

Hands-on Lab: Working with Databases in Cloudant



Estimated time needed: 30 minutes

Objectives

After completing this lab you will be able to:

- Create a database through the Cloudant dashboard
- Insert documents into your database to populate it
- Query documents with specific criteria
- Modify documents by updating and deleting them

Prerequisite

In order to complete this lab, you will need to create an instance of Cloudant on IBM Cloud. If you haven't yet created one, you can create one by referring to the [Create an Instance of IBM Cloudant](#) lab.

Note: While working on this lab, you may be prompted to login when ever your session expires. Use your credentials to authenticate. This may happen when you step out or leave your Cloudant session unattended.

Exercise 1 - Launch Cloudant Dashboard

Step 1: Click on [cloud.ibm.com/resources](#).

Step 2: Click on the Services chevron.

Step 3: Click on your instance of Cloudant.

► Click here for Hint

Step 4: Click on Launch Dashboard.

The screenshot shows the IBM Cloud console interface. At the top, there's a navigation bar with 'IBM Cloud' and a search bar. Below it, the 'Resource list' shows 'mycloudant' as an active resource. The left sidebar has a 'Manage' section with options like 'Service credentials', 'Plan', and 'Connections'. The main area displays the 'Overview' tab for the Cloudant instance, showing deployment details such as CRN, Location (London), External Endpoint, and Authentication methods. A blue arrow points to the 'Launch Dashboard' button in the top right corner of the instance details section.

Exercise 2 - Create Database

Step 1: On the dashboard click on Create Database.

The screenshot shows the Cloudant 'Databases' dashboard. It features a sidebar with navigation icons and a main area with a table of databases. The table has columns for 'Name', 'Size', '# of Docs', 'Partitioned', and 'Actions'. A blue arrow points to the 'Create Database' button in the top right corner of the dashboard.

Step 2: Type **housing** as database name. Select 'Non-partitioned' and click on Create.

Create Database

Create Database

Database name

housing

Partitioning

☐ Partitioned

☒ Non-partitioned

> What is a Partitioned Database?

Cancel

Create

In a few moments the database will be created. and you will be taken to a page that looks like the one below.

housing

Document ID

Options

JSON

All Documents

Query

Permissions

Changes

Design Documents

Create Document

No Documents Found

Showing 0 documents. Documents per page: 20

Exercise 3 - Insert documents

Step 1: Click on `Create Document` to insert a document.

You will be presented the below screen, with a simple sample document.

housing

> New Document

JSON

Create Document

Cancel

1. {

2. "id": "0ec51619d15d138e95f1693c1c085ac6"

3. }

Cloudant uses `_id` key to uniquely identify a document. It is equivalent to the primary key in RDBMS. You can use your own custom values for `_id`.

Copy and paste the below json document and click on `Create Document` button, as show in the image below.

```
1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7

1. {
2.   "_id": "1",
3.   "square_feet": 1500,
4.   "bedrooms": 3,
5.   "price": 147890
6. }
```

Copied!

housing

> New Document

JSON

Create Document

Cancel

1. {

2. "id": "1",

3. "square_feet": 1500,

4. "bedrooms": 3,

5. "price": 147890

6. }

Once the document is created, Cloudant will take you to a page with the list of documents.

Click on the `Table` view button. You should see a screen similar to the one below.

Follow the above mentioned process and insert the below 4 documents. Ensure you only insert one document at a time.

```
1. {
2.     "_id": "2",
3.     "square_feet": 1800,
4.     "bedrooms": 3,
5.     "price": 182650
6. }
```

```
1.
2. {
3.     "_id": "3",
4.     "square_feet": 2000,
5.     "bedrooms": 3,
6.     "price": 201260
7. }
```

```
1.
2. {
3.     "_id": "4",
4.     "square_feet": 2200,
5.     "bedrooms": 4,
6.     "price": 234980
7. }
```

```
1.
2. {
3.     "_id": "5",
4.     "square_feet": 1100,
5.     "bedrooms": 2,
6.     "price": 114310
7. }
```

After inserting the above documents your database should look like this.

Cloudant is a NoSQL database. It is a schema less database. All documents in a database need not have the same schema.

Let us insert two documents that have additional keys, compared to the previously inserted documents.

```
1.
2. {
3.     "_id": "6",
4.     "square feet": 1400,
```

```
5.   "bedrooms":3,
6.   "price":123140,
7.   "type":"apartment",
8.   "floor":5
9. }

1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7
8. 8
9. 9

1. {
2. {
3.   "_id":"7",
4.   "square_feet":3400,
5.   "bedrooms":4,
6.   "price":342720,
7.   "type":"villa",
8.   "car_parks":3
9. }
```

After inserting the above documents your database should now look like this.

housing

Document ID

Options

{ } JSON

All Documents

Query

Permissions

Changes

Design Documents

Table

Metadata

{ } JSON

Create Document

	_id	bedrooms	price	square_feet	type
<input type="checkbox"/>	1	3	147890	1500	
<input type="checkbox"/>	2	3	182650	1800	
<input type="checkbox"/>	3	3	201260	2000	
<input type="checkbox"/>	4	4	234980	2200	
<input type="checkbox"/>	5	2	114310	1100	
<input type="checkbox"/>	6	3	123140	1400	apartment
<input type="checkbox"/>	7	4	342720	3400	villa

Exercise 4 - Query documents

Click on Query as shown in the image below.

housing

Document ID

Options

{ } JSON

All Documents

Query

Permissions

Changes

Design Documents

Table

Metadata

{ } JSON

Create Document

	_id	bedrooms	price	square_feet	type
<input type="checkbox"/>	1	3	147890	1500	
<input type="checkbox"/>	2	3	182650	1800	
<input type="checkbox"/>	3	3	201260	2000	
<input type="checkbox"/>	4	4	234980	2200	
<input type="checkbox"/>	5	2	114310	1100	
<input type="checkbox"/>	6	3	123140	1400	apartment
<input type="checkbox"/>	7	4	342720	3400	villa

You will see a screen like this.

↔

housing > Cloudant Query

Query history

Cloudant Query ?

1- {

2- "selector": {

3- "_id": {

4- "\$gt": "0"

5- }

6- },

7- "fields": [

8- "_id",

9- "_rev"

10-],

11- "sort": [

12- {

13- "_id": "asc"

14- }

15-]

16- }

Run Query

Explain


manage indexes

{} JSON

📖

🔔

Create Document



No Documents Found

Replace the default query with the one given below, and click on the Run Query button.

```
1. 1
2. 2
3. 3

1. {
2.   "selector": {}
3. }
```

Copied!

↔

housing > Cloudant Query

Query history

Cloudant Query ?

1

2

3- {

4- "selector": {}

5- }

6

7

Run Query

Explain

manage indexes

You should see an output like this.

↔

housing > Cloudant Query

Query history

Cloudant Query ?

1- {

2- "selector": {}

3- }

Run Query

Explain

manage indexes

ⓘ Executed in 3 ms

{} JSON

📖

🔔

Create Document

☐

Table

{} JSON

📄

	_id	bedrooms	price	square_feet	type
<input type="checkbox"/>	1	3	147890	1500	
<input type="checkbox"/>	2	3	182650	1800	
<input type="checkbox"/>	3	3	201260	2000	
<input type="checkbox"/>	4	4	234980	2200	
<input type="checkbox"/>	5	2	114310	1100	
<input type="checkbox"/>	6	3	123140	1400	apartment
<input type="checkbox"/>	7	4	342720	3400	villa

Try out these Cloudant queries.

Select all fields in all documents

```
1. 1
2. 2
3. 3
4. 4

1. {
2.   "selector": {}
3. }
4. }
```

Copied!

Select all fields in all documents with _id greater than 4

```
1. 1
2. 2
```

```
3. 3
4. 4
5. 5
6. 6
7. 7
8. 8

1.
2. {
3.   "selector": {
4.     "_id": {
5.       "$gt": "4"
6.     }
7.   }
8. }
```

Copied!

Select all fields in all documents with _id less than 4

```
1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7
8. 8

1.
2. {
3.   "selector": {
4.     "_id": {
5.       "$lt": "4"
6.     }
7.   }
8. }
```

Copied!

Select the fields _id, square_feet and price in all documents

```
1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7
8. 8
9. 9

1.
2. {
3.   "selector": {},
4.   "fields": {
5.     "_id",
6.     "price",
7.     "square_feet"
8.   }
9. }
```

Copied!

Select the fields _id, square_feet and price in documents with _id less than 4

```
1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7
8. 8
9. 9
10. 10
11. 11
12. 12
13. 13

1.
2. {
3.   "selector": {
4.     "_id": {
5.       "$lt": "4"
6.     }
7.   },
8.   "fields": {
9.     "_id",
10.    "price",
11.    "square_feet"
12.   }
13. }
```

Copied!

Select the fields _id, bedrooms and price in documents with _id greater than 2 and sort by _id ascending

```
1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7
8. 8
9. 9
10. 10
11. 11
12. 12
13. 13
14. 14
15. 15
16. 16
17. 17
18. 18

1.
2. {
3.   "selector": {
4.     "_id": {
5.       "$gt": "2"
6.     }
7.   },
8.   "fields": {
9.     "_id",
10.    "price",
11.    "square_feet"
12.   },
13.   "sort": [
14.     {
15.       "_id": "asc"
16.     }
17.   ]
18. }
```

Copied!

Select the fields `_id`, `bedrooms` and `price` in documents with `_id` greater than 2 and sort by `_id` descending

```
1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7
8. 8
9. 9
10. 10
11. 11
12. 12
13. 13
14. 14
15. 15
16. 16
17. 17
18. 18

1.
2. {
3.   "selector": {
4.     "_id": {
5.       "$gt": "2"
6.     }
7.   },
8.   "fields": [
9.     "_id",
10.    "price",
11.    "square_feet"
12.  ],
13.   "sort": {
14.     {
15.       "_id": "desc"
16.     }
17.   }
18. }
```

Copied!

Exercise 5 - Update documents

Click on the database name `housing` as shown in the image below.

housing > Cloudant Query

Query history

Cloudant Query

1+ {

2 | "selector": {

3 }

Run Query

Explain

Executed in 3 ms

manage indexes

Table

JSON

Create Document

	_id	bedrooms	price	square_feet	type
<input type="checkbox"/>	1	3	147890	1500	
<input type="checkbox"/>	2	3	182650	1800	
<input type="checkbox"/>	3	3	201260	2000	
<input type="checkbox"/>	4	4	234980	2200	
<input type="checkbox"/>	5	2	114310	1100	
<input type="checkbox"/>	6	3	123140	1400	apartment
<input type="checkbox"/>	7	4	342720	3400	villa

You will see a screen as in the image below.

housing

All Documents

Query

Permissions

Changes

Design Documents

Table

Metadata

JSON

Create Document

	_id	bedrooms	price	square_feet	type
<input type="checkbox"/>	1	3	147890	1500	
<input type="checkbox"/>	2	3	182650	1800	
<input type="checkbox"/>	3	3	201260	2000	
<input type="checkbox"/>	4	4	234980	2200	
<input type="checkbox"/>	5	2	114310	1100	
<input type="checkbox"/>	6	3	123140	1400	apartment
<input type="checkbox"/>	7	4	342720	3400	villa

Click on the document with `_id` 7.

housing

Document ID

Options {} JSON

Table Metadata {} JSON

Create Document

	_id	bedrooms	price	square_feet	type
<input type="checkbox"/>	1	3	147890	1500	
<input type="checkbox"/>	2	3	182650	1800	
<input type="checkbox"/>	3	3	201260	2000	
<input type="checkbox"/>	4	4	234980	2200	
<input type="checkbox"/>	5	2	114310	1100	
<input type="checkbox"/>	6	3	123140	1400	apartment
<input type="checkbox"/>	7	4	342720	3400	villa

The document will open up like this.

housing > 7

Save Changes Cancel

Upload Attachment Clone Document Delete

```

1 {
2   "_id": "7",
3   "_rev": "1-6c4aba2b36f6cfa1bee45f5b2220a578",
4   "square_feet": 3400,
5   "bedrooms": 4,
6   "price": 342720,
7   "type": "villa",
8   "car_parks": 3
9 }

```

Change the number of car_parks to 4 and add facing key with value East, as shown in the image below. Click save changes to save the document.

housing > 7

Save Changes Cancel

Upload Attachment Clone Document Delete

```

1 {
2   "_id": "7",
3   "_rev": "1-6c4aba2b36f6cfa1bee45f5b2220a578",
4   "square_feet": 3400,
5   "bedrooms": 4,
6   "price": 342720,
7   "type": "villa",
8   "car_parks": 4,
9   "facing": "East"
10 }

```

Exercise 6 - Delete documents

Select the document you wish to delete and click on the delete icon as shown in the image below.

housing

Document ID

Options {} JSON

Table Metadata {} JSON

Create Document

	_id	bedrooms	price	square_feet	type
<input type="checkbox"/>	1	3	147890	1500	
<input type="checkbox"/>	2	3	182650	1800	
<input type="checkbox"/>	3	3	201260	2000	
<input type="checkbox"/>	4	4	234980	2200	
<input checked="" type="checkbox"/>	5	2	114310	1100	
<input type="checkbox"/>	6	3	123140	1400	apartment
<input type="checkbox"/>	7	4	342720	3400	villa

You will get a pop up asking "Are you sure you want to delete this doc?"

Click ok.

Practice exercises

1. Create a database named **diamonds**.

▼ Click here for Hint

Click on Create Database

Enter **diamonds** as the database name.

Select 'Non-partitioned'.

Click on Create

Refer to Exercise 2 if you wish to revise this topic.

▼ Click here for Solution

Database name

Create Database

{ } JSON

Database name

diamonds

Partitioning

Partitioned

Non-partitioned

What is a partitioned Database?

Cancel

Create

Name	Size	# of Docs	Partitioned
_replicator	4.8 KB	2	No
planets	1.4 KB	1	No
training	1.9 KB	1	No
training_replica	2.1 KB	1	No

Showing 1-4 of 4 databases

2. Insert the below documents into the **diamonds** database.

- 1. 1
- 2. 2
- 3. 3
- 4. 4
- 5. 5
- 6. 6
- 7. 7
- 8. 8
- 9. 9
- 10. 10
- 11. 11
- 12. 12
- 13. 13
- 14. 14
- 15. 15
- 16. 16
- 17. 17
- 18. 18
- 19. 19
- 20. 20
- 21. 21
- 22. 22
- 23. 23
- 24. 24
- 25. 25
- 26. 26
- 27. 27
- 28. 28
- 29. 29
- 30. 30
- 31. 31
- 32. 32
- 33. 33
- 34. 34
- 35. 35
- 36. 36
- 37. 37
- 38. 38
- 39. 39
- 40. 40
- 41. 41
- 42. 42
- 43. 43
- 44. 44
- 45. 45
- 46. 46
- 47. 47
- 48. 48
- 49. 49
- 50. 50
- 51. 51
- 52. 52
- 53. 53
- 54. 54
- 55. 55
- 56. 56
- 57. 57
- 58. 58
- 59. 59
- 60. 60
- 61. 61
- 62. 62
- 63. 63
- 64. 64
- 65. 65
- 66. 66
- 67. 67
- 68. 68
- 69. 69
- 70. 70
- 71. 71
- 72. 72

```
73. 73
74. 74
75. 75
76. 76
77. 77
78. 78
79. 79
80. 80
81. 81
82. 82
83. 83
84. 84
85. 85
86. 86
87. 87
88. 88
89. 89
90. 90
91. 91
92. 92
93. 93
94. 94
95. 95
96. 96
97. 97
98. 98
99. 99
100. 100
101. 101
102. 102
103. 103
104. 104
105. 105
106. 106
107. 107
108. 108
109. 109
110. 110
111. 111
112. 112
113. 113
114. 114

1.  {
2.    "_id": "1",
3.    "carat": 0.31,
4.    "cut": "Ideal",
5.    "color": "J",
6.    "clarity": "SI2",
7.    "depth": 62.2,
8.    "table": 54,
9.    "price": 339
10. }
11.
12. {
13.   "_id": "2",
14.   "carat": 0.2,
15.   "cut": "Premium",
16.   "color": "E",
17.   "clarity": "SI2",
18.   "depth": 60.2,
19.   "table": 62,
20.   "price": 351
21. }
22.
23.
24. {
25.   "_id": "3",
26.   "carat": 0.32,
27.   "cut": "Premium",
28.   "color": "E",
29.   "clarity": "I1",
30.   "depth": 60.9,
31.   "table": 58,
32.   "price": 342
33. }
34.
35.
36.
37. {
38.   "_id": "4",
39.   "carat": 0.3,
40.   "cut": "Good",
41.   "color": "J",
42.   "clarity": "SI1",
43.   "depth": 63.4,
44.   "table": 54,
45.   "price": 349
46. }
47.
48.
49. {
50.   "_id": "5",
51.   "carat": 0.3,
52.   "cut": "Good",
53.   "color": "J",
54.   "clarity": "SI1",
55.   "depth": 63.8,
56.   "table": 56,
57.   "price": 347
58. }
59.
60.
61. {
62.   "_id": "6",
63.   "carat": 0.3,
64.   "cut": "Very Good",
65.   "color": "J",
66.   "clarity": "SI1",
67.   "depth": 62.7,
68.   "table": 59,
69.   "price": 349
70. }
71.
72. {
73.   "_id": "7",
74.   "carat": 0.3,
75.   "cut": "Good",
76.   "color": "I",
77.   "clarity": "SI2",
78.   "depth": 63.3,
79.   "table": 56,
80.   "price": 343
81. }
82.
83. {
84.   "_id": "8",
85.   "carat": 0.23,
86.   "cut": "Very Good",
87.   "color": "E",
88.   "clarity": "VS2",
89.   "depth": 63.8,
90.   "table": 55,
91.   "price": 339
92. }
93.
94. {
95.   "_id": "9",
96.   "carat": 0.23,
97.   "cut": "Very Good",
```

```
98.   "color": "H",
99.   "clarity": "VS1",
100.  "depth": 61,
101.  "table": 57,
102.  "price": 323
103. }
104.
105. {
106.   "_id": "10",
107.   "carat": 0.31,
108.   "cut": "Very Good",
109.   "color": "J",
110.   "clarity": "SI1",
111.   "depth": 59.4,
112.   "table": 62,
113.   "price": 346
114. }
```

Copied!

▼ Click here for Hint

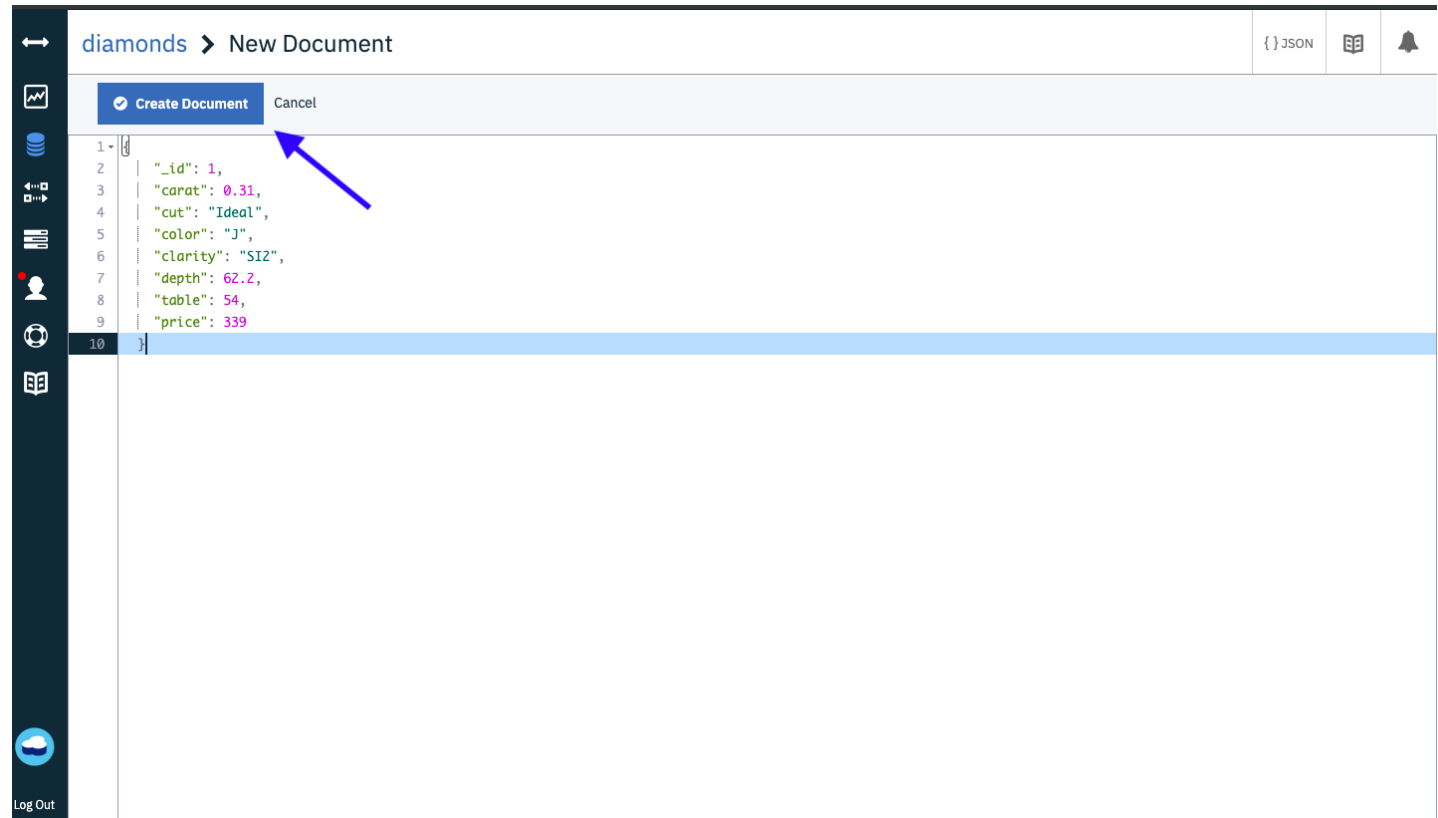
Click on Create Document

Copy and paste the document in the text box.

Click on Create Document

Refer to Exercise 3 if you wish to revise this topic.

▼ Click here for Solution



3. Write a query to fetch all documents

▼ Click here for Hint

Go to the **Query** page.

Write the query in JSON form in the query box.

Click on Run Query

Refer to Exercise 4 if you wish to revise this topic.

▼ Click here for Solution

↔

Cloudant Query

Query history

Cloudant Query

1-
2-
3-
}

"selector": {}

Run Query

Explain

manage indexes

Executed in 3 ms

Log Out

TableJSON

Create Document

	_id	carat	clarity	color	cut
<input type="checkbox"/>	1	0.31	SI2	J	Ideal
<input type="checkbox"/>	10	0.31	SI1	J	Very Good
<input type="checkbox"/>	2	0.2	SI2	E	Premium
<input type="checkbox"/>	3	0.32	I1	E	Premium
<input type="checkbox"/>	4	0.3	SI1	J	Good
<input type="checkbox"/>	5	0.3	SI1	J	Good
<input type="checkbox"/>	6	0.3	SI1	J	Very Good
<input type="checkbox"/>	7	0.3	SI2	I	Good
<input type="checkbox"/>	8	0.23	VS2	E	Very Good
<input type="checkbox"/>	9	0.23	VS1	H	Very Good

Showing 5 of 9 columns.

Show all columns.

Showing document 1 - 10.

Documents per page: 20

<>

4. Write a query to fetch all documents with `_id` greater than 2

▼ Click here for Hint

Go to the **Query** page.

Write the query in JSON form in the query box.

Click on **Run Query**

Refer to Exercise 4 if you wish to revise this topic.

▼ Click here for Solution

↔

Cloudant Query

Query history

Cloudant Query

1-
2-
3-
4-
5-
6-
7-
}

"selector": {
 "_id": {
 "\$gt": "2"
 }
}

Run Query

Explain

manage indexes

Executed in 3 ms

Log Out

TableJSON

Create Document

	_id	carat	clarity	color	cut
<input type="checkbox"/>	3	0.32	I1	E	Premium
<input type="checkbox"/>	4	0.3	SI1	J	Good
<input type="checkbox"/>	5	0.3	SI1	J	Good
<input type="checkbox"/>	6	0.3	SI1	J	Very Good
<input type="checkbox"/>	7	0.3	SI2	I	Good
<input type="checkbox"/>	8	0.23	VS2	E	Very Good
<input type="checkbox"/>	9	0.23	VS1	H	Very Good

Showing 5 of 9 columns.

Show all columns.

Showing document 1 - 7.

Documents per page: 20

<>

5. Write a query to fetch all documents with `_id` less than 4

▼ Click here for Hint

Go to the **Query** page.

Write the query in JSON form in the query box.

Click on **Run Query**

Refer to Exercise 4 if you wish to revise this topic.

▼ Click here for Solution

↔ diamonds > Cloudant Query

Query history

Cloudant Query ?

```
1 {
2   "selector": {
3     "_id": {
4       "$lt": "4"
5     }
6   }
7 }
```

Run Query

Explain

manage indexes

● Executed in 2 ms

Log Out

Table

JSON

Create Document

	_id	carat	clarity	color	cut
<input type="checkbox"/>	1	0.31	SI2	J	Ideal
<input type="checkbox"/>	10	0.31	SI1	J	Very Good
<input type="checkbox"/>	2	0.2	SI2	E	Premium
<input type="checkbox"/>	3	0.32	I1	E	Premium

Showing 5 of 9 columns. ☐ Show all columns.

Showing document 1 - 4. Documents per page: 20

6. Set the price of the diamond with _id 7 to 352

▼ Click here for Hint

From the list of documents, click on the document with _id 7.

Make the changes.

Click on Save Changes

Refer to Exercise 5 if you wish to revise this topic.

▼ Click here for Solution

↔ diamonds > 7

Save Changes

Cancel

Upload Attachment

Clone Document

Delete

```
1 {
2   "_id": "7",
3   "_rev": "1-b709e1c9ca25953abb6e0f991c14ec31",
4   "carat": 0.3,
5   "cut": "Good",
6   "color": "I",
7   "clarity": "SI2",
8   "depth": 63.3,
9   "table": 56,
10  "price": 352
11 }
```

Log Out

7. Delete the document with _id 3

▼ Click here for Hint

From the list of documents, select the document with _id 3.

Click on the delete icon.

Refer to Exercise 6 if you wish to revise this topic.

▼ Click here for Solution

↔

◀ diamonds

⋮

All Documents

+

Query

Permissions

Changes

Design Documents

+

Log Out

Document ID

▼

Options

{ } JSON

Create Document

Table

Metadata

{ } JSON

_id

▼

carat

▼

clarity

▼

color

▼

cut

▼

1

0.31

SI2

J

Ideal

10

0.31

SI1

J

Very Good

2

0.2

SI2

E

Premium

☒

3

0.32

I1

E

Premium

4

0.3

SI1

J

Good

5

0.3

SI1

J

Good

6

0.3

SI1

J

Very Good

7

0.3

SI2

I

Good

8

0.23

VS2

E

Very Good

9

0.23

VS1

H

Very Good

Showing 5 of 9 columns.

☐ Show all columns.

Showing document 1 - 10.

Documents per page: 20

▼

◀

▶

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Change Log

Date (YYYY-MM-DD)	Version	Changed By	Change Description
2021-10-25	0.5	Kathy An	Updated lab instructions
2021-04-28	0.4	Steve Ryan	Changed IBM cloud links to markdown format
2021-04-14	0.3	Steve Ryan	Review pass
2021-04-13	0.2	Ramesh Sannareddy	Added hints and solutions to practice exercises
2021-04-6	0.1	Ramesh Sannareddy	Created initial version of the lab

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