

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

Prerequisites

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 Databases 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...

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Active

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Manage

Service credentials

Plan

Connections

Overview

Dashboard

Capacity

Docs

Deployment details

CRN

crn:v1:bluemix:public:cloudantnosqldb:eu-gb:a/9ff7e8c5d25d4ac7aa5dcdf286db5a8db9::

Location

London

External Endpoint

<https://4646e655-6aee-42d8-8b93-d2bde6e9a6ca-bluemix.cloudant.com>

External Endpoint (preferred)

<https://4646e655-6aee-42d8-8b93-d2bde6e9a6ca-bluemix.cloudantnosqldb.a>

Authentication methods

[IBM Cloud IAM](#) and [Cloudant credentials](#)

Activity Tracker event types

Management

Save

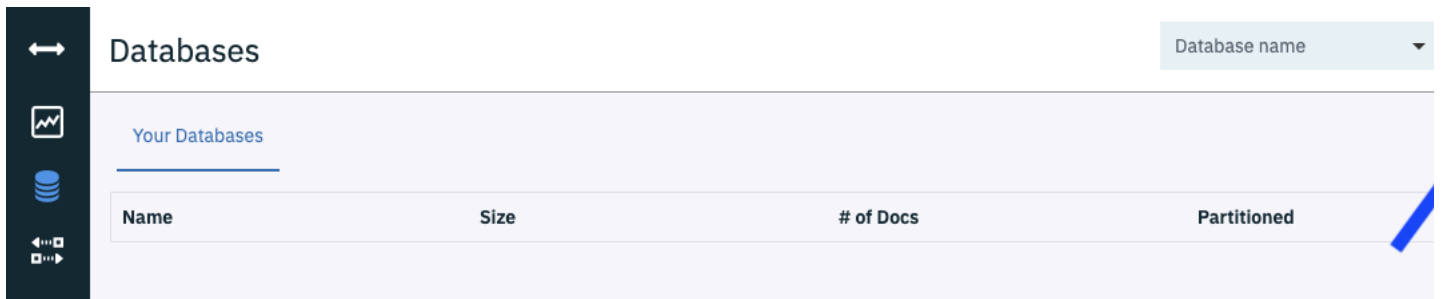
Disk encryption

Yes. Automatically generated disk encryption key.

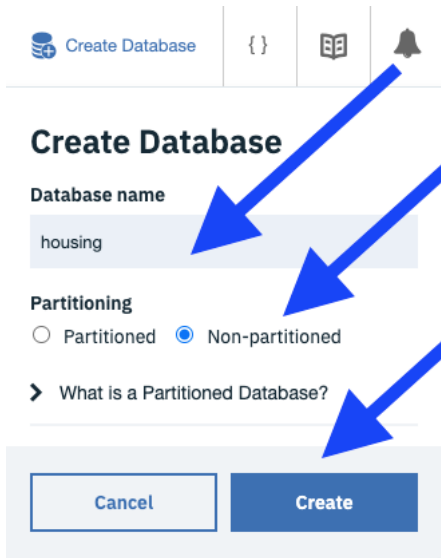
Capacity details

Exercise 2 - Create Database

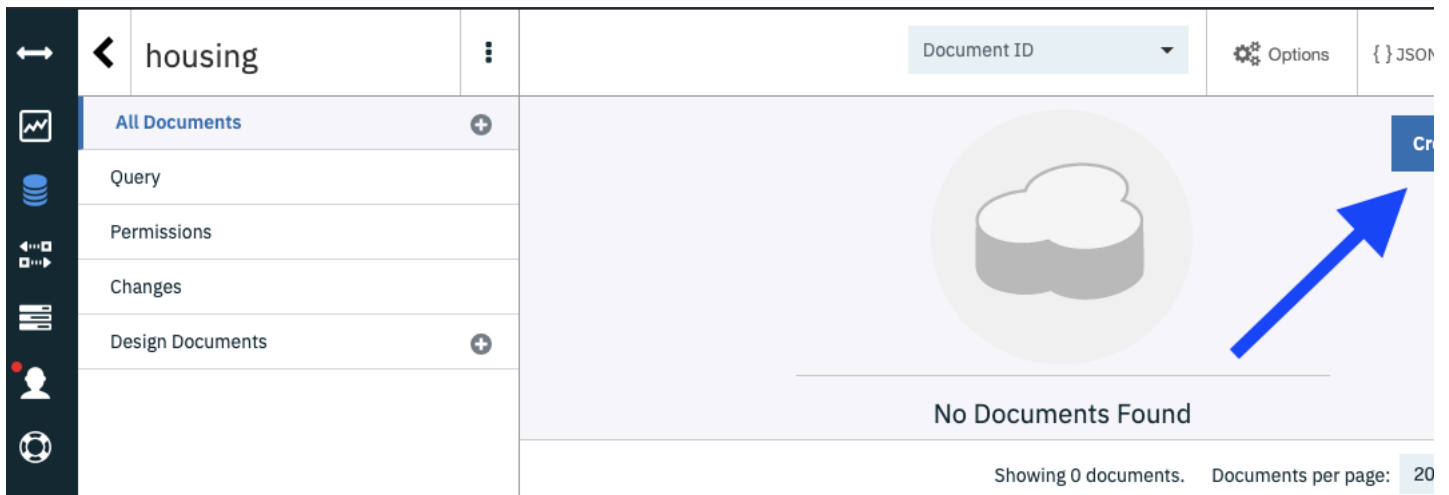
Step 1: On the dashboard click on Create Database.



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



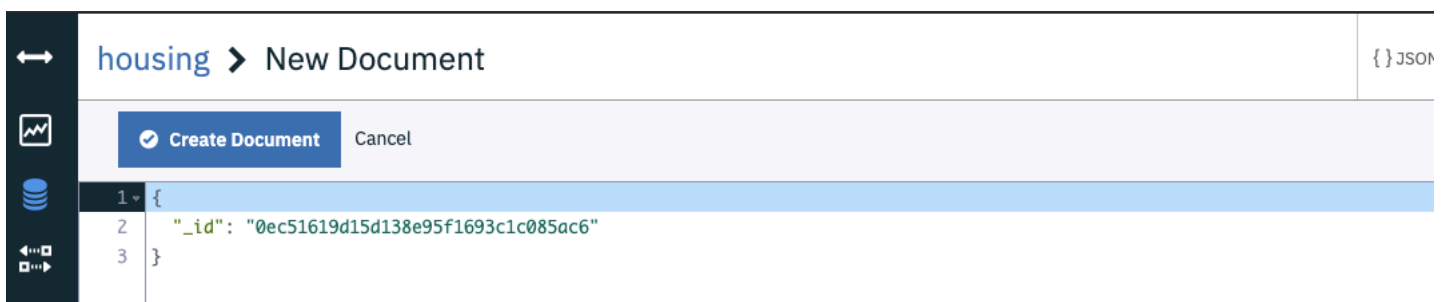
In a few moments the database will be created, and you will be taken to a page that looks like the one below.



Exercise 3 - Insert documents

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

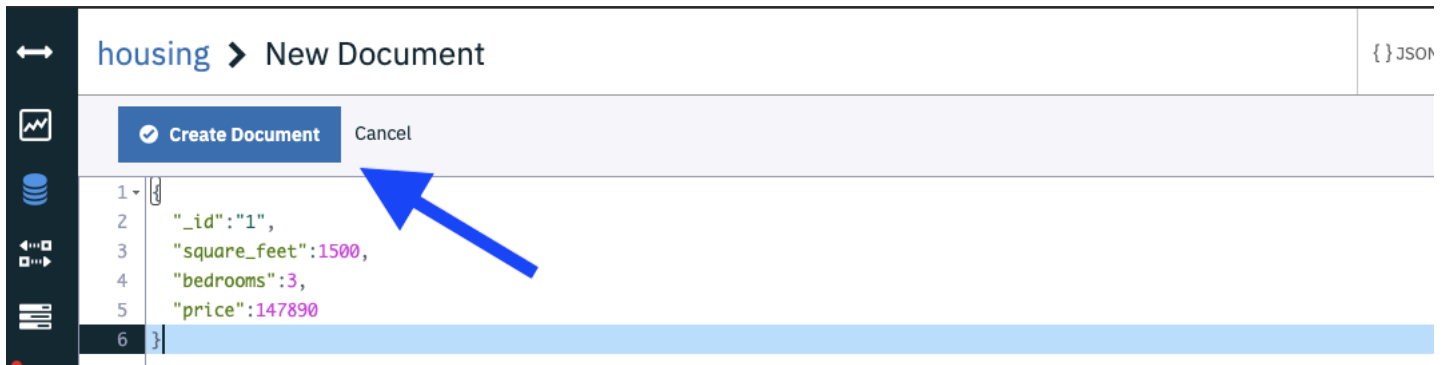
You will be presented the below screen, with a simple sample document.



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.

```
{
  "_id": "1",
  "square_feet": 1500,
  "bedrooms": 3,
  "price": 147890
}
```



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.

```
{
  "_id": "2",
  "square_feet": 1800,
  "bedrooms": 3,
  "price": 182650
}
```

```
{
  "_id": "3",
  "square_feet": 2000,
  "bedrooms": 3,
  "price": 201260
}
```

```
{
  "_id": "4",
  "square_feet": 2200,
  "bedrooms": 4,
  "price": 234980
}
```

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.

```
{
  "_id": "6",
  "square_feet": 1400,
  "bedrooms": 3,
  "price": 123140,
  "type": "apartment",
  "floor": 5
}
```

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

housing		Document ID	Options	{ } JSON	
All Documents		Table	Metadata	{ } JSON	Create Doc
Query					
Permissions					
Changes					
Design Documents					

		_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		Table	Metadata	{ } JSON	Create Doc
Query					
Permissions					
Changes					
Design Documents					

		_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

No Documents Found

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

```
{
  "selector": {}
}
```

The screenshot shows the Cloudfare Cloudant Query interface. On the left is a dark sidebar with navigation icons. The main area has a header 'housing > Cloudfant Query'. Below this is a 'Query history' dropdown. The 'Cloudant Query' section contains a query editor with a table of line numbers (1-7) and a JSON query snippet: `{ "selector": {} }`. Line 6 is highlighted. A large blue arrow points from the query editor area down to the 'Run Query' button. At the bottom are 'Run Query' and 'Explain' buttons, and a 'manage indexes' link on the right.

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

Table

{ } JSON

	_id	bedrooms	price	sqft
<input type="checkbox"/>	1	3	147890	15
<input type="checkbox"/>	2	3	182650	18
<input type="checkbox"/>	3	3	201260	20
<input type="checkbox"/>	4	4	234980	22
<input type="checkbox"/>	5	2	114310	11
<input type="checkbox"/>	6	3	123140	14
<input type="checkbox"/>	7	4	342720	34

Try out these Cloudant queries.

Select all fields in all documents

```
{
  "selector": {}
}
```

Select all fields in all documents with _id greater than 4

```
{
  "selector": {
    "_id": {
      "$gt": "4"
    }
  }
}
```

Select all fields in all documents with _id less than 4

```
{
  "selector": {
    "_id": {
      "$lt": "4"
    }
  }
}
```

Select the fields _id, square_feet and price in all documents

```
{
  "selector": {},
  "fields": ["_id", "square_feet", "price"]
}
```

```
    "fields": [
      "_id",
      "price",
      "square_feet"
    ]
  }
}
```

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

```
{
  "selector": {
    "_id": {
      "$lt": "4"
    }
  },
  "fields": [
    "_id",
    "price",
    "square_feet"
  ]
}
```

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

```
{
  "selector": {
    "_id": {
      "$gt": "2"
    }
  },
  "fields": [
    "_id",
    "price",
    "bedrooms"
  ],
  "sort": [
    {
      "_id": "asc"
    }
  ]
}
```

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

```
{
  "selector": {
    "_id": {
      "$gt": "2"
    }
  },
  "fields": [
    "_id",
    "price",
    "bedrooms"
  ],
  "sort": [
    {
      "_id": "desc"
    }
  ]
}
```


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

	_id	bedrooms	price	s
<input type="checkbox"/>	1	3	147890	15
<input type="checkbox"/>	2	3	182650	18
<input type="checkbox"/>	3	3	201260	20
<input type="checkbox"/>	4	4	234980	22
<input type="checkbox"/>	5	2	114310	11
<input type="checkbox"/>	6	3	123140	14
<input type="checkbox"/>	7	4	342720	34

You will see a screen as in the image below.

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⏪

housing

⋮

Document ID

All Documents

+

Query

Permissions

Changes

Design Documents

+

☐

Table

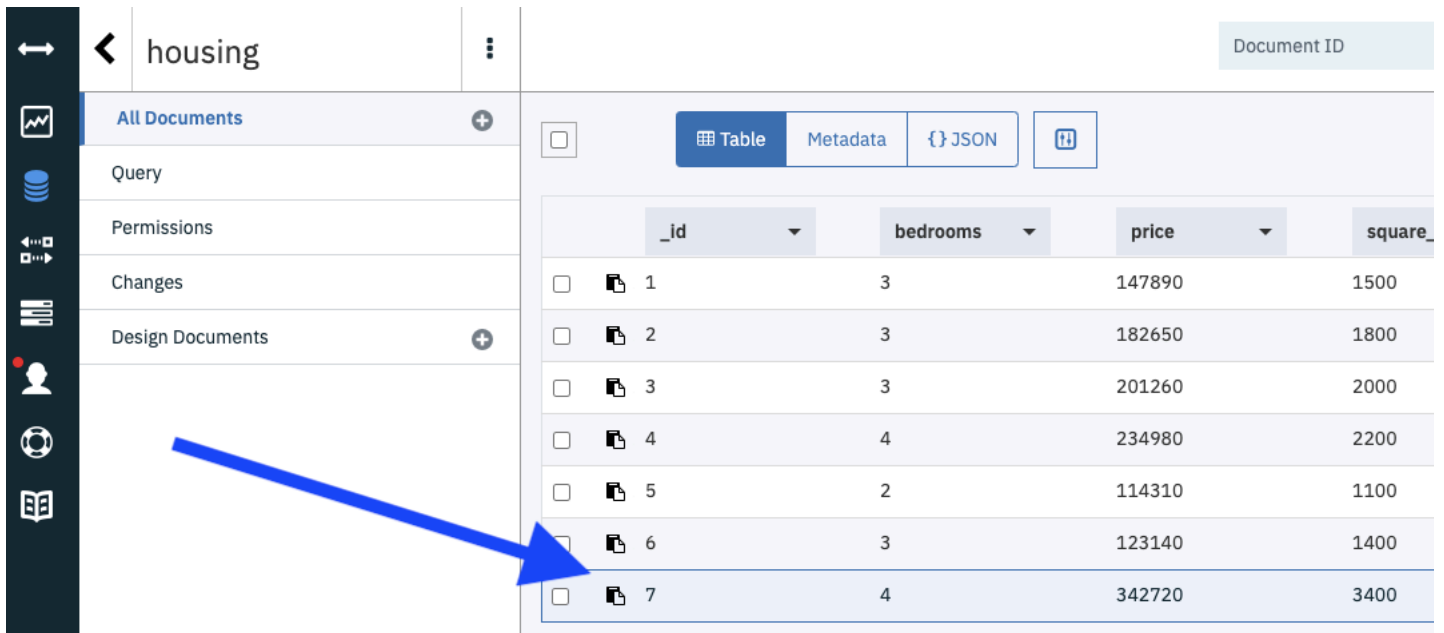
Metadata

{ } JSON

📄

	id	bedrooms	price	square
☐ 📄	1	3	147890	1500
☐ 📄	2	3	182650	1800
☐ 📄	3	3	201260	2000
☐ 📄	4	4	234980	2200
☐ 📄	5	2	114310	1100
☐ 📄	6	3	123140	1400
☐ 📄	7	4	342720	3400

Click on the document with `_id 7`.



housing

Document ID

All Documents

Query

Permissions

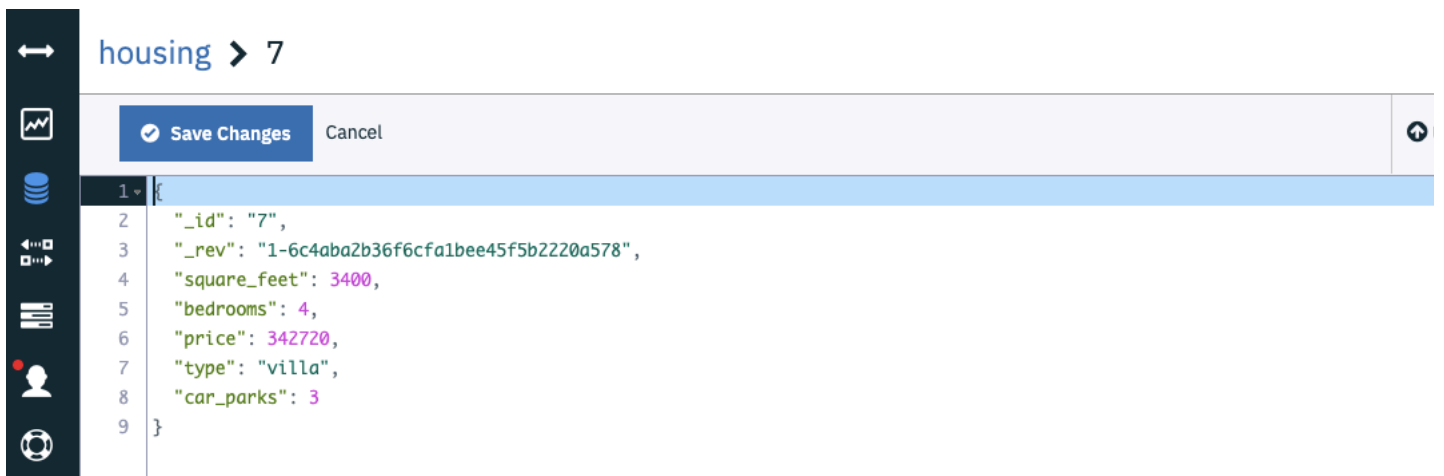
Changes

Design Documents

Table Metadata {} JSON

	id	bedrooms	price	square
<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
<input type="checkbox"/>	7	4	342720	3400

The document will open up like this.



housing > 7

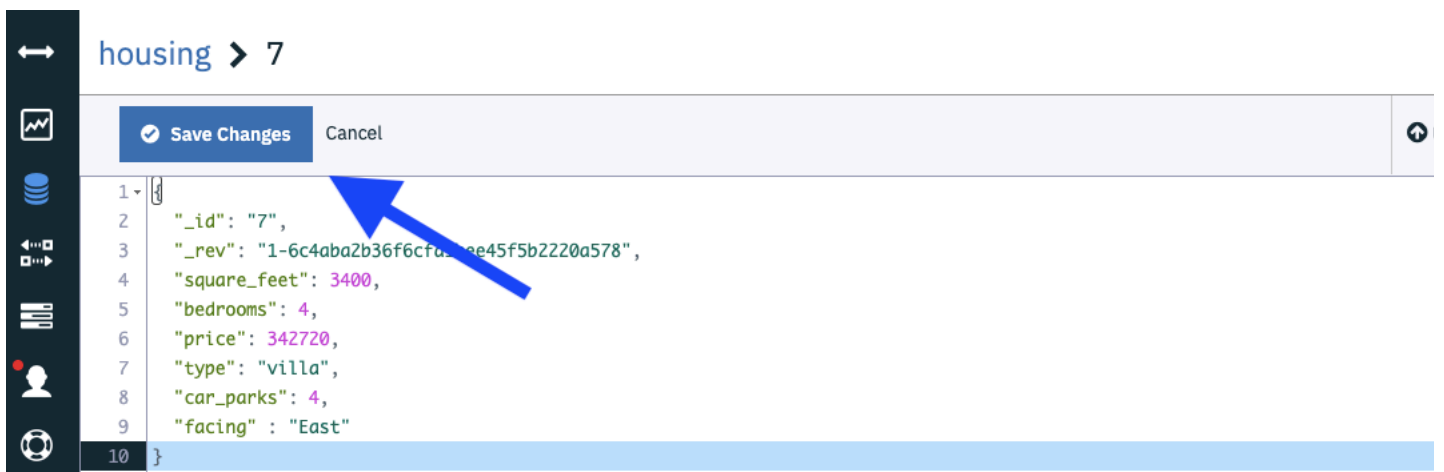
Save Changes Cancel

```

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

```

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

All Documents +

Query

Permissions

Changes

Design Documents +

Table Metadata {} JSON

		id	bedrooms	price	square
<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
<input type="checkbox"/>		7	4	342720	3400

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.

```
{
  "_id": "1",
  "carat": 0.31,
  "cut": "Ideal",
  "color": "J",
  "clarity": "SI2",
  "depth": 62.2,
  "table": 54,
  "price": 339
}

{
  "_id": "2",
  "carat": 0.2,
  "cut": "Premium",
  "color": "E",
  "clarity": "SI2",
  "depth": 60.2,
  "table": 62,
  "price": 351
}

{
  "_id": "3",
  "carat": 0.32,
  "cut": "Premium",
  "color": "E",
  "clarity": "I1",
  "depth": 60.9,
  "table": 58,
  "price": 342
}

{
  "_id": "4",
  "carat": 0.3,
  "cut": "Good",
  "color": "J",
  "clarity": "SI1",
  "depth": 63.4,
  "table": 54,
  "price": 349
}

{
  "_id": "5",
  "carat": 0.3,
  "cut": "Good",
  "color": "J",
  "clarity": "SI1",
  "depth": 63.8,
  "table": 56,
  "price": 347
}
```

```

}

{
  "_id": "6",
  "carat": 0.3,
  "cut": "Very Good",
  "color": "J",
  "clarity": "SI1",
  "depth": 62.7,
  "table": 59,
  "price": 349
}

{
  "_id": "7",
  "carat": 0.3,
  "cut": "Good",
  "color": "I",
  "clarity": "SI2",
  "depth": 63.3,
  "table": 56,
  "price": 343
}

{
  "_id": "8",
  "carat": 0.23,
  "cut": "Very Good",
  "color": "E",
  "clarity": "VS2",
  "depth": 63.8,
  "table": 55,
  "price": 339
}

{
  "_id": "9",
  "carat": 0.23,
  "cut": "Very Good",
  "color": "H",
  "clarity": "VS1",
  "depth": 61,
  "table": 57,
  "price": 323
}

{
  "_id": "10",
  "carat": 0.31,
  "cut": "Very Good",
  "color": "J",
  "clarity": "SI1",
  "depth": 59.4,
  "table": 62,
  "price": 346
}

```

- [Click here for Hint](#)
- [Click here for Solution](#)

3. Write a query to fetch all documents

- [Click here for Hint](#)
- [Click here for Solution](#)

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

- [Click here for Hint](#)
- [Click here for Solution](#)

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

- [Click here for Hint](#)
- [Click here for Solution](#)

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

- [Click here for Hint](#)
- [Click here for Solution](#)

7. Delete the document with `_id` 3

- [Click here for Hint](#)
- [Click here for Solution](#)

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