



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.

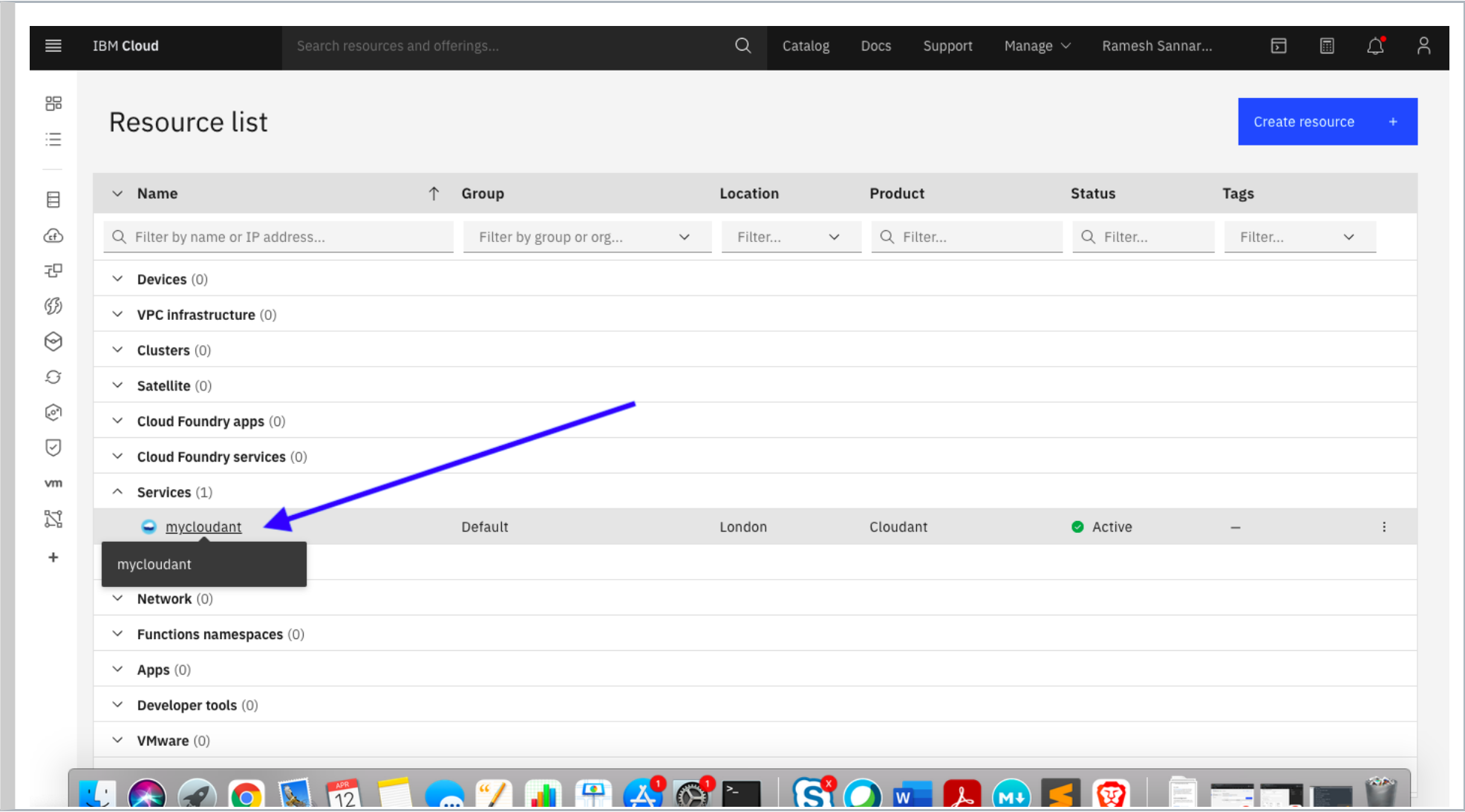
Exercise 1 - Launch Cloudant Dashboard

Step 1: Click on cloud.ibm.com/resources.

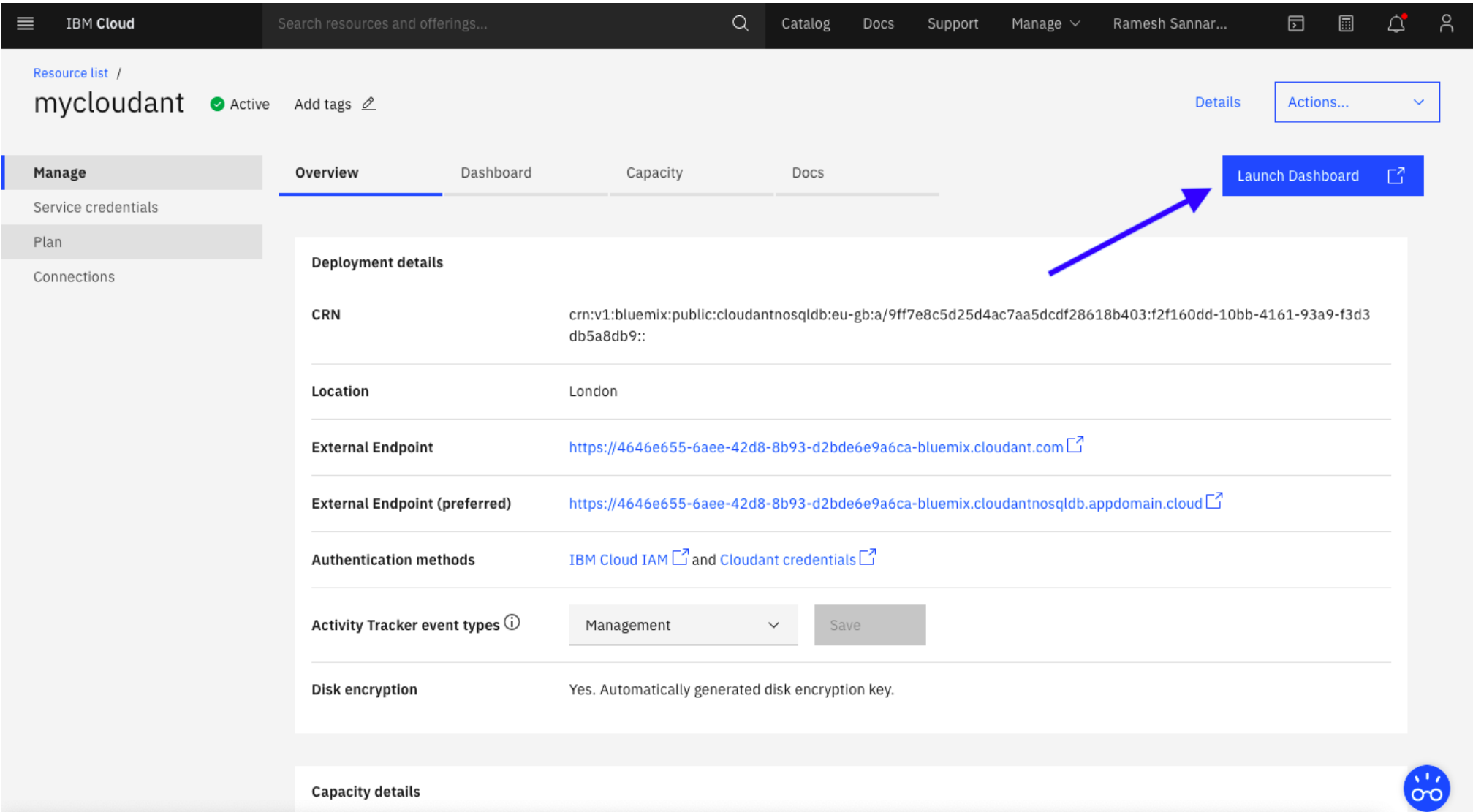
Step 2: Click on the Services chevron.

Step 3: Click on your instance of Cloudant.

▼ Click here for Hint

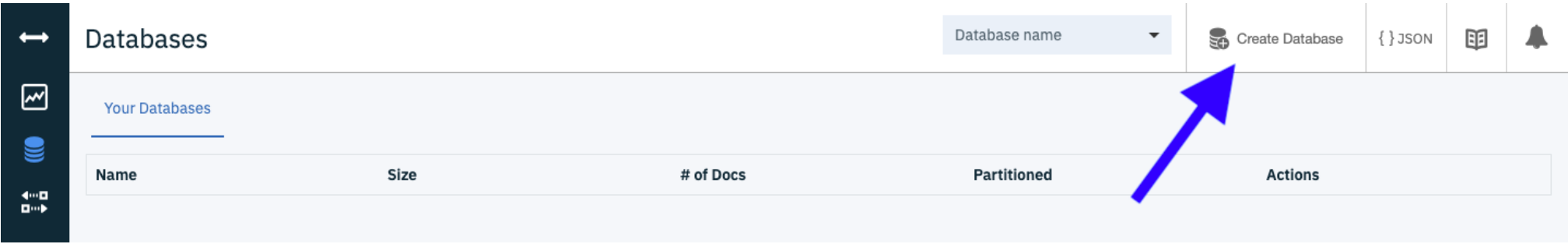


Step 4: Click on **Launch Dashboard**.



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**.

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

All Documents

Query

Permissions

Changes

Design Documents

Document ID

Options

JSON

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

Create Document

Cancel

1 {

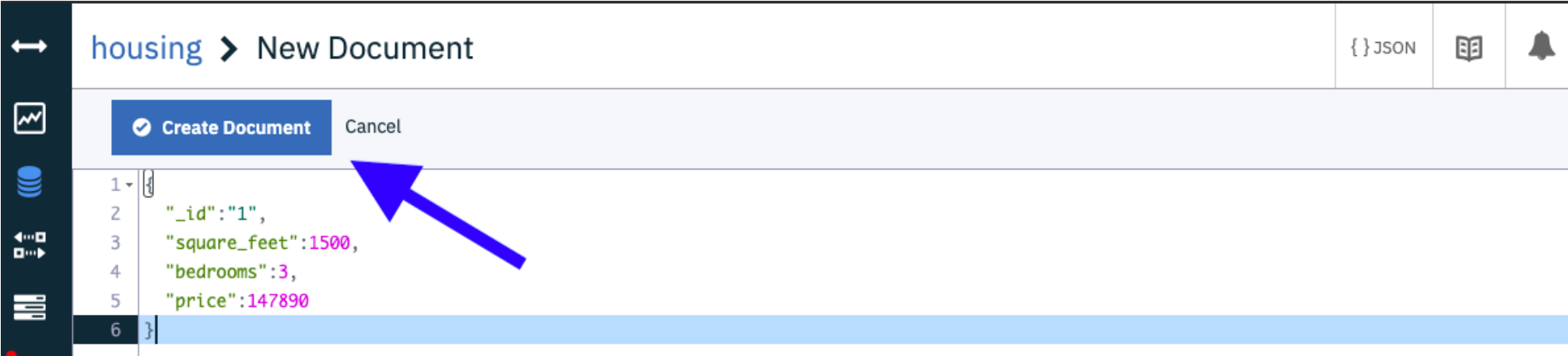
2 _id: "0ec51619d15d138e95f1693c1c085ac6"

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`.

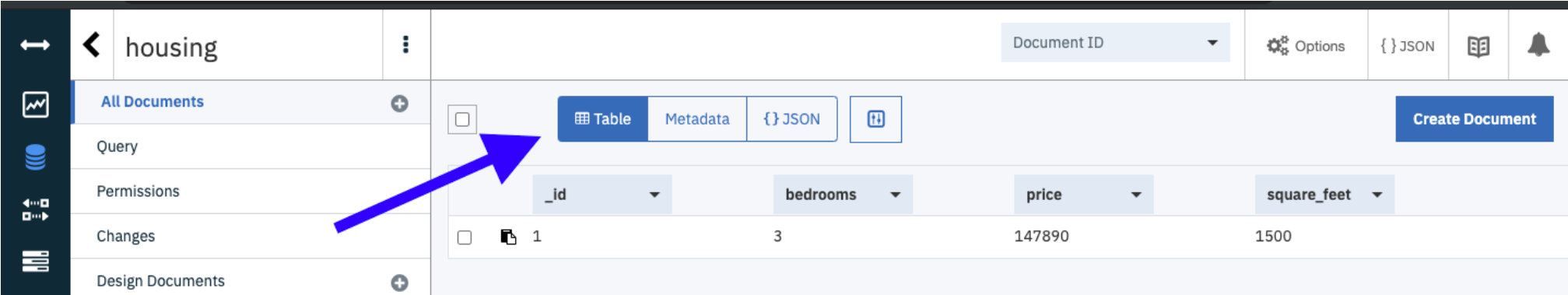
Copy and paste the below json document and click on **Create Document** button, as show in the image below.

```
{
  "_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
}
```

```
{
  "_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

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

Exercise 4 - Query documents

Click on **Query** as shown 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

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

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

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

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

https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DB0151EN-SkillsNetwork/labs/Cloudant/Lab - Working with Databases in Cloudant/Lab_-_Working_with_Databases_in_Cloudant.md.html?or...

7/16

```
{
  "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

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

Document ID

Options

{ } JSON

Create Document

Table

Metadata

{ } 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

Click on the document with _id 7.

housing

All Documents

Query

Permissions

Changes

Design Documents

Document ID

Options

{ } JSON

Create Document

Table

Metadata

{ } JSON

<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- |

3- | " _id": "7",

4- | " _rev": "1-6c4aba2b36f6cfa1bee45f5b2220a578",

5- | "square_feet": 3400,

6- | "bedrooms": 4,

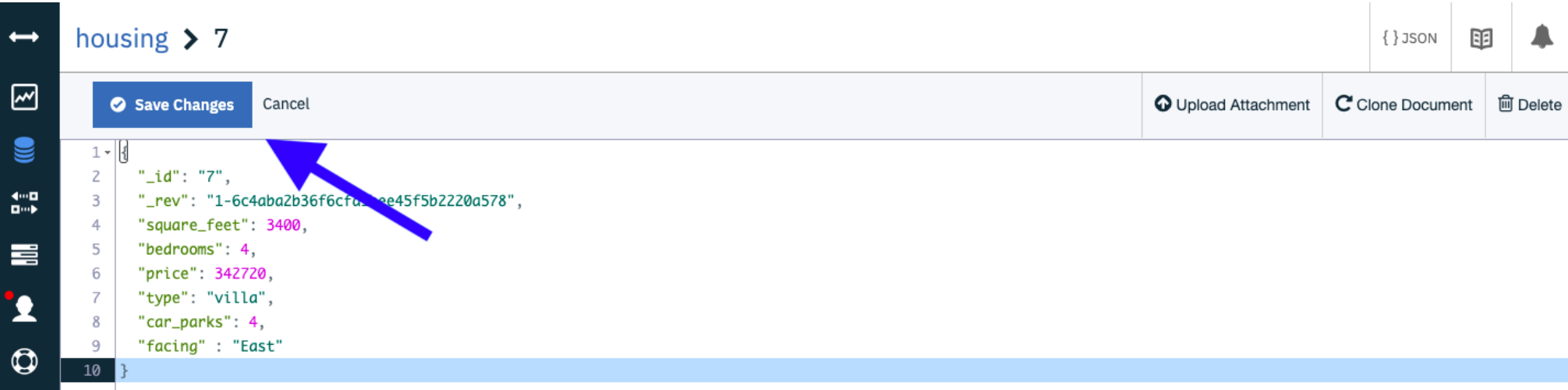
7- | "price": 342720,

8- | "type": "villa",

9- | "car_parks": 3

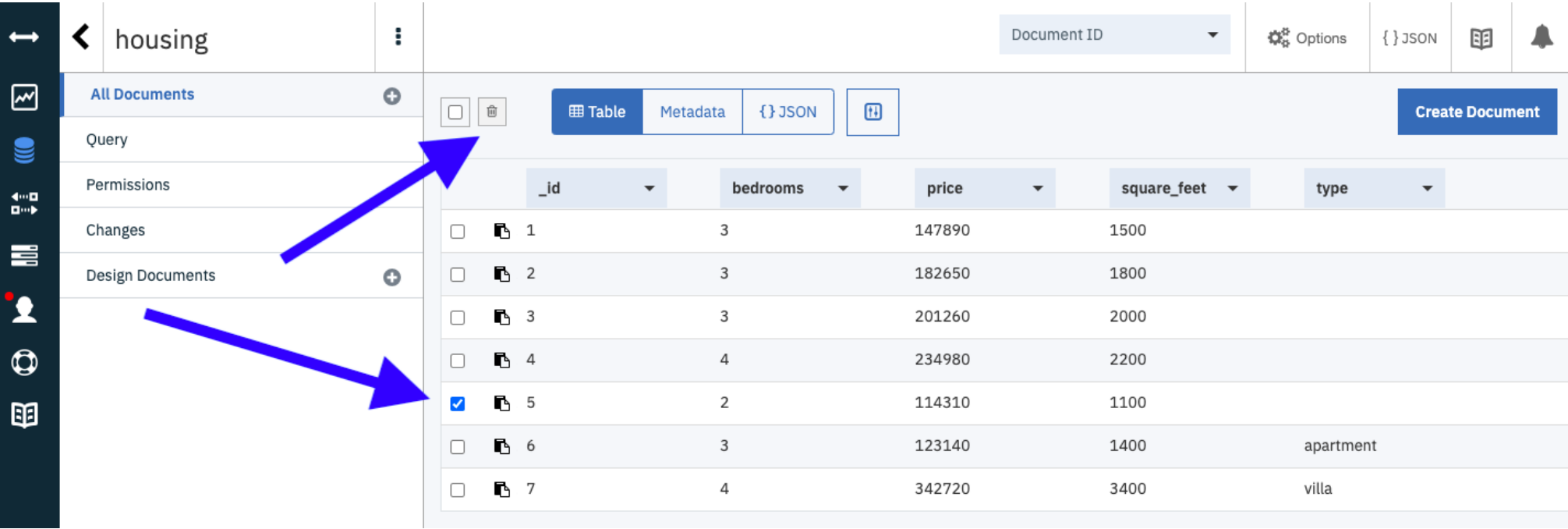
10- }

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.



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 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

↔

diamonds > New Document

{ } JSON

📖

🔔

✔ 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 }

Log Out

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

{ } JSON

📖

🔔

Query history

Cloudant Query ?

1 {

2 selector: {}

3 }

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

<

>

Log Out

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

↔

diamonds > Cloudant Query

Query history

Cloudant Query ?

1 {

2 "selector": {

3 "_id": {

4 "\$gt": "2"

5 }

6 }

7 }

Run Query

Explain

manage indexes

Executed in 3 ms

Log Out

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

<

>

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

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-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 }

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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

←

→

Log Out

←

diamonds

⋮

All Documents

+

Query

Permissions

Changes

Design Documents

+

Table

Metadata

{ } 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 checked="" 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

▼

◀

▶

Authors

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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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