MODELOS Y BASES DE DATOS
SQL Básico
2023-2
Guía autoestudio 1/ 6

OBJETIVOS

Desarrollar competencias básicas para escribir consultas simples en SQL

PRÁCTICA

A. Estudien las secciones SELECT, SELECT ...WHERE, SELECT … GROUP BY, SELECT … SELECT de la referencia y escriban expresiones para todas las consultas en cálculo y algebra.

SELECT:

Cálculo relacional → **{Relación | Restringir: Proyectar: Multiplicar}**

Algebra relacional → $\pi_{columna}(Relacion)$

Seleccionar las columnas yr y city de la tabla games

{x.games | x.yr , x.city }

$$\pi_{yr,city}(games)$$

SELECT … WHERE:

Cálculo relacional → **{Relación | Restringir: Proyectar: Multiplicar}**

Algebra relacional → $\pi_{columna}(\sigma_{condicion}(Relacion))$

Seleccionar las ciudades que fueron cede de los juegos olímpicos en el año 2004.

{x.games | x.yr = 2004: x.yr, x.city}

$$\pi_{yr,city}\left(\sigma_{yr=2004}(games)\right)$$

SELECT … GROUP BY: enumerar la cantidad de veces que ha habido juegos olímpicos en cada continente.

Cálculo relacional → no se puede realizar ya que no existe una operación que tenga funciones de contador.

Algebra relacional à no se puede realizar ya que no existe una operación que tenga funciones de contador.

SELECT … SELECT :

Cálculo relacional → **{x| Restringir: Proyectar : Multiplicar }**

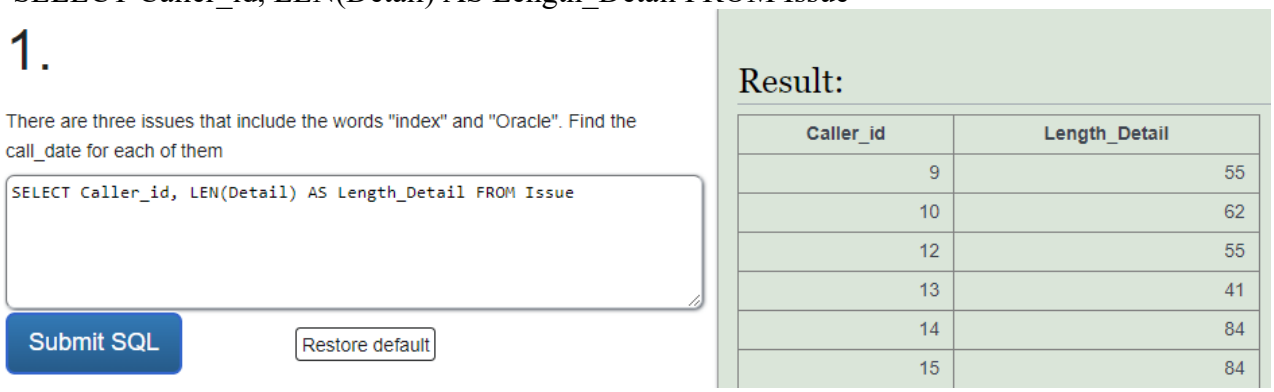
Donde x = {Relación | Restringir: Proyectar : Multiplicar}

Algebra relacional → $\pi_{columna}\left(\pi_{columna}(\sigma_{condicion}(Relacion))\right)$

B. Estudien la sección FUNCTIONS de la referencia, seleccionen 3 funciones y escriban 3 consultas que usen Issue de la base de datos HelpDesk

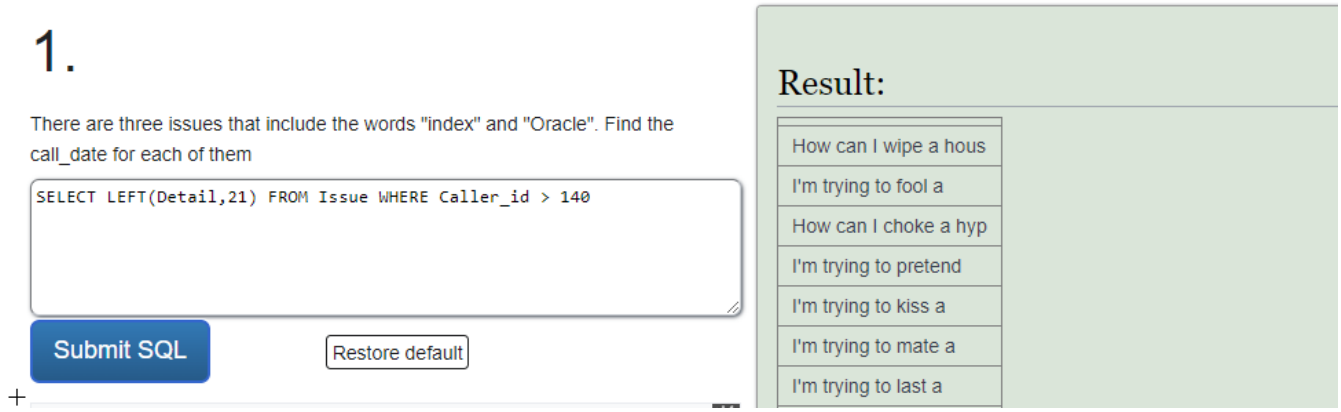
SELECT

SELECT Caller_id, LEN(Detail) AS Length_Detail FROM Issue



SELECT ...WHERE

SELECT LEFT(Detail,21) FROM Issue WHERE Caller_id > 140

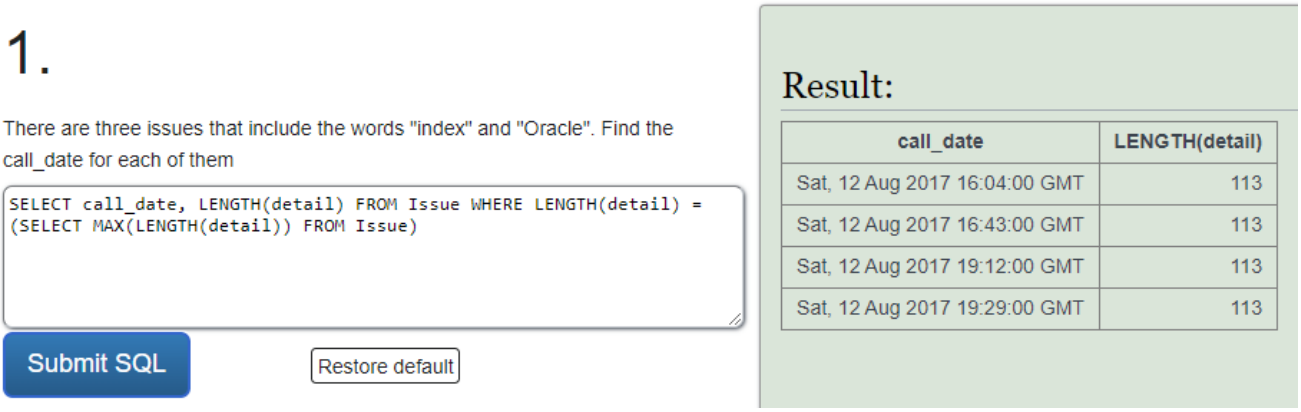


SELECT ...GROUP BY

SELECT Status, Count(Status) FROM Issue GROUP BY Status

SELECT ...SELECT

SELECT call_date, LENGTH(detail) FROM Issue WHERE LENGHT(detail) = (SELECT MAX(LENGTH(detail)) FROM Issue)



C. Realicen todos los ejercicios propuestos en los siguientes tutoriales y presente los quices. Utilice el motor My SQL.

SELECT.. WHERE

```
SELECT name FROM WHERE name IS 'Mali'
```

7. Select the result that would be obtained from this code:

```
SELECT name FROM world
 WHERE continent = 'South America'
   AND population > 40000000
```

Afghanistan
Brazil
Colombia

Brazil

Brazil
Colombia

Brazil	South America
Colombia	South America

Brazil	182800000
Colombia	45600000

Score the test

Your score is: 7 out of 7

- SELECT from WORLD.

3. SELECT name, gdp/population FROM world

   WHERE population = 200000000

name	gdp/population
Brazil	9634.4370
China	13723.0997
India	2683.9073
Indonesia	5046.8101
Nigeria	2318.1051
Pakistan	1596.4932
United States	80252.3377

4. SELECT name, population/1000000 FROM world

   WHERE continent = 'Americas'

Correct answer

name	population/10..
Antigua and Barbuda	0.1008
Argentina	46.0447
Bolivia	12.0060
Brazil	216.0204
Canada	39.8003
Chile	19.9609
Colombia	52.2155
Costa Rica	5.1630

5. SELECT name, population FROM world

WHERE name = 'France' or name = 'Germany' or name = 'Italy'

Correct answer

name	population
France	68042591
Germany	84270625
Italy	58833079

6. SELECT name FROM world

WHERE name LIKE 'United%'

Correct answer

name
United Arab Emirates
United Kingdom
United States

7. *SELECT name, population,area FROM world*

WHERE area > 3000000 or population > 250000000

Correct answer

name	population	area
Australia	26082471	7633565
Brazil	216020406	8460415
Canada	39800334	9093507
China	1411750000	9326410
India	1392329000	2973190
Indonesia	275773800	1811569
Russia	146424729	16378410
United States	334627000	9147593

8. *SELECT name, population,area FROM world*

WHERE area > 3000000 xor population > 250000000

Correct answer

name	population	area
Australia	26082471	7633565
Brazil	216020406	8460415
Canada	39800334	9093507
India	1392329000	2973190
Indonesia	275773800	1811569
Russia	146424729	16378410

9. *SELECT name, ROUND(population/1000000,2),ROUND(gdp/1000000000,2) FROM world*

   WHERE continent = 'Americas'

Correct answer

name	ROUND(populat..	ROUND(gdp/100..
Antigua and Barbuda	0.10	1.86
Argentina	46.04	641.10
Bolivia	12.01	46.10
Brazil	216.02	2081.24
Canada	39.80	2089.67
Chile	19.96	358.56
Colombia	52.22	334.69
Costa Rica	5.16	77.78

10. *SELECT name, ROUND(gdp/population,-3) FROM world*

    WHERE gdp >= 1000000000000

Correct answer

name	ROUND(gdp/pop..
Australia	65000
Brazil	10000
Canada	53000
China	14000
France	43000
Germany	51000
India	3000

- *SELECT from Nobel Tutorial*

1. *SELECT yr, subject, winner*
   FROM nobel
   WHERE yr = 1950

Correct answer

yr	subject	winner
1950	Chemistry	Kurt Alder
1950	Chemistry	Otto Diels
1950	Literature	Bertrand Russell
1950	Medicine	Philip S. Hench
1950	Medicine	Edward C. Kendall
1950	Medicine	Tadeus Reichstein
1950	Peace	Ralph Bunche
1950	Physics	Cecil Powell

2. *SELECT winner FROM nobel*
   WHERE yr = 1962 AND subject = 'literature'

Correct answer

winner
John Steinbeck

3. *SELECT yr, subject FROM nobel*
   WHERE winner = 'Albert Einstein'

Correct answer

yr	subject
1921	Physics

4. *SELECT winner FROM nobel*
   WHERE subject = 'peace' and yr >=2000

Correct answer

winner
Tunisian National Dialogue Quartet
Kailash Satyarthi
Malala Yousafzai
European Union
Ellen Johnson Sirleaf
Leymah Gbowee
Tawakel Karman

5. *SELECT yr,subject,winner FROM nobel*
   WHERE subject ='literature' AND yr BETWEEN 1980 AND 1989

Correct answer

yr	subject	winner
1989	Literature	Camilo José Cela
1988	Literature	Naguib Mahfouz
1987	Literature	Joseph Brodsky
1986	Literature	Wole Soyinka
1985	Literature	Claude Simon
1984	Literature	Jaroslav Seifert
1983	Literature	William Golding
1982	Literature	Gabriel García Márquez

7. *SELECT winner FROM nobel*

WHERE winner LIKE 'john%'

Correct answer

winner
John O'Keefe
John B. Gurdon
John C. Mather
John L. Hall
John B. Fenn
John E. Sulston
John Pople

8. *SELECT *FROM nobel*
   WHERE yr = 1980 AND subject ='physics' OR yr = 1984 AND subject ='chemistry'

Correct answer

yr	subject	winner
1984	Chemistry	Bruce Merrifield
1980	Physics	James Cronin
1980	Physics	Val Fitch

9. *SELECT * FROM nobel*
   WHERE subject NOT IN ('chemistry','medicine')AND yr = 1980

Correct answer

yr	subject	winner
1980	Economics	Lawrence R. Klein
1980	Literature	Czeslaw Milosz
1980	Peace	Adolfo Pérez Esquivel
1980	Physics	James Cronin
1980	Physics	Val Fitch

10. *SELECT yr,subject,winner FROM nobel*
    WHERE subject ='Medicine' AND yr <1910 OR subject ='literature' AND yr >=2004

Correct answer

yr	subject	winner
2015	Literature	Svetlana Alexievich
2014	Literature	Patrick Modiano
2013	Literature	Alice Munro
2012	Literature	Mo Yan
2011	Literature	Tomas Tranströmer
2010	Literature	Mario Vargas Llosa
2009	Literature	Herta Müller

11. *SELECT * FROM nobel*
    WHERE winner = 'PETER GRÜNBERG'

Correct answer

yr	subject	winner
2007	Physics	Peter Grünberg

*12. SELECT * FROM nobel*
WHERE winner = 'EUGENE O"NEILL'

yr	subject	winner
1936	Literature	Eugene O'Neill

SELECT in SELECT

2. SELECT name
FROM world
WHERE continent = 'Europe' AND GDP/population > (
SELECT GDP/population
FROM world
WHERE name = 'United Kingdom'
);

name
Austria
Belgium
Denmark
Finland
Germany
Iceland
Liechtenstein
Luxembourg

3. SELECT name, continent
FROM world
WHERE continent IN (
SELECT Continent
FROM world
WHERE name IN ('Argentina', 'Australia')
)
ORDER BY name

name	continent
Argentina	South America
Australia	Insular Oceania
Bolivia	South America
Brazil	South America
Chile	South America
Colombia	South America

4. SELECT name, population
FROM world
WHERE population > (
SELECT population
FROM world
WHERE name = 'United Kingdom'
)
AND Population < (
SELECT Population
FROM world
WHERE name = 'Germany'
)

name	population
France	68128000
Thailand	68263022

*5. SELECT name, CONCAT(ROUND((population / (SELECT population FROM world WHERE name = 'Germany')) * 100, 0), '%') AS Percentage*
FROM world
WHERE continent = 'Europe'

name	Percentage
Albania	3%
Andorra	0%
Austria	11%
Belarus	11%
Belgium	14%
Bosnia and Herzegovina	4%
Bulgaria	8%

6. SELECT name
FROM world
WHERE GDP > ALL (
SELECT GDP
FROM world
WHERE continent = 'Europe' AND GDP IS NOT NULL
)

name
China
Japan
United States

9. SELECT name, continent, population
FROM world
WHERE continent NOT IN (
SELECT continent
FROM world
WHERE population > 25000000
)

name	continent	population

SUM and COUNT

2. SELECT DISTINCT continent
FROM world

continent
Asia
Europe
Africa
North America
South America
Insular Oceania

3. SELECT SUM(GDP)
FROM world
WHERE continent = 'Africa'

SUM(GDP)
2994342000000

4. SELECT COUNT(*)
FROM world
WHERE area >= 1000000

COUNT(*)
28

5, SELECT SUM(Population)
FROM world
WHERE name IN ('Estonia', 'Latvia', 'Lithuania')

SUM(Populatio..
6115449

6. SELECT continent, COUNT(*)
FROM world
GROUP BY continent

continent	COUNT(*)
Africa	54
Asia	47
Europe	44
Insular Oceania	14
North America	23
South America	12

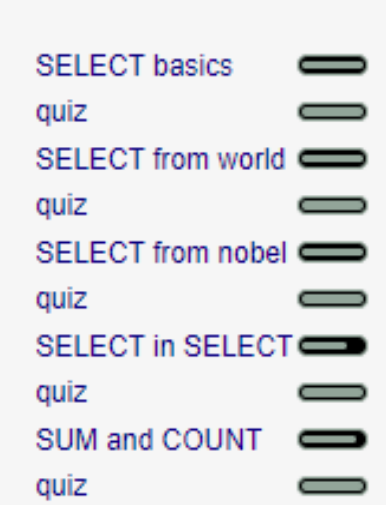
7. SELECT continent, COUNT(*)
FROM world
WHERE population >= 10000000
GROUP BY continent

continent	COUNT(*)
Africa	32
Asia	28
Europe	16
Insular Oceania	2
North America	7
South America	8

8. SELECT continent
FROM world
GROUP BY continent
HAVING SUM(population) >= 100000000

continent
Africa
Asia
Europe
North America
South America

RESULTADOS



D. De las consultas anteriores, escriban 1 en algebra y 1 en cálculo.

Show the name and population for France, Germany, Italy

$$\pi_{name,population}(\sigma_{name=\text{"France"}\ ^{v}name=\text{"Germany"}\ ^{v}name=\text{"}Italy\text{"}}(world))$$

$$\{x.world \mid (name = \text{"France"}\ ^{v}name = \text{"Germany"}\ ^{v}name = \text{"}Italy\text{"}) : x.name, x.population\}$$

E. Propongan consultas que cumplan los siguientes requerimientos. Usen Issue de la base de datos HelpDesk Escoja el motor que prefiera. Justifique la selección.
[Escriban la consulta en lenguaje natural y la sentencia en SQL en auto01.doc y ejecuten la sentencia SQL en sqlzoo. Si no lograron escribir alguna sentencia indiquen el punto de problema]
El motor que elegimos fue MySQL ya que es un motor que nos permite hacer búsquedas más eficientes y adicional es compatible con los estándares de varios lenguajes de programación.

- 8 consultas: una para cada uno de los tipos de operadores para expresiones.

Numéricos:

- Muestre la fecha de las llamadas y la referencia calculada en decenas.
- SELECT call_date , call_ref DIV 10 FROM Issue

call_date	call_ref DIV ..
Sat, 12 Aug 2017 08:16:00 GMT	123
Sat, 12 Aug 2017 08:24:00 GMT	123
Sat, 12 Aug 2017 08:29:00 GMT	123
Sat, 12 Aug 2017 08:43:00 GMT	124
Sat, 12 Aug 2017 08:48:00 GMT	124
Sat, 12 Aug 2017 08:49:00 GMT	124

Lógicos:

- Muestre la fecha de la llamada y el detalle de las llamadas que fueron asignadas a AE1 y que tienen un numero de id par.
- SELECT Call_date, Detail FROM Issue
  WHERE Assigned_to = 'AE1' AND MOD(Caller_id,2) = 0

Call_date	Detail
Sat, 12 Aug 2017 08:29:00 GMT	How can I request a usability in Microsoft Powerpoint ?
Sat, 12 Aug 2017 08:48:00 GMT	I'm trying to train a locator in SQL Server but the Information Mapping is too wacky
Sat, 12 Aug 2017 09:03:00 GMT	How can I prevent a authoring memory in Adobe Acrobat ?
Sat, 12 Aug 2017 09:18:00 GMT	How can I ignore a technical author in Microsoft Word ?

De comparación:

- Muestre la fecha de la llamada y el detalle de las llamadas que su estado sea Open.
- SELECT Call_date, Detail FROM Issue
  WHERE Status = 'Open'

Call_date	Detail
Sat, 12 Aug 2017 09:01:00 GMT	How can I remind a vocabulary list in Microsoft Excel ?
Sat, 12 Aug 2017 11:14:00 GMT	I'm trying to bow a appendix in MySQL but the white space is too quack
Sat, 12 Aug 2017 19:29:00 GMT	I'm trying to remain a sans serif in Adobe PhotoShop but the Electronic Performance Support System is too guarded

Cadenas:

- Muestre la fecha de la llamada y el detalle si la descripción es menor o igual 40 caracteres.
- SELECT Call_date, Detail FROM Issue
  WHERE LENGTH(Detail) <= 40

Call_date	Detail
Sun, 13 Aug 2017 12:53:00 GMT	How can I pull a graphic in MySQL ?
Sun, 13 Aug 2017 12:54:00 GMT	How can I grab a callout in MySQL ?
Sun, 13 Aug 2017 13:05:00 GMT	How can I rush a callout in MySQL ?
Mon, 14 Aug 2017 09:19:00 GMT	How can I rinse a header in Oracle ?
Mon, 14 Aug 2017 15:24:00 GMT	How can I stuff a callout in Oracle ?

Tiempo:

- Muestre la fecha actual y la fecha de cuando fueron realizadas las llamadas que fueron asignadas a “JE1”.
- SELECT CAST(CURRENT_DATE AS DATE),Call_date
  FROM Issue
  WHERE Assigned_to = 'JE1'

CAST(CURRENT_..	Call_date
Thu, 31 Aug 2023 00:00:00 GMT	Sat, 12 Aug 2017 08:24:00 GMT
Thu, 31 Aug 2023 00:00:00 GMT	Sat, 12 Aug 2017 08:43:00 GMT
Thu, 31 Aug 2023 00:00:00 GMT	Sat, 12 Aug 2017 09:01:00 GMT
Thu, 31 Aug 2023 00:00:00 GMT	Sat, 12 Aug 2017 09:01:00 GMT

Agrupamiento:

- Muestre el “detail” de mayor longitud de cada grupo asignado
- SELECT Assigned_to, MAX(detail)
  FROM Issue
  GROUP BY Assigned_to

Assigned_to	MAX(detail)
AB2	I'm trying to wash a word list in Microsoft Word but the appendix is too eatable
AE1	I'm trying to wobble a access key in SQL Server but the XML schema is too reflective
AL1	I'm trying to whip a browse sequence in Camtasia Studio but the user analysis is too bashful
BJ1	I'm trying to whisper a knowledge elicitation in Camtasia Studio but the international English is too quarrelsome
DJ1	I'm trying to unfasten a bibliography in Microsoft Powerpoint but the user assistance is too needless

Condiciones:

Mostrar detail, call_date y la prioridad de la llamada según el valor de call_ref. (La llamada se clasifica si call_ref <1280 “urgent” , si es menor a 1697 “priority” de lo contrario se clasifica como “deferrable”.

- SELECT detail, call_date,
  CASE WHEN call_ref<1280
  THEN 'urgent'
  WHEN call_ref<1697
  THEN 'priority'
  ELSE 'deferrable'
  END
  FROM Issue

detail	call_date	CASE WHEN cal..
How can I guarantee a digital communication in Oracle ?	Sat, 12 Aug 2017 08:16:00 GMT	urgent
How can I vanish a task-based documentation in Adobe Acrobat ?	Sat, 12 Aug 2017 08:24:00 GMT	urgent

Cambio de tipo:

- Muestre la referencia de llamada con un decimal de precisión, los detalles de la llamada y la fecha en la que fue realizada.
- SELECT CAST(call_ref/10

  AS DECIMAL(8,1)) AS reference,

  detail,call_date

  FROM Issue

reference	detail	call_date
123.7	How can I guarantee a digital communication in Oracle ?	Sat, 12 Aug 2017 08:16:00 GMT
123.8	How can I vanish a task-based documentation in Adobe Acrobat ?	Sat, 12 Aug 2017 08:24:00 GMT

- 3 consultas anidadas que usen otra consulta: 1) (SELECT …) en FROM, 2) SELECT en WHERE y 3) SELECT … en SELECT

1) (SELECT …) en FROM
   - Muestre el responsable de recibir la llamada “Taken_by” que obtuvo una cantidad impar en el total de llamadas que atendio
   - SELECT Taken_by, total_call
     FROM (
       SELECT Taken_by, SUM(call_ref) AS total_call
       FROM Issue
       GROUP BY Taken_by
) AS SubqueryAlias
     WHERE MOD(total_call, 2) = 1;
2) SELECT en WHERE
   - Muestre el nombre “First_name” y el id de la persona que realizo la llamada “Caller_id” que fueron atendidas por “AB1”.
   - SELECT First_name, Caller_id
     FROM Caller
     WHERE Caller_id IN(
       SELECT Caller_id
       FROM Issue
       WHERE Taken_by = 'AB1'
     );
3) SELECT … en SELECT
   Esta sentencia no entendemos la lógica de cómo funciona.

- 3 consultas con el siguiente esquema: 1) GROUP BY ... HAVING … 2) ORDER BY 3) DISTINCT

1) Selecciona las columnas de a quien se le asigna, el detalle del problema y la cantidad de caracteres que tiene toma los datos de la tabla Issue, los ordena por quien fue asignado, muestra los detalles que tienen más de 90 caracteres y solo me muestra los 5 primeros registros

1.

There are three issues that include the words "index" and "Oracle". Find the call_date for each of them

```
SELECT assigned_to, detail, LENGTH(detail) FROM Issue GROUP BY
assigned_to, detail HAVING LENGTH(detail) > 90 LIMIT 5
```

Submit SQL Restore default

```
+---------------------+----------+
| call_date           | call_ref |
+---------------------+----------+
| 2017-08-12 16:00:00 |     1308 |
| 2017-08-16 14:54:00 |     1697 |
| 2017-08-16 19:12:00 |     1731 |
```

assigned_to	detail	LENGTH(detail)
AB2	I'm trying to accept a structured authoring in Microsoft Word but the document management system is too equable	111
AB2	I'm trying to influence a table of contents in Adobe PhotoShop but the definition list is too piquant	101
AB2	I'm trying to reflect a print on demand in Adobe PhotoShop but the front matter is too volatile	95
AB2	I'm trying to rhyme a instructions in Microsoft Powerpoint but the knowledge management is too knotty	101
AB2	I'm trying to serve a digital communication in Camtasia Studio but the style sheet is too black	95

2) selecciona los detalles de los problemas y el número de caracteres que contienen, además se renombra como CharNum, toma los datos de la tabla Issue y los ordena de forma descendente de acuerdo al número de caracteres.

There are three issues that include the words "index" and "Oracle". Find the call_date for each of them

```
SELECT detail, LENGTH(detail) AS CharNum FROM Issue ORDER BY CharNum
DESC
```

Submit SQL Restore default

```
+---------------------+----------+
| call_date           | call_ref |
+---------------------+----------+
| 2017-08-12 16:00:00 |     1308 |
| 2017-08-16 14:54:00 |     1697 |
| 2017-08-16 19:12:00 |     1731 |
```

Result:

detail	CharNum
I'm trying to describe a sans serif in Microsoft Word but the Electronic Performance Support System is too tricky	113
I'm trying to whisper a knowledge elicitation in Camtasia Studio but the international English is too quarrelsome	113
I'm trying to crack a technical writer in Microsoft Powerpoint but the controlled natural language is too prickly	113
I'm trying to remain a sans serif in Adobe PhotoShop but the Electronic Performance Support System is too guarded	113
I'm trying to accept a structured authoring in Microsoft Word but the document management system is too equable	111
I'm trying to book a context-sensitive help in Microsoft Powerpoint	110

3) Selecciona sin repetirse a quien se le asigna los problemas, y se toman los datos de tabla Issue.

1.

There are three issues that include the words "index" and "Oracle". Find the call_date for each of them

```
SELECT DISTINCT(assigned_to) FROM Issue
```

Submit SQL Restore default

```
+---------------------+----------+
| call_date           | call_ref |
+---------------------+----------+
| 2017-08-12 16:00:00 |     1308 |
| 2017-08-16 14:54:00 |     1697 |
| 2017-08-16 19:12:00 |     1731 |
```

assigned_to
AB2
AE1
AL1
BJ1
DJ1
EB1
EH1
JE1
JL1
JP1
MB1
ME1
MM1