

Delivery Hero: An Online Food Delivery Service

Task 1

The screenshot shows the MongoDB Compass interface. A modal window titled "Create Database" is open, prompting for a "Database Name" (set to "restaurant_database") and a "Collection Name" (set to "restaurant_data"). Below these fields are three optional checkboxes: "Capped Collection", "Use Custom Collection", and "Time-Series". The "Capped Collection" checkbox is checked, with a descriptive tooltip explaining it supports high-throughput operations based on insertion order. The "Use Custom Collection" checkbox is unchecked, with a tooltip about collation rules. The "Time-Series" checkbox is also unchecked, with a tooltip about efficiently storing time-series measurements. At the bottom right of the modal are "Cancel" and "Create Database" buttons. In the background, the main interface shows a list of databases and collections, and a preview pane displaying document data for the "Demo.customer_detail" collection.

The screenshot shows the MongoDB Compass interface after the database and collection have been created. The left sidebar lists the databases and collections. Under the "restaurant_database" database, the "restaurant_data" collection is visible. The main area displays the "Collections" view for the "restaurant_data" collection. It shows summary statistics: Storage size: 4.10 kB, Documents: 0, Avg. document size: 0 B, Indexes: 1, and Total index size: 4.10 kB. The "Sort by" dropdown is set to "Collection Name".

Local

8 DBS 18 COLLECTIONS C FAVORITE

HOST localhost:27017

CLUSTER Standalone

EDITION MongoDB 5.0.6 Community

Filter your data

- Demo
- admin
- config
- customer_data
- local
- restaurant
- restaurant_database
- restaurant_data
- students_data

> MONGOSH

Import To Collection restaurant_database.restaurant_data

Select File Practice_Brief_S3_RestaurantData.json

Select Input File Type JSON (highlighted)

Options Stop on errors

Import completed 2,548 / 2,548

DONE

Local

8 DBS 18 COLLECTIONS C FAVORITE

HOST localhost:27017

CLUSTER Standalone

EDITION MongoDB 5.0.6 Community

Filter your data

- Demo
- admin
- config
- customer_data
- local
- restaurant
- restaurant_database
- restaurant_data
- students_data

> MONGOSH

restaurant_database.restaurant_data

DOCUMENTS 2.5k STORAGE SIZE 4.1KB 163B INDEXES 1 TOTAL SIZE 4.1KB AVG. SIZE 4.1KB

Documents Aggregations Schema Explain Plan Indexes Validation

FILTER { field: 'value' } OPTIONS FIND RESET REFRESH

ADD DATA

	_id	objectId	address	line 2	String	outcode	String	postcode	String	rating	Mixed
1	55f14312c7447c3da7051b26		"Cardiff"		"CF24"		"E3JH"			5	
2	55f14312c7447c3da7051b27		"Essex"		"SS9"		"SPT"			5.5	
3	55f14312c7447c3da7051b28		"London"		"W6"		"BNX"			4.5	
4	55f14312c7447c3da7051b29		"London"		"W6"		"BNX"			4.5	
5	55f14312c7447c3da7051b2a		"Broughton"		"CH4"		"BQR"			6	
6	55f14312c7447c3da7051b2b		"Rotherham"		"S65"		"1HY"			6	
7	55f14312c7447c3da7051b2c		"London"		"E11"		"1HR"			3	
8	55f14312c7447c3da7051b2d		"London"		"E11"		"1HR"			3	
9	55f14312c7447c3da7051b2e		"London"		"E11"		"1HR"			3	
10	55f14312c7447c3da7051b2f		"Swalwell"		"NE16"		"3DS"			4.5	
11	55f14312c7447c3da7051b30		"Swalwell"		"NE16"		"3DS"			4.5	
12	55f14312c7447c3da7051b31		"Treforest"		"CF37"		"1SN"			5	

Task 2

The screenshot shows the MongoDB Compass interface for the `restaurant_database.restaurant_data` collection. The **Aggregations** tab is selected. The pipeline consists of one stage, `$group`, which groups documents by their `postcode`. The output of this stage is shown in the preview pane, where two documents are displayed:

```
_id: ObjectId("55f14312c7447c3da7051b26")
address line 2: "Cardiff"
outcode: "CF24"
postcode: "3JH"
rating: 5
type_of_food: "Chinese"
RestaurantName: ".CN Chinese"

_id: ObjectId("55f14312c7447c3da7051b27")
address line 2: "Essex"
outcode: "SS9"
postcode: "SPT"
rating: 5.5
type_of_food: "Thai"
RestaurantName: "@ Thai"
```

The pipeline editor shows the following code:

```
1 /**
2  * _id: The id of the group.
3  * fieldN: The first field name.
4 */
5 {
6   _id: '$postcode',
7   region: {
8     $addToSet: '$RestaurantName'
9   }
10 }
```

Below the pipeline editor is a button labeled **ADD STAGE**.

The screenshot shows the MongoDB Compass interface for the `restaurant_database.restaurant_data` collection. The **Aggregations** tab is selected. A modal dialog titled **Create a View** is open, prompting the user to enter a view name. The input field contains the value `region`. In the bottom right corner of the dialog are two buttons: **Cancel** and **Create**.

The background shows the aggregation pipeline and its output preview, which is identical to the one in the previous screenshot.

Local

8 DBS 19 COLLECTIONS C

HOST localhost:27017

CLUSTER Standalone

EDITION MongoDB 5.0.6 Community

Filter your data

- Demo
- admin
- config
- customer_data
- local
- restaurant
- restaurant_database
- region**
- restaurant_data
- students_data

> MONGOSH

_id	region
"STA"	[] 1 elements
"SH"	[] 2 elements
"GPG"	[] 1 elements
"DS"	[] 2 elements
"NS"	[] 2 elements
"QO"	[] 1 elements
"QE"	[] 1 elements
"FF"	[] 1 elements
"LJ"	[] 1 elements
"BG"	[] 1 elements
"PX"	[] 2 elements
"AH"	[] 2 elements

AND

MongoDB Compass - localhost:27017/restaurant_database.restaurant_data

Connect View Collection Help

Local

9 DBS 29 COLLECTIONS C

HOST localhost:27017

CLUSTER Standalone

EDITION MongoDB 5.0.6 Community

Filter your data

- restaurant
- restaurant_database
- average
- food type
- lowest_rating
- rating
- region
- region_food
- restaurant_data
- students_data

> MONGOSH

```

_id: ObjectId("55f14312c7447c3da7051b26")
address line 2: "Cardiff"
outcode: "CF24"
postcode: "33H"
rating: 5
type_of_food: "Chinese"
RestaurantName: ".CN Chinese"

_id: ObjectId("55f14312c7447c3da7051b27")
address line 2: "Essex"
outcode: "SS9"
postcode: "SPT"
rating: 5.5
type_of_food: "Thai"
RestaurantName: "@ Thai"

```

Output after \$group stage (Sample of 20 documents)

_id	count
"0DL"	1
"8HH"	1

MongoDB Compass - localhost:27017/restaurant_database.restaurant_data

Connect View Collection Help

Local

9 DBS 29 COLLECTIONS

HOST localhost:27017

CLUSTER Standalone

EDITION MongoDB 5.0.6 Community

Filter your data

- restaurant
- restaurant_database
 - average
 - food type
 - lowest_rating
 - rating
 - region
 - region_food
 - region_partner
 - restaurant_data
- students_data

> MONGOSH

Documents Aggregations Schema Explain Plan Indexes Validation

COLLATION Untitled- Modified SAVE SAMPLE MODE AUTO PREVIEW

Select an operation

Create a View

Enter a View Name

region_partner

Cancel Create

ADD STAGE

DOCUMENTS 2.5k STORAGE SIZE 131.1KB AVG. SIZE 163B INDEXES 1 TOTAL SIZE 45.1KB AVG. SIZE 45.1KB

_id: ObjectId("56f14312c7447c3da7051b26")
 address_line_2: "Essex"
 outcode: "SS9"
 postcode: "SPT"
 rating: 5.5
 type_of_food: "Thai"
 Restaurantname: "@ Thai"

_id: "8HH"
 count: 1

23°C 1:06 AM 3/10/2022

MongoDB Compass - localhost:27017/restaurant_database.region_partner

Connect View Collection Help

Local

9 DBS 30 COLLECTIONS

HOST localhost:27017

CLUSTER Standalone

EDITION MongoDB 5.0.6 Community

Filter your data

- restaurant
- restaurant_database
 - average
 - food type
 - lowest_rating
 - rating
 - region
 - region_food
 - region_partner
 - restaurant_data
- students_data

> MONGOSH

Documents Aggregations Schema Explain Plan Indexes Validation

READ-ONLY VIEW

view on: restaurant_database.restaurant_data EDIT VIEW

FILTER { field: 'value' }

OPTIONS FIND RESET ...

Displaying documents 1 - 20 of 1307

region_partner	_id	count
1	"4EE"	4
2	"5AA"	8
3	"1AG"	1
4	"8DP"	3
5	"2JQ"	2
6	"9HA"	2
7	"1NE"	4
8	"6DY"	3
9	"1AZ"	1
10	"0RE"	1
11	"1AB"	4
12	"3LL"	1

23°C 1:06 AM 3/10/2022

Task 4

The screenshot displays two MongoDB Compass windows side-by-side, illustrating aggregation operations on the `restaurant_database.restaurant_data` collection.

Top Window (Aggregation Pipeline):

- Collection:** `restaurant_database.restaurant_data`
- Stages:**
 - `$group`:
A code editor shows the aggregation stage:

```
1 /**  
2 * _id: The id of the group.  
3 * fieldN: The first field name.  
4 */  
5 {  
6   _id: null,  
7   fieldN: {  
8     $addToSet: '$rating'  
9   }  
10 }
```
 - Output after `$group` stage:** A preview pane shows the resulting document structure:

```
_id: null  
fieldN: Array  
  0: 5  
  1: 2.5  
  2: 1  
  3: 4  
  4: 1.5  
  5: 3
```

Bottom Window (View Details):

- Collection:** `restaurant_database.rating` (READ-ONLY)
- View:** `restaurant_database.restaurant_data`
- Filter:** `{ field: 'value' }`
- Results:** A preview pane shows the filtered documents:

```
_id: null  
fieldN: Array  
  0: "Not yet rated"  
  1: 3  
  2: 5.5  
  3: 6  
  4: 5  
  5: 2.5  
  6: 3.5  
  7: 4  
  8: 1  
  9: 1.5  
  10: 2  
  11: 4.5
```

Local

8 DBS 20 COLLECTIONS C

HOST localhost:27017

CLUSTER Standalone

EDITION MongoDB 5.0.6 Community

Filter your data

- Demo
- admin
- config
- customer_data
- local
- restaurant
- restaurant_database**
- rating
- region
- restaurant_data

> MONGOSH

restaurant_database.restaurant_data

Documents Aggregations Schema Explain Plan Indexes Validation

FILTER { 'rating': { \$in: [1, 1.5] } }

PROJECT { field: 0 }

SORT { field: -1 } or [[{'field': -1}]]

COLLATION { Locale: 'simple' }

MAX TIME MS 60000

Skip 0 Limit 0

ADD DATA VIEW

Displaying documents 1 - 7 of 7

_id	ObjectID	address	line 2	String	outcode	String	postcode	String	rating	Mixed
1	55f14312c7447c3da7051ceb	"Birmingham"		"B21"		"9SE"		"B21"	1	
2	55f14312c7447c3da7051cec	"Birmingham"		"B21"		"9SE"		"B21"	1	
3	55f14312c7447c3da7051d35	"London"		"SE14"		"SDJ"		"SE14"	1	
4	55f14313c7447c3da70522ef	"London"		"SW1X"		"9JW"		"SW1X"	1.5	
5	55f14313c7447c3da70522f0	"London"		"SW1X"		"9JW"		"SW1X"	1.5	
6	55f14313c7447c3da70523a1	"Leicester"		"LE1"		"6FB"		"LE1"	1	
7	55f14313c7447c3da70523a2	"Leicester"		"LE1"		"6FB"		"LE1"	1	

Local

8 DBS 20 COLLECTIONS C

HOST localhost:27017

CLUSTER Standalone

EDITION MongoDB 5.0.6 Community

Filter your data

- Demo
- admin
- config
- customer_data
- local
- restaurant
- restaurant_database**
- rating
- region
- restaurant_data

> MONGOSH

Collections

Create collection

rating

View on: restaurant_data

region

View on: restaurant_data

restaurant_data

Storage size: 131.07 kB

Sort by Collection Name

Create Collection

Collection Name: lowest_rating

Capped Collection

Fixed-size collections that support high-throughput operations that insert and retrieve documents based on insertion order. ⓘ

Use Custom Collation

Collation allows users to specify language-specific rules for string comparison, such as rules for lettercase and accent marks. ⓘ

Time-Series

Time-series collections efficiently store sequences of measurements over a period of time.

Total index size: 45.06 kB

Cancel Create Collection

```
[{"_id": {"$oid": "55f14312c7447c3da7051ceb"}, "address_line": "2": "Birmingham", "outcode": "B21", "postcode": "9SE", "rating": 1, "type_of_food": "Chicken", "RestaurantName": "Al Dixi Fried Chicken & Grill House"}, {"_id": {"$oid": "55f14312c7447c3da7051cec"}, "address_line": "2": "Birmingham", "outcode": "B21", "postcode": "9SE", "rating": 1, "type_of_food": "Chicken", "RestaurantName": "Al Dixi Fried Chicken & Grill House"}, {"_id": {"$oid": "55f14312c7447c3da7051d35"}, "address_line": "2": "London", "outcode": "SE14", "postcode": "5DJ", "rating": 1, "type_of_food": "African", "RestaurantName": "Alaowerry Restaurant"}, {"_id": {"$oid": "55f14313c7447c3da70522ef"}, "address_line": "2": "London", "outcode": "SW1X", "postcode": "9JW", "rating": 1.5, "type_of_food": "Lebanese", "RestaurantName": "Beiteddine"}, {"_id": {"$oid": "55f14313c7447c3da70522f0"}, "address_line": "2": "London", "outcode": "SW1X", "postcode": "9JW", "rating": 1.5, "type_of_food": "Lebanese", "RestaurantName": "Beiteddine"}, {"_id": {"$oid": "55f14313c7447c3da70523a1"}, "address_line": "2": "Leicester", "outcode": "LE1", "postcode": "6FB", "rating": 1, "type_of_food": "Chicken", "RestaurantName": "Benny's"}, {"_id": {"$oid": "55f14313c7447c3da70523a2"}, "address_line": "2": "Leicester", "outcode": "LE1", "postcode": "6FB", "rating": 1, "type_of_food": "Chicken", "RestaurantName": "Benny's"}]
```

The screenshot shows the MongoDB Compass application interface. On the left, the sidebar lists databases, collections, and users. The main area shows the 'lowest_rating' collection under the 'restaurant_database'. A modal window is open, titled 'Insert to Collection' with the collection name 'lowest_rating'. Inside the modal, there is a code block containing the JSON data for seven documents. At the bottom right of the modal, there are 'Cancel' and 'Insert' buttons, with 'Insert' being the active one.

Local

8 DBS 21 COLLECTIONS C

HOST localhost:27017

CLUSTER Standalone

EDITION MongoDB 5.0.6 Community

Filter your data

- Demo
- admin
- config
- customer_data
- local
- restaurant
- restaurant_database
 - lowest_rating
 - rating
 - region

> MONGOSH

restaurant_database.lowest_rating

Documents Aggregations Schema Explain Plan Indexes Validation

FILTER { field: 'value' } OPTIONS FIND RESET REFRESH

ADD DATA VIEW

Displaying documents 1 - 7 of 7

	_id	address	line 2	outcode	postcode	rating	Mixed			
1	55f14312c7447c3da7051ceb	"Birmingham"		"B21"	"9SE"	1				
2	55f14312c7447c3da7051cec	"Birmingham"		"B21"	"9SE"	1				
3	55f14312c7447c3da7051d35	"London"		"SE14"	"5DJ"	1				
4	55f14313c7447c3da70522ef	"London"		"SW1X"	"9JW"	1.5				
5	55f14313c7447c3da70522f0	"London"		"SW1X"	"9JW"	1.5				
6	55f14313c7447c3da70523a1	"Leicester"		"LE1"	"6FB"	1				
7	55f14313c7447c3da70523a2	"Leicester"		"LE1"	"6FB"	1				

Local

8 DBS 22 COLLECTIONS C

HOST localhost:27017

CLUSTER Standalone

EDITION MongoDB 5.0.6 Community

Filter your data

- customer_data
- local
- restaurant
- restaurant_database
 - average
 - lowest_rating
 - rating
 - region
- restaurant_data
- students_data

> MONGOSH

restaurant_database.lowest_rating

Documents

FILTER { field: 'value' }

ADD DATA VIEW

Displaying documents 1 - 7 of 7

Export Collection restaurant_database.lowest_rating

Select Export File Type

JSON CSV

Output C:\Users\krish\Desktop\lowest_rating.csv BROWSE

Export completed 7 / 7

CLOSE SHOW FILE

```
_id: ObjectId("55f14312c7447c3da7051ceb")
address: "Birmingham"
line 2: 
outcode: "B21"
postcode: "9SE"
rating: 1
type_of_food: "Chicken"
RestaurantName: "Al Dixi Fried Chicken & Grill House"

_id: ObjectId("55f14312c7447c3da7051d35")
address: "London"
line 2: 
outcode: "SE14"
postcode: "5DJ"
rating: 1
type_of_food: "African"
```

Task 5

{rating:{\$gt:4}}

{rating:1,RestaurantName:1,type_of_food:1}

The screenshot shows the MongoDB Compass interface with the following details:

- Local** database selected.
- 8 DBS** and **20 COLLECTIONS** listed.
- restaurant_database.restaurant_data** collection selected.
- Documents** tab selected.
- FILTER**: {rating:{\$gt:4}}
- PROJECT**: {_id:1, RestaurantName:1, type_of_food:1}
- SORT**: { field: -1 } or {['field': -1]}
- COLLATION**: { Locale: 'simple' }
- OPTIONS**: MAX TIME MS: 60000, SKIP: 0, LIMIT: 0
- DISPLAYING**: documents 1 - 20 of 2228.
- REFRESH** button.

_id	rating	type_of_food	RestaurantName
55f14312c7447c3da7051b26	5	"Chinese"	".CN Chinese"
55f14312c7447c3da7051b27	5.5	"Thai"	"@ Thai"
55f14312c7447c3da7051b28	4.5	"Thai"	"@ Thai Restaurant"
55f14312c7447c3da7051b29	4.5	"Thai"	"@ Thai Restaurant"
55f14312c7447c3da7051b2a	6	"Curry"	"@Indian.com"
55f14312c7447c3da7051b2b	6	"Pizza"	"007 Takeaway"
55f14312c7447c3da7051b2f	4.5	"Chinese"	"1 2 3 Chinese"
55f14312c7447c3da7051b30	4.5	"Chinese"	"1 2 3 Chinese"
55f14312c7447c3da7051b31	5	"Chinese"	"100 Degrees Chinese Restaurant"

Task 6

The screenshot shows the MongoDB Compass interface with the following details:

- Local** database selected.
- 8 DBS** and **21 COLLECTIONS** listed.
- restaurant_database.restaurant_data** collection selected.
- Aggregations** tab selected.
- Untitled- Modified** pipeline stage selected.
- COLLATION** and **SAVE** buttons.
- SAMPLE MODE** and **AUTO PREVIEW** checkboxes.
- SELECT AN OPERATOR** message: "Select an operator to construct expressions used in the aggregation pipeline stages. [Learn more](#)".
- Output after \$group stage** (Sample of 1 document):

```
_id: ObjectId("55f14312c7447c3da7051b26")
address line 2: "cardiff"
outcode: "C24"
postcode: "3JH"
rating: 5
type_of_food: "Chinese"
RestaurantName: ".CN Chinese"
```

```
_id: ObjectId("55f14312c7447c3da7051b27")
address line 2: "Essex"
outcode: "S59"
postcode: "SPT"
rating: 5.5
type_of_food: "Thai"
RestaurantName: "@ Thai"
```
- \$group** stage:

```
1 /**
2 * _id: The id of the group.
3 * field: The first field name.
4 */
5 {
6   _id: null,
7   average: {
8     $avg: '$rating'
9   }
10 }
```
- Output after \$group stage** (Sample of 1 document):

```
_id: null
average: 4.907042253521126
```
- ADD STAGE** button.

Local

8 DBS 22 COLLECTIONS C

HOST localhost:27017

CLUSTER Standalone

EDITION MongoDB 5.0.6 Community

Filter your data

- Demo
- admin
- config
- customer_data
- local
- restaurant
- restaurant_database**
- average
- lowest_rating
- rating

> MONGOSH

restaurant_database.restaurant_data

Aggregations

Documents Aggregations Schema Explain Plan Indexes Validation

COLLATION Untitled- Modified SAVE

Select an operation

Create a View

Enter a View Name

average

Create in Progress

```

1 /**
2 * _id: The
3 * FieldN:
4 */
5 {
6   _id: null
7   average:
8   $avg:
9 }
10

```

Cancel Create

_id: ObjectId("55f14312c7447c3da7051b27")
address line 2: "Essex"
outcode: "559"
postcode: "SPT"
rating: 5.5
type_of_food: "Thai"
RestaurantName: "@ Thai"

Local

8 DBS 22 COLLECTIONS C

HOST localhost:27017

CLUSTER Standalone

EDITION MongoDB 5.0.6 Community

Filter your data

- Demo
- admin
- config
- customer_data
- local
- restaurant
- restaurant_database**
- average
- lowest_rating
- rating

> MONGOSH

restaurant_database.average

READ-ONLY

view on: restaurant_database.restaurant_data EDIT VIEW

Documents Aggregations Schema Explain Plan Indexes Validation

FILTER { field: 'value' }

OPTIONS FIND RESET ...

VIEW

Displaying documents 1 - 1 of 1

average

_id: null
average: 4.907042253521126

Task 7

The screenshot shows the MongoDB Compass interface with the following details:

- Local** database selected.
- Aggregations** tab selected.
- Documents** tab selected in the top navigation.
- Output after \$group stage** (Sample of 1 document) is displayed:

```
_id: null
food:
  0: "Breakfast"
  1: "American"
  2: "Caribbean"
  3: "Healthy"
  4: "Afghan"
  5: "South Curry"
```

```
{type_of_food: { $exists: true, $in: [ "American", "Caribbean", "Afghan", "Vietnamese", "Mexican", "Ethiopian", "Bangladeshi", "Sri-Lankan", "Azerbaijan", "Korean", "Lebanese", "Portuguese", "Polish", "Chinese", "Mediterranean", "Nigerian", "Greek", "Moroccan", "Japanese", "Spanish", "Arabic", "African", "Persian", "Punjabi", "Turkish", "Russian", "Pakistani", "Thai"] } }
```

The screenshot shows the MongoDB Compass interface with the following details:

- Local** database selected.
- Documents** tab selected.
- Filter**: {type_of_food: { \$exists: true, \$in: ["American", "Caribbean", "Afghan", "Vietnamese", "Mexican", "Ethiopian", "Bangladeshi", "Sri-Lankan", "Azerbaijan", "Korean", "Lebanese", "Portuguese", "Polish", "Chinese", "Mediterranean", "Nigerian", "Greek", "Moroccan", "Japanese", "Spanish", "Arabic", "African", "Persian", "Punjabi", "Turkish", "Russian", "Pakistani", "Thai"] } }
- Results** table:

	_id	objectId	address_line_2	outcode	postcode	rating
1	55f14312c7447c3da7051b26		"Cardiff"	"CF24"	"B3H"	5
2	55f14312c7447c3da7051b27		"Essex"	"SS9"	"SPT"	5.5
3	55f14312c7447c3da7051b28		"London"	"W6"	"BNX"	4.5
4	55f14312c7447c3da7051b29		"London"	"W6"	"BNX"	4.5
5	55f14312c7447c3da7051b2c		"London"	"E11"	"1HR"	3
6	55f14312c7447c3da7051b2d		"London"	"E11"	"1HR"	3
7	55f14312c7447c3da7051b2e		"London"	"E11"	"1HR"	3
8	55f14312c7447c3da7051b2f		"Swalwell"	"NE16"	"B05"	4.5
9	55f14312c7447c3da7051b30		"Swalwell"	"NE16"	"B05"	4.5
10	55f14312c7447c3da7051b31		"Treforest"	"CF37"	"1SN"	5
11	55f14312c7447c3da7051b32		"Wigan"	"WN1"	"JU"	5
12	55f14312c7447c3da7051b33		"Essex"	"IG6"	"1QE"	5

Library

Task 1

The screenshot shows the MongoDB Compass interface. A modal window titled "Create Database" is open in the foreground. In the "Database Name" field, "library" is typed. In the "Collection Name" field, "books_data" is typed. There are three optional checkboxes: "Capped Collection", "Use Custom Collation", and "Time-Series". The "Time-Series" checkbox is selected. At the bottom right of the modal are "Cancel" and "Create Database" buttons.

The screenshot shows the MongoDB Compass interface. A modal window titled "Import To Collection library.books_data" is open. In the "Select File" field, "Books_details.json" is selected. In the "Select Input File Type" section, "JSON" is chosen. Under "Options", the "Stop on errors" checkbox is unchecked. At the bottom right are "DONE" and "Cancel" buttons. The background shows the "library.books_data" collection with two documents and a progress bar indicating "Import completed" at 516 / 516.

Local

9 DBS 25 COLLECTIONS C

HOST localhost:27017

CLUSTER Standalone

EDITION MongoDB 5.0.6 Community

Filter your data

- customer_data
- library
 - books_data
- local
- restaurant
- restaurant_database
 - average
 - food type
 - lowest_rating
 - rating

> MONGOSH

library.books_data

Documents Aggregations Schema Explain Plan Indexes Validation

FILTER { field: 'value' } OPTIONS FIND RESET REFRESH

ADD DATA VIEW

Displaying documents 1 - 20 of 516

	_id Int32	isbn String	pageCount Int32	publishedDate Date	shortDescription String
1	1	"1933988673"	416	2009-04-01T07:00:00.000+00:00	"Unlocking Android: A D
2	2	"1935182722"	592	2011-01-14T08:00:00.000+00:00	"Android in Action, Sec
3	3	"1617290084"	0	2011-06-03T07:00:00.000+00:00	No field
4	4	"1933988746"	576	2009-02-02T08:00:00.000+00:00	No field
5	5	"1935182428"	600	2010-11-15T08:00:00.000+00:00	No field
6	6	"1933988312"	425	2008-10-01T07:00:00.000+00:00	No field
7	7	"1933988320"	432	2008-12-01T08:00:00.000+00:00	"Zend Framework in Acti
8	8	"1933988797"	265	2010-10-15T07:00:00.000+00:00	" A beautifully written
9	9	"1935182234"	375	2012-06-04T07:00:00.000+00:00	"Griffon in Action is a
10	10	"193518217X"	325	2011-12-12T08:00:00.000+00:00	"Enterprise OSGi shows
11	11	"1933988308"	592	2008-01-01T08:00:00.000+00:00	""Flexible Rails create
12	13	"1933988762"	258	2009-11-01T07:00:00.000+00:00	"Hello! Flex 4 progress

Task 2

{_id:1,Book_name:1,isbn:1,writers:1}

Local

9 DBS 25 COLLECTIONS C

HOST localhost:27017

CLUSTER Standalone

EDITION MongoDB 5.0.6 Community

Filter your data

- customer_data
- library
 - books_data
- local
- restaurant
- restaurant_database
 - average
 - food type
 - lowest_rating
 - rating

> MONGOSH

library.books_data

Documents Aggregations Schema Explain Plan Indexes Validation

FILTER { field: 'value' } PROJECT {_id:1,book_name:1,isbn:1,writers:1} SORT { field: -1 } or [[{'field': -1}]] COLLATION { Locale: 'simple' } MAX TIME MS 60000 SKIP 0 LIMIT 0

Displaying documents 1 - 20 of 516

```

_id:1
isbn: "1933988673"
Book_name: "Unlocking Android"
writers: Array

_id:2
isbn: "1935182722"
Book_name: "Android in Action, Second Edition"
writers: Array

_id:3
isbn: "1617290084"
Book_name: "Specification by Example"
writers: Array

```

Task 3

The screenshot shows the MongoDB Compass interface. On the left, the sidebar displays the database structure with 'library.books_data' selected. The main area shows an aggregation pipeline:

```
1 /**
2  * path: Path to the array field.
3  * includeArrayIndex: optional name for index.
4  * preserveNullAndEmptyArrays: optional
5  * toggle to unwind null and empty values.
6 */
7 {
8   path: '$writers',
9   preserveNullAndEmptyArrays: true
10 }
```

Below this is a stage labeled '\$group':

```
1 /**
2  * _id: The id of the group.
3  * fieldN: The first field name.
4  */
5 {
6   _id: '$writers',
7   count: {
8     $sum: 1
9   }
10 }
```

The results pane shows two documents from the sample output:

```
_id: 1
isbn: "1933988673"
pageCount: 416
publishedDate: 2009-04-01T07:00:00.000+00:00
shortDescription: "Unlocking Android: A Developer's Guide"
concise, hands-on inst...
longDescription: "Android is an open source mobile phone based on the Linux ope..."
```

```
_id: 1
isbn: "1933988673"
pageCount: 416
publishedDate: 2009-04-01T07:00:00.000+00:00
shortDescription: "Unlocking Android: A Developer's Guide"
concise, hands-on inst...
longDescription: "Android is an open source mobile phone based on the Linux ope..."
```

The screenshot shows the MongoDB Compass interface with a 'Create a View' dialog box overlaid. The dialog has the following fields:

- View Name: author
- Create button: 'Create in Progress'

The background shows the same aggregation pipeline and results as the previous screenshot.

Local

9 DBS 23 COLLECTIONS C

HOST localhost:27017

CLUSTER Standalone

EDITION MongoDB 5.0.6 Community

Filter your data

- admin
- config
- customer_data
 - customer_details
 - customer_feedback
 - positive_feedback
- library
 - author
 - books_data
- local

> MONGOSH

library.author READ-ONLY

Documents Aggregations Schema Explain Plan Indexes Validation

FILTER {count:{\$in:[12,6,5]}}

PROJECT {field: 0}

SORT {count:-1}

COLLATION {Locale: 'simple'}

MAX TIME MS 60000

Skip 0 Limit 0

view on: library.books_data EDIT VIEW

Displaying documents 1 - 11 of 11

	author	_id	String	count	Int32
1	"Vikram Goyal"			12	
2	"Richard Siddaway"			6	
3	"Don Jones"			6	
4	"Yehuda Katz"			5	
5	"Gavin King"			5	
6	"Jon Skeet"			5	
7	"Christian Bauer"			5	
8	"Erik Hatcher"			4	
9	"Kalen Delaney"			4	

Task 4

Local

9 DBS 24 COLLECTIONS C

HOST localhost:27017

CLUSTER Standalone

EDITION MongoDB 5.0.6 Community

Filter your data

- config
- customer_data
 - customer_details
 - customer_feedback
 - positive_feedback
- library
 - author
 - books_data
 - trend
- local

> MONGOSH

library.trend READ-ONLY

Documents Aggregations Schema Explain Plan Indexes Validation

FILTER {trend:96}

PROJECT {field: 0}

SORT {trend:-1}

COLLATION {Locale: 'simple'}

MAX TIME MS 60000

Skip 0 Limit 0

view on: library.books_data EDIT VIEW

Displaying documents 1 - 1 of 1

	trend	_id	String	trend	Int32
1	"Java"			96	

Local

library.trend

library.books_data

Documents

library.trend (READ-ONLY) VIEW

view on: library.books_data EDIT VIEW

Documents Aggregations Schema Explain Plan Indexes Validation

FILTER: { 'trend': 1 }
PROJECT: { field: 0 }
SORT: { trend: 1 }
COLLATION: { Locale: 'simple' }

MAX TIME MS: 60000
SKIP: 0
LIMIT: 0

Displaying documents 1 - 17 of 17

	trend
1	"internet"
2	"Next Generation Databases"
3	"SOA"
4	"In Action"
5	"Mobile"
6	"Microsoft/.NET"
7	"Algorithmic Art"
8	"Software Development"
9	".NET"

> MONGOSH

Task 5

Local

library.books_data

Aggregations

library.books_data

Documents

library.books_data (Untitled- Modified) SAVE

DOCUMENTS 516 STORAGE SIZE 258.0KB AVG. SIZE 935B INDEXES 1 TOTAL SIZE 20.5KB AVG. SIZE 20.5KB

Aggregations

COLLATION Untitled- Modified SAMPLE MODE AUTO PREVIEW

```

1 /**
2 * path: Path to the array field.
3 * includeArrayIndex: Optional name for index.
4 * preserveNullAndEmptyArrays: Optional
5 *   toggle to unwind null and empty values.
6 */
7 {
8   path: '$writers',
9   preserveNullAndEmptyArrays: true
10 }

```

```

_id: 1
isbn: "1933988673"
pageCount: 416
publishedDate: 2009-04-01T07:00:00.000+00:00
shortDescription: "Unlocking Android: A Developer's Guide"
concise, hands-on inst...
longDescription: "Android is an open source mobile phone based on the Linux ope..."
```

```

_id: 1
isbn: "1933988673"
pageCount: 416
publishedDate: 2009-04-01T07:00:00.000+00:00
shortDescription: "Unlocking Android: A Developer's Guide"
concise, hands-on inst...
longDescription: "Android is an open source mobile phone based on the Linux ope..."
```

\$group

Output after \$group stage (Sample of 1 document)

```

1 /**
2 * _id: The id of the group.
3 * fieldN: The first field name.
4 */
5 {
6   _id: null,
7   name: {
8     $addToSet: '$writers'
9   }
10 }
```

```

570: "William Back"
571: "Kyle Bailey"
572: "Ge Wang"
573: "Brian Ketelsen"
574: "Peter Bakum"
575: "Daniel C. Lynch"
576: "Alvaro Videla"
577: "Joel Hooks"
578: "David Savage"
```

> MONGOSH

Local

9 DBS 24 COLLECTIONS

HOST localhost:27017

CLUSTER Standalone

EDITION MongoDB 5.0.6 Community

Filter your data

- config
- customer_data
 - customer_details
 - customer_feedback
 - positive_feedback
- library
 - author
 - books_data
 - trend
- local

> MONGOSH

library.books_data Aggregations Documents

library.books_data

Documents Aggregations Schema Explain Plan Indexes Validation

COLLATION Untitled- Modified SAVE

SAMPLE MODE AUTO PREVIEW

Create a View

Enter a View Name: auther_name

Cancel Create

```

1 /**
2  * path: $group
3  * include:
4  * preserve:
5  * toggle:
6 */
7 {
8   path: '$writers',
9   preserve: true
10 }

```

```

1 /**
2  * _id: The
3  * _idField:
4 */
5 {
6   _id: null,
7   name: {
8     $addToSet: '$writers'
9   }
10 }

```

```

_id:1
isbn:"1933988673"
pageCount:416
publishedDate:2009-04-01T07:00:00.000+00:00
shortDescription:"Unlocking Android: A Concise, Hands-on Introduction to the Open Source Platform"
longDescription:"Android is an open source platform based on the Linux operating system. It's used to build mobile applications for Google's Android mobile devices, as well as for wearables like Google Glass and smartwatches. This book provides a comprehensive introduction to the Android ecosystem, covering everything from basic concepts to advanced topics like building games and integrating with Google Play services. Whether you're a developer looking to learn more about the platform or a non-developer who wants to understand how it works, this book is the perfect resource."/>

```

Local

9 DBS 25 COLLECTIONS

HOST localhost:27017

CLUSTER Standalone

EDITION MongoDB 5.0.6 Community

Filter your data

- config
- customer_data
 - customer_details
 - customer_feedback
 - positive_feedback
- library
 - author
 - auther_name
 - books_data
 - trend
- local

> MONGOSH

library.auther_name library.books_data

library.auther_name READ-ONLY VIEW

view on: library.books_data EDIT VIEW

Documents Aggregations Schema Explain Plan Indexes Validation

FILTER { field: 'value' }

OPTIONS FIND RESET REFRESH

Displaying documents 1 - 1 of 1

```

_id: null
name: Array
  0: "Brandon Goodin"
  1: "Benjamin L. Kovitz"
  2: "Stephen Holder"
  3: "Magnus Rydin"
  4: "Brandon Trebitsowski"
  5: "Cole Krumholz"
  6: "Jacob K. Andresen"
  7: "Ted G. Lewis"
  8: "Chris Hay"
  9: "Pierre Henri Kuate"
  10: "James P. White"
  11: "Luke Ruth"
  12: "Barry J. Shepherd"
  13: "J. B. Rainsberger with contributions by Scott Stirling"
  14: "Ellen Friedman"
  15: "David A. Black"
  16: "Max Carlson with Glenn MacEwen"
  17: "Stuart McCulloch"
  18: "Robert Kabacoff"
  19: "Felipe Leme"
  20: "David Savage"
  21: "Joel Hooks"
  22: "Daniel C. Lynch"
  23: "Alvaro Videala"

```

Task 6

The screenshot shows the MongoDB Compass interface. The left sidebar lists databases and collections, with 'library.trend' selected. The main area displays a table of documents from the 'trend' collection, which contains fields '_id' and 'trend'. The table has 9 rows of data. A query editor at the top shows the following pipeline:

```
{ $gt: 10 } { field: 0 } { trend: 1 } { Locale: 'simple' }
```

Buttons for 'FIND', 'RESET', and 'REFRESH' are visible.

_id	trend
1	245
2	96
3	41
4	34
5	17
6	16
7	12
8	12
9	11

Task 7

The screenshot shows the MongoDB Compass interface with the 'Aggregations' tab selected for the 'library.books_data' collection. The top right shows statistics: DOCUMENTS 516, STORAGE SIZE 258.0KB, AVG. SIZE 935B, INDEXES 1, TOTAL SIZE 20.5KB, AVG. SIZE 20.5KB. The aggregation pipeline is displayed as:

```
$group
```

The output after the '\$group' stage is shown as a sample of 20 documents:

```
_id: 1
isbn: "1933988673"
pageCount: 416
publishedDate: 2009-04-01T07:00:00.000+00:00
shortDescription: "Unlocking Android: A Developer's Guide to the Platform"
concise, hands-on inst...
longDescription: "Android is an open source mobile phone based on the Linux ope..."
```

Another document sample is shown:

```
_id: 2
isbn: "1935182722"
pageCount: 592
publishedDate: 2011-01-14T08:00:00.000+00:00
shortDescription: "Android in Action, Second Edition: A Comprehensive Tutorial and Reference"
comprehensive tutorial ...
longDescription: "When it comes to mobile almost anything _ and wi..."
```

Local

library.books_data

Aggregations

Documents

DOCUMENTS 516 STORAGE SIZE 256.0KB AVG. SIZE 935B INDEXES 1 TOTAL SIZE 20.5KB AVG. SIZE 20.5KB

HOST localhost:27017

CLUSTER Standalone

EDITION MongoDB 5.0.6 Community

Filter your data

- config
- customer_data
 - customer_details
 - customer_feedback
 - positive_feedback
- library
 - author
 - author_name
 - books_data
 - ...
- trend

MONGOSH

Create a View

Enter a View Name: preffered_date

Cancel Create

ADD STAGE

1 /**
 2 * _id: The
 3 * FieldN:
 4 */
 5 {
 6 _id: '\$p
 7 date: {
 8 \$sum: 1
 9 }
10 }

_id: 1
isbn: "1935182722"
pageCount: 592
publishedDate: 2011-01-14T08:00:00.000+00:00
shortDescription: "Android in Action, Second Edition is a comprehensive tutorial for building mobile applications using Java and the Android framework. It covers almost anything you can do with the Android API, from basic UIs to complex multi-threaded applications." longDescription: "When it comes to mobile development, there's no better guide than the official source. This book is the go-to resource for learning how to build native mobile apps for the Android platform. It's packed with practical examples and step-by-step instructions, making it perfect for both beginners and experienced developers. Whether you're new to mobile app development or looking to expand your skills, this book is an essential resource for anyone working with the Android framework." price: 39.99
rating: 4.5
reviewCount: 123
category: "Technology > Computer Programming > Software Development > Mobile Development"
tags: ["Android", "Java", "Mobile Development", "Programming"]

id: 2006-04-01T08:00:00.000+00:00
date: 1

MongoDB Compass - localhost:27017/library.preferred_date

Connect View Collection Help

Local

library.preferred_date

library.books_data

Documents

view on: library.books_data EDIT VIEW

Documents Aggregations Schema Explain Plan Indexes Validation

FILTER {date:{\$in:[15,7]}}

PROJECT {_id: 0}

SORT {date:-1}

COLLATION { Locale: 'simple' }

MAX TIME MS 60000

FIND RESET ...

Displaying documents 1 - 2 of 2

preferred_date

_id	Date
1	2005-03-01T08:00:00.000+00:00
2	2002-03-01T08:00:00.000+00:00

Type here to search

23°C 12:38 AM 3/10/2022

Task 8

The screenshot shows the MongoDB Compass interface. On the left, the sidebar displays the database structure with the 'books_data' collection selected. The main area is titled 'library.books_data' and shows the 'Aggregations' tab is active. A pipeline stage '\$project' is visible, which includes the following code:

```
1. /*  
2. * specifications: The fields to  
3. * include or exclude.  
4. */  
5. {  
6.     'Book_name':1,'$shortDescription':1  
7. }
```

On the right, the results of the aggregation pipeline are displayed, showing two sample documents. The first document has the following fields:

```
_id: 1  
isbn: "1933988673"  
pageCount: 416  
publishedDate: 2009-04-01T07:00:00.000+00:00  
shortDescription: "Unlocking Android: A Developer's Gui...  
longDescription: "Android is an open source mobile phon...  
based on the Linux ope..."
```

The second document has the following fields:

```
_id: 2  
isbn: "1935182722"  
pageCount: 592  
publishedDate: 2011-01-14T08:00:00.000+00:00  
shortDescription: "Android in Action, Sec...  
comprehensive tutorial +  
longDescription: "When it comes to mobile...  
almost anything_ and wi..."
```

The screenshot shows the same MongoDB Compass interface as the previous one, but with a modal dialog box in the foreground titled 'Create a View'. The dialog contains a single input field labeled 'Enter a View Name' with the value 'short_books' entered. Below the input field are two buttons: 'Cancel' and 'Create'. The background of the interface remains the same, showing the 'Aggregations' tab and the results of the aggregation pipeline.

Local

library.short_books Documents

library.books_data Documents

library.short_books (READ-ONLY) VIEW

view on: library.books_data EDIT VIEW

Documents Aggregations Schema Explain Plan Indexes Validation

FILTER { field: 'value' } OPTIONS FIND RESET REFRESH

Displaying documents 1 - 20 of 516

Document 1: _id:1, shortDescription: "Unlocking Android: A Developer's Guide provides concise, hands-on inst...", Book_name: "Unlocking Android"

Document 2: _id:2, shortDescription: "Android in Action, Second Edition is a comprehensive tutorial for Andr...", Book_name: "Android in Action, Second Edition"

Document 3: _id:3, Book_name: "Specification by Example"

Document 4: _id:4, Book_name: "Flex 3 in Action"

Document 5: _id:5, Book_name: "Flex 4 in Action"

> MONGOSH

Task 9

MongoDB Compass - localhost:27017/library.books_data

Connect View Collection Help

Local

library.books_data Aggregations

library.books_data Documents

DOCUMENTS 516 STORAGE SIZE 238.0KB AVG. SIZE 935B INDEXES 1 TOTAL SIZE 20.5KB AVG. SIZE 20.5KB

Documents Aggregations Schema Explain Plan Indexes Validation

SAMPLE MODE AUTO PREVIEW

Aggregations Stage 1: \$unwind

```

1 /**
2  * path: Path to the array field.
3  * includeArrayIndex: Optional name for index.
4  * preserveNullAndEmptyArrays: Optional
5  * toggle to unwind null and empty values.
6 */
7 {
8   path: '$writers',
9   preserveNullAndEmptyArrays: true
10 }

```

Output after \$unwind stage (Sample of 20 documents)

Aggregations Stage 2: \$group

```

1 /**
2  * _id: The id of the group.
3  * fieldN: The first field name.
4  */
5 {
6   _id: '$writers',
7   books: {
8     $addToSet: '$Book_name'
9   }
10 }

```

Output after \$group stage (Sample of 20 documents)

Karen Bryla

Avi Pfeffer

> MONGOSH

Type here to search

23°C 12:46 AM 3/10/2022

MongoDB Compass - localhost:27017/library.books_data

Connect View Collection Help

Local

9 DBS 22 COLLECTIONS C

HOST localhost:27017

CLUSTER Standalone

EDITION MongoDB 5.0.6 Community

Filter your data

- author_name
- books_data
- preferred_date
- short_books
- trend
- local
- startup_log
- restaurant
- restaurant_database
- students_data

library.books_data

Aggregations Documents

516 DOCUMENTS 258.0KB STORAGE SIZE 935B AVG. SIZE INDEXES 1 TOTAL SIZE 20.5KB AVG. SIZE 20.5KB

Documents Aggregations Schema Explain Plan Indexes Validation

`/* INCLUDEONLY: OPTIONAL NAME FOR INDEX */
preservesNullAndEmptyValues: true,
options: {
 path: '$books',
 preserves: true
}`

`_id: 1
Author: "Alvaro Videila"`

`CREATEVIEWBOOKSCOLLECTION
OPTIONAL NAME FOR INDEX
preservesNullAndEmptyValues: true,
options: {
 path: '$books',
 preserves: true
}
_id: 1
Author: "Alvaro Videila"`

Create a View

Enter a View Name

books_collection

Cancel Create

MongoDB Compass - localhost:27017/library.books_collection

Connect View Collection Help

Local

9 DBS 28 COLLECTIONS C

HOST localhost:27017

CLUSTER Standalone

EDITION MongoDB 5.0.6 Community

Filter your data

- author_name
- books_collection
- books_data
- preferred_date
- short_books
- trend
- local
- startup_log
- restaurant
- restaurant_database

library.books_collection

READ-ONLY VIEW

view on: library.books_data EDIT VIEW

Documents Aggregations Schema Explain Plan Indexes Validation

FILTER { field: 'value' }

OPTIONS FIND RESET ...

Displaying documents 1 - 20 of 580

books_collection

	_id String	books Array
1	"Alvaro Videila"	[] 1 elements
2	"Peter Bakkum"	[] 1 elements
3	"Richard S. Hall"	[] 1 elements
4	"Sam Ahn"	[] 1 elements
5	"Daniel Minoli"	[] 3 elements
6	"Prasad A. Chodavarapu"	[] 1 elements
7	"Daniele Bochicchio"	[] 2 elements
8	"Ashley Atkins"	[] 1 elements
9	"Phil Wicklund"	[] 1 elements
10	"Matthew D. Groves"	[] 1 elements
11	"Robin Anil"	[] 1 elements
12	"Eric Pulier and Hugh Taylor"	[] 1 elements

Type here to search

MongoDB Compass - localhost:27017/library.books_collection

Connect View Collection Help

Local

9 DBS 28 COLLECTIONS

HOST localhost:27017

CLUSTER Standalone

EDITION MongoDB 5.0.6 Community

Filter your data

- author_name
- books_collection
- books_data
- preferred_date
- short_books
- trend
- local
- startup_log
- restaurant
- restaurant_database

library.books_collection

Documents Aggregations Schema Explain Plan Indexes Validation

FILTER { field: 'value' }

VIEW OPTIONS FIND RESET REFRESH

Displaying documents 1 - 20 of 580

	books_collection	books []	_id	objectId	0 String	1 String	2 String
1	"Alvaro Videla"	"RabbitMQ in Action"	No field				
2	"Peter Bakum"	"MongoDB in Action, Second Edit"	No field				
3	"Richard S. Hall"	"OSGi in Action"	No field				
4	"Sam Ahn"	"Adobe AIR in Action"	No field				
5	"Daniel Minoli"	"Planning and Managing ATM Networks"	"Multiprotocol over ATM"	"client/Server Applications on			
6	"Prasad A. Chodavarapu"	"SOA Security"	No field				
7	"Daniele Bochicchio"	"Entity Framework 4 in Action"	"ASP.NET 4.0 in Practice"	No field			
8	"Ashley Atkins"	"Adobe AIR in Action"	No field				
9	"Phil Wicklund"	"SharePoint 2010 Workflows in Action"	No field				
10	"Matthew D. Groves"	"AOP in .NET"	No field				
11	"Robin Anil"	"Mahout in Action"	No field				
12	"Eric Pulier and Hugh Taylor"	"Understanding Enterprise SOA"	No field				

> MONGOSH

Type here to search

12:48 AM 3/10/2022

Task 10

Local

9 DBS 28 COLLECTIONS

HOST localhost:27017

CLUSTER Standalone

EDITION MongoDB 5.0.6 Community

Filter your data

- positive_feedback
- library
- author
- author_name
- books_collection
- books_data
- preferred_date
- short_books
- trend
- local

library.books_data

Documents Aggregations Schema Explain Plan Indexes Validation

COLLATION Untitled- Modified SAVE SAMPLE MODE AUTO PREVIEW

DOCUMENTS 516 STORAGE SIZE 258.0KB AVG. SIZE 935B INDEXES 1 TOTAL SIZE 20.5KB AVG. SIZE 20.5KB

```

1 /**
2  * path: Path to the array field.
3  * includeArrayIndex: Optional name for index.
4  * preserveNullAndEmptyArrays: Optional
5  *   toggle to unwind null and empty values.
6 */
7 {
8   path: '$categories',
9   preserveNullAndEmptyArrays: true
10 }

```

_id: 1
isbn: "1933988673"
pageCount: 416
publishedDate: 2009-04-01T07:00:00.000+00:00
shortDescription: "Unlocking Android: A Developer's Guide"
longDescription: "Android is an open source mobile phone based on the Linux ope..."

\$group Output after \$group stage (Sample of 1 document)

```

1 /**
2  * _id: The id of the group.
3  * fieldN: The first field name.
4 */
5 {
6   _id: null,
7   category: {
8     $addToSet: '$categories'
9   }
10 }

```

_id: null
category: Array
0: "PowerBuilder"
1: "Programming"
2: "Object-Oriented Programming"
3: "Internet"
4: "Next Generation Databases"
5: "SOA"

The screenshot shows the MongoDB Compass interface with the database 'library' selected. In the left sidebar, the collection 'books_data' is expanded, showing sub-collections like 'author', 'author_name', 'books_collection', 'preferred_date', 'short_books', 'trend', and 'local'. The main workspace displays the 'library.books_data' collection, which has 516 documents. The 'Aggregations' tab is active, showing a pipeline stage '\$group' with a field path '\$category'. A modal window titled 'Create a View' is open, prompting for a view name, with 'categories_books' entered into the input field. Below the input field are 'Cancel' and 'Create' buttons. To the right of the modal, a preview pane shows a document with an array of categories: 'PowerBuilder', 'Programming', 'Object-Oriented Programming', 'Internet', 'Next Generation Databases', and 'SOA'.

The screenshot shows the MongoDB Compass interface with the following details:

- Local** database selected.
- 9 DBS** and **29 COLLECTIONS** listed.
- library.categories_books** collection selected, shown as **READ-ONLY**.
- Documents** tab selected.
- FILTER** query: `{ field: 'value' }`
- OPTIONS**, **FIND**, **RESET**, and **...** buttons.
- Displaying documents 1 - 1 of 1**.
- Document Data:**

```
_id: null
category: Array
  0: "Programming"
  1: "PowerBuilder"
  2: "Internet"
  3: "SOA"
  4: "Next Generation Databases"
  5: "Python"
  6: "Mobile"
  7: "In Action"
  8: ""
  9: "Microsoft/.NET"
  10: "Web Development"
  11: "Mobile Technology"
  12: "XML"
  13: "Perl"
  14: "Algorithmic Art"
  15: "Networking"
  16: ".NET"
  17: "Software Development"
  18: "P"
  19: "Internet"
  20: "Miscellaneous"
  21: "Java"
  22: "Java"
  23: "Business"
```

Task 11

library.books_data

DOCUMENTS 516 STORAGE SIZE 258.0KB AVG. SIZE 935B INDEXES 1 TOTAL SIZE 20.5KB AVG. SIZE 20.5KB

Documents Aggregations Schema Explain Plan Indexes Validation

FILTER {pageCount: {\$gt: 1}} PROJECT { field: 0 } SORT {pageCount: 1} COLLATION { Locale: 'simple' }

MAX TIME MS 60000 SKIP 0 LIMIT 0

ADD DATA VIEW

Displaying documents 1 - 20 of 265

`_id: 293
isbn: "132632942"
pageCount: 180
publishedDate: 1996-06-01T07:00:00.000+00:00
shortDescription: "Making Sense of Java clearly and concisely explains the concepts, feat..."
longDescription: "The meteoric rise of interest in Java, and the simultaneous rise in Ja..."
status: "PUBLISH"
> categories: Array
Book_name: "Making Sense of Java"
> writers: Array`

`_id: 176
isbn: "132612313"
pageCount: 200
publishedDate: 1996-06-01T07:00:00.000+00:00
shortDescription: "Object Technology Centers of Excellence provides guidance to those cha..."
longDescription: "Object Technology Centers (OTC) are technology transfer catalysts for ..."
status: "PUBLISH"
> categories: Array`

library.books_data

DOCUMENTS 516 STORAGE SIZE 258.0KB AVG. SIZE 935B INDEXES 1 TOTAL SIZE 20.5KB AVG. SIZE 20.5KB

Documents Aggregations Schema Explain Plan Indexes Validation

FILTER { field: 'value' } PROJECT { field: 0 } SORT {pageCount: -1} COLLATION { Locale: 'simple' }

MAX TIME MS 60000 SKIP 0 LIMIT 0

ADD DATA VIEW

Displaying documents 1 - 20 of 516

`_id: 70
isbn: "1884777929"
pageCount: 1101
publishedDate: 2000-08-01T07:00:00.000+00:00
longDescription: "The Essential Guide to PeopleSoft Development and Customization is an ..."
status: "PUBLISH"
> categories: Array
Book_name: "Essential Guide to Peoplesoft Development and Customization"
> writers: Array`

`_id: 315
isbn: "1935182129"
pageCount: 1096
publishedDate: 2008-12-01T08:00:00.000+00:00
shortDescription: "This unique collector's volume includes every daily strip from Novembe..."
longDescription: "For over 10 years, UserFriendly has been entertaining geeks of all str..."
status: "PUBLISH"
> categories: Array
Book_name: "The Complete Years of UserFriendly.com"`