicians, p.performer | m.m_no = p.perf_is ^ died = null ^ instrument ϵ {m:musicians, p:performer |: m.m_no = p.perf_is ^ m.m_name = ‘Theo’} ^ name != ‘Theo’ : m_name, born, instrument}

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.

SQL

```
SELECT band_id, COUNT(player) As P1

FROM band,plays_in

WHERE band_id=band_no

GROUP BY band_id

HAVING P1>(SELECT AVG(P2) FROM( SELECT band_id,COUNT(player) as P2

FROM band,plays_in

WHERE band_id=band_no

GROUP BY band_id)As tabla
```

CALCULO

(k:{b:band,pl:plays_in|b.band_id=b.band_no: band_id,(#|:player)}

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

SQL

SELECT DISTINCT m_name

FROM musician,performance,composer,place

WHERE conducted_by = m_no AND comp_is=m_no AND living_in IN (SELECT place_no FROM place WHERE place_country= 'England' OR place_country= 'Scotland')

CALCULO
{c:composer, m:musician, p:place, pr:performance | m.m_no = c.comp_is ^ p.conducted_by = m.m_no ^ m.living_in = p.place_no ^ p.place_country = ‘England’ : m_name}

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

SQL

SELECT instrument,players

FROM (SELECT instrument,COUNT(instrument) as players

FROM performer

GROUP BY instrument) as tabla

WHERE players <= all (SELECT COUNT(instrument)

FROM performer

GROUP BY instrument)

CALCULO
{k:{p.performer|:p.instrument,(#|:p.perf_no)} |
(#p.performer |: p.perf_no) <= {p:performer |: (#|: p.perf_no)} : k.instrument, (#|:k.instrument)}

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

SQL

SELECT band_name,c_title

FROM band,performance,composition,has_composed,composer,musician

WHERE gave=band_no and performed=c_no and c_no=cmpn_no and comp_is = m_no and m_name = 'Sue Little'

and cmpr_no = comp_no

CALCULO
{C:composition, H:has_composed, S:composer, M:musician, P:performance, B:band | S.comp_is = M.m_no ^ M.m_name = ‘Sue Litlle’ ^ C.comp_no = H.cmpr_no AND H.cmpn_no = C.c_no ^ C.c_no = P.performed}

Implementen las consultas Hard questions: 12..15 en SQL

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

SELECT DISTINCT m_name,place_town

FROM musician,performer,place

WHERE born_in = place_no and perf_is = m_no and m_name != 'James First' and place_town = (SELECT place_town

FROM musician,place

WHERE born_in = place_no and m_name = 'James First')

12.Create a list showing for EVERY musician born in Britain the number of compositions and the number of instruments played.

SELECT m_name,count(distinct cmpn_no) as compositions,count(distinct instrument)as instruments

FROM musician left join place on born_in=place_no

LEFT JOIN composer on comp_is=m_no

LEFT JOIN performer on perf_is=m_no

LEFT JOIN has_composed on comp_no = cmpr_no

WHERE place_country = 'England' or place_country = 'Scotland'
group by m_name

13.Give the band name, conductor and contact of the bands performing at the most recent concert in the Royal Albert Hall.

```
SELECT band_name as banda,contacto,conductor

FROM (SELECT band_name,m_name as contacto

FROM band,performance,musician,concert

WHERE band_no = gave and performed_in = concert_no and band_contact = m_no and concert_venue = 'Royal Albert Hall' and con_date = (SELECT MAX (con_date) FROM concert WHERE concert_venue = 'Royal Albert Hall')) as t1  inner join

(SELECT band_name as band2,m_name as conductor

FROM band,performance,musician,concert

WHERE conducted_by = m_no and gave = band_no and  performed_in = concert_no  and concert_venue = 'Royal Albert Hall' and con_date = (SELECT MAX (con_date) FROM concert WHERE concert_venue = 'Royal Albert Hall'))as t2

on band_name = band2
```

14. Give a list of musicians associated with Glasgow. Include the name of the musician and the nature of the association - one or more of 'LIVES_IN', 'BORN_IN', 'PERFORMED_IN' AND 'IN_BAND_IN'.

```
(SELECT m_name,'LIVES_IN' as nature

FROM musician,place

WHERE place_no = living_in and place_town = 'Glasgow')

UNION

(SELECT m_name,'BORN_IN'

FROM musician,place

WHERE place_no = born_in and place_town = 'Glasgow')

UNION

(SELECT m_name,'PERFORMED_IN'

FROM musician,place,performance,concert

WHERE m_no = conducted_by and performed_in = concert_no and concert_in = place_no and place_town = 'Glasgow')

UNION

(SELECT m_name,'IN_BAND_IN'
```

FROM musician,performer,plays_in,band,place

WHERE m_no=perf_is and perf_no = player and band_no = band_id and band_home = place_no and place_town = 'Glasgow')

15. Jeff Dawn plays in a band with someone who plays in a band with Sue Little. Who is it and what are the bands?

SELECT m_name as nombre,Sue_Band,Jeff_Band

FROM

(SELECT DISTINCT m_name as n1,band_name as Sue_Band

FROM musician,performer,band,plays_in

WHERE band_no = band_id and m_name!= 'Jeff Dawn' and m_no = perf_is and perf_no = player and band_id in (SELECT band_id

FROM musician,performer,band,plays_in

WHERE m_no = perf_is and perf_no = player and m_name = 'Sue Little')) as t1

JOIN

(SELECT DISTINCT m_name,band_name as Jeff_band

FROM musician,performer,band,plays_in

WHERE band_no = band_id and m_name!= 'Jeff Dawn' and m_no = perf_is and perf_no = player and band_id in (SELECT band_id

FROM musician,performer,band,plays_in

WHERE m_no = perf_is and perf_no = player and m_name = 'Jeff Dawn')) as t2

ON m_name = n1

PARTE TRES. Definiendo e implementando consultas gerenciales.

1.En Astah como 3.1

2. En Astah como 3.2

3. En Astah como 3.3

RETROSPECTIVA

1. ¿Cuál fue el tiempo total invertido en el laboratorio por cada uno de ustedes? (Horas/Hombre)
Nicolas Aguilera Contreras 20 horas
Miguel Ángel Fúquene Arias 20 hora

2. ¿Cuál es el estado actual del laboratorio? ¿Por qué?
Terminado, puesto que le invertimos el tiempo y la disposición durante toda la semana.

3. ¿Cuál consideran fue el mayor logro? ¿Por qué?
Pudimos aplicar los conceptos vistos en clase no solo a consultas básicas sino en consultas mucho más densas como las HARD QUESTIONS de musicians.

4. ¿Cuál consideran que fue el mayor problema técnico? ¿Qué hicieron para resolverlo?
Tuvimos un poco de inconvenientes en el tema de Calculo relacional puesto no sabíamos aplicarlo muy bien a consultas más difíciles a las que hicimos en clase.

5. ¿Qué hicieron bien como equipo? ¿Qué se comprometen a hacer para mejorar los resultados?
Distribuimos bien el tiempo y utilizamos espacios de estudio fuera de clase para fortalecer los conocimientos y poder realizar todas las consultas que proponía el laboratorio. Nos comprometemos a reforzar el tema de cálculo relacional para tener unos mejores resultados en el futuro.