Kushal Chandani

Kc07535

Kc07535@st.habib.edu.pk

Homework 6

Note: The name of my json is Hwfile instead of laureate. Hence all the queries are done accordingly.

Q1 Solution:

Query: db.Hwfile.countDocuments()

Output:

```
31  The aggregate query will be run with Query Assist.
32
33  955
34
```

Interpretation: 955 recipients of Nobel Prizes.

Q2 Solution:

Query:
db.Hwfile.aggregate([

{

$group: {

_id: "$diedCountryCode",

count: { $sum: 1 }}

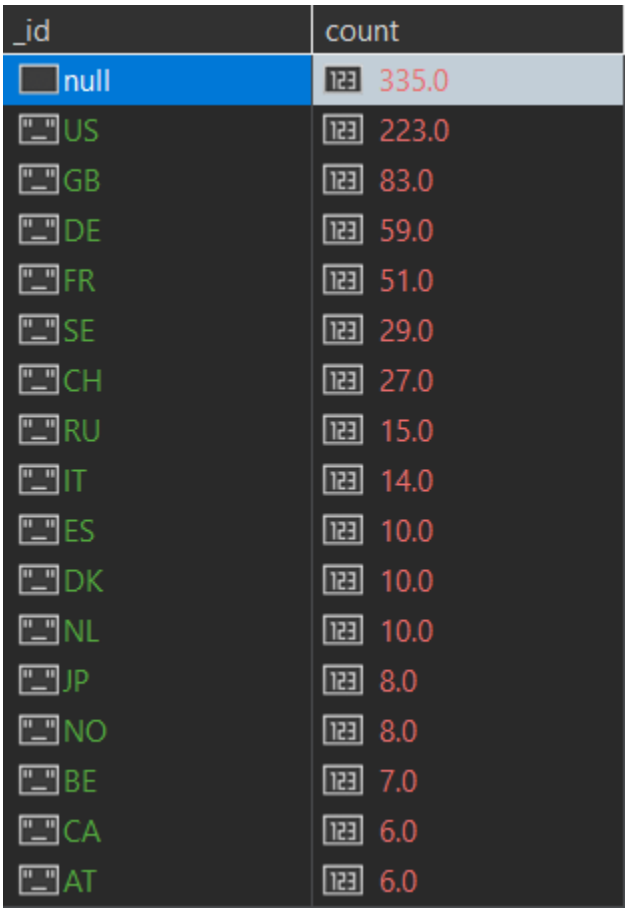
},

{

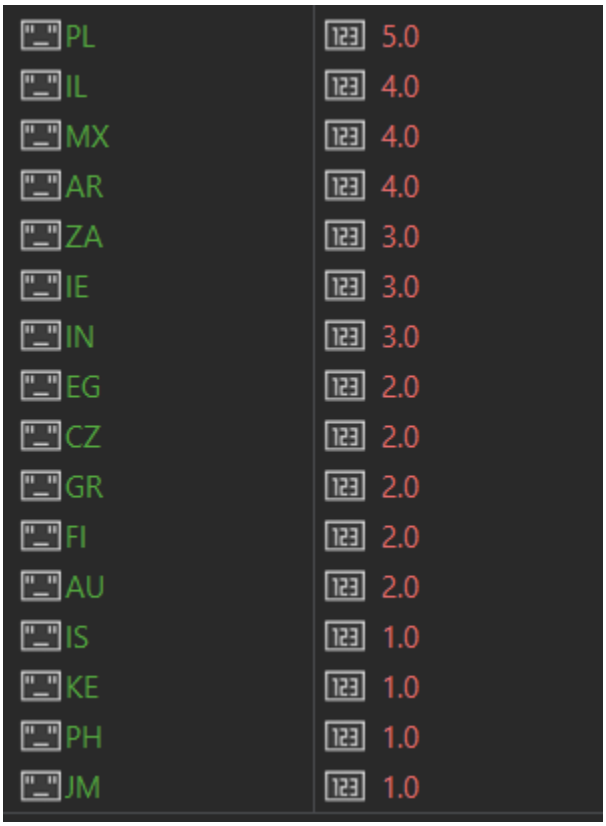
$sort: { count: -1 }}

]);

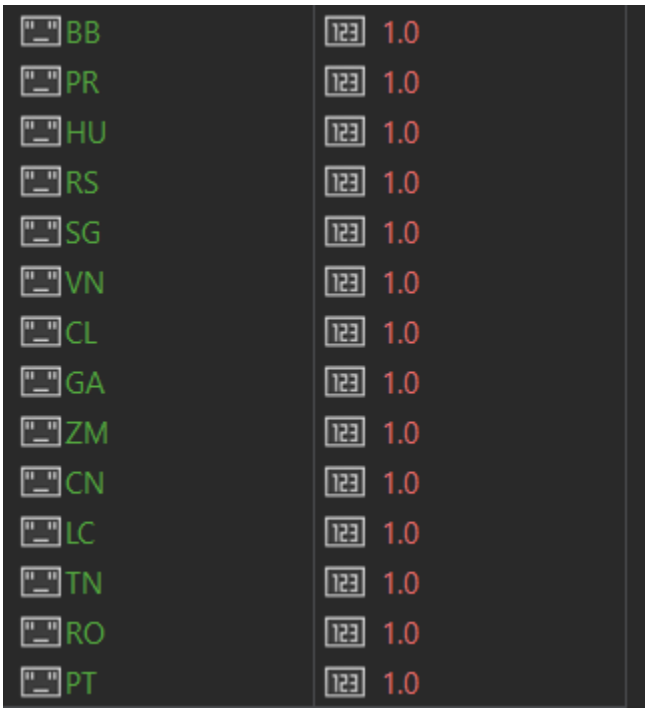
Output:



_id	count
null	335.0
US	223.0
GB	83.0
DE	59.0
FR	51.0
SE	29.0
CH	27.0
RU	15.0
IT	14.0
ES	10.0
DK	10.0
NL	10.0
JP	8.0
NO	8.0
BE	7.0
CA	6.0
AT	6.0



PL	5.0
IL	4.0
MX	4.0
AR	4.0
ZA	3.0
IE	3.0
IN	3.0
EG	2.0
CZ	2.0
GR	2.0
FI	2.0
AU	2.0
IS	1.0
KE	1.0
PH	1.0
JM	1.0



BB	1.0
PR	1.0
HU	1.0
RS	1.0
SG	1.0
VN	1.0
CL	1.0
GA	1.0
ZM	1.0
CN	1.0
LC	1.0
TN	1.0
RO	1.0
PT	1.0

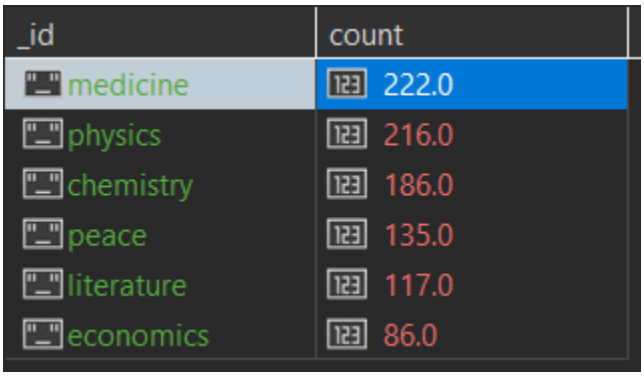
Interpretation:
The query will provide a descending list of "diedCountryCode" values with their respective counts, revealing where Nobel laureates have passed away. It orders them from the most common to the least common locations based on the count of laureates who have died there. Notably, 355 entries have no recorded or current recorded deaths, followed by 223 laureates who passed away in the United States, 83 in Britain, and so on. This pattern highlights a concentration of laureates in developed countries due to the opportunities they offer for progress and development.

Q3 Solution:

Query:

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

Output:



_id	count
medicine	222.0
physics	216.0
chemistry	186.0
peace	135.0
literature	117.0
economics	86.0

Interpretation:

The query's outcome offers a concise breakdown of Nobel laureates across prize categories. "Medicine" leads with 222 recipients, followed closely by "physics" at 216. "Chemistry" ranks third with 186 laureates, while "peace" follows with 135, "literature" with 117, and "economics" with 86 laureates. This data provides valuable insights into the distribution of Nobel Prize winners across diverse fields, underscoring the varying levels of recognition and achievement in each category. It underscores the significance of these fields in the context of Nobel laureates' contributions to society and knowledge.

Q4 Solution:

Query:

```
db.Hwfile.aggregate([
  { $match: { 'prizes.category': 'physics' } },
  { $unwind: "$prizes" },
  { $group: {
    _id: { gender: '$gender', diedCountryCode: '$diedCountryCode',
PrizeCategory: '$prizes.category' },
```

```
    count: { $sum: 1 }}
},
  { $sort: { '_id.diedCountryCode': 1 } } // $sort should be inside an object
]);
```

Interpretation:

The query results break down Nobel laureates in physics by gender and their country of passing. It highlights a significant gender gap, with 76 male laureates compared to just 2 females still alive. The data also shows a diverse geographic distribution, featuring laureates from countries like Austria, Canada, Switzerland, Germany, Denmark, France, and more. Notably, the United States leads with 60 male laureates, while other nations have fewer representatives. This information sheds light on the demographics of physics Nobel laureates.

Output:


```
{
    "_id" : {
        "gender" : "male",
        "PrizeCategory" : "physics"
    },
    "count" : 76.0
}
{
    "_id" : {
        "gender" : "female",
        "PrizeCategory" : "physics"
    },
    "count" : 2.0
}
{
    "_id" : {
        "gender" : "male",
        "diedCountryCode" : "AT",
        "PrizeCategory" : "physics"
    },
    "count" : 1.0
}
{
    "_id" : {
        "gender" : "male",
        "diedCountryCode" : "CA",
        "PrizeCategory" : "physics"
```

Q5 Solution:

Query:

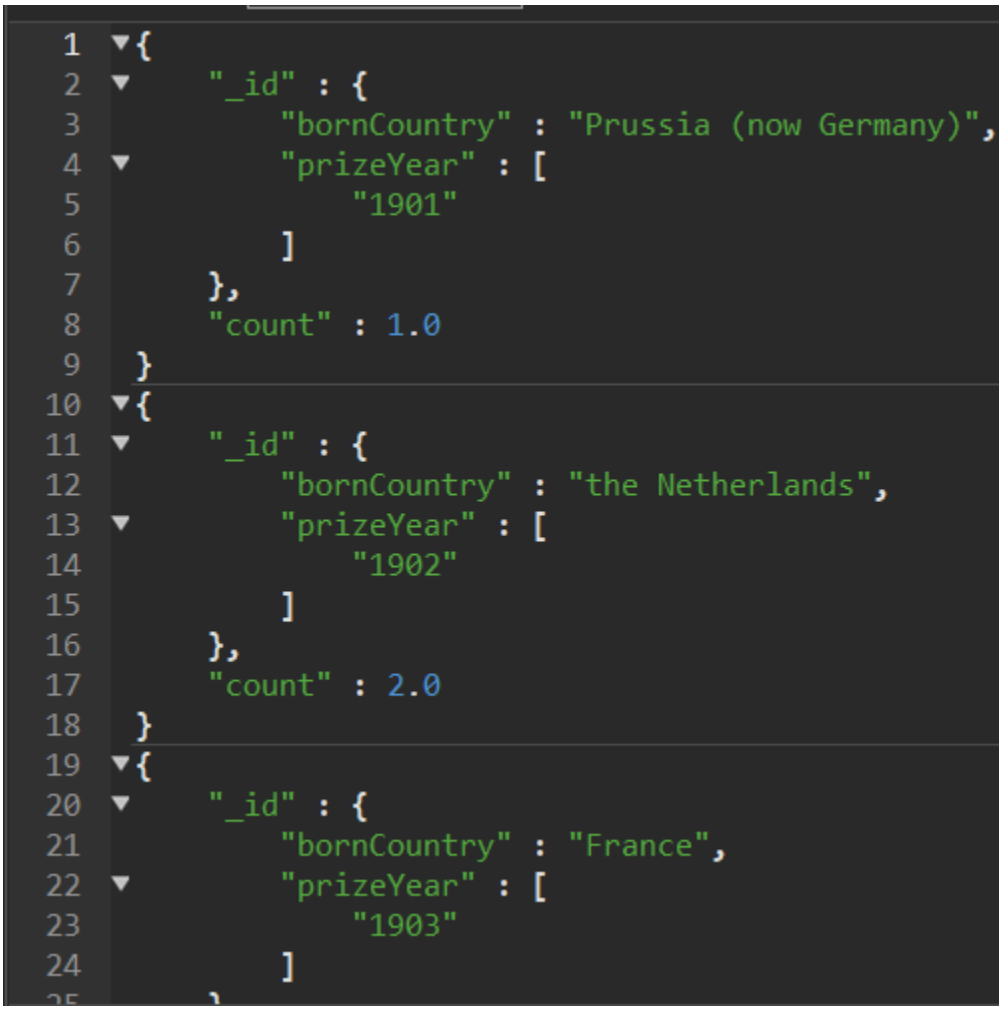
```
db.Hwfile.aggregate([
 {
  $match: {
   "gender": "male",
   "prizes.category": "physics"}
 },
```

```
 {
  $group: {
    _id: {
      bornCountry: "$bornCountry",
      prizeYear: "$prizes.year"
    },
    count: { $sum: 1 } }
 },
 {
  $sort: {
    "_id.prizeYear": 1  }}
]);
```

Interpretation:

The final result will be a list of unique pairs of "bornCountry" and "prizeYear" where male laureates received physics prizes. For each unique pair, you will have a "count" indicating how many laureates were born in that country and received a physics prize in that particular year. The results will be sorted by "prizeYear" in ascending order, showing the data chronologically. This can be helpful in analyzing the distribution of male laureates in the physics category by their birth countries and prize years.

Output:


{
"_id" : {
"bornCountry" : "Prussia (now Germany)",
"prizeYear" : [
"1901"
]
},
"count" : 1.0
}
{
"_id" : {
"bornCountry" : "the Netherlands",
"prizeYear" : [
"1902"
]
},
"count" : 2.0
}
{
"_id" : {
"bornCountry" : "France",
"prizeYear" : [
"1903"
]