

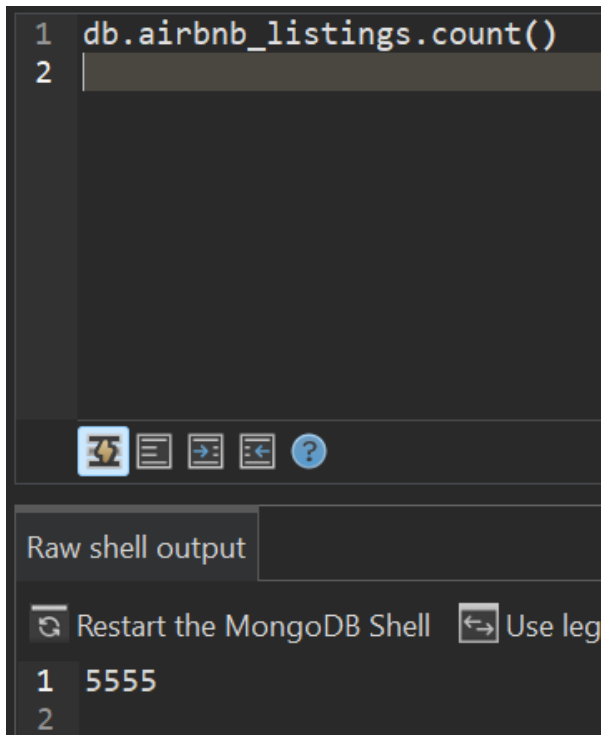
Homework Assignment 5: NoSQL

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1. The count of total number of records in the collection.

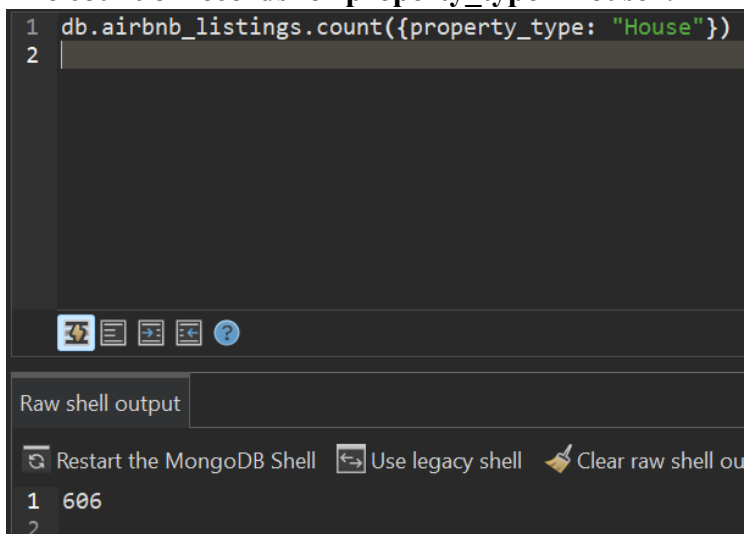
```
1 db.airbnb_listings.count()
2
```



The image shows a MongoDB Shell interface. The command `db.airbnb_listings.count()` is entered in the input field. Below the input field, the output `5555` is displayed. The interface includes a toolbar with icons for running, saving, and other shell functions, and a status bar at the bottom with buttons for restarting the shell and using legacy shell.

2. The count of records for property_type “House”.

```
1 db.airbnb_listings.count({property_type: "House"})
2
```



The image shows a MongoDB Shell interface. The command `db.airbnb_listings.count({property_type: "House"})` is entered in the input field. Below the input field, the output `606` is displayed. The interface includes a toolbar with icons for running, saving, and other shell functions, and a status bar at the bottom with buttons for restarting the shell, using legacy shell, and clearing raw shell output.

3. The counts for each property_type in descending order of count:

```
1 db.airbnb_listings.aggregate([
2   { $group: { _id: "$property_type", count: { $sum: 1 } } },
3   { $sort: { count: -1 } }
4 ])
```

Raw shell output | Aggregate Query (line 1) ✖

50 Documents 1 to 36

```
1 {
2   "_id" : "Apartment",
3   "count" : 3626.0
4 }
5 {
6   "_id" : "House",
7   "count" : 606.0
8 }
9 {
10  "_id" : "Condominium",
11  "count" : 399.0
12 }
13 {
14  "_id" : "Serviced apartment",
15  "count" : 185.0
16 }
```

1 document selected

4. The count of records for review_scores_cleanliness less than 5:

```
1 db.airbnb_listings.countDocuments({ "review_scores.review_scores_cleanliness": { $lt: 5 } })
2
```

Raw shell output

Restart the MongoDB Shell Use legacy shell Clear raw shell output Pin new results

```
1 38
2
```

5. The count of records for each room_type, cancellation_policy (ascending order of count):

```
1 db.airbnb_listings.aggregate([
2   { $group: { _id: { room_type: "$room_type", cancellation_policy: "$cancellation_policy" }, count: { $sum: 1 } } },
3   { $sort: { count: 1 } }
4 ])
```

Raw shell output | Aggregate Query (line 1) ✖

50 Documents 1 to 12

Query Code Explain Query JSON View

```
1 {
2   "_id" : {
3     "room_type" : "Private room",
4     "cancellation_policy" : "super_strict_60"
5   },
6   "count" : 6.0
7 }
8 {
9   "_id" : {
10    "room_type" : "Shared room",
11    "cancellation_policy" : "moderate"
12  },
13  "count" : 8.0
14 }
15 {
```

1 document selected

Count Documents 00:00

6. The count of records for each room_type, cancellation_policy when property_type is “Apartment” (ascending order of cancellation_policy):

```
1 db.airbnb_listings.aggregate([
2   { $match: { property_type: "Apartment" } },
3   { $group: { _id: { room_type: "$room_type", cancellation_policy: "$cancellation_policy" }, count: { $sum: 1 } } },
4   { $sort: { "_id.cancellation_policy": 1 } }
5 ])
```

Raw shell output | Aggregate Query (line 1) ✖

50 Documents 1 to 12

Query Code Explain Query JSON View

```
1 {
2   "_id" : {
3     "room_type" : "Private room",
4     "cancellation_policy" : "flexible"
5   },
6   "count" : 550.0
7 }
8 {
9   "_id" : {
10    "room_type" : "Entire home/apt",
11    "cancellation_policy" : "flexible"
12  },
13  "count" : 567.0
14 }
```

1 document selected

Count Documents 00:00

7. Records where address.market is "New York" and monthly_price > 5000, sorted by monthly_price:

```
1 db.airbnb_listings.find(
2   { "address.market": "New York", monthly_price: { $gt: 5000 } },
3   { _id: 1, monthly_price: 1 }
4 ).sort({ monthly_price: -1 })
```

Raw shell output | Find Query (line 1) ✖

50 Documents 1 to 10

```
1 {
2   "_id" : "846854",
3   "monthly_price" : NumberDecimal("17000.00")
4 }
5 {
6   "_id" : "256328",
7   "monthly_price" : NumberDecimal("12000.00")
8 }
9 {
10    "_id" : "598612",
11    "monthly_price" : NumberDecimal("10000.00")
12 }
13 {
14   "_id" : "1897001",
15   "monthly_price" : NumberDecimal("9495.00")
16 }
```

1 document selected

8. Records sorted by `cleaning_fee` in descending order (name, property_type, cleaning_fee) and limited to 10:

```
1 db.airbnb_listings.find(
2   {},
3   { _id: 0, name: 1, property_type: 1, cleaning_fee: 1 }
4 ).sort({ cleaning_fee: -1 }).limit(10)
5
```

Raw shell output Find Query (line 1) ✕

50 Documents 1 to 10

```
1 {
2   "name" : "Casa completa p olimpiadas com serviços incluído",
3   "property_type" : "House",
4   "cleaning_fee" : NumberDecimal("2000.00")
5 }
6 {
7   "name" : "service apartment with terrace",
8   "property_type" : "Apartment",
9   "cleaning_fee" : NumberDecimal("1200.00")
10 }
11 {
12   "name" : "Stunning Waterfront Marina bay house in Sai Kung",
13   "property_type" : "House",
14   "cleaning_fee" : NumberDecimal("1000.00")
15 }
```

1 document selected

9. Custom query: Count properties by room_type and property_type where price > 200 and accommodates > 2:

```
1 db.airbnb_listings.aggregate([
2   { $match: { price: { $gt: 200 }, accommodates: { $gt: 2 } } },
3   { $group: { _id: { room_type: "$room_type", property_type: "$property_type" }, count: { $sum: 1 } } },
4   { $sort: { count: -1 } }
5 ])
6
```

Raw shell output Aggregate Query (line 1) ✕

50 Documents 1 to 42

Query Code Explain Query

```
1 {
2   "_id" : {
3     "room_type" : "Entire home/apt",
4     "property_type" : "Apartment"
5   },
6   "count" : 645.0
7 }
8 {
9   "_id" : {
10    "room_type" : "Entire home/apt",
11    "property_type" : "House"
12  },
13  "count" : 187.0
14 }
```

1 document selected

Count Document

Insights:

Airbnb's accommodation landscape is diverse, with entire home/apartment rentals dominating the market, especially in apartments, houses, and condominiums. While less common, private room rentals are still available across various property types, catering to travelers seeking a more personal experience. The platform offers a wide array of options, from conventional apartments and houses to unique stays like farm stays, houseboats, and tiny houses, appealing to different tastes and preferences. Notably, shared room listings are infrequent, suggesting that most Airbnb users prioritize privacy in their accommodations.

10. Custom query: Average price and total listings for each property_type and cancellation_policy group (sorted by avg_price) and limited to 10:

```
1 db.airbnb_listings.aggregate([
2   {
3     $group: {
4       _id: { property_type: "$property_type", bedrooms: "$bedrooms" },
5       avg_price: { $avg: "$price" },
6       total_listings: { $sum: 1 }
7     }
8   },
9   { $sort: { avg_price: -1 } },
10  { $limit: 10 }
11 ])
```

Raw shell output | Aggregate Query (line 1) ✖ ×

50 Documents 1 to 10

```
2   "_id" : {
3     "property_type" : "House",
4     "bedrooms" : NumberInt(9)
5   },
6   "avg_price" : NumberDecimal("5595.00"),
7   "total_listings" : 1.0
8 }
9 {
10  "_id" : {
11    "property_type" : "House",
12    "bedrooms" : NumberInt(7)
13  },
14  "avg_price" : NumberDecimal("4745.00"),
15  "total_listings" : 1.0
16 }
```

1 document selected

Insights: A 9-bedroom house tops the list at \$5,595 per night, followed by a 7-bedroom villa at \$4,745. The top 10 include unique property types like Casa particular in Cuba and Heritage hotels in India, alongside more traditional options such as serviced apartments and bed and breakfasts. While there's a general correlation between the number of bedrooms and price, exceptions exist, indicating that factors beyond size influence pricing.