

¿Cuál es la necesidad o problema a resolver? 🚀

Conocer la distribución de las ciudades de cada país del mundo y su población.

¿Cuál es la propuesta para resolver esa necesidad o problema? 💡

Crear una base de datos que registre los continentes, países ciudades y los lenguajes que se emplea en cada lugar

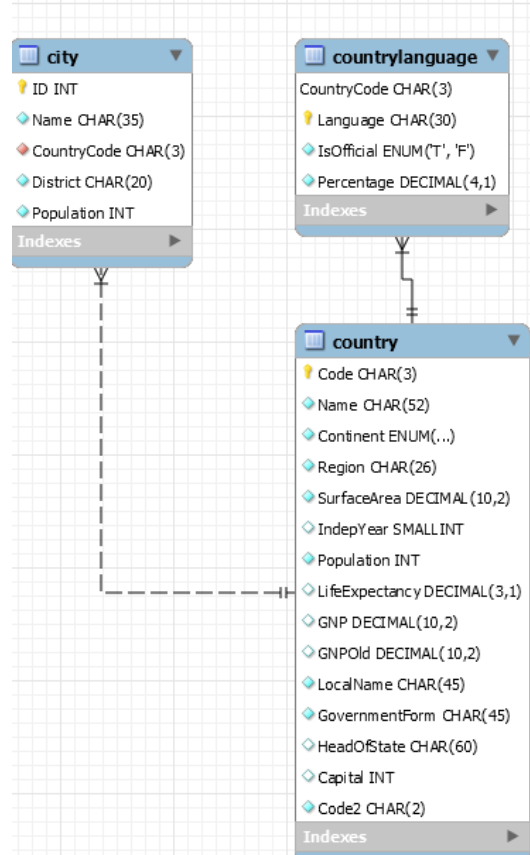
¿Cómo lo vas a hacer? 📁

Crear el modelo ER sobre el que se descargará la información mundial.

Fuente de datos

World, se descargó de la página oficial de workbench. Es una base de datos para practicar. Se instaló dentro de la instancia de BEDU.

Estructura del proyecto



Consultas

1 ¿Cuál es el nombre de todos los países?

select name from country;

The screenshot shows a SQL query editor with the following code:

```
5  
6 -- 1 ¿cual es el nombre de todos los paises?  
7 • select name from country;
```

Below the editor is a toolbar with the following options: **Result Grid**, a grid icon, **Filter Rows:** (with a dropdown), **Export:** (with a document icon), and **Wrap Cell Content:** (with a text icon).

The results are displayed in a table with the following data:

name
Aruba
Afghanistan
Angola
Anguilla
Albania
Andorra
Netherlands Antilles
United Arab Emirates
Argentina
Armenia
American Samoa
Antarctica
French Southern ter...
Antigua and Barbuda
Australia
Austria
Azerbaijan
Burundi
Belgium
Benin
Burkina Faso
Bangladesh
Bulgaria
Bahrain
Bahamas
Bosnia and Herzego...
Belarus
Belize
Bermuda

At the bottom of the results, there is a tab labeled **country 1** with a close button (X).

```
select * from country order by population desc limit 1;
```

Code	Name	Continent	Region	SurfaceArea	IndepYear	Population	LifeExpectancy	GNP	GNPOld	LocalName	GovernmentForm	HeadOfState	Capital	Code2
CHN	China	Asia	Eastern Asia	9572900.00	-1523	1277558000	71.4	982268.00	917719.00	Zhongqou	People'sRepublic	Jiang Zemin	1891	CN

```
select * from country where lifeexpectancy >80;
```

Results Grid															Filter Rows															Edit															Export/Import															Wrap Cell Contents														
Code	Name	Continent	Region	SurfaceArea	IndepYear	Population	LifeExpectancy	GDP	GPOld	Localname	GovernmentForm	HeadOfState	Capital	Code2																																																												
AND	Andorra	Europe	Southern Europe	468.00	1278	78000	83.5	1630.00		Andorra	Parliamentary Copnicpality		SS	AD																																																												
JPN	Japan	Asia	Eastern Asia	377829.00	-660	126714000	80.7	3787042.00		Nihon/Nippon	Constitutional Monarchy	Akihito	1552	JP																																																												
MAC	Macao	Asia	Eastern Asia	18.00		473000	81.6	5749.00	5940.00	Saopao/Aomen	Special Administrative Region of China	Jiang Zemin	1434	MO																																																												
SGP	Singapore	Asia	Southeast Asia	618.00	1965	3567000	80.1	86503.00	96318.00	Singapore/Singapura/Xinjiapo/Singapur	Republic	Sellapan Rama Nathan	3208	SG																																																												
SMR	San Marino	Europe	Southern Europe	61.00	1885	27000	81.1	510.00		San Marino	Republic		3171	SM																																																												

```
select * from country where continent="Asia" order by population desc limit 5;
```

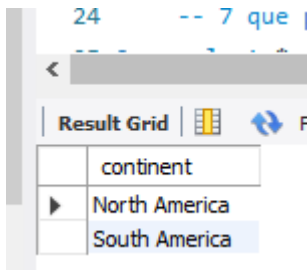
Result Grid															
		Filter Rows:		Edit:		Export/Import:		Wrap Cell Content:		Patch rows:					
Code	Name	Continent	Region	SurfaceArea	IndepYear	Population	LifeExpectancy	GNP	GNPOld	LocalName	GovernmentForm	HeadOfState	Capital	Code2	
CHN	China	Asia	Eastern Asia	9572900.00	-1523	1277558000	71.4	982268.00	917719.00	Zhonghua	People's Republic	Jiang Zemin	1891	CN	
IND	India	Asia	Southern and Central Asia	3287263.00	1947	1103662000	62.5	447114.00	430572.00	Bharatgana	Federal Republic	Kocheril Raman Narayanan	1109	IN	
IDN	Indonesia	Asia	Southeast Asia	1904569.00	1945	212370000	68.0	215027.00	215027.00	Indonesia	Republic	Abdurrahman Wahid	939	ID	
PAK	Pakistan	Asia	Southern and Central Asia	796095.00	1947	156483000	61.1	61289.00	58549.00	Pakistan	Republic	Mohammad Rafiq Tarar	2831	PK	
BGD	Bangladesh	Asia	Southern and Central Asia	143998.00	1971	129155000	60.2	32852.00	31966.00	Bangladesh	Republic	Shahabuddin Ahmad	150	BD	
CHN	China	Asia	Eastern Asia	9572900.00	-1523	1277558000	71.4	982268.00	917719.00	Zhonghua	People's Republic	Jiang Zemin	1891	CN	

```
select * from country where name like 'a%';
```

Result Grid															Filter Rows:															Edit:															Export/Import:															Wrap Cell Contents:														
	Code	Name	Continent	Region	SurfaceArea	IndexPop	Population	LifeExpectancy	GDP	GNPOLD	LocalName	GovernmentForm	HeadOfState	Capital																																																												
▶	ABW	Aruba	North America	Caribbean	193.00	[NA]	103000	78.4	828.00	793.00	Aruba	Nonmetropolitan Territory of The Netherlands	Beatrix	129																																																												
	AFG	Afghanistan	Asia	Southern and Central Asia	652090.00	1919	22720000	45.9	9976.00	[NA]	Afghanistan/Afonestan	Islamic Emirate	Mohammad Omar	1																																																												
	AGO	Angola	Africa	Central Africa	1246700.00	1975	12878000	38.3	6648.00	7984.00	Angola	Republic	José Eduardo dos Santos	56																																																												
	ALA	Anguilla	North America	Caribbean	96.00	[NA]	8000	78.1	63.20	[NA]	Anguila	Dependent Territory of the UK	Rexheeb Elhi	62																																																												
	ALB	Albania	Europe	Southern Europe	28746.00	1912	3401200	71.6	3205.00	2500.00	Shqiperia	Republic	Ethem Bejdari	34																																																												
	AND	Andorra	Europe	Southern Europe	468.00	1278	78000	83.5	1630.00	[NA]	Andorra	Parliamentary Coprinpalty	Fernando de la Rúa	69																																																												
	ARG	Argentina	South America	South America	2780400.00	1816	37032000	75.4	340236.00	323310.00	Federal Republic	Argentine Republic	Bernardo de la Rúa	69																																																												
	ARM	Arménia	Asia	Middle East	29800.00	1991	3520000	66.4	1813.00	[NA]	Hajastan	Republic	Krikor Kobianjan	126																																																												
	ASM	American Samoa	Oceania	Polynesia	199.00	[NA]	68000	75.1	34.00	[NA]	Amerika Samoa	US Territory	George W. Bush	54																																																												
	ATA	Antarctica	Antarctica	Antarctic	13120000.00	[NA]	0	[NA]	0.00	[NA]	-	Co-administrated	[NA]	[NA]																																																												
	ATG	Antigua and Ba...	North America	Caribbean	442.00	1981	68000	70.5	612.00	584.00	Antigua and Barbuda	Constitutional Monarchy	Elisabeth II	63																																																												
	AUS	Australia	Oceania	Australia and New Zealand	7741220.00	1901	18886000	79.8	351182.00	392911.00	Australia	Constitutional Monarchy, Federation	Elisabeth II	135																																																												
	AUT	Austria	Europe	Western Europe	83859.00	1918	8091800	77.7	211860.00	206025.00	Osterreich	Federal Republic	Thomas Klestil	1523																																																												
	AZE	Azerbaijan	Asia	Middle East	86600.00	1991	7734000	62.9	4127.00	4100.00	Azərbaycan	Federal Republic	Heydar Aliyev	144																																																												
	DZA	Algérie	Africa	Northern Africa	2381741.00	1962	31471000	69.7	49982.00	46966.00	Al-Jaza'ir/Algérie	Republic	Abdelaziz Bouteflika	35																																																												

6 ¿Cuáles son los continentes cuyo nombre contenga “ame” en su nombre?

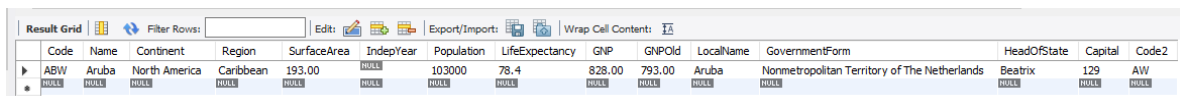
```
select * from country where continent like '%ame%';
```



continent
North America
South America

7 ¿Qué países tienen la siguiente cadena “Arub” sin importar la letra final?

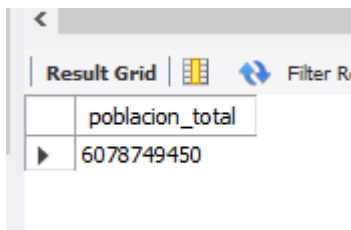
```
select * from country where name like 'Arub_';
```



Code	Name	Continent	Region	SurfaceArea	IndepYear	Population	LifeExpectancy	GNP	GNPOld	LocalName	GovernmentForm	HeadOfState	Capital	Code2
ABW	Aruba	North America	Caribbean	193.00	1986	103000	78.4	828.00	793.00	Aruba	Nonmetropolitan Territory of The Netherlands	Beatrix	129	AW

8 ¿Cuál es la población general de la tierra?

```
select sum(population) as poblacion_total from country;
```



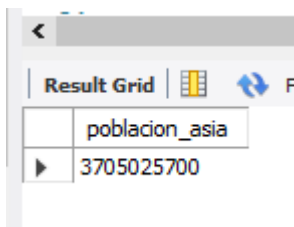
poblacion_total
6078749450

9 ¿Cuál es la población total de Asia?

```
select sum(population) as poblacion_asia
```

```
from country
```

```
where continent = "Asia";
```

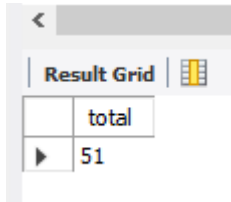


poblacion_asia
3705025700

10 ¿Cuántos países pertenecen al continente asiático?

```
select count(*) as total from country
```

```
where continent = "Asia";
```



The screenshot shows a database interface with a 'Result Grid' tab. The grid contains one column labeled 'total' and one row with the value '51'.

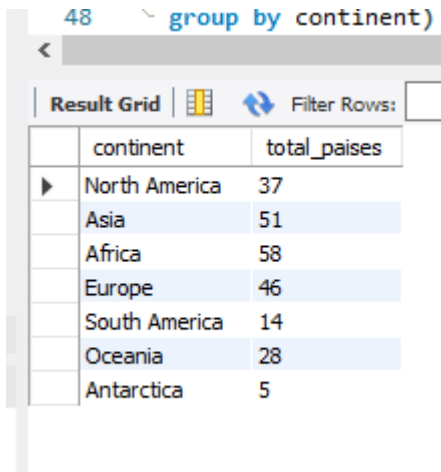
total
51

11 ¿Cuántos países pertenecen a cada continente?

```
select continent, count(*) as total_paises
```

```
from country
```

```
group by continent;
```



The screenshot shows a database interface with a 'Result Grid' tab. The grid contains two columns: 'continent' and 'total_paises'. The results are as follows:

continent	total_paises
North America	37
Asia	51
Africa	58
Europe	46
South America	14
Oceania	28
Antarctica	5

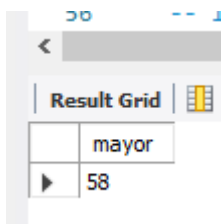
12 ¿Cuál es el mayor número de países de un continente?

```
select max(total_paises) as mayor from
```

```
(select continent, count(*) as total_paises
```

```
from country
```

```
group by continent) as cantidades;
```

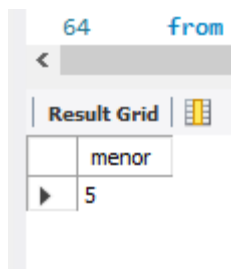


The screenshot shows a database interface with a 'Result Grid' tab. The grid contains one column labeled 'mayor' and one row with the value '58'.

mayor
58

13 ¿Cuál es el menor número de países de un continente?

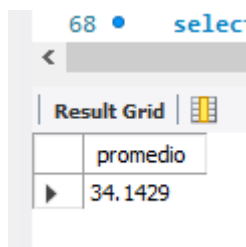
```
select min(total_paises) as mayor from  
(select continent, count(*) as total_paises  
from country  
group by continent) as cantidades;
```



Result Grid	
menor	5

14 ¿Cuál es el promedio de países de continente?

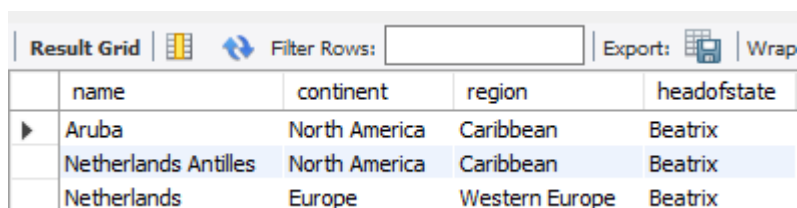
```
select avg(total_paises) as promedio from  
(select continent, count(*) as total_paises  
from country  
group by continent) as cant
```



Result Grid	
promedio	34.1429

15 Mostrar el nombre del país, continente y región de cada país con headofstate sea "Beatrix"

```
select name,continent,region,headofstate  
from country  
where headofstate in (select headofstate from country where  
headofstate="Beatrix");
```



Result Grid				
	name	continent	region	headofstate
▶	Aruba	North America	Caribbean	Beatrix
	Netherlands Antilles	North America	Caribbean	Beatrix
	Netherlands	Europe	Western Europe	Beatrix

16 Mostrar los nombres de las ciudades de cada país

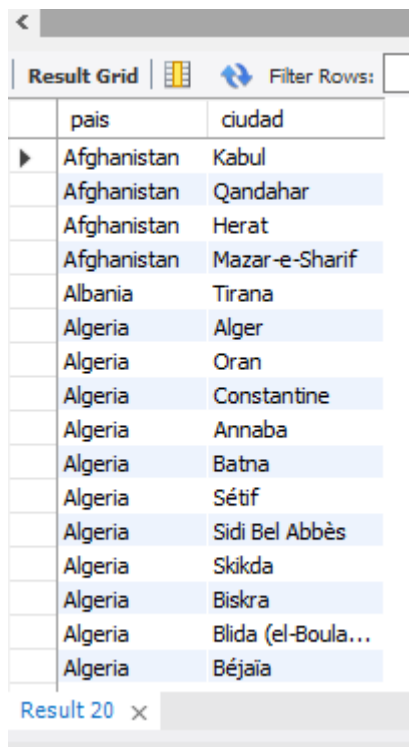
```
select c.name as pais, ct.name as ciudad
```

```
from country as c
```

```
join city as ct
```

```
on ct.countrycode=c.code
```

```
order by c.name;
```



	pais	ciudad
▶	Afghanistan	Kabul
	Afghanistan	Qandahar
	Afghanistan	Herat
	Afghanistan	Mazar-e-Sharif
	Albania	Tirana
	Algeria	Alger
	Algeria	Oran
	Algeria	Constantine
	Algeria	Annaba
	Algeria	Batna
	Algeria	Sétif
	Algeria	Sidi Bel Abbès
	Algeria	Skikda
	Algeria	Biskra
	Algeria	Blida (el-Boula...
	Algeria	Béjaïa

Result 20 ✕

17 Mostrar los países que no tengan ciudades

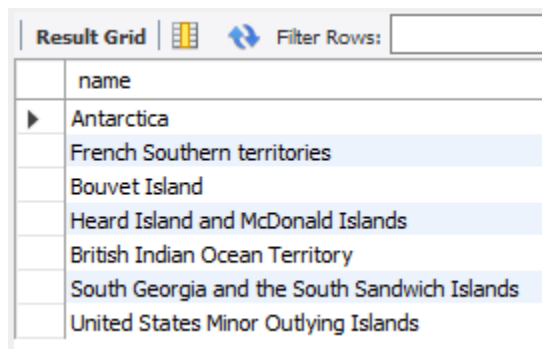
```
select c.name
```

```
from country as c
```

```
left join city as ct
```

```
on c.code=ct.countrycode
```

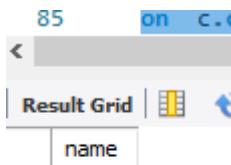
```
where countrycode is null;
```



	name
▶	Antarctica
	French Southern territories
	Bouvet Island
	Heard Island and McDonald Islands
	British Indian Ocean Territory
	South Georgia and the South Sandwich Islands
	United States Minor Outlying Islands

18 Mostrar las ciudades que no tengan países

```
select ct.name  
from country as c  
right join city as ct  
on c.code=ct.countrycode  
where countrycode is null;
```



85 on c.

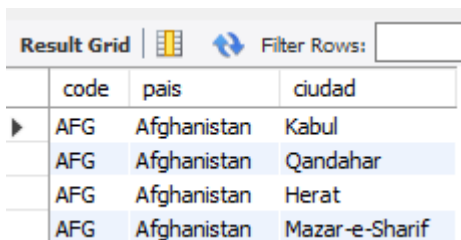
name

19 Crear una vista que muestre el código y las ciudades de cada país

```
create view ciudades_pais as  
select c.code,c.name as pais, ct.name as ciudad  
from country as c  
join city as ct  
on ct.countrycode=c.code  
order by c.name;
```

20 Mostrar las ciudades de cada país cuyo código sea AFG

```
select * from ciudades_pais where code="AFG";
```



Result Grid | Filter Rows:

	code	pais	ciudad
▶	AFG	Afghanistan	Kabul
	AFG	Afghanistan	Qandahar
	AFG	Afghanistan	Herat
	AFG	Afghanistan	Mazar-e-Sharif

Para la base de datos de mongo se usaron datos extraídos de datos públicos sobre las becas que hay en el país para doctorados y las estancias postdoctorados fuera de México. (los csv están en mi repositorio)

1 Listar todos los becarios que su apellido materno sea Lopez

2 filtrar todas las áreas de conocimiento que terminen con “salud”

3 filtrar todas las áreas de conocimiento que comiencen con “VII”

The screenshot shows the MongoDB Compass interface. On the left, the 'Doctorados' collection is selected. The main panel displays the 'Documents' tab with a query filter: `{ "Area de conocimiento": { "$regex": "VII" } }`. The results show four documents, each with a unique ID, last name, first name, and area of knowledge starting with 'VII'.

Area de conocimiento
VII. INGENIERIA
VII. INGENIERIA
VII. INGENIERIA
VII. INGENIERIA

4 Obtener todas las áreas de conocimiento que tengan “GIA” en alguna parte

The screenshot shows the MongoDB Compass interface. On the left, the 'Doctorados' collection is selected. The main panel displays the 'Documents' tab with a query filter: `{ "Area de conocimiento": { "$regex": "GIA" } }`. The results show four documents, each with a unique ID, last name, first name, and area of knowledge containing 'GIA'.

Area de conocimiento
VII. INGENIERIA
VII. INGENIERIA
VII. INGENIERIA
VII. INGENIERIA

5 listar todos los becarios cuyo país de destino sea Argentina o España

The screenshot shows the MongoDB Compass interface. The left sidebar displays the database structure with 'Doctorados.Becas' selected. The main panel shows a query in the 'Documents' tab: `{ "País Destino": { "$in": ["España", "Argentina"] } }`. The results show a list of documents, each representing a scholar with fields like '_id', 'Apellido paterno', 'Apellido materno', 'Nombre', 'Área de Conocimiento', 'Nivel', 'Institución', 'País Destino', and 'Genero'. The first three documents shown are for scholars from Spain.

6 ¿Cuántos becarios hay para cada país de destino?

The screenshot shows the MongoDB Compass interface with the 'Aggregations' tab selected. The aggregation pipeline is defined as follows:

```
1 * {}
2 * $id: the id of the group.
3 * $push: the first field name.
4 *
5 * {
6 *   $id: "País Destino",
7 *   $push: "Becarios"
8 * }
9
10 }
```

The 'Preview of Documents in the Collection' section shows a sample of documents. The 'Output after \$group stage' section shows the result of the aggregation, which is a list of documents where each document represents a country and the count of scholars for that country:

```
{ "_id": "JAPON", "Becarios": 14 }
{ "_id": "PAZLANDIA", "Becarios": 3 }
{ "_id": "BELICIA", "Becarios": 2 }
{ "_id": "COSTA 1", "Becarios": 31 }
```

7 ¿Cuántos becarios hay para cada área de conocimiento?

MongoDB Compass - cluster0-jg0ns.mongodb.net:27017

Doctorados.Becas

Documents Aggregations Schema Explain Plan Indexes Validation

3109 Documents in the Collection

Preview of Documents in the Collection

Output after \$group stage (Sample of 7 documents)

```
1 * /*
2 * $id: the id of the group.
3 * $first: the first field name.
4 */
5 {
6   $id: "Área de conocimiento",
7   $first: "Becarios"
8 }
9
10 }
```

ADD STAGE

DOCUMENTS 3.1k TOTAL SIZE 901.0KB AVG SIZE 284B INDEXES 1 TOTAL SIZE 44.0KB AVG SIZE 44.0KB

DOCUMENTS 3.1k TOTAL SIZE 901.0KB AVG SIZE 284B INDEXES 1 TOTAL SIZE 44.0KB AVG SIZE 44.0KB

Output after \$group stage (Sample of 7 documents)

Área de conocimiento: "II. BIOLOGÍA Y QUÍMICA" Nivel: "1. DOC" Institución: "UNIVERSIDAD DE VALENCIA" País destino: "ESPAÑA" Becarios: 101

Área de conocimiento: "II. BIOLOGÍA Y QUÍMICA" Nivel: "1. DOC" Institución: "UNIVERSIDAD DE VALENCIA" País destino: "ESPAÑA" Becarios: 101

Área de conocimiento: "VI. BIOTECNOLOGÍA Y CS. AGROPECUARIAS" Nivel: "1. DOC" Institución: "UNIVERSIDAD DE VALENCIA" País destino: "ESPAÑA" Becarios: 101

Área de conocimiento: "VI. BIOTECNOLOGÍA Y CS. AGROPECUARIAS" Nivel: "1. DOC" Institución: "UNIVERSIDAD DE VALENCIA" País destino: "ESPAÑA" Becarios: 101

Área de conocimiento: "VII. INGENIERÍA Y CS. DE LA CONDUCTA" Nivel: "1. DOC" Institución: "UNIVERSIDAD DE VALENCIA" País destino: "ESPAÑA" Becarios: 101

Área de conocimiento: "VII. INGENIERÍA Y CS. DE LA CONDUCTA" Nivel: "1. DOC" Institución: "UNIVERSIDAD DE VALENCIA" País destino: "ESPAÑA" Becarios: 101

Área de conocimiento: "VIII. CIENCIAS SOCIALES" Nivel: "1. DOC" Institución: "UNIVERSIDAD DE VALENCIA" País destino: "ESPAÑA" Becarios: 101

Área de conocimiento: "VIII. CIENCIAS SOCIALES" Nivel: "1. DOC" Institución: "UNIVERSIDAD DE VALENCIA" País destino: "ESPAÑA" Becarios: 101

8 Listado de alumnos por carrera

MongoDB Compass - cluster0-jg0ns.mongodb.net:27017

Doctorados.Becas

Documents Aggregations Schema Explain Plan Indexes Validation

3109 Documents in the Collection

Preview of Documents in the Collection

Output after \$group stage (Sample of 7 documents)

```
1 * /*
2 * $id: the id of the group.
3 * $first: the first field name.
4 */
5 {
6   $id: "Área de conocimiento",
7   $first: "Alumnos"
8 }
9
10 }
```

ADD STAGE

DOCUMENTS 3.1k TOTAL SIZE 901.0KB AVG SIZE 284B INDEXES 1 TOTAL SIZE 44.0KB AVG SIZE 44.0KB

Output after \$group stage (Sample of 7 documents)

Área de conocimiento: "II. BIOLOGÍA Y QUÍMICA" Nivel: "1. DOC" Institución: "UNIVERSIDAD DE VALENCIA" País destino: "ESPAÑA" Becarios: 101

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Área de conocimiento: "VI. BIOTECNOLOGÍA Y CS. AGROPECUARIAS" Nivel: "1. DOC" Institución: "UNIVERSIDAD DE VALENCIA" País destino: "ESPAÑA" Becarios: 101

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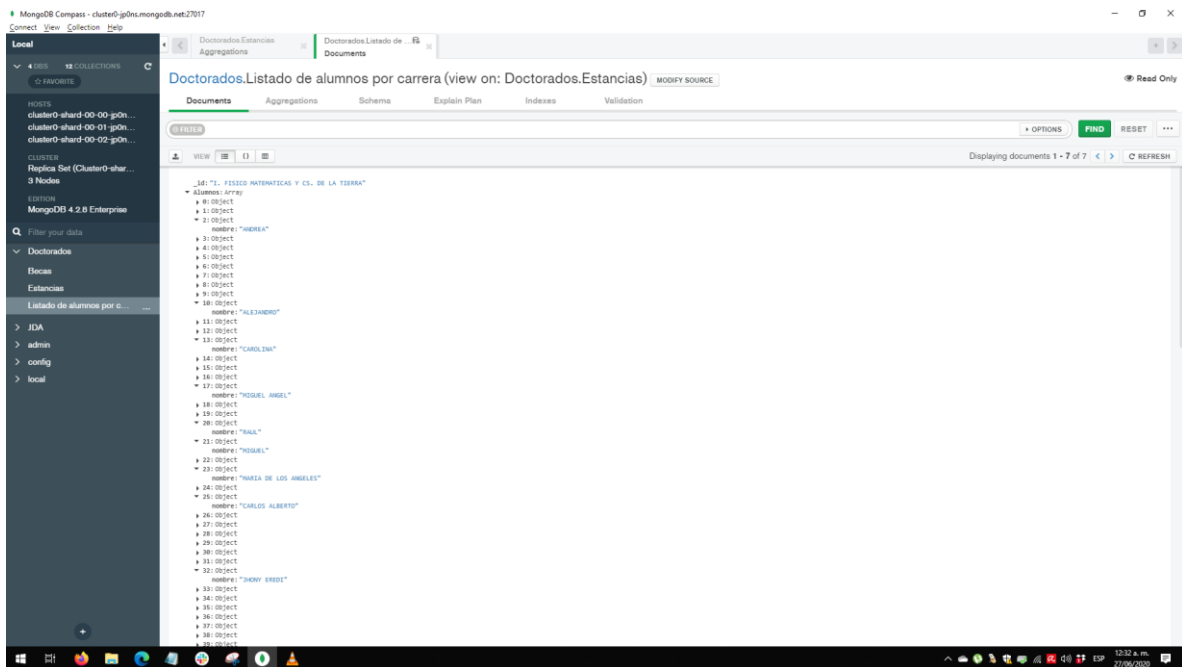
Área de conocimiento: "VII. INGENIERÍA Y CS. DE LA CONDUCTA" Nivel: "1. DOC" Institución: "UNIVERSIDAD DE VALENCIA" País destino: "ESPAÑA" Becarios: 101

Área de conocimiento: "VII. INGENIERÍA Y CS. DE LA CONDUCTA" Nivel: "1. DOC" Institución: "UNIVERSIDAD DE VALENCIA" País destino: "ESPAÑA" Becarios: 101

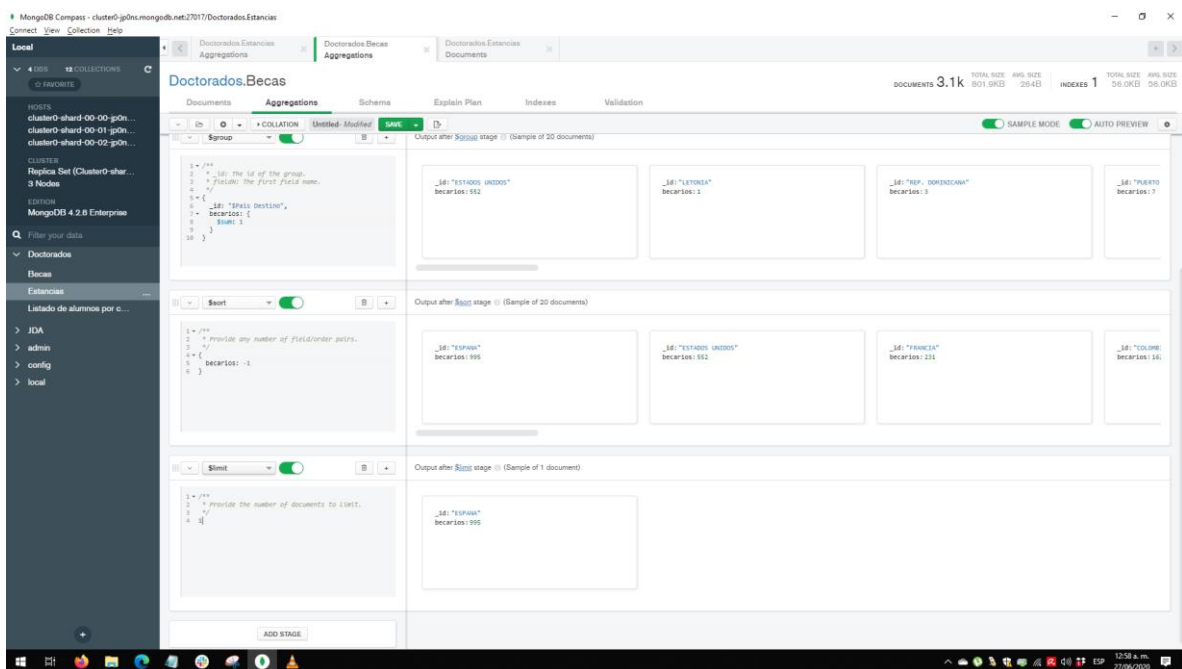
Área de conocimiento: "VIII. CIENCIAS SOCIALES" Nivel: "1. DOC" Institución: "UNIVERSIDAD DE VALENCIA" País destino: "ESPAÑA" Becarios: 101

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9 Creación de vista del listado de alumnos por carrera



10 ¿Cuál es el país de destino con el mayor número de becarios?



[illegible][illegible]

13 Países con un solo becario

The screenshot shows the MongoDB Compass interface for the 'Doctorados.Becas' collection. The aggregation pipeline is configured with three stages:

- \$group**: Groups documents by country ('_id: \$pais').
- \$sort**: Sorts the grouped documents by the number of grants ('_id: \$count').
- \$match**: Filters the results to only include countries with exactly one grant ('_id: \$count: 1').

The output of the pipeline shows four documents, each representing a country with a single grant: 'FINLANDIA', 'FILIPINAS', 'AUSTRALIA', and 'TAYIKAN'.

14 agregar en una variable nueva el dato del postdoctorado

The screenshot shows the MongoDB Compass interface for the 'Doctorados.BecasNombre' collection. The aggregation pipeline is configured with three stages:

- \$match**: Filters documents where the 'estancia' field is not null.
- \$addFields**: Adds a new field 'postdoctorado' to each document, which is the value of the 'estancia' field.
- \$project**: Projects the documents to include only the 'nombre' and 'postdoctorado' fields.

The output of the pipeline shows two documents, each with a 'nombre' field and a 'postdoctorado' field. The first document is for 'AZALEA REYES AGUILAR' and the second is for 'AZALEA REYES AGUILAR'.