



CN5005



MODULE: WEB AND MOBILE APPLICATION DEVELOPMENT (CN5006)

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Week 2 Reflection:

In this lab, I learned how to manage and manipulate data using MongoDB Compass. Firstly, I created a database named PeopleDB and a collection called people, then imported the provided Peoples.csv file. This introduced me to MongoDB's document-oriented structure, where collections take the place of tables and documents are individual records. I practiced CRUD operations: inserting, updating, and deleting documents, which reinforced my understanding of document fields, types, and the system-generated `_id` field.

A significant portion of the lab was on aggregation pipelines. I had used the `$match` stage to filter documents, such as selecting people with a Bachelor's degree over 21 years old. Then, I wanted to apply the `$group` stage to calculate aggregated results - Average, minimum, and maximum of age and salary, grouped by gender or marital status. These exercises allowed me to understand how MongoDB can process and summarize large datasets efficiently, similar to SQL aggregate functions but with more flexibility for varied data structures.

This lab strengthened my practical skills in database management, query formulation, and aggregation operations. Now, I can really appreciate the flexibility of MongoDB while handling dynamic and complex data sets, which is really demanded in modern applications for both web and mobile development.

MongoDB Compass - Local MongoDB/local

Connections Edit View Help

Compass

My Queries

CONNECTIONS (1)

Search connections

- Local MongoDB
 - admin
 - config
 - local
 - startup_log

Local MongoDB > local

Open MongoDB shell Create collection Refresh

Sort by Collection Name

View

startup_log CAPPED

Storage size:	Documents:	Avg. document size:	Indexes:	Total index size:
24.58 kB	10	3.71 kB	1	36.86 kB

Connections Edit View Collection Help

Compass

My Queries

Data Modeling

CONNECTIONS (2)

Search connections

- Local MongoDB
- Week2labConnection
 - PeopleDB
 - People
 - admin
 - config
 - local

Week2labConnection > PeopleDB > People

Open MongoDB shell

Documents 202 Aggregations Schema Indexes 1 Validation

Type a query: { field: 'value' Explain Reset Find </> Options

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```
{ "_id": ObjectId('6913ad3ed474025e519fd9d1'), "First Name": "" }
```

```
{ "_id": ObjectId('6913adb4d474025e519fd9d2'), "First Name": "Nadeem", "age": "25", "gender": "Male", "education": "Bachelor", "salary": "40000", "maritalstatus": "Single" }
```

1	<code>_id: ObjectId('6913adb4d474025e519fd9d2')</code>	ObjectId
2	<code>First Name: "Nadeem"</code>	String
3	<code>age: "25"</code>	String
4	<code>gender: "Male"</code>	String
5	<code>education: "Bachelor"</code>	String
6	<code>salary: "446765"</code>	String
7	<code>maritalstatus: "Single"</code>	String

Document modified.

CANCEL

UPDATE

```
_id: ObjectId('6913ad21d474025e519fd986')
firstName: "Ned"
lastName: "Ellis"
gender: "Male"
age: 20
email: "n.ellis@randatmail.com"
education: "Upper secondary"
salary: 1258
maritalstatus: "Single"
```

Document flagged for deletion.

CANCEL

DELETE

Stage 1 \$match

```
1 /**
2  * query: The query in MQL.
3  */
4 {
5   education: "Bachelor",
6   age: { "$gte": 21 }
7 }
```

Output preview after \$match stage (Sample of 10 documents)

```
_id: ObjectId('6913ad21d474025e519fd989')
firstName: "Grace"
lastName: "Nelson"
gender: "Female"
age: 21
email: "g.nelson@randatmail.com"
education: "Bachelor"
salary: 5347
maritalstatus: "Single"
```

```
_id: ObjectId('6913ad21d474025e519fd98f')
firstName: "Charlie"
lastName: "Perkins"
gender: "Male"
age: 28
email: "c.perkins@randatmail.com"
education: "Bachelor"
salary: 3586
maritalstatus: "Single"
```

Stage 2 \$group

```
1 /**
2  * _id: The id of the group.
3  * fieldN: The first field name.
4  */
5 {
6   _id: "$gender",
7   AvgAge: {
8     $avg: "$age"
9   }
10 }
11
```

Output preview after \$group stage (Sample of 2 documents)

```
_id: "Female"
AvgAge: 25
```

```
_id: "Male"
AvgAge: 25.666666666666668
```

+ Add stage

Stage 2 \$group

```
1 /**
2  * _id: The id of the group.
3  * fieldN: The first field name.
4  */
5 {
6   _id: "$gender",
7   Avg: { $avg: "$age" },
8   MinAge: { $min: "$age" },
9   MaxAge: { $max: "$age" }
10 }
11
12
```

Output preview after \$group stage (Sample of 2 documents)

_id: "Female"
Avg : 25
MinAge : 21
MaxAge : 29

_id: "Male"
Avg : 25.666666666666668
MinAge : 22
MaxAge : 30

Stage 2 \$group

```
1 /**
2  * _id: The id of the group.
3  * fieldN: The first field name.
4  */
5 {
6   _id: "$gender",
7   Avg: { $avg: "$age" },
8   MinAge: { $min: "$age" },
9   MaxAge: { $max: "$age" },
10  MaxSalary: { $max: "$salary" },
11  MinSalary: { $min: "$salary" },
12  AvgSalary: { $avg: "$salary" }
13 }
14
15
```

Output preview after \$group stage (Sample of 2 documents)

_id: "Female"
Avg : 25
MinAge : 21
MaxAge : 29
MaxSalary : 8799
MinSalary : 509
AvgSalary : 5020.846153846154

_id: "Male"
Avg : 25.666666666666668
MinAge : 22
MaxAge : 30
MaxSalary : 9759
MinSalary : 1260
AvgSalary : 5252.416666666667