



**IBM Developer
SKILLS NETWORK**

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...

Q

Catalog

Docs

Support

Manage

Ramesh Sannar...

Resource list / mycloudant Active Add tags

Details Actions...

Manage

Service credentials

Plan

Connections

Overview

Dashboard

Capacity

Docs

Launch Dashboard

Deployment details

CRN

crn:v1:bluemix:public:cloudantnosqldb:eu-gb:a/9ff7e8c5d25d4ac7aa5dcdf28618b403:f2f160dd-10bb-4161-93a9-f3d3db5a8db9::

Location

London

External Endpoint

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

External Endpoint (preferred)

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

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**.

Databases

Database name

Create Database

{ } JSON

Your Databases

Name	Size	# of Docs	Partitioned	Actions
------	------	-----------	-------------	---------

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

Create Database

{ }

Create Database

Database name

housing

Partitioning

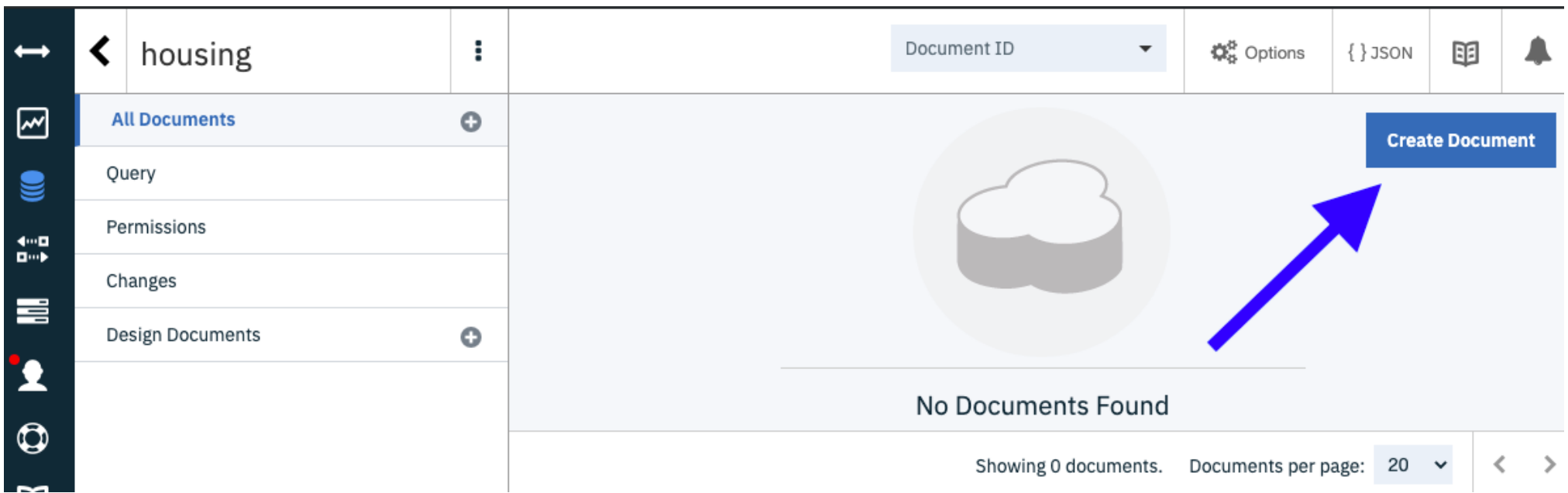
☐ Partitioned ☒ Non-partitioned

What is a Partitioned Database?

Cancel

Create

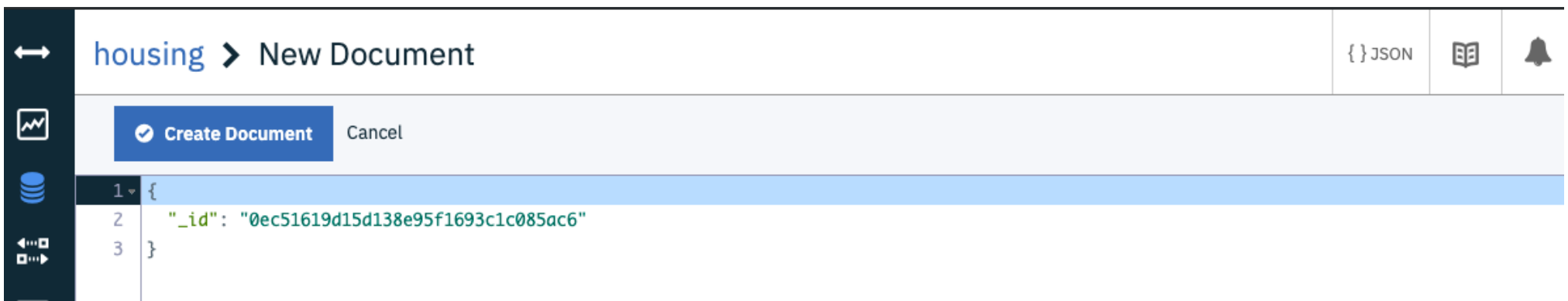
In a few moments the database will be created. and you will be taken to a page that looks like the one below.



Exercise 3 - Insert documents

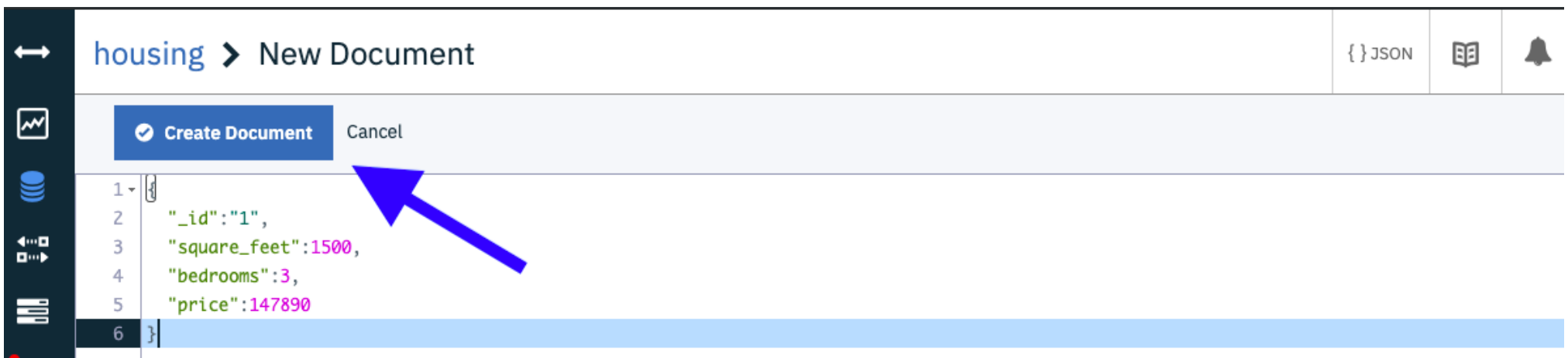
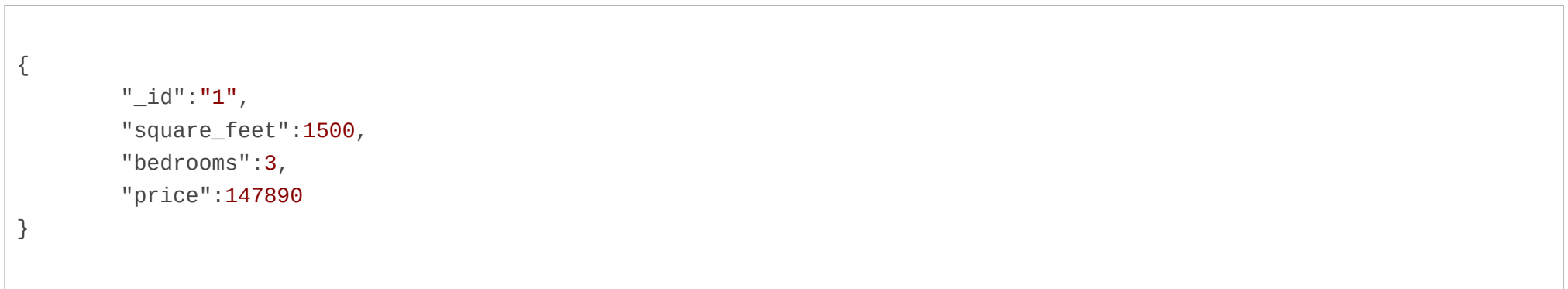
Step 1: Click on **Create Document** to insert a document.

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



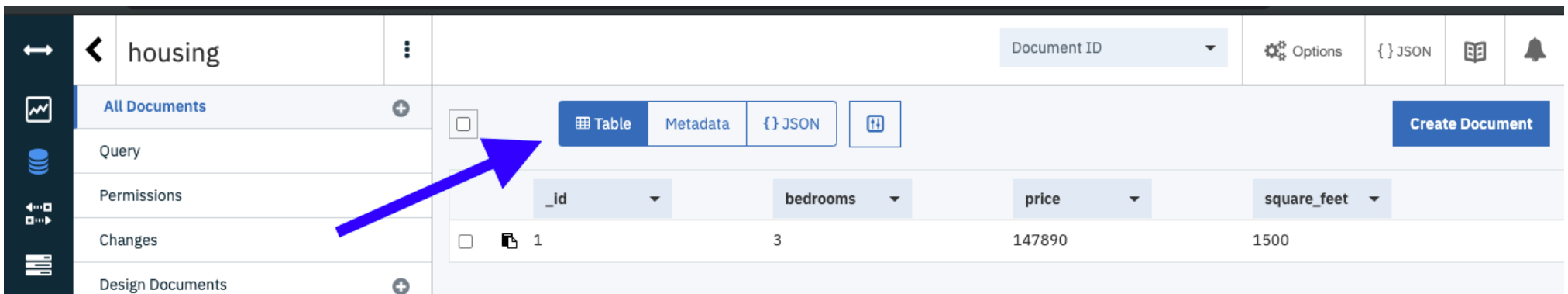
Cloudant uses **_id** key to uniquely identify a document. It is equivalent to the primary key in RDBMS. You can use your own custom values for **_id**.

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



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
}
```

```
{
  "_id": "5",
  "square_feet": 1100,
  "bedrooms": 2,
  "price": 114310
}
```

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

housing

All Documents

Query

Permissions

Changes

Design Documents

Document ID

Options

JSON

Table

Metadata

JSON

Create Document

		_id	bedrooms	price	square_feet
<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

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.

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

```
{
  "_id": "7",
  "square_feet": 3400,
  "bedrooms": 4,
  "price": 342720,
  "type": "villa",
  "car_parks": 3
}
```

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.

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

↔

housing > Cloudant Query

Query history

Cloudant Query ?

1 {

2 "selector": {

3 }

4 }

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 }

4 }

5 }

Run Query

Explain

manage indexes

ⓘ Executed in 3 ms

☐

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

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",
    "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",
    "square_feet"
  ],
  "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",
    "square_feet"
  ],
  "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

TableJSON

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

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

Click on the document with _id 7.

housing

All Documents

Query

Permissions

Changes

Design Documents

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.


```
{
  "_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 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

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☁️

Log Out

diamonds > Cloudant Query

Query history

Cloudant Query ?

1 {

2 |

3 | "selector": {}

4 }

Run Query

Explain

manage indexes

ⓘ Executed in 3 ms

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
<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
- ▼ Click here for Solution

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Log Out

diamonds > Cloudant Query

Query history

Cloudant Query ?

1 {

2 |

3 | "selector": {

4 | | "_id": {

5 | | | "\$gt": "2"

6 | | }

7 | }

Run Query

Explain

manage indexes

ⓘ Executed in 3 ms

Table

{ } JSON

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

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

- Click here for Hint
- ▼ Click here for Solution

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Log Out

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

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
- ▼ Click here for Solution

↔

diamonds > 7

{ } JSON

📖

🔔

✔ 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 }

7. Delete the document with *_id* 3

- Click here for Hint
- ▼ Click here for Solution

