

BASES DE DATOS



`#{LL.u}`
Libre Lab UCM

LibreLabUCM
Pablo García de los Salmones Valencia



VIAJE A TRAVES DE LAS BASES DE DATOS

13 FEBRERO 13:00 - 14:00

AULA 6







SQL

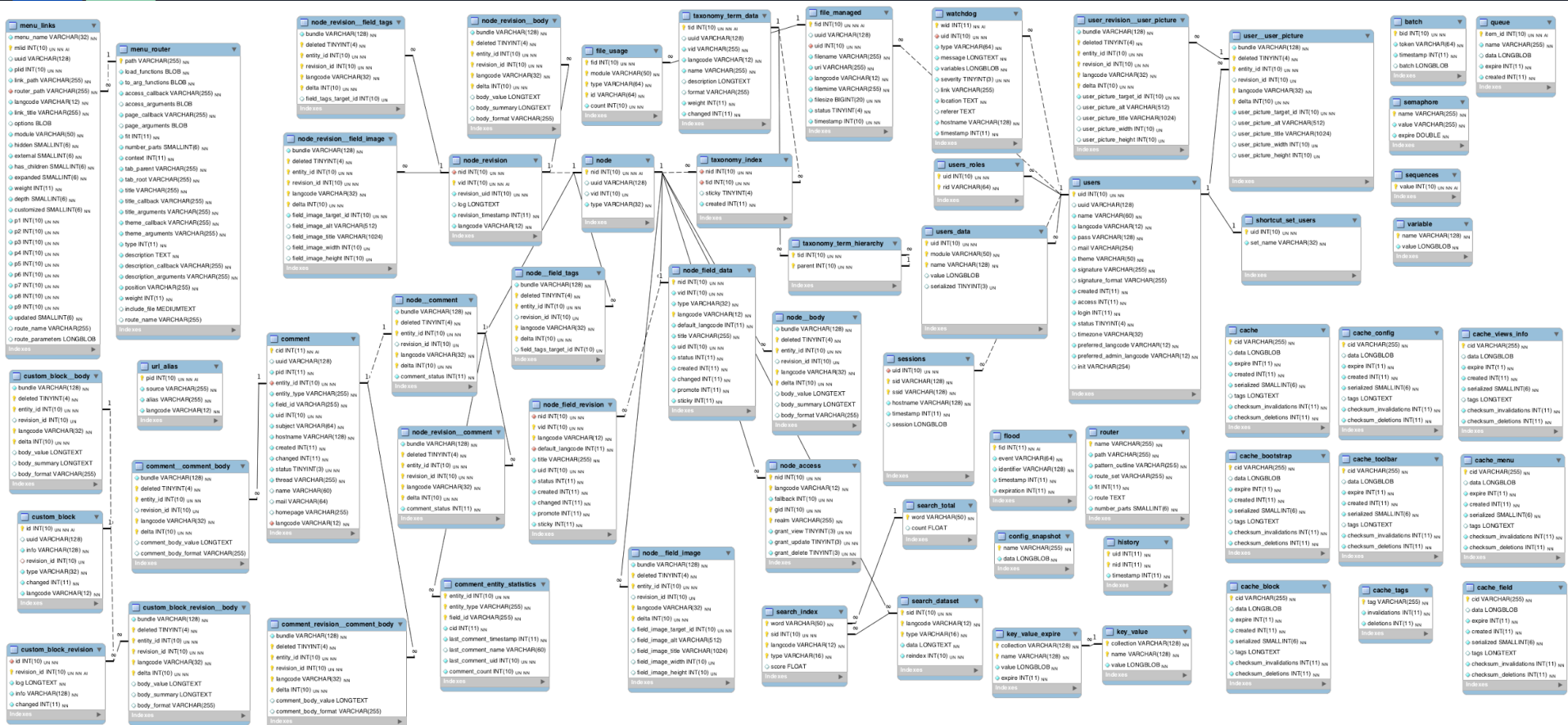
NoSQL



- SQL: Structured Query Language
 - MySQL / MariaDB
 - Oracle
 - PostgreSQL
 - MSSQL

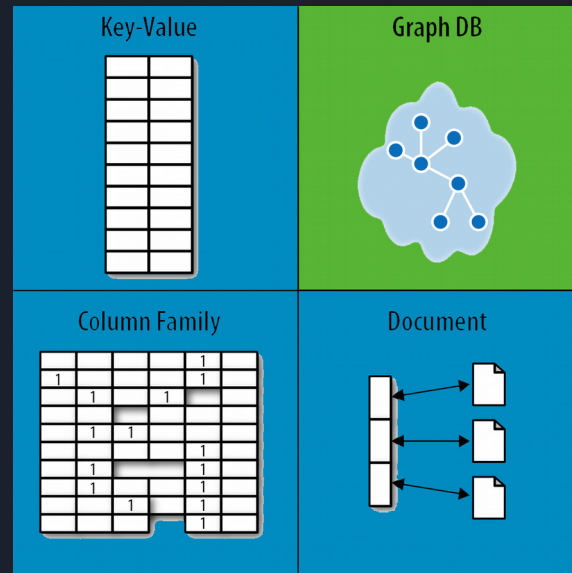
Employees Table

IdNum	LName	FName	JobCode	Salary	Phone
1876	CHIN	JACK	TA1	42400	212/588-5634
1114	GREENWALD	JANICE	ME3	38000	212/588-1092
1556	PENNINGTON	MICHAEL	ME1	29860	718/383-5681
1354	PARKER	MARY	FA3	65800	914/455-2337
1130	WOOD	DEBORAH	PT2	36514	212/587-0013





- NoSQL: Non SQL / Not Only SQL
 - Cassandra
 - Redis
 - MongoDB
 - CouchDB



- XML
- Yaml
- Redis
- MongoDB
- Elasticsearch
- MySQL / MariaDB

XML: Extensible Markup Language

```
<?xml version="1.0" encoding="UTF-8" ?>
<ProductInformation ExportTime="2010-11-23 23:56:40" ExportContext="german" ContextID="german" WorkspaceID="Test" id="1" parent="0">
- <AnalyzerResult>
  - <AnalyzerLists>
    - <AnalyzerList name="items.added">
      <AnalyzerElement ItemID="product?id=123456" ProductID="123456" />
      <AnalyzerElement ItemID="product?id=789" ProductID="789" />
    </AnalyzerList>
    - <AnalyzerList name="items.deleted">
      <AnalyzerElement ItemID="product?id=111111" ProductID="111111" />
      <AnalyzerElement ItemID="product?id=222222" ProductID="222222" />
    </AnalyzerList>
    - <AnalyzerList name="items.dummy_test">
      <AnalyzerElement ItemID="product?id=test1" ProductID="test1" />
      <AnalyzerElement ItemID="product?id=test2" ProductID="test2" />
    </AnalyzerList>
  </AnalyzerLists>
  - <AnalyzerDummyTest>
    <AnalyzerDummyTest name="Dummy not processed" />
  </AnalyzerDummyTest>
</AnalyzerResult>
- <Products>
  - <Product id="123456" name="Product A">
    - <MetaData>
      <Value AttributeID="AttrA">false</Value>
      <Value AttributeID="AttrB">true</Value>
      <Value AttributeID="AttrShortName">Product A Short Name</Value>
      <Value AttributeID="AttrLongName">Product A Long Name</Value>
    </MetaData>
  </Product>
  - <Product id="789" name="Product B">
    - <MetaData>
      <Value AttributeID="AttrA">true</Value>
      <Value AttributeID="AttrB">false</Value>
      <Value AttributeID="AttrShortName">Product B Short Name</Value>
      <Value AttributeID="AttrLongName">Product B Long Name</Value>
    </MetaData>
  </Product>
</Products>
</ProductInformation>
```

Yaml: YAML Ain't Markup Language

```
---
first_name: Adam
last_name: Bertram
hair_color: Brown
married: true
spouse:
  name: Miranda
  occupation: Mom
  interests:
    - Instagram
    - Facebook
    - "keeping the Bertram family in check"
dog_count: 2
dogs:
  dog1:
    name: Elliott
    breed: Shih-Tzu
    color: black/white
  dog2:
    name: Brody
    breed: Shih-Tzu
    color: black/white
```

sky:

```
name: "\n  Get to the sky!"
startingRoom: "hell_7_start"
description: "\n  You start in hell.\n  It's hot in there, so.... You should go somewhere cooler:\n  To the sky XD"
rooms:
  hell_7_start:
    arrivalText: "Floor: -7, Start\n  It's hot in here.... I should find a way out...\n  Perhaps... if I could find Lucifer"
    options:
      's':
        text: "Go down"
        action:
          text: "You can't go down... You are at the bottom of hell..."
          repeatTimes: -1
      'w':
        text: "Go up"
        required:
          knowledge_secretDoor_hell_6_main: 1
        nextRoom: "hell_6_main"
      'q':
        text: "Search around"
        action:
          text: "This place is empty as hell..."
          items:
            point: 5
            repeatTimes: 1
      'd':
        text: "Go to next room"
        nextRoom: "hell_7_1"
  hell_7_1:
    arrivalText: "Floor: -7, 1\n  Something shines here... With a dark red color..."
    options:
```

<https://github.com/DevPGSV/GameMaker/games.yml>

Redis Data Examples

Keys

Values

page:index.html	—————→	<html><head>[...]	← String
login_count	—————→	7464	
users_logged_in_today	—————→	{ 1, 2, 3, 4, 5 }	← Set
latest_post_ids	—————→	[201, 204, 209,...]	← List
user:123:session	—————→	time => 10927353 username => joe	← Hash
users_and_scores	—————→	joe ~ 1.3483 bert ~ 93.4 fred ~ 283.22 chris ~ 23774.17	← Sorted (scored) Set

<https://github.com/yagop/telegram-bot>

MongoDB

```
db.users.insertOne(  ← collection
{
  name: "sue",        ← field: value
  age: 26,             ← field: value
  status: "pending"   ← field: value } document
}
)
```



```
{
  name: "sue",        ← field: value
  age: 26,             ← field: value
  status: "A",         ← field: value
  groups: [ "news", "sports" ] ← field: value
}
```

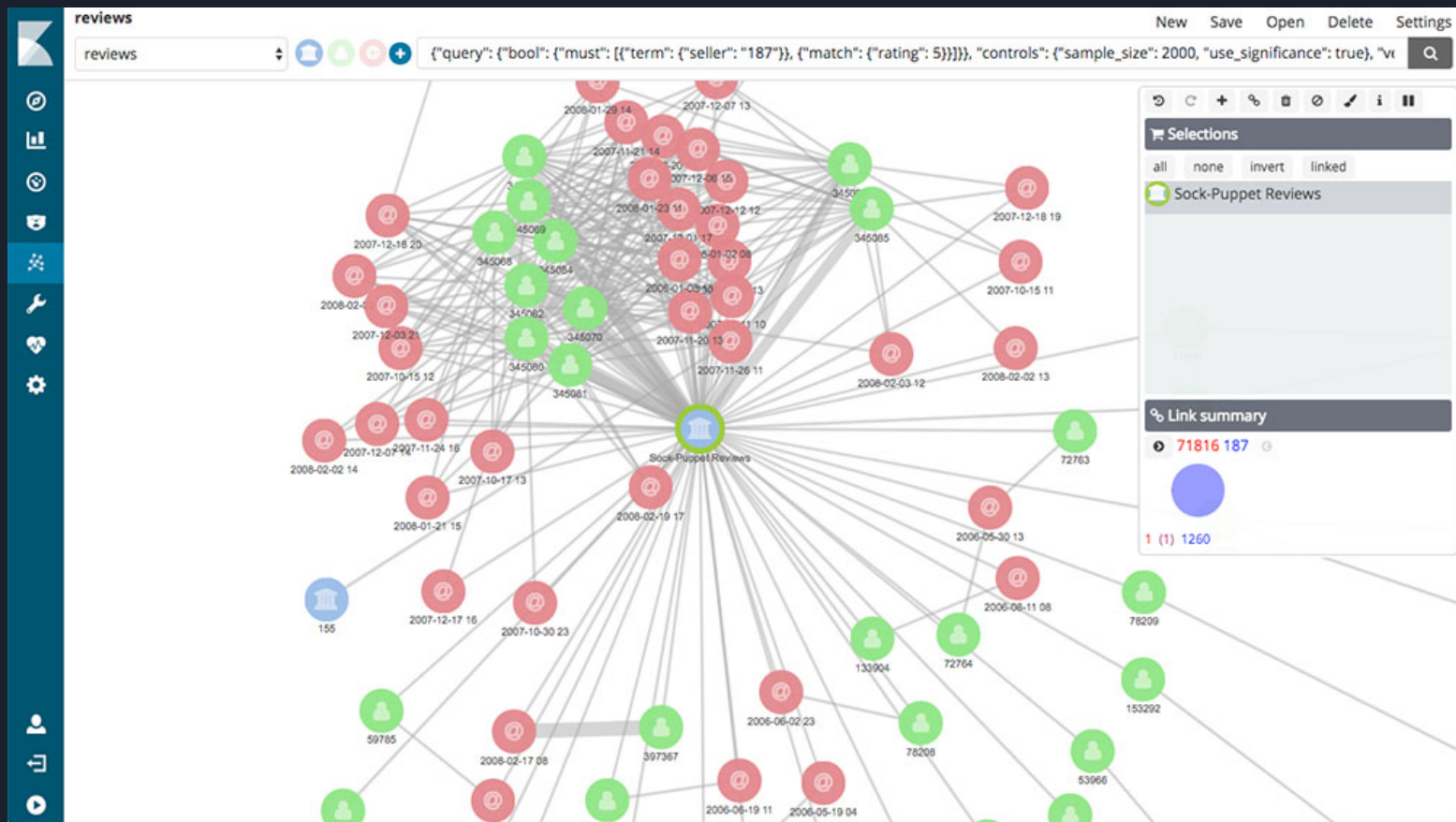
MongoDB

```
{
  _id: <ObjectId>,
  username: "123xyz",
  contact: {
    phone: "123-456-7890",
    email: "xyz@example.com"
  },
  access: {
    level: 5,
    group: "dev"
  }
}
```

Embedded sub-document

Embedded sub-document

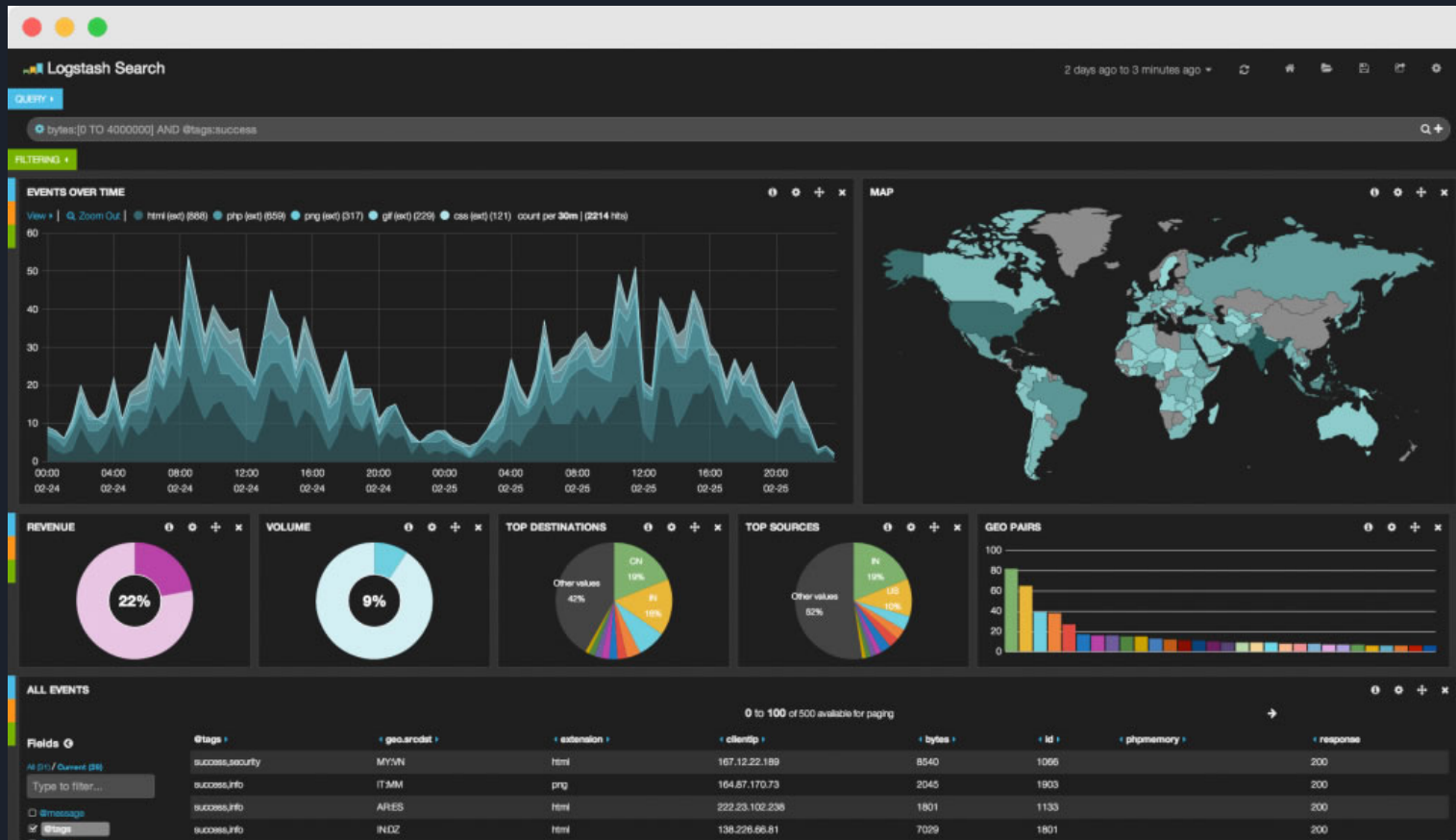
Elasticsearch & Kibana



Elastic Stack



Elastic Stack



MySQL & MariaDB

- XAMPP
- LAMPP
- ...
- Wordpress
- Joomla
- Drupal
- Magento
- Prestashop

MySQL & MariaDB

- DBeaver
- PhpMyAdmin

MySQL & MariaDB: PhpMyAdmin

phpMyAdmin

(Recent tables) ...

- information_schema
- ntests
 - ntests_database
 - ntests_wp789
 - New
 - wp_commentmeta
 - wp_comments
 - wp_links
 - wp_options
 - wp_postmeta
 - wp_posts
 - wp_termmeta
 - wp_terms
 - wp_term_relationships
 - wp_term_taxonomy
 - wp_usermeta
 - wp_users

Server: localhost:3306 » Database: ntests_wp789

Structure SQL Search Query Export Import Operations Routines Events Triggers

Table	Action	Rows	Type	Collation	Size	Overhead
wp_commentmeta	Browse Structure Search Insert Empty Drop	0	MyISAM	utf8_general_ci	4 KiB	
wp_comments	Browse Structure Search Insert Empty Drop	1	MyISAM	utf8_general_ci	7.3 KiB	
wp_links	Browse Structure Search Insert Empty Drop	0	MyISAM	utf8_general_ci	1 KiB	
wp_options	Browse Structure Search Insert Empty Drop	103	MyISAM	utf8_general_ci	18.4 KiB	
wp_postmeta	Browse Structure Search Insert Empty Drop	1	MyISAM	utf8_general_ci	9.1 KiB	
wp_posts	Browse Structure Search Insert Empty Drop	2	MyISAM	utf8_general_ci	12.3 KiB	
wp_termmeta	Browse Structure Search Insert Empty Drop	0	MyISAM	utf8_general_ci	4 KiB	
wp_terms	Browse Structure Search Insert Empty Drop	1	MyISAM	utf8_general_ci	11 KiB	
wp_term_relationships	Browse Structure Search Insert Empty Drop	1	MyISAM	utf8_general_ci	3 KiB	
wp_term_taxonomy	Browse Structure Search Insert Empty Drop	1	MyISAM	utf8_general_ci	4 KiB	
wp_usermeta	Browse Structure Search Insert Empty Drop	13	MyISAM	utf8_general_ci	9.6 KiB	
wp_users	Browse Structure Search Insert Empty Drop	1	MyISAM	utf8_general_ci	7.1 KiB	
12 tables	Sum	124	MyISAM	utf8_general_ci	90.8 KiB	0 B

Check All With selected:

Print view Data Dictionary

MySQL & MariaDB: PhpMyAdmin

phpMyAdmin

Server: localhost » Database: nickn_db1 » Table: form

Recent Favorites

nickn_db1

- New
- form
 - Columns
 - New
 - address
 - behind_on_mortgage
 - credit
 - email
 - facing_foreclosure
 - fname
 - home_value
 - lname
 - lower_payment
 - mortgage_balance
 - mortgage_due
 - other
 - owe_more_than_hc
 - phone
 - reduce_rate
 - zip
 - Indexes
- wp_commentmeta
- wp_comments
- wp_links

SELECT * FROM `form`

☐ Profiling [Inline] [Edit] [Explain SQL] [Create PHP Code] [Refresh]

☐ Show all | Number of rows: 25 | Filter rows: Search this table

Sort by key: None

+ Options

fname	lname	email	phone	address	zip	credit	home_value	mortgage_balance	mortgage_due	behind_on_mortgage	facing_foreclosure	lower
sam	aburto	a@b.com	123-123-1234	123 fake st, 4	12345	Excellent						
jim	bean	jim@bean.com	1233334444	2 blah st	12312	Excellent						
slim	jim	slimjim@yahoo.com	7149989087	123 long street name	90210	Good						
sam	iam	a@b.com	123-123-1234	111111 frgh vfbgr wwd	11112	Fair						
jaime	aburto	sambabli.sb@gmail.com	7147878888	333 city blvd westtttttt	11111	Poor						
Sam	aburto	a@b.com	123-123-1234	123 fake st, 4444444444444444	11111	Excellent						
sam	s	sambabli.sb@gmail.com	123-123-1234	123 fake st, 4444444444444444	11222	Excellent						

☐ Show all | Number of rows: 25 | Filter rows: Search this table

Query results operations

Console | Print view | Print view (with full texts) | Export | Display chart | Create view

MySQL & MariaDB: PhpMyAdmin

phpMyAdmin

Current Server: phpMyAdmin demo - My

(Recent tables) ...

filter databases by name X

<< 3

- Usuarios
- Usuarios1
- VSet
- VsetiAdmin
- Xss
- uam
- uam2
- ube_db
- victoria_base
- vseti
- world
 - New
 - City
 - Country
 - CountryLanguage

phpMyAdmin demo - MySQL > world

Structure SQL Search Query Export Import Operations Privileges More

world.City

- ID : int(11)
- Name : char(35)
- CountryCode : char(3)
- District : char(20)
- Population : int(11)

world.Country

- Code : char(3)
- Name : char(52)
- Continent : enum('Asia','Europe','North America','Africa','Oceania','Antarctica','South America')
- Region : char(26)
- SurfaceArea : float(10,2)
- IndepYear : smallint(6)
- Population : int(11)
- LifeExpectancy : float(3,1)
- GNP : float(10,2)
- GNPOld : float(10,2)
- LocalName : char(45)
- GovernmentForm : char(45)
- HeadOfState : char(60)
- Capital : int(11)
- Code2 : char(2)

world.CountryLanguage

- CountryCode : char(3)
- Language : char(30)
- IsOfficial : enum('T','F')
- Percentage : float(4,1)

MySQL & MariaDB

```
INSERT INTO table_name  
(column1, column2, column3, ...)  
VALUES (value1, value2, value3, ...);
```

```
INSERT INTO Customers (CustomerName,  
ContactName, Address, City, PostalCode, Country)  
VALUES ('Cardinal', 'Tom B. Erichsen', 'Skagen 21',  
'Stavanger', '4006', 'Norway');
```

MySQL & MariaDB

```
UPDATE table_name  
SET c1 = v1, c2 = v2, ...  
WHERE condition;
```

```
UPDATE Customers  
SET Name = 'Agent Smith', City = 'Machine City'  
WHERE CustomerID = 149;
```

MySQL & MariaDB

```
SELECT column1, column2, ...  
FROM table_name;
```

```
SELECT username, password, ...  
FROM users;
```

MySQL & MariaDB

```
SELECT f.animal_id AS farm_animal_id,  
       f.animal_type AS farm_animal_type,  
       d.animal_description AS farm_animal_description,  
       f.animal_name AS farm_animal_name,  
       att.animal_type_description AS description
```

```
FROM tutorial.farm f
```

```
LEFT OUTER JOIN tutorial.animal_types att  
ON f.animal_type = att.animal_type_id
```

```
LEFT OUTER JOIN tutorial.animal_descriptions d  
on f.animal_description = d.animal_description_id
```

```
UNION
```

```
SELECT f.animal_id AS farm_animal_id,  
       f.animal_type AS farm_animal_type,  
       d.animal_description AS farm_animal_description,  
       f.animal_name AS farm_animal_name,  
       att.animal_type_description AS description
```

```
FROM tutorial.farm f
```

```
RIGHT OUTER JOIN tutorial.animal_types att  
ON f.animal_type = att.animal_type_id
```

```
RIGHT OUTER JOIN tutorial.animal_descriptions d  
on f.animal_description = d.animal_description_id
```

LibreLabUCM



[@LibreLabUCM](https://twitter.com/LibreLabUCM)



<https://t.me/LLUchat>



<https://librelabucm.org/>



Pablo García de los Salmones Valencia
Febrero 2018



This work is licensed
under a
Creative Commons Attribution-ShareAlike 4.0 International License

