

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.

IBM Cloud

Search resources and offerings...

Resource list /

mycloudant

Active

Add tags

Manage

Service credentials

Plan

Connections

Overview

Dashboard

Capacity

Deployment details

CRN

crn:v1:bluemix:public:cl
db5a8db9::

Location

London

External Endpoint

[https://4646e655-6aee](#)

External Endpoint (preferred)

[https://4646e655-6aee](#)

Authentication methods

[IBM Cloud IAM](#) and [C](#)

Activity Tracker event types

Management

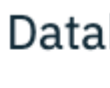
Disk encryption

Yes. Automatically gene

Capacity details

Exercise 2 - Create Database

Step 1: On the dashboard click on Create Database.





Databases


Your Databases


Name	Size	# of Docs
------	------	-----------

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

 Create Database







Create Database

Database name

housing

Partitioning

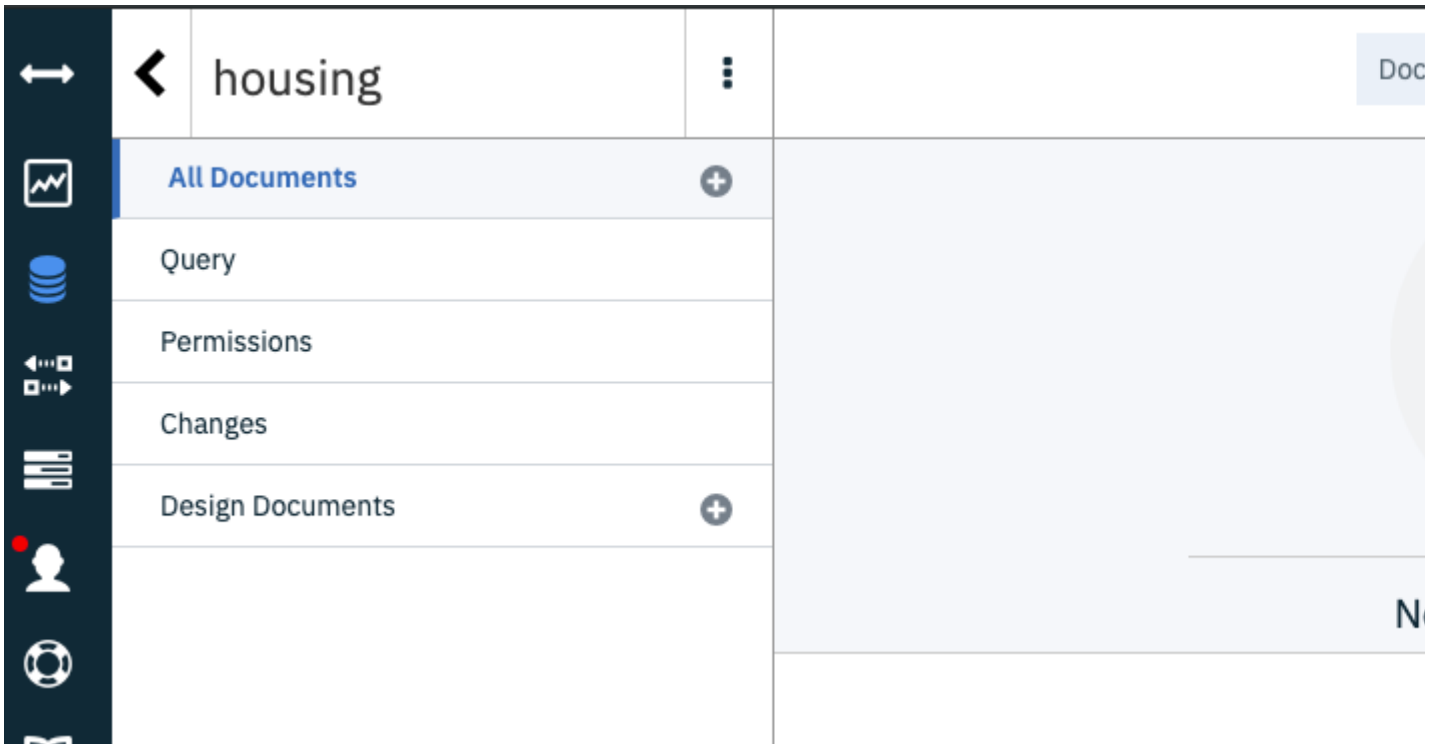
☐ Partitioned ☒ Non-partitioned

➤ What is a Partitioned Database?

Cancel

Create

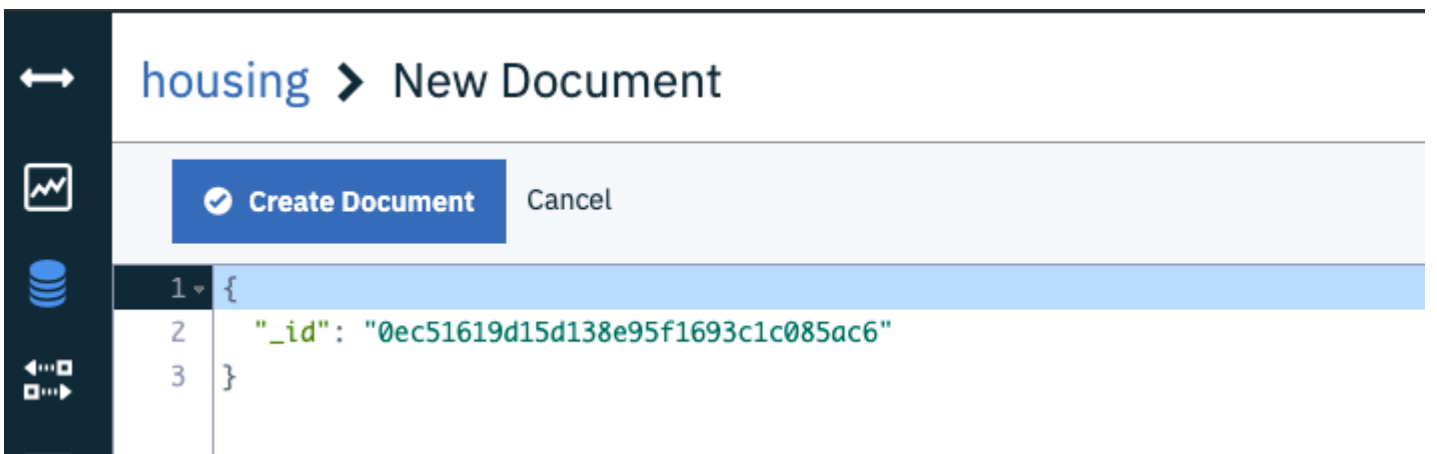
In a few moments the database will be created, and you will be taken to a page that looks like the one below.



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.



Cloudbase 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`.

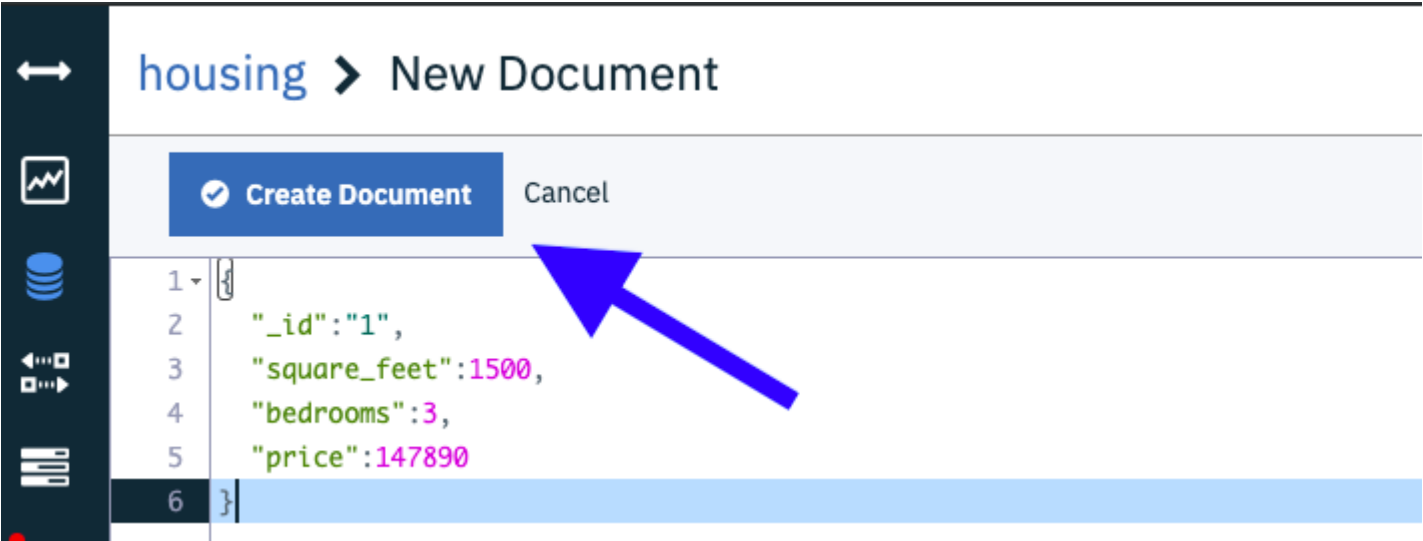
Copy and paste the below json document and click on Create Document button, as show in the image below.

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

- 1.
2. {
3. "`_id`": "1",
4. "`square_feet`": 1500,
5. "`bedrooms`": 3,

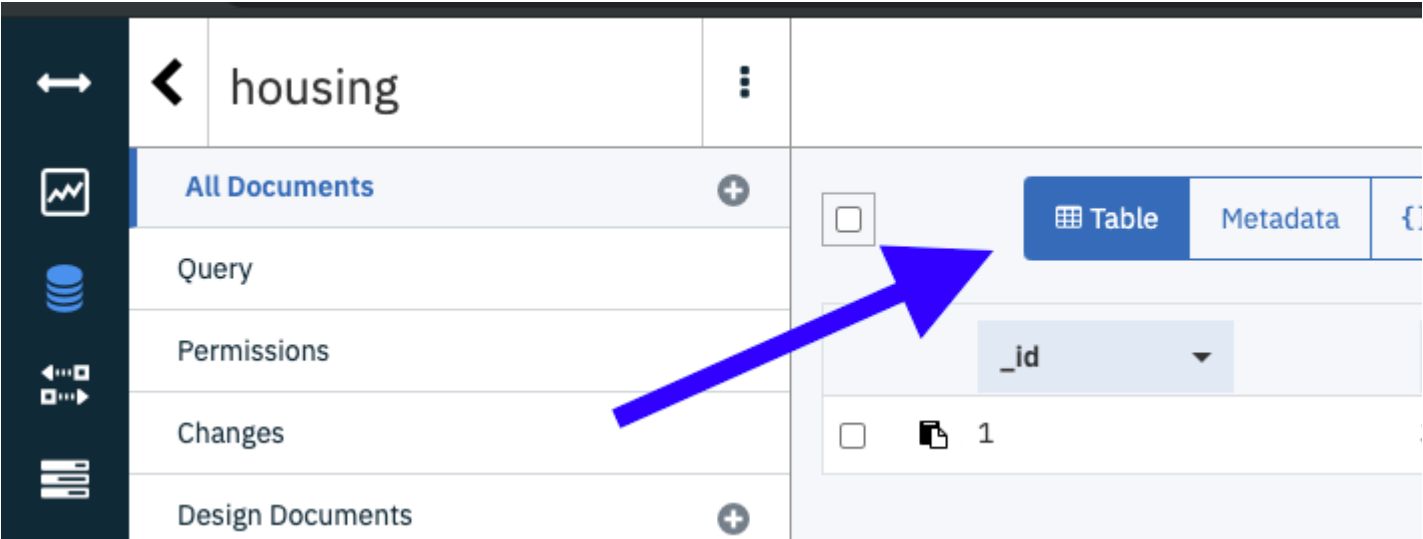
```
6.   "price":147890
7. }
```

Copied!



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. 1
2. 2
3. 3
4. 4
5. 5
6. 6

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

Copied!

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

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

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

Copied!

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

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

Copied!

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

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

Copied!

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

housing

⋮

Document ID

All Documents

+

Query

Permissions

Changes

Design Documents

+

☐

Table

Metadata

{ } JSON

		_id	bedrooms
☐	📄	1	3
☐	📄	2	3
☐	📄	3	3
☐	📄	4	4
☐	📄	5	2

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

```
1.
2. {
3.     "_id":"6",
4.     "square_feet":1400,
5.     "bedrooms":3,
6.     "price":123140,
7.     "type":"apartment",
8.     "floor":5
9. }
```

Copied!

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_foot": 3400,
```

```
5.   "bedrooms":4,  
6.   "price":342720,  
7.   "type":"villa",  
8.   "car_parks":3  
9. }
```

Copied!

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

<

housing

:

All Documents

+

Query

Permissions

Changes

Design Documents

+

Document ID

Table

Metadata

{ } JSON

		_id	bedrooms	price
<input type="checkbox"/>		1	3	1478
<input type="checkbox"/>		2	3	1826
<input type="checkbox"/>		3	3	2012
<input type="checkbox"/>		4	4	2349
<input type="checkbox"/>		5	2	1143
<input type="checkbox"/>		6	3	1231
<input type="checkbox"/>		7	4	3427

Exercise 4 - Query documents

Click on Query as shown in the image below.

housing

⋮

All Documents

+

Query

Permissions

Changes

Design Documents

+

Document ID

Table

Metadata

JSON

		_id	bedrooms	price
<input type="checkbox"/>		1	3	1478
<input type="checkbox"/>		2	3	1826
<input type="checkbox"/>		3	3	2012
<input type="checkbox"/>		4	4	2349
<input type="checkbox"/>		5	2	1143
<input type="checkbox"/>		6	3	1231
<input type="checkbox"/>		7	4	3427

You will see a screen like this.

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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

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 &gt; Cloudant Query

Query history

housing &gt; Cloudant Query

⚠ Executed in 3 ms

Select all fields in all documents

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

- 1.
2. {
3.     "selector": {}
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.

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housing > Cloudant Query

Query history

Cloudant Query ?

1 {

2 "selector": {}

3 }

Run Query

Explain

manage indexes

ⓘ Executed in 3 ms

☐

Table

\_id

1

2

3

4

5

6

7

You will see a screen as in the image below.

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⏪

housing

⋮

All Documents

+

Query

Permissions

Changes

Design Documents

+

☐

Table

Metadata

{ }

|   |   | _id | bedroom |
|---|---|-----|---------|
| ☐ | 📄 | 1   | 3       |
| ☐ | 📄 | 2   | 3       |
| ☐ | 📄 | 3   | 3       |
| ☐ | 📄 | 4   | 4       |
| ☐ | 📄 | 5   | 2       |
| ☐ | 📄 | 6   | 3       |
| ☐ | 📄 | 7   | 4       |

Click on the document with \_id 7.

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📖

⏪ housing ⋮

All Documents +

Query

Permissions

Changes

Design Documents +

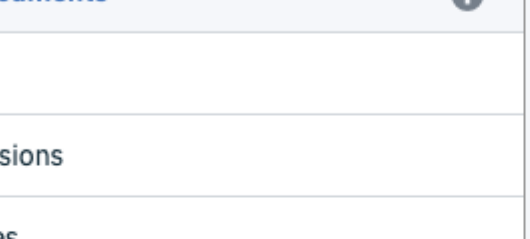
☐

Table

Metadata

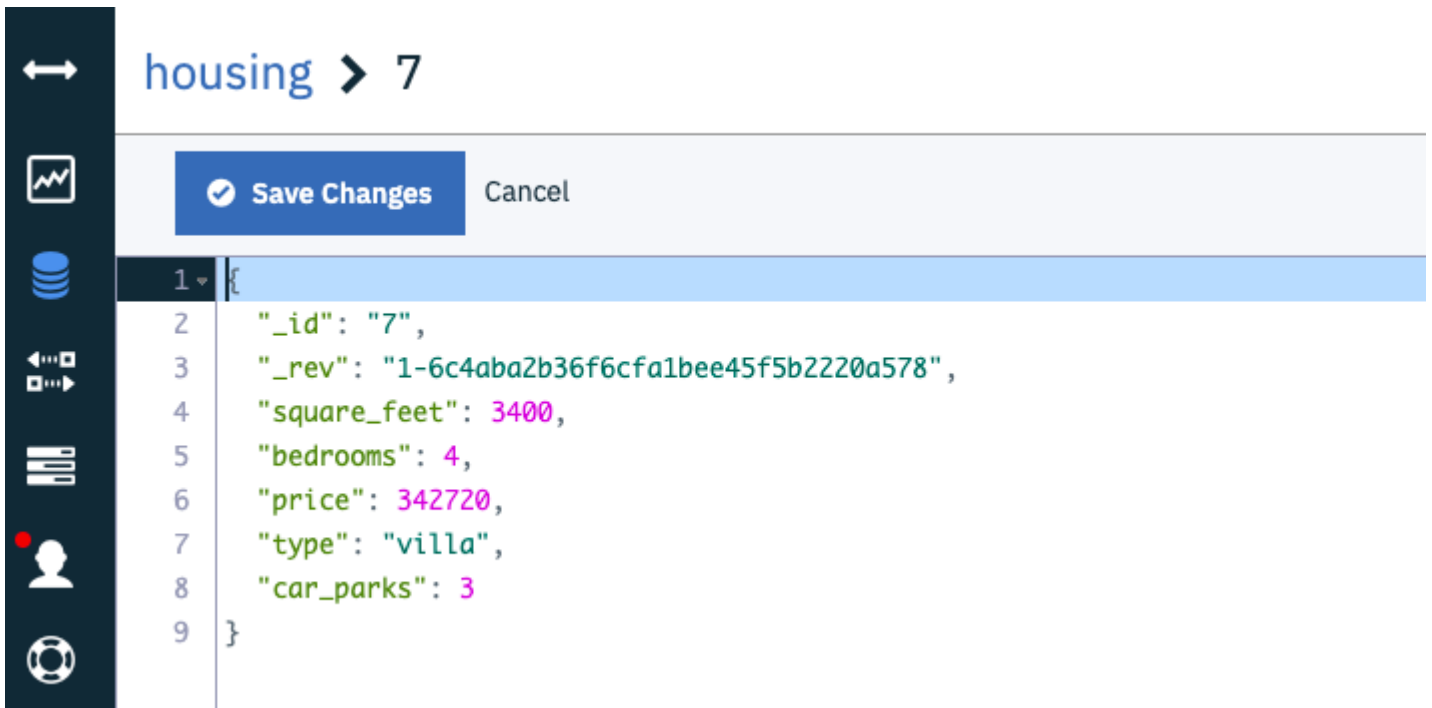
{ }

|                          |   | _id | bedrooms |
|--------------------------|---|-----|----------|
| <input type="checkbox"/> | 📄 | 1   | 3        |
| <input type="checkbox"/> | 📄 | 2   | 3        |
| <input type="checkbox"/> | 📄 | 3   | 3        |
| <input type="checkbox"/> | 📄 | 4   | 4        |
| <input type="checkbox"/> | 📄 | 5   | 2        |
| <input type="checkbox"/> | 📄 | 6   | 3        |
| <input type="checkbox"/> | 📄 | 7   | 4        |

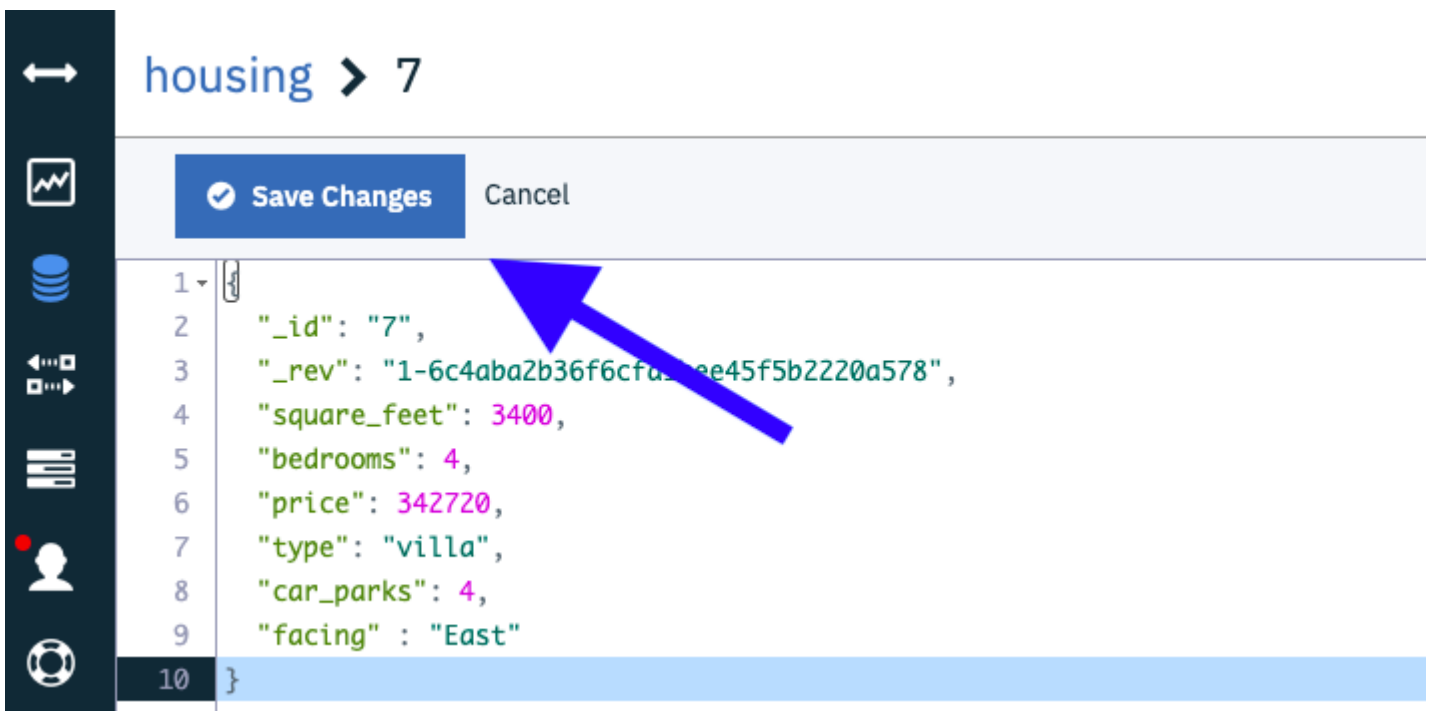


The document will open up like this.





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.



## Exercise 6 - Delete documents

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

housing

All Documents

Query

Permissions

Changes

Design Documents

Table Metadata

|                                     |  | _id | bedroom |
|-------------------------------------|--|-----|---------|
| <input type="checkbox"/>            |  | 1   | 3       |
| <input type="checkbox"/>            |  | 2   | 3       |
| <input type="checkbox"/>            |  | 3   | 3       |
| <input type="checkbox"/>            |  | 4   | 4       |
| <input checked="" type="checkbox"/> |  | 5   | 2       |
| <input type="checkbox"/>            |  | 6   | 3       |
| <input type="checkbox"/>            |  | 7   | 4       |

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 here for Solution

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. "_id": "3",
25. "carat": 0.32,
26. "cut": "Premium",
27. "color": "E",
28. "clarity": "I1",
29. "depth": 60.9,
30. "table": 58,
31. "price": 342
32. }
33.
34. {
35. "_id": "4",
36. "carat": 0.3,
37. "cut": "Good",
38. "color": "J",
39. "clarity": "SI1",
40. "depth": 63.4,
41. "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

Log Out

diamonds > New Document

Create Document Cancel

```
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 }
```

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](#)

diamonds > Cloudant Query

---

Query history ▾

**Cloudant Query ?**

|   |                |
|---|----------------|
| 1 | {              |
| 2 | "selector": {} |
| 3 | }              |

**Run Query**
Explain
[manage indexes](#)

**i Executed in 3 ms**

☐ Table

|                          |  | _id ▾ |
|--------------------------|--|-------|
| <input type="checkbox"/> |  | 1     |
| <input type="checkbox"/> |  | 10    |
| <input type="checkbox"/> |  | 2     |
| <input type="checkbox"/> |  | 3     |
| <input type="checkbox"/> |  | 4     |
| <input type="checkbox"/> |  | 5     |
| <input type="checkbox"/> |  | 6     |
| <input type="checkbox"/> |  | 7     |
| <input type="checkbox"/> |  | 8     |
| <input type="checkbox"/> |  | 9     |

Showing 5 of 9 columns.    ☐ S

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



▼ [Click here for Solution](#)

Log Out

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

▼ [Click here for Solution](#)

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

Click on Save Changes

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

▼ [Click here for Solution](#)

The screenshot shows the MongoDB Compass interface. The left sidebar contains navigation icons. The main area displays a document from the 'diamonds' collection. The document is as follows:

```
1 {
2 "_id": "7",
3 "_rev": "1-b709e1c9ca25953abd6e0f991c14ec31",
4 "carat": 0.3,
5 "cut": "Good",
6 "color": "I",
7 "clarity": "SI2",
8 "depth": 63.3,
9 "table": 56,
10 "price": 352
11 }
```

At the top of the document view, there are two buttons: 'Save Changes' (with a checkmark icon) and 'Cancel'. Two blue arrows are overlaid on the image: one points to the 'Save Changes' button, and the other points to the closing brace '}' of the document on line 11.

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](#)

[illegible]

## Authors

Ramesh Sannareddy

## Other Contributors

Rav Ahuja

# Change Log

| <b>Date (YYYY-MM-DD)</b> | <b>Version</b> | <b>Changed By</b> | <b>Change Description</b>                       |
|--------------------------|----------------|-------------------|-------------------------------------------------|
| 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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