

Homework 6: NoSQL

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Question 1: Loading the data

Code:

```
db.laureate.find()
```

Output:

The screenshot displays the MongoDB Atlas interface. The top panel shows the 'JSON Import' task configuration. The target connection is 'atlas-Savo2i-shard-0 (AlizaRK@cluster0.9xeqg.mongodb.net)'. The JSON source is 'laureate2.json', and the target database and collection are 'homework' and 'laureate' respectively. The bottom panel shows the MongoDB Shell with the command `db.laureate.find()` executed, resulting in a list of 11 records from the 'laureate' collection.

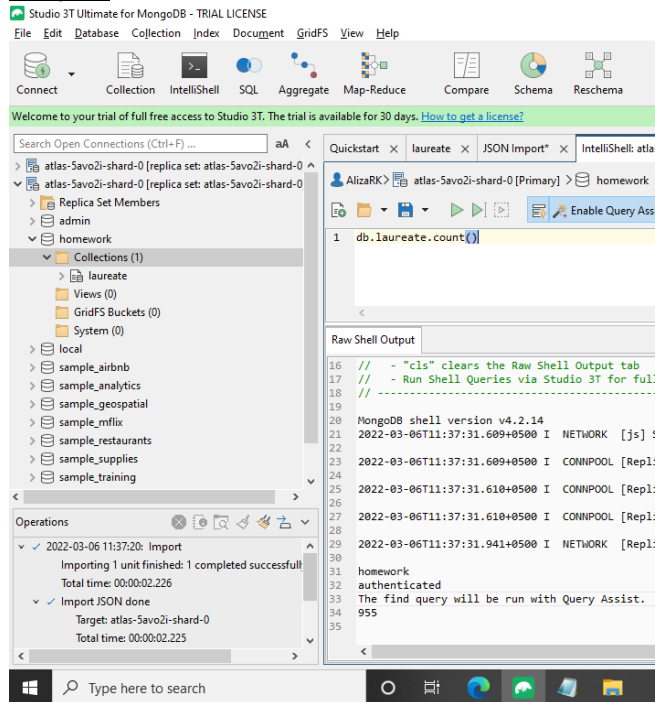
_id	id	firstname	surname	born	died	bornCountry	bornCountryCode
6224569f8e6a24...	1	Wilhelm Conrad	Röntgen	1845-03-27	1923-02-10	Prussia (now G...	DE
6224569f8e6a24...	2	Hendrik A.	Lorentz	1853-07-18	1928-02-04	the Netherlands	NL
6224569f8e6a24...	3	Pieter	Zeeman	1865-05-25	1943-10-09	the Netherlands	NL
6224569f8e6a24...	4	Henri	Becquerel	1852-12-15	1908-08-25	France	FR
6224569f8e6a24...	5	Pierre	Curie	1859-05-15	1906-04-19	France	FR
6224569f8e6a24...	6	Marie	Curie	1867-11-07	1934-07-04	Russian Empire...	PL
6224569f8e6a24...	8	Lord	Rayleigh	1842-11-12	1919-06-30	United Kingdom	GB
6224569f8e6a24...	9	Philipp	Lenard	1862-06-07	1947-05-20	Hungary (now ...	SK
6224569f8e6a24...	10	J.J.	Thomson	1856-12-18	1940-08-30	United Kingdom	GB
6224569f8e6a24...	11	Albert A.	Michelson	1852-12-19	1931-05-09	Prussia (now P...	PL

Question 2: The count of total number of records in the collection

Code:

```
db.laureate.count()
```

Output:



Interpretation:

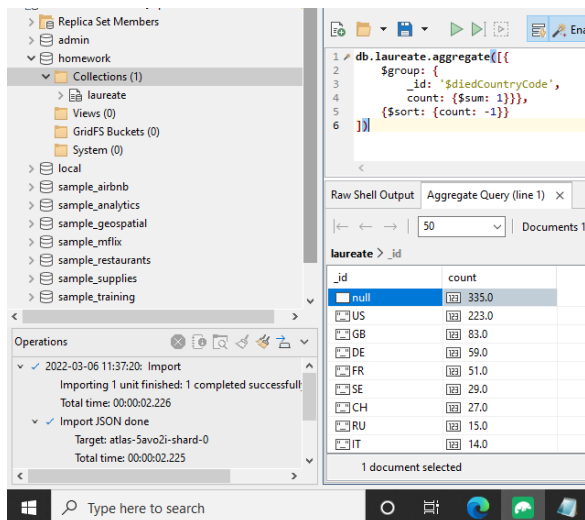
There are total 955 Nobel Laureates from 1901 till 2016.

Question 3: the count of records for each diedCountryCode in descending order of count.

Code:

```
db.laureate.aggregate([  
  $group: {  
    _id: '$diedCountryCode',  
    count: {$sum: 1}},  
  {$sort: {count: -1}}  
])
```

Output:



Interpretation:

We don't have the record of the death places of 335 Nobel Laureates (maximum number of them). But we can see that most of the Nobel Laureates died in the US.

Question 4: The count of records for each prizes.category in descending order of count.

Code:

```
db.laureate.aggregate([
  {$group: {$_id: "$prizes.category", count: {$sum: 1}}},
  {$sort: {count: -1}}
])
```

Output:

Raw Shell Output

Aggregate Query (line 1) X

← ← → | 50 | Documents 1 to 12 | 🔍

laureate > count

_id	count	
[1 elements]	222.0	
[1 elements]	213.0	
[1 elements]	182.0	
[1 elements]	129.0	
[1 elements]	117.0	
[1 elements]	86.0	
[2 elements]	1.0	
[3 elements]	1.0	
[2 elements]	1.0	

1 document selected

Interpretation:

Single most Nobel Prizes were given in medicine (222), there is also one person who won three Nobel Prizes in peace category. Similarly, there are people winning uniquely combination of Nobel Prizes in two different fields.

Question 5: The count of records for each gender, diedCountryCode, prize.category when prize.category is "physics". Order the output by diedCountryCode.

Code:

```
db.laureate.aggregate( [{
  $match: { "prizes": {$elemMatch:{category : "physics"} }} },
  {$group: { _id: {gender: "$gender", died_country_code: "$diedCountryCode",
prize_cat: "$prizes.category"},
  count: { $sum: 1 } } },
  {$sort: {'_id.died_country_code': 1}}
])
```

Output:


Raw Shell Output

Aggregate Query (line 1) X

← ← →

50

Documents 1 to 19



```
1 {
2   "_id" : {
3     "gender" : "male",
4     "prize_cat" : [
5       "physics"
6     ]
7   },
8   "count" : 76.0
9 }
10 {
11   "_id" : {
12     "gender" : "female",
13     "prize_cat" : [
14       "physics"
15     ]
16   },
17 }
```

1 document selected

Raw Shell Output			
Aggregate Query (line 1) ×			
<div> <div> <div>←</div> <div>→</div> </div> <div>50</div> <div>Documents 1 to 19</div> <div>🔍</div> </div>			
laureate > _id > gender			
{Document id}	gender	prize_cat	died_country_code
{ 2 fields }	male	[1 elements]	
{ 2 fields }	female	[1 elements]	
{ 3 fields }	male	[1 elements]	AT
{ 3 fields }	male	[1 elements]	CA
{ 3 fields }	male	[1 elements]	CH
{ 3 fields }	male	[1 elements]	DE
{ 3 fields }	male	[1 elements]	DK
{ 3 fields }	female	[2 elements]	FR
{ 3 fields }	male	[1 elements]	FR
{ 3 fields }	male	[1 elements]	GB

Interpretation:

Here we can see the males and females winning Nobel Prize in Physics in each country. For example, there are 58 males who won prize in physics in the US and one male who won two Nobel Prizes in Physics. Similarly, we can see the count of males and females for other countries as well and we can also see how many prizes in physics they won.

Question 6: Find how many women won Nobel Prize in medicine in each country.

Code:

```
db.laureate.aggregate( [{
  $match: { "prizes": {$elemMatch:{category : "medicine"} }, "gender":
"female"}},
  {$group: { _id: {gender: "$gender", born_country: "$bornCountry",
prize_cat: "$prizes.category"},
  count: { $sum: 1 } } },
  {$sort: {'_id.born_country': 1}}
])
```

Output:

Quickstart x IntelliShell: atlas-5avo2i-shard-0 x

AlizaRK > atlas-5avo2i-shard-0 [Primary] > homework

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```

1 db.laureate.aggregate( [{
2   $match: { "prizes": { $elemMatch: { category : "medicine" } }, "gender": "female" },
3   {$group: { _id: { gender: "$gender", born_country: "$bornCountry", prize_cat: "$prizes.category" },
4     count: { $sum: 1 } } },
5   {$sort: { '_id.born_country': 1 }}
6 ]})

```

Raw Shell Output Aggregate Query (line 1) x

← ← → | 50 | Documents 1 to 8 | 🔍 Pin Result Query

laureate > _id > gender

{Document id}	gender	born_country	prize_cat
{ 3 fields }	female	Australia	[1 elements]
{ 3 fields }	female	Austria-Hunga...	[1 elements]
{ 3 fields }	female	China	[1 elements]
{ 3 fields }	female	France	[1 elements]
{ 3 fields }	female	Germany	[1 elements]
{ 3 fields }	female	Italy	[1 elements]
{ 3 fields }	female	Norway	[1 elements]
{ 3 fields }	female	USA	[1 elements]

Interpretation:

Here as we can see that there are 8 females who won the Nobel Prize in Medicine and we can also see their respective countries. The number 8 is a very less number considering the years from 1901 to 2016. I calculated the same thing for males (attached below) and there are about 44 males who won the prize in Medicine, five times more than females.

Raw Shell Output Aggregate Query (line 1) x

← ← → | 50 | Documents 1 to 44 | 🔍

laureate > _id > gender

{Document id}	gender	born_country	prize_cat
{ 3 fields }	male	Argentina	[1 elements]
{ 3 fields }	male	Australia	[1 elements]
{ 3 fields }	male	Austria	[1 elements]
{ 3 fields }	male	Austria-Hunga...	[1 elements]
{ 3 fields }	male	Austria-Hunga...	[1 elements]
{ 3 fields }	male	Austrian Empir...	[1 elements]
{ 3 fields }	male	Belgium	[1 elements]
{ 3 fields }	male	Brazil	[1 elements]
{ 3 fields }	male	Canada	[1 elements]
{ 3 fields }	male	China	[1 elements]

End of Assignment