Hands-on Lab: Working with Databases in Cloudant

Skills Network

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 authentiate. This may happen when you step out or leave your Cloudant session unattented.

Exercise 1 - Launch Cloudant Dashboard

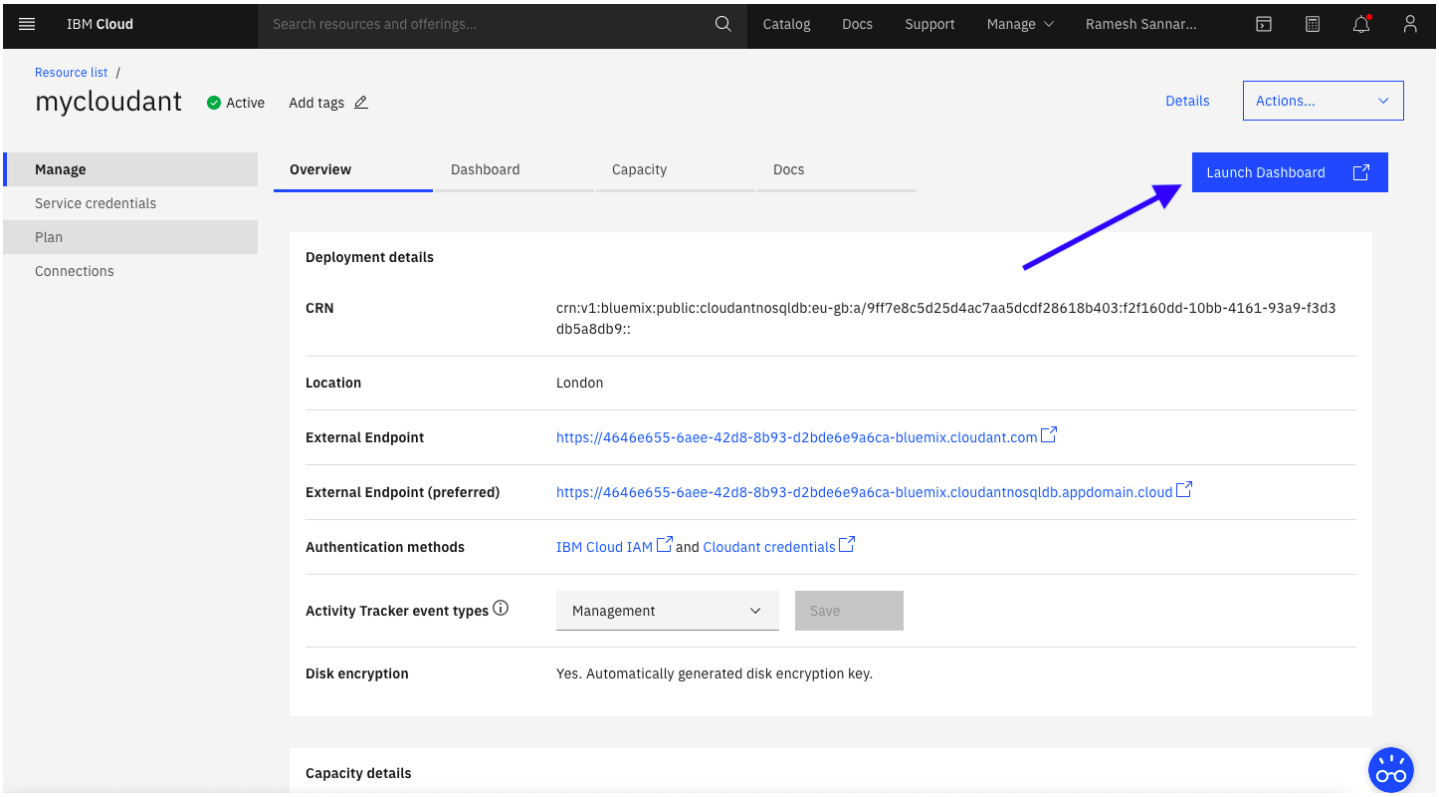
Step 1: Click on cloud.ibm.com/resources.

Step 2: Click on the Services chevron.

Step 3: Click on your instance of Cloudant.

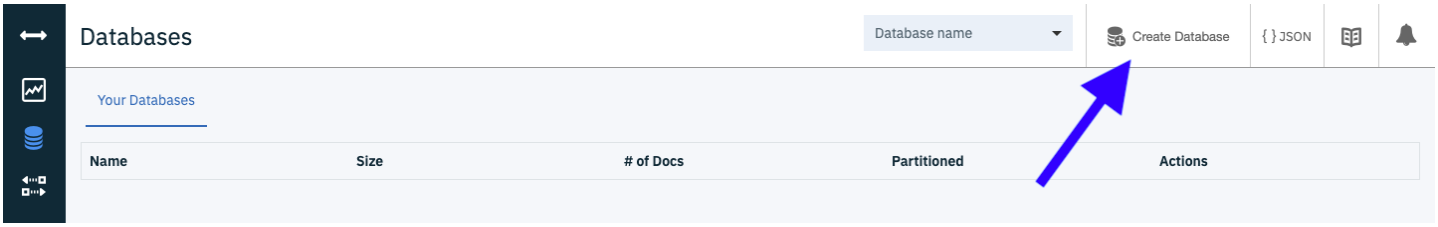
▶ Click here for Hint

Step 4: Click on `Launch Dashboard`.

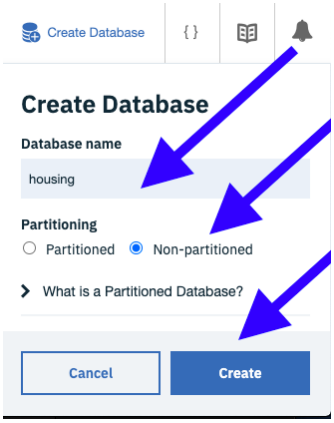


Exercise 2 - Create Database

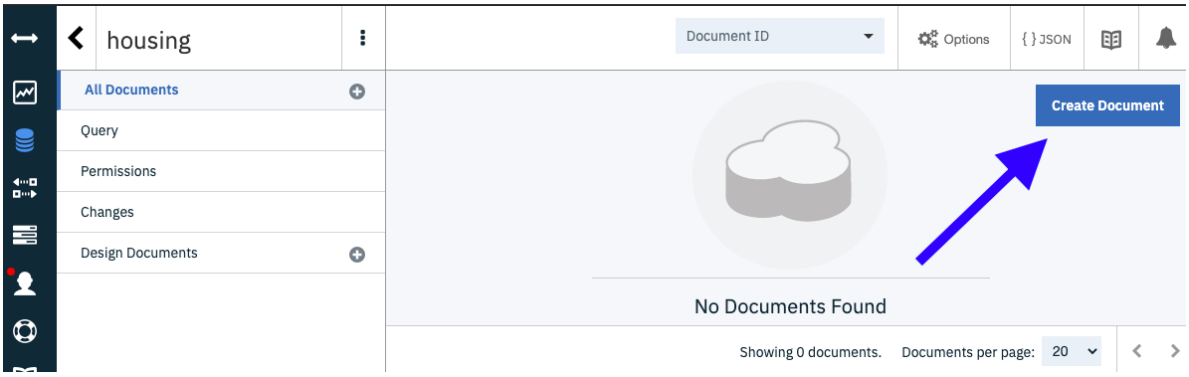
Step 1: On the dashboard click on `Create Database`.



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



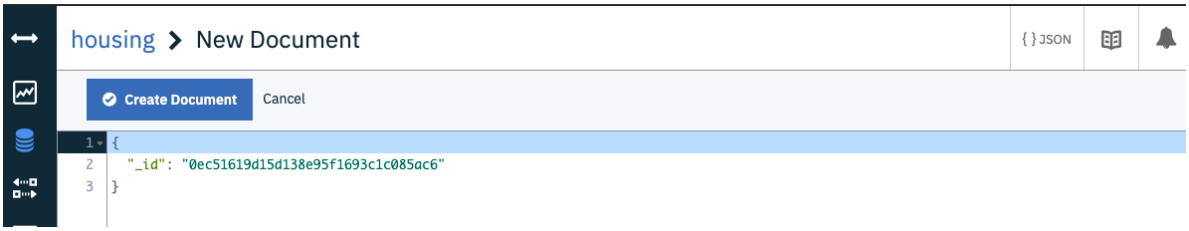
In a few moments the database will be created. and you will be taken to a page that looks like the one below.



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.

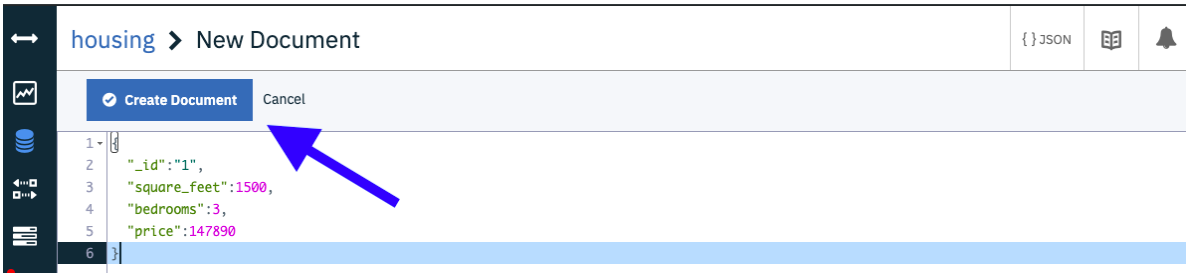


Cloudant uses `_id` key to uniquely identify a document. It is equivalent to the primary key in RDBMS. You can use your own custom values for `_id`.

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

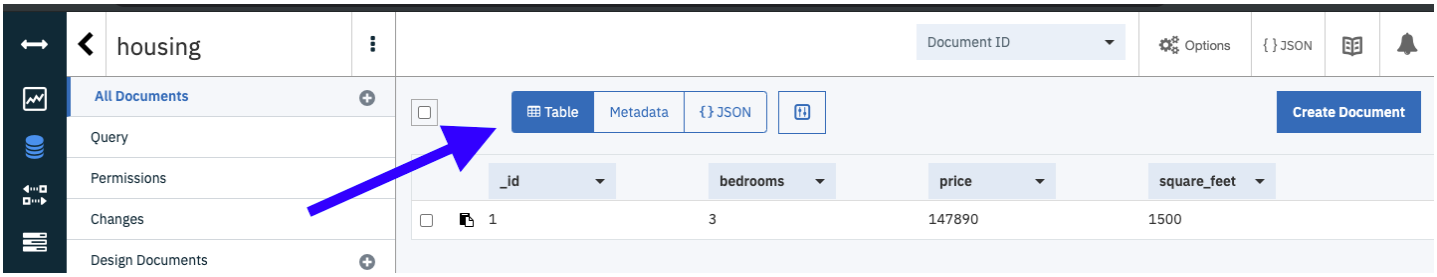
```
1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7

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
2
3
4
5
6
```

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

Copied!

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

```

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

Copied!

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

```

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

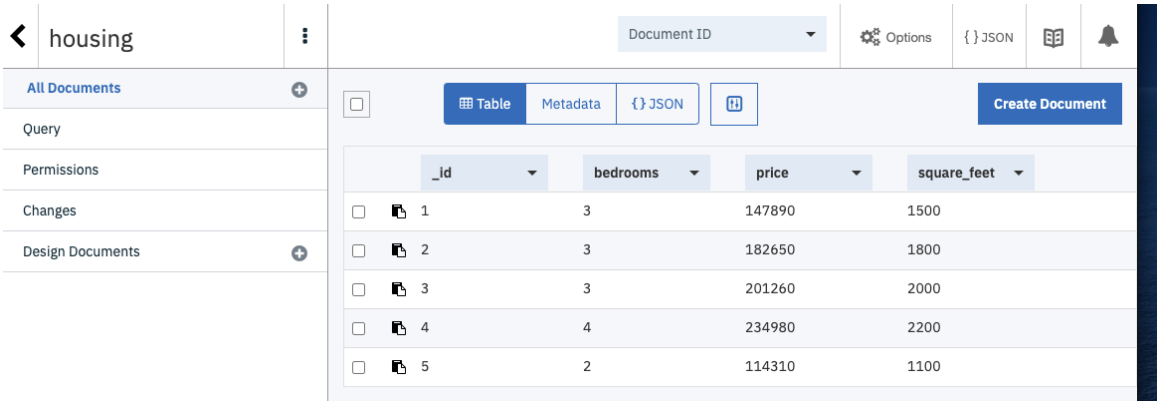
Copied!

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

```

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

Copied!

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
4
5
6
7
8
9
```

```

{
    "_id":"6",
    "square_feet":1400,
```

```
    "bedrooms":3,
    "price":123140,
    "type":"apartment",
    "floor":5
}
```

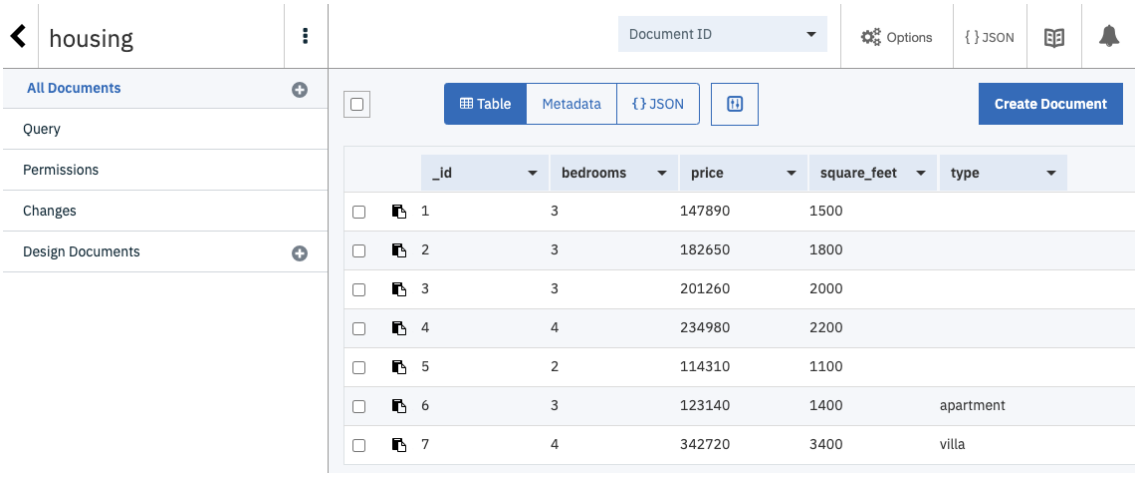
Copied!

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

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

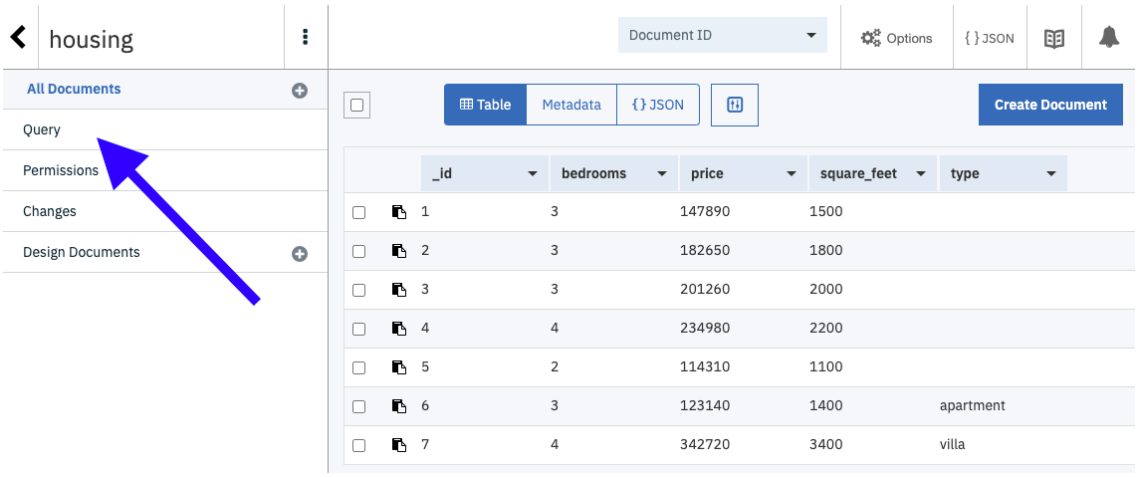
Copied!

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

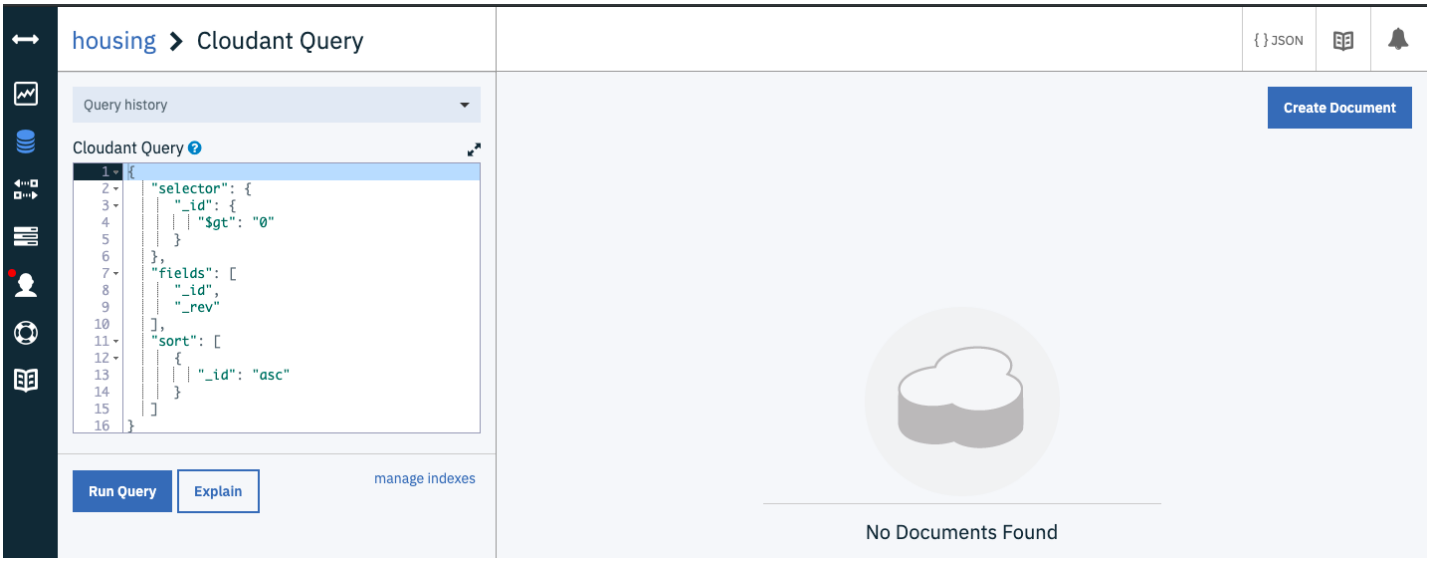


Exercise 4 - Query documents

Click on `Query` as shown in the image below.



You will see a screen like this.

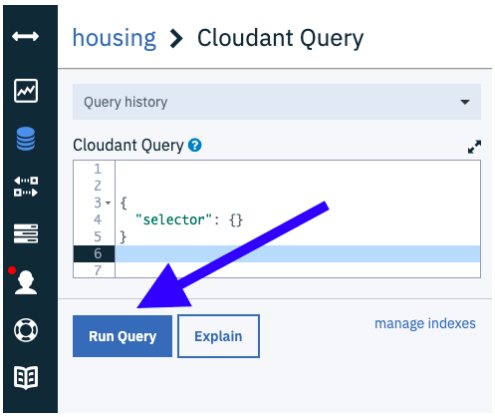


Replace the default query with the one given below, and click on the `Run Query` button.

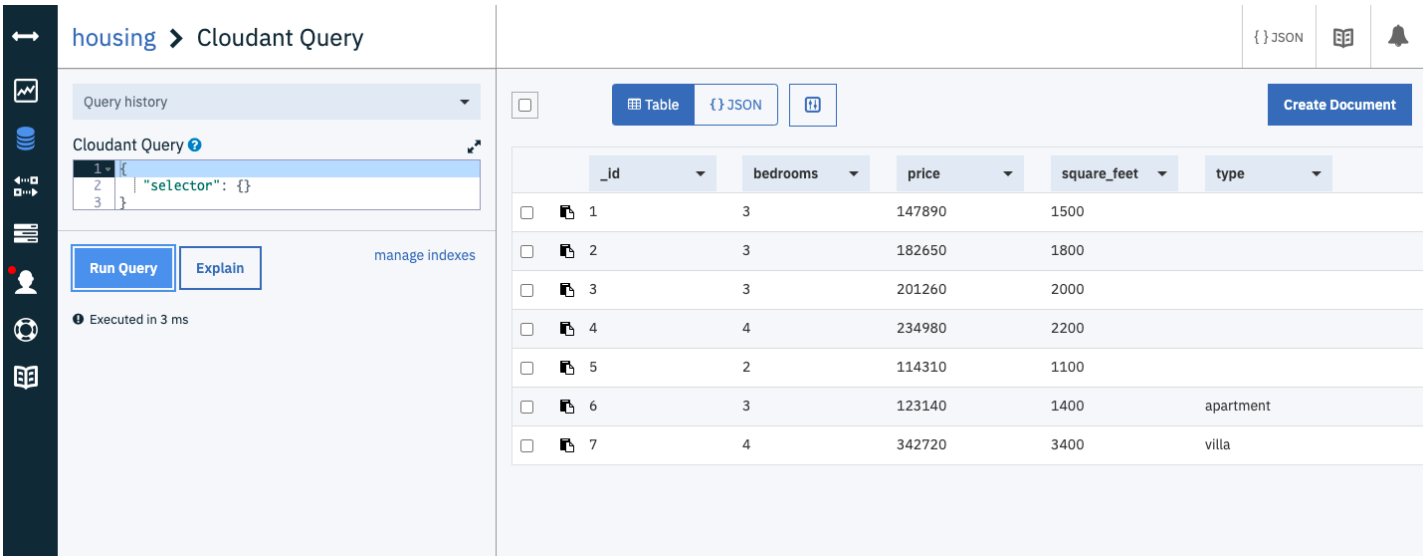
```
1. 1
2. 2
3. 3
```

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

Copied!



You should see an output like this.



Try out these Cloudant queries.

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

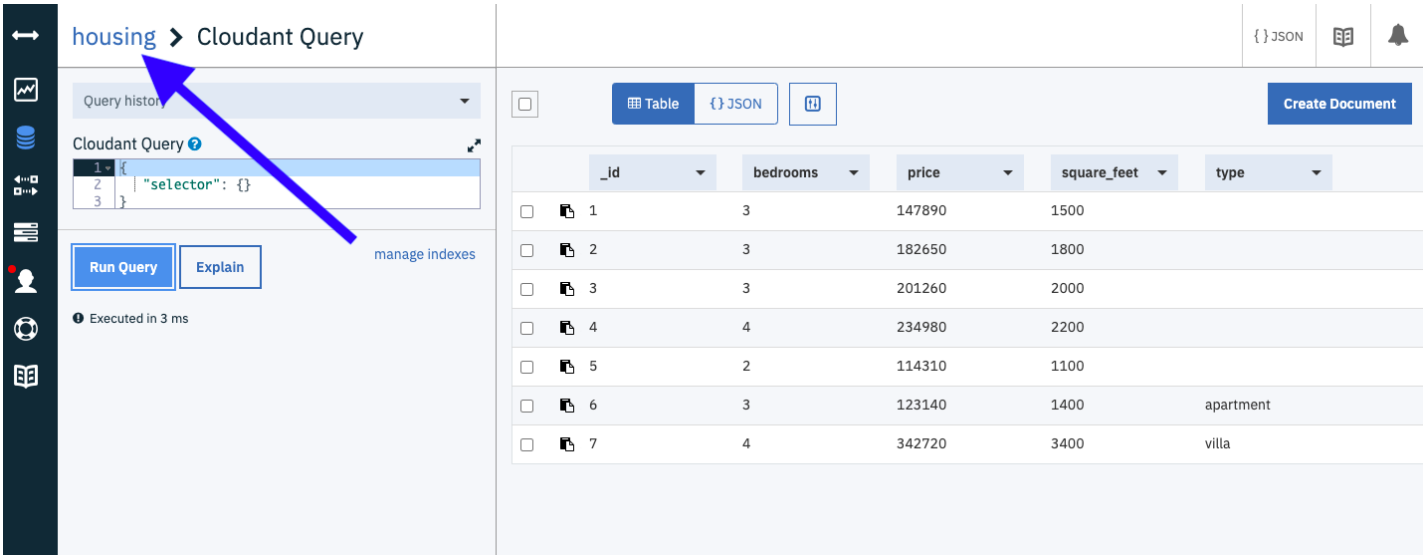
```
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
```

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

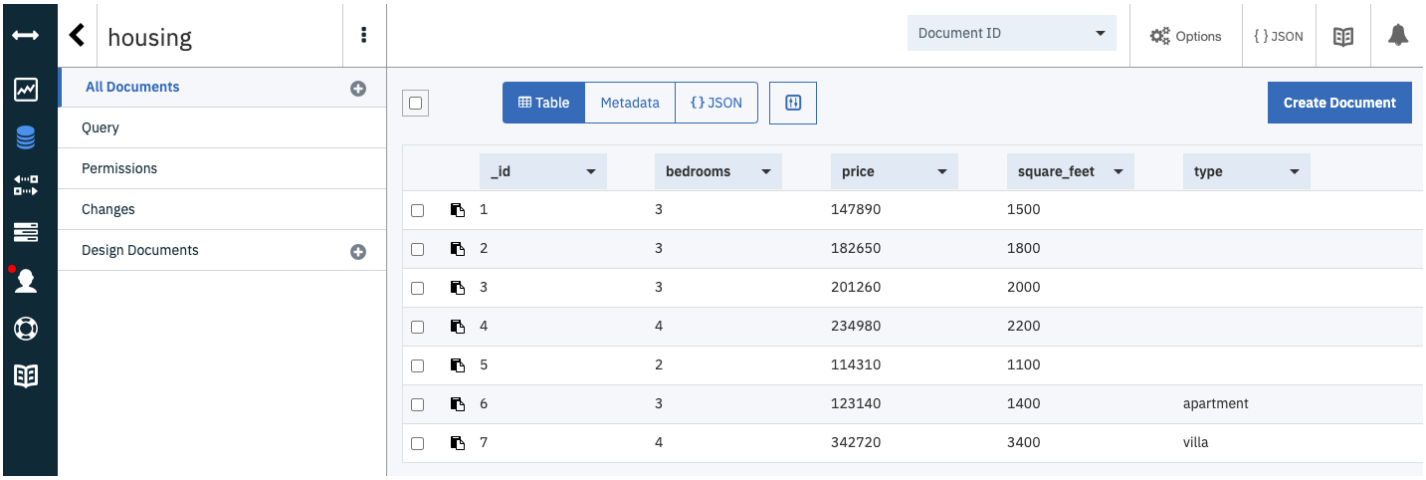
Copied!

Exercise 5 - Update documents

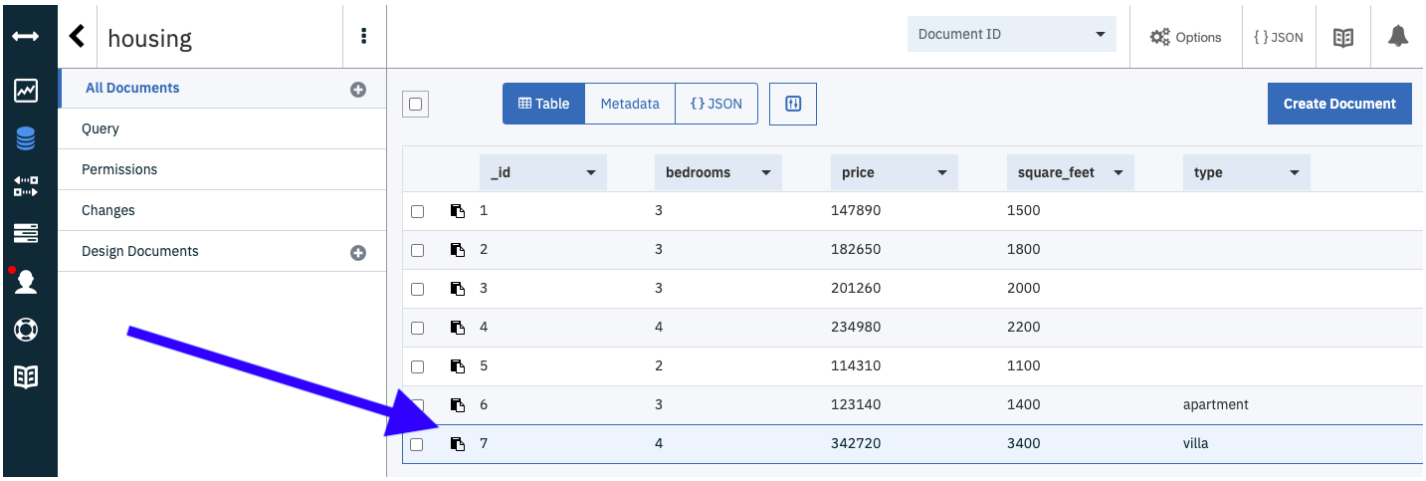
Click on the database name `housing` as shown in the image below.



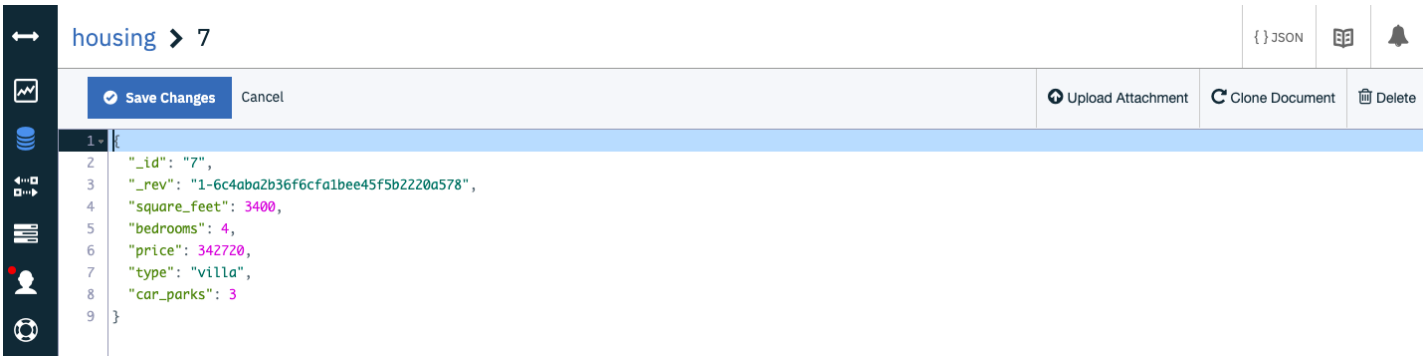
You will see a screen as in the image below.



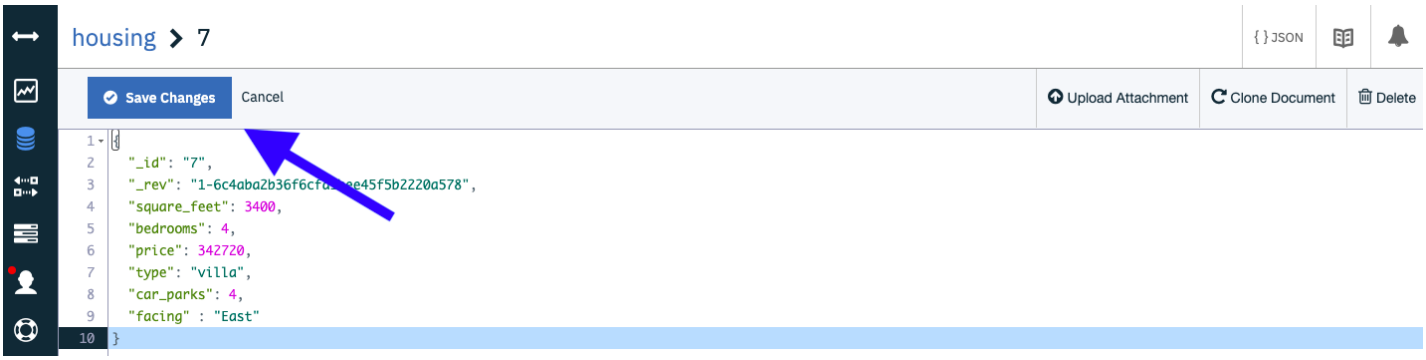
Click on the document with _id 7.



The document will open up like this.

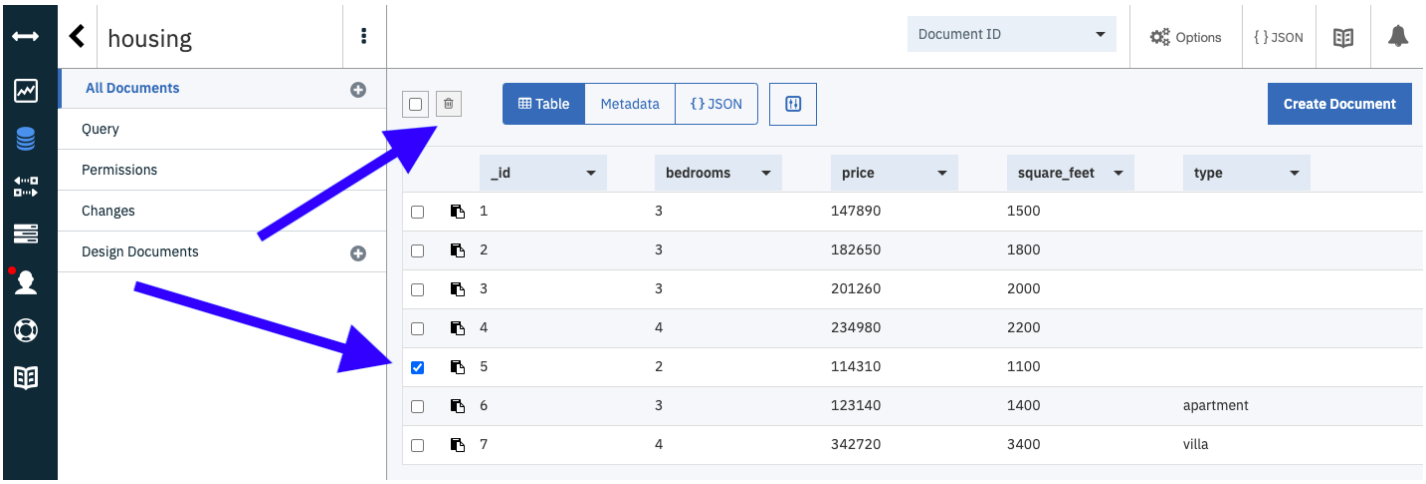


Change the number of `car parks` to 4 and add `facing` key with value `East`, as shown in the image below. Click `Save Changes` to save the document.



Exercise 6 - Delete documents

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



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

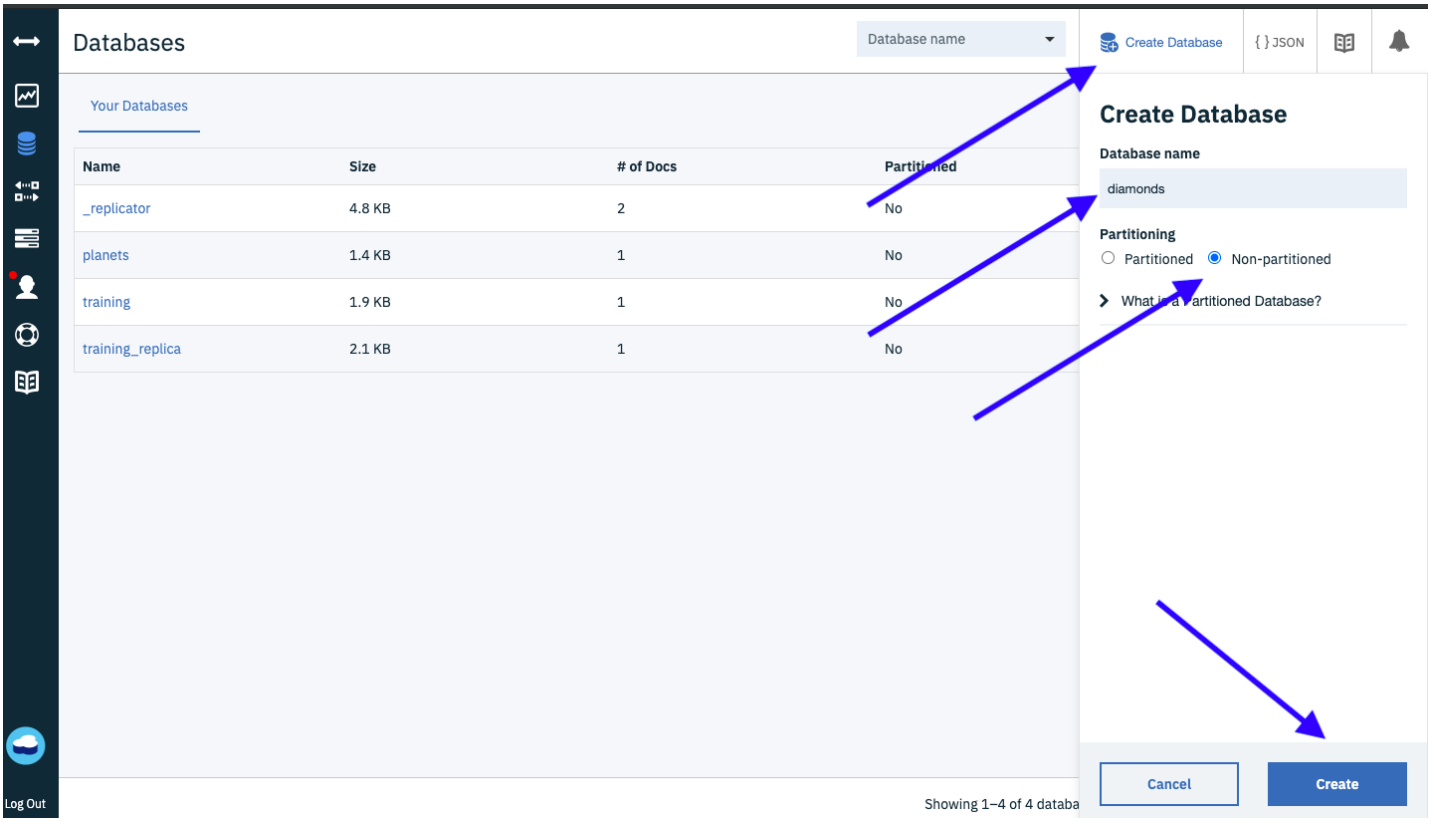
Click on `Create Database`

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



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

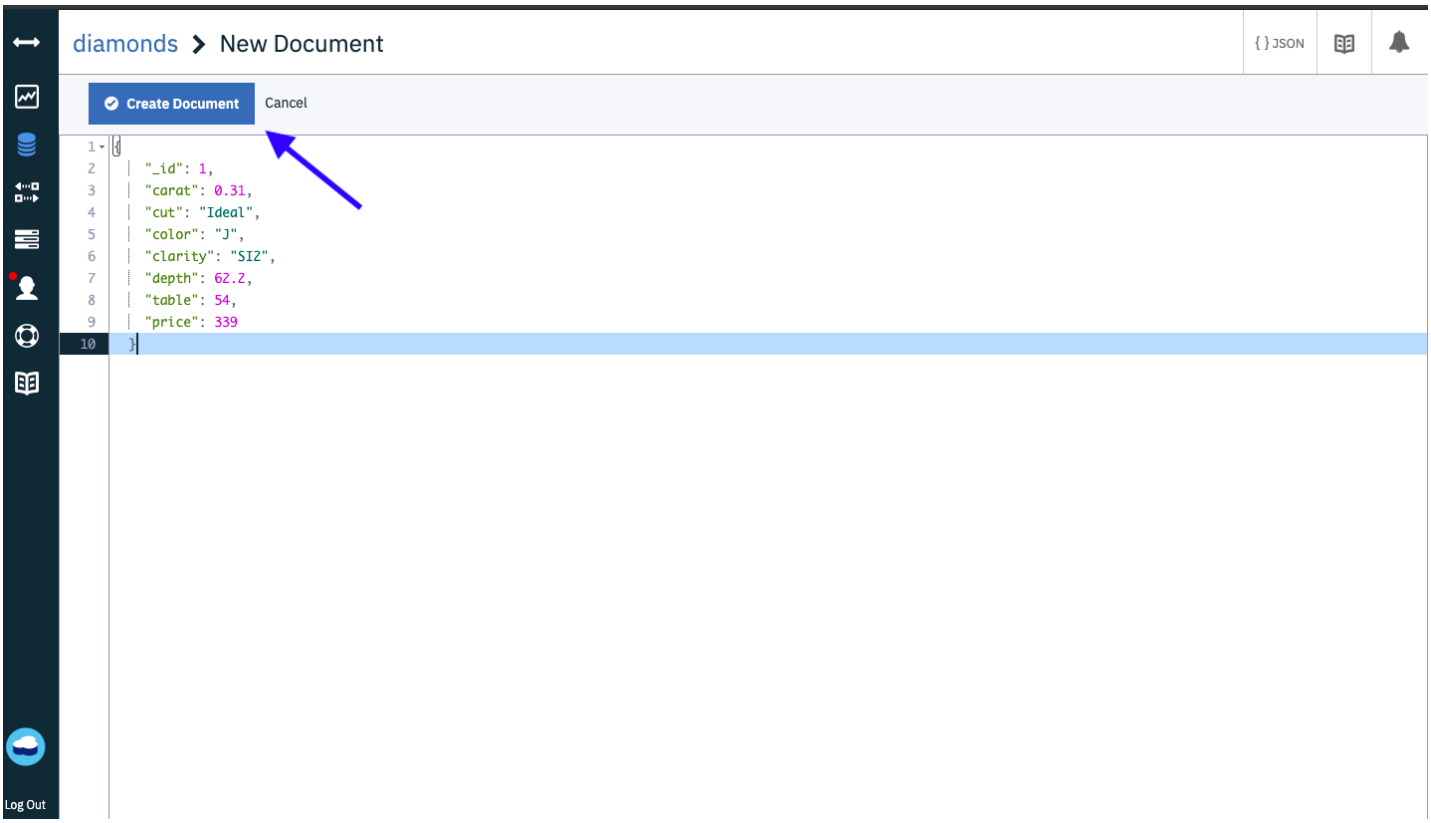
Click on `Create Document`

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

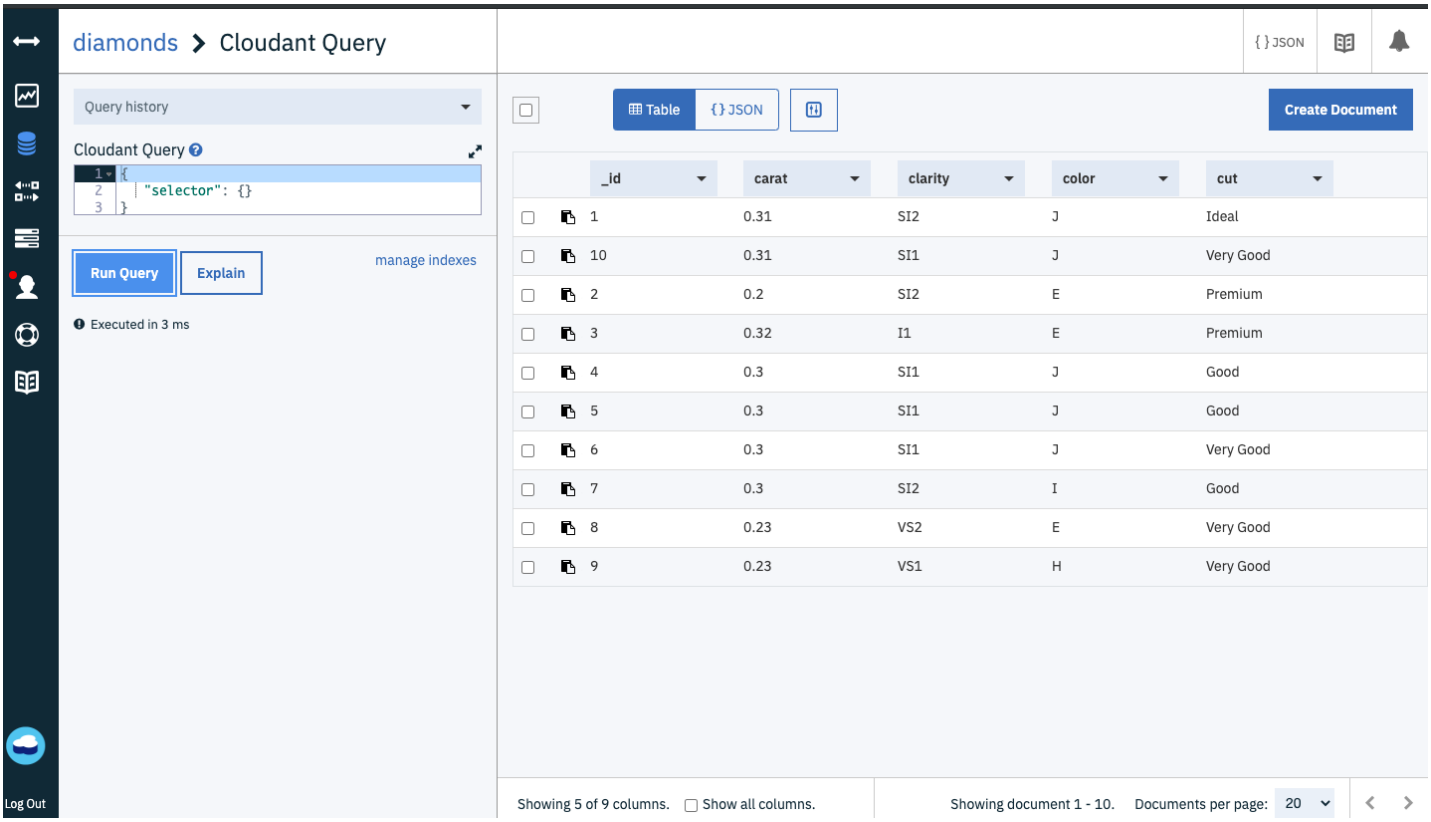
Go to the **Query** page.

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



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

▼ Click here for Hint

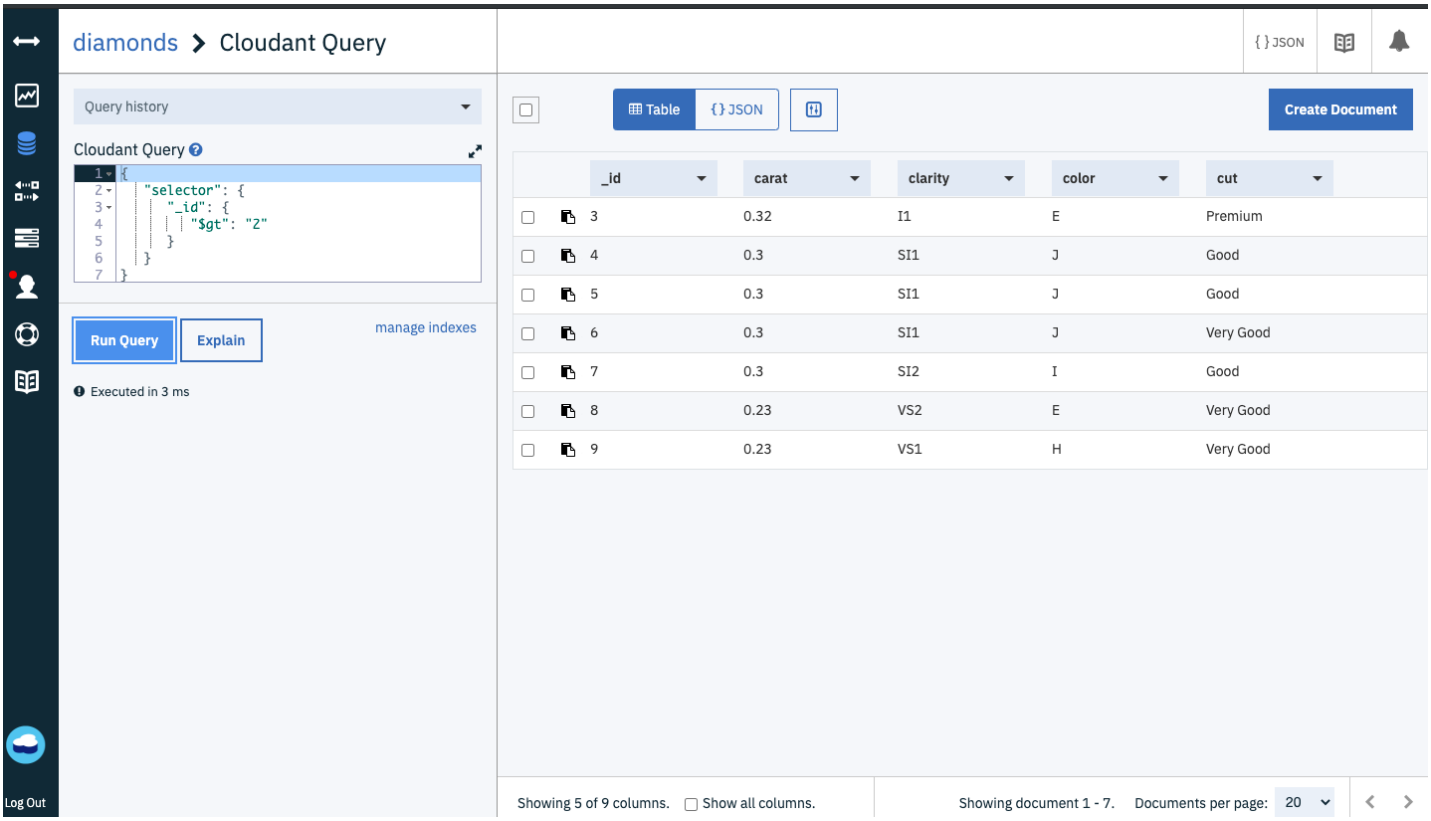
Go to the **Query** page.

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



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

▼ Click here for Hint

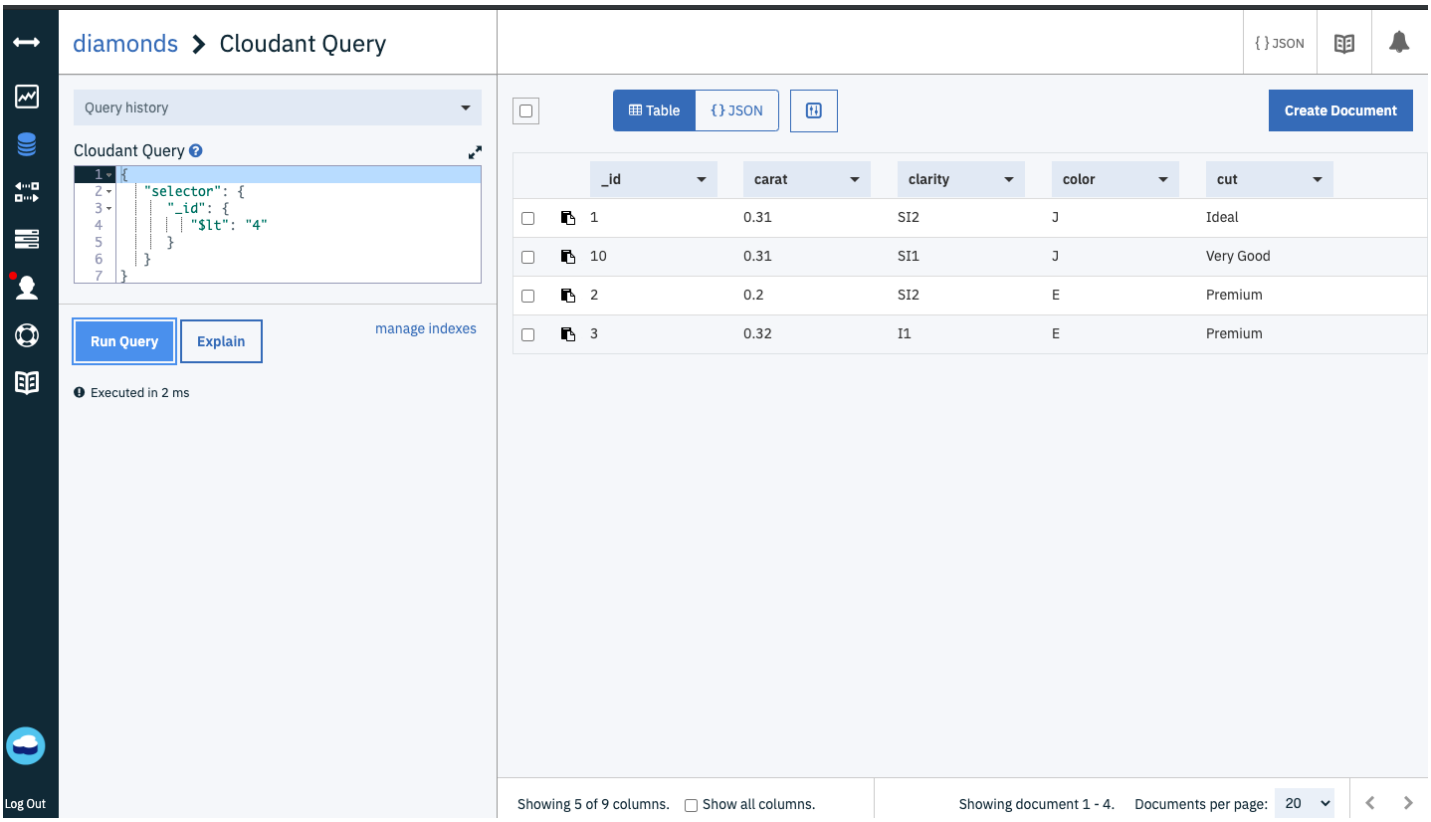
Go to the **Query** page.

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



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

▼ Click here for Hint

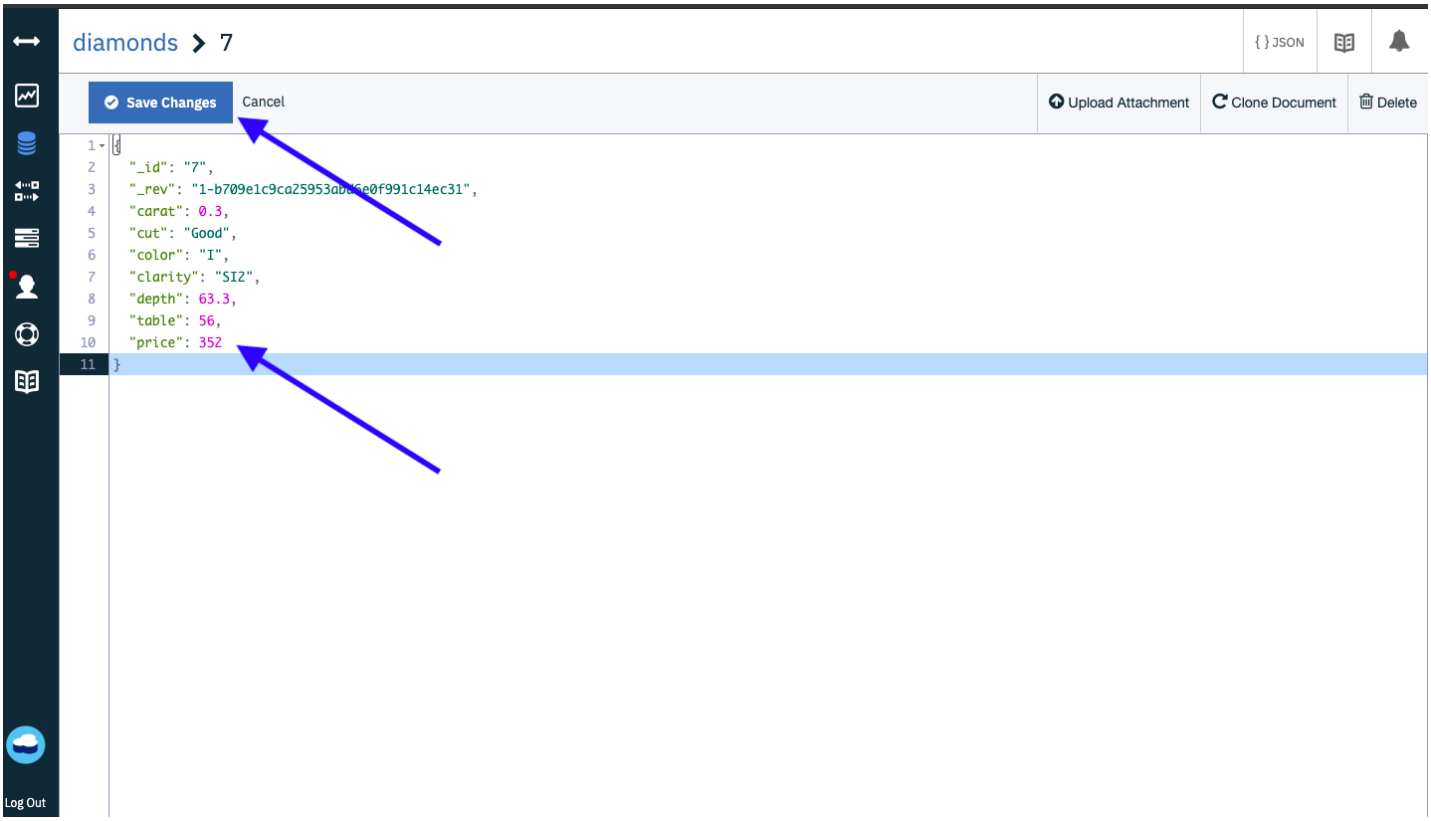
From the list of documents, click on the document with `_id` 7.

Make the changes.

Click on `Save Changes`

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

▼ Click here for Solution



7. Delete the document with `_id` 3

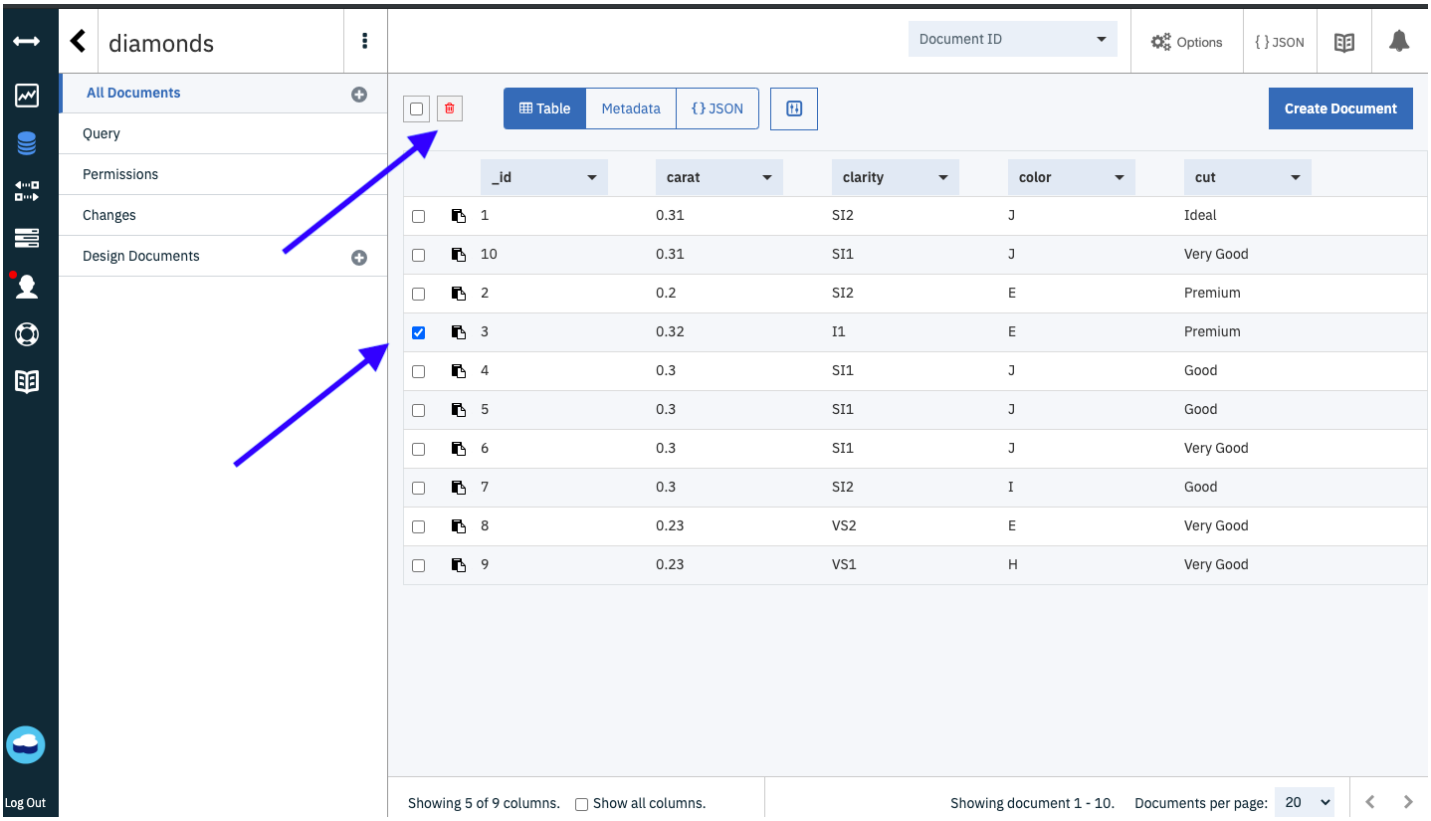
▼ Click here for Hint

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



Authors

Ramesh Sannareddy

Other Contributors

Rav Ahuja

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