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

Exercise 1 - Launch Cloudant Dashboard

Step 1: Click on <u>cloud.ibm.com/resources</u>.

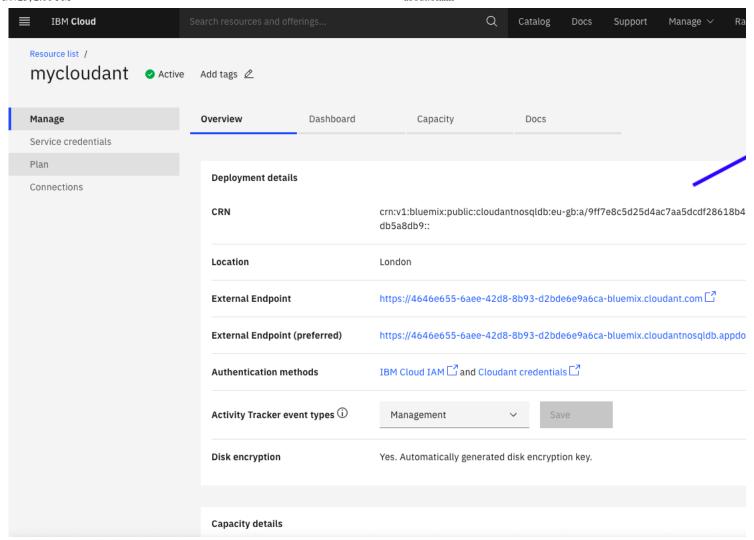
Step 2: Click on the Services chevron.

Step 3: Click on your instance of Cloudant.

▶ Click here for Hint

Step 4: Click on Launch Dashboard.

about:blank 1/20



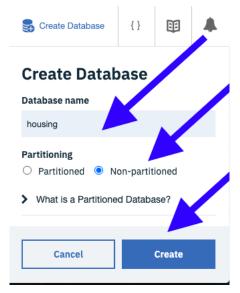
Exercise 2 - Create Database

Step 1: On the dashboard click on Create Database.



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

about:blank 2/20



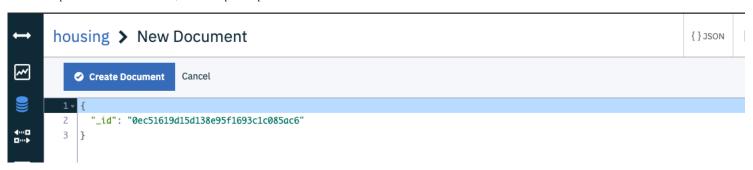
In a few moments the database will be created, and you will be taken to a page that looks like the one below.



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.

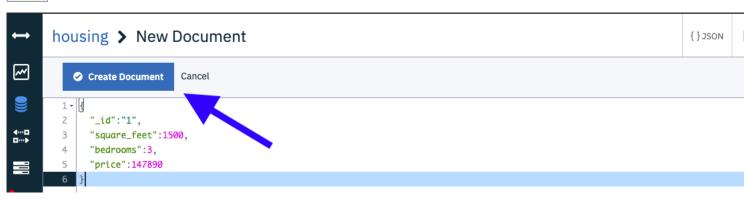
Copy and paste the below json document and click on Create Document button, as show in the image below.

```
1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7
1.
2. {
3. "_id":"1",
4. "square_feet":1500,
```

about:blank 3/20

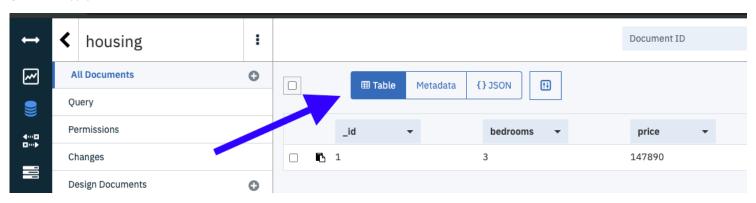
```
5. "bedrooms":3,
6. "price":147890
7. }
```

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
 4. 4
 5. 5
 6.6
 1. {
         "_id":"2",
 2.
          "square_feet":1800,
 3.
 4.
          "bedrooms":3,
          "price":182650
 5.
 6. }
Copied!
 2. 2
 3. 3
 4. 4
5. 5
6. 6
7. 7
 1.
 2. {
         "_id":"3",
 з.
 4.
          "square_feet":2000,
 5.
          "bedrooms":3,
 6.
7. }
          "price":201260
Copied!
 1. 1
 2. 2
 3. 3
 4. 4
5. 5
6. 6
7. 7
 1.
 2. {
 3.
           id":"4",
          "square_feet":2200,
 5.
          "bedrooms":4,
```

about:blank 4/20

```
6. "price":234980
7. }

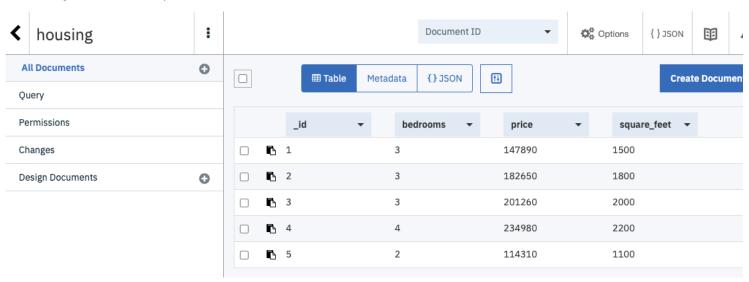
Copied!

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.



Cloudant is a NoSQL database. It is a schema less database. All documents in a database need not have the same schema.

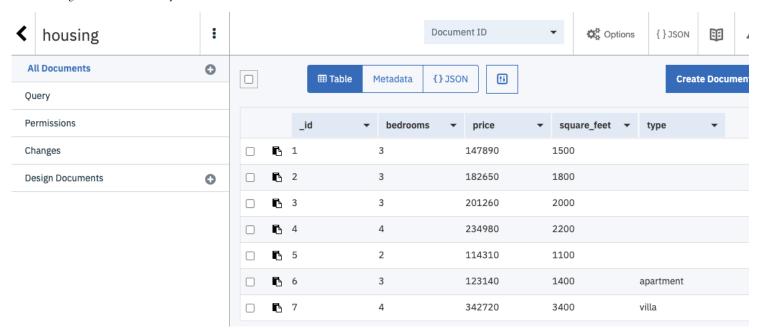
Let us insert two documents that have additional keys, compared to the previously inserted documents.

```
1. 1
  2. 2
  3. 3
  4. 4
5. 5
6. 6
7. 7
  8. 8
9. 9
  1.
 2. {
  з.
              "_id":"6",
  4.
              "square_feet":1400,
              "bedrooms":3,
"price":123140,
"type":"apartment",
"floor":5
  5.
  6.
7.
  8.
  9. }
Copied!
 2. 2
3. 3
4. 4
5. 5
6. 6
7. 7
  8.8
  9.
       9
  1.
  2. {
              "_id":"7",
"square_feet":3400,
"bedrooms":4,
  3.
4.
  5.
  6.
              "price":342720,
               type":"villa",
  8.
              "car_parks":3
```

about:blank 5/20

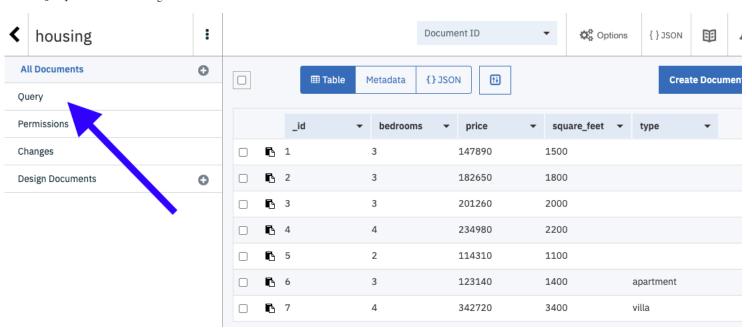


After inserting the above documents your database should now look like this.



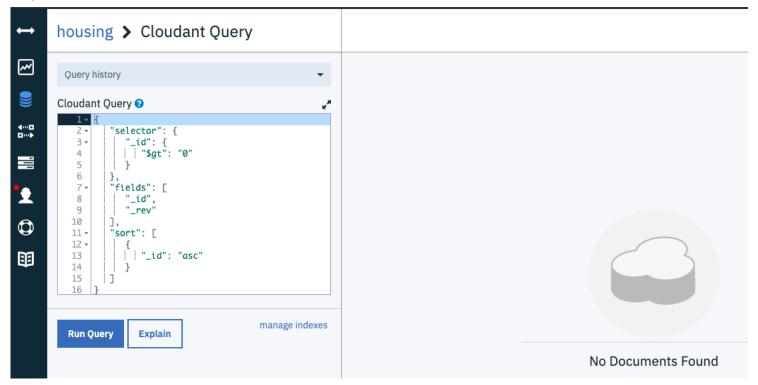
Exercise 4 - Query documents

Click on Query as shown in the image below.



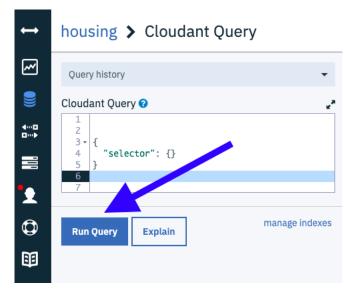
You will see a screen like this.

about:blank 6/20



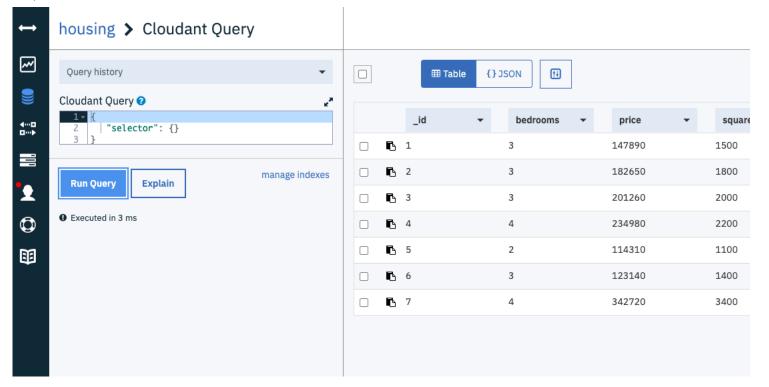
Replace the default query with the one given below, and click on the Run Query button.

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



You should see an output like this.

about:blank 7/20



Try out these Cloudant queries.

Select all fields in all documents

```
1. 1
2. 2
3. 3
4. 4
1.
2. {
3. "selector": {}
4. }
```

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. }
```

about:blank 8/20

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
10. 10
11. 11
12. 12
13. 13
 1.
 2. {
3.
           "selector": {
           4.
  5.
  6.
7.
         },
"fields": [
    "_id",
    "price",
    "amare_
 8.
9.
10.
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

```
2. 2
 5. 5
 6. 6
7. 7
8. 8
12. 12
13. 13
14. 14
15. 15
16. 16
17. 17
18. 18
 1.
 2. {
 3.
           "selector": {
                "_id": {
    "$gt": "2"
 4.
 5.
6.
7.
               }
         },
"fields": [
    "_id",
    "price",
    "cquare_
 8.
 9.
10.
                "square_feet"
11.
12.
13.
           ],
"sort": [
14.
               {
                    "_id": "asc"
15.
16.
17.
           ]
```

about:blank 9/20

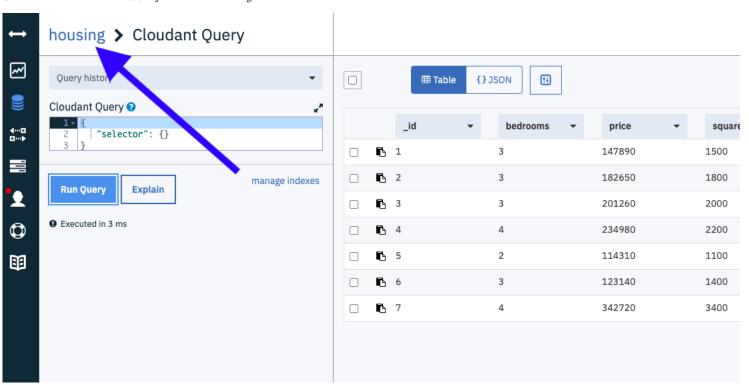
```
18. }
Copied!
```

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

```
2. 2
3. 3
4. 4
5. 5
  6. 6
7. 7
  8. 8
9. 9
 10. 10
11. 11
 12. 12
 13. 13
 15. 15
 16. 16
17. 17
 18. 18
  1.
2. {
3.
4.
5.
            "selector": {
                 "_id": {
    "$gt": "2"
  6.
7.
8.
           },
"fields": [
    "_id",
    "_"
                 "price",
 10.
 11.
                 "square_feet"
            ],
"sort": [
 13.
 14.
15.
                      "_id": "desc"
 16.
 17.
Copied!
```

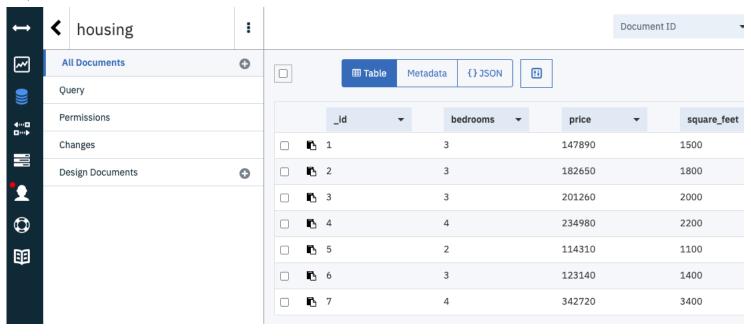
Exercise 5 - Update documents

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

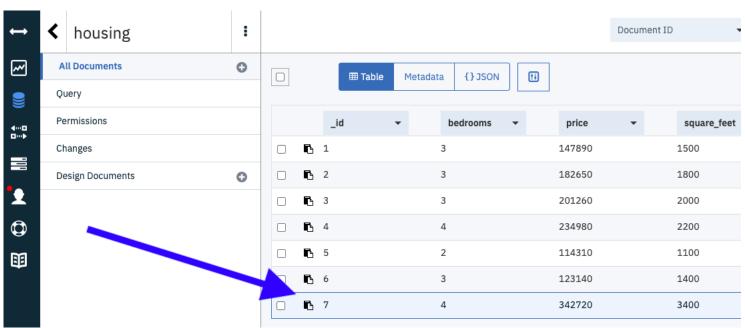


You will see a screen as in the image below.

about:blank 10/20



Click on the document with _id 7.



The document will open up like this.

```
housing > 7
<u>~</u>
           Save Changes
                             Cancel
                                                                                                                                    Uploa
        1 ▼ {
              "_id": "7",
         3
              "_rev": "1-6c4aba2b36f6cfa1bee45f5b2220a578",
              "square_feet": 3400,
         4
              "bedrooms": 4,
               "price": 342720,
               "type": "villa",
         8
               "car_parks": 3
         9
0
```

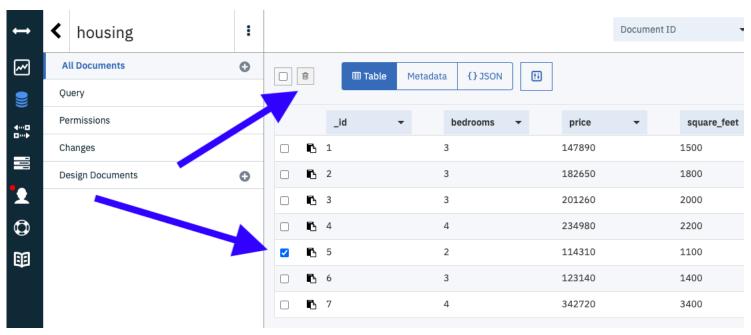
Change the number of car parks to 4 and add facing key with value East, as shown in the image below. Click Save Changes to save the document.

about:blank 11/20

```
housing > 7
~
           Save Changes
                            Cancel
                                                                                                                                   Uploa
        1 - [{
        2
              "_id": "7",
              "_rev": "1-6c4aba2b36f6cfa. 2e45f5b2220a578",
        3
              "square_feet": 3400,
              "bedrooms": 4,
              "price": 342720,
              "type": "villa",
              "car_parks": 4,
              "facing" : "East"
```

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 or.

Practice exercises

1. Create a database named diamonds.

▼ Click here for Hint

Click on Create Database

Enter diamonds as the database name.

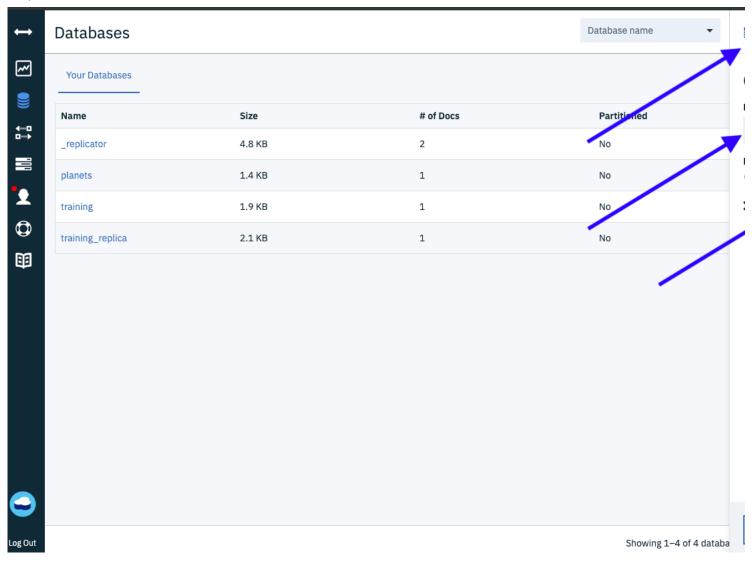
Select 'Non-partitioned'.

Click on Create

Refer to Exercise 2 if you wish to revise this topic.

▼ Click here for Solution

about:blank 12/20



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. 255
26. 26
27. 27
28. 28
29. 29
30. 30
31. 31
32. 32
32. 33
33. 33
34. 34
35. 35
36. 36
37. 37
38. 38
39. 39
40. 40

about:blank 13/20

```
1/9/23, 2:08 PM
    41. 41
   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
   56. 56
57. 57
58. 58
59. 59
    60.60
    61. 61
    62. 62
    63. 63
64. 64
65. 65
    66. 66
    68. 68
    69. 69
   70. 70
71. 71
72. 72
73. 73
   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
   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
                {
    "_id": "1",
    "carat": 0.31,
    "cut": "Ideal",
    "color": "J",
    "clarity": "S12",
    "depth": 62.2,
    "table": 54,
    "price": 339
      2.
      3.
      4.
      5.
      6.
      8.
                     "price": 339
      9.
    10.
    11.
                {
  "_id": "2",
  "carat": 0.2,
  "cut": "premium",
  "color": "E",
  "clarity": "SI2",
  "depth": 60.2,
  "table": 62,
  "price": 351
    12.
    13.
     14.
    15.
    16.
    17.
    18.
    19.
    20.
    21.
   22.
23.
```

about:blank 14/20

```
{
    "_id": "3",
    "carat": 0.32,
    "cut": "Premium",
    "color": "E",
    "clarity": "II",
    "depth": 60.9,
 24.
 25.
 26.
 27.
 28.
 29.
 30.
                      "table": 58,
  31.
  32.
                      "price": 342
 33.
 34.
               }
 35.
 36.
               {
    "_id": "4",
    "carat": 0.3,
    "cut": "Good",
    "color": "J",
    "clarity": "SII",
    "depth": 63.4,
    "table": 54,
    "price": 349
 37.
  38.
  39.
  40.
 41.
  42.
  43.
  44.
                     "price": 349
  45.
  46.
 47.
                }
 48.
               {
    "_id": "5",
    "carat": 0.3,
    "cut": "Good",
    "color": "J",
    "clarity": "SII",
    "depth": 63.8,
    "table": 56,
    "price": 347
  49.
 50.
  51.
  52.
 53.
 54.
 55.
 56.
  57.
                      "price": 347
 58.
 59.
               }
 60.
 61.
                {
                    "_id": "6",
"carat": 0.3,
"cut": "Very Good",
"color": "J",
"clarity": "S11",
"depth": 62.7,
"table": 59,
"price": 240
  62.
  63.
  64.
  65.
  66.
 67.
 68.
                      "price": 349
  69.
  70.
  71.
 72.
                    "_id": "7",
"carat": 0.3,
"cut": "Good",
"color": "I",
"clarity": "SI2",
  73.
  74.
  75.
  76.
  77.
                     "depth": 63.3,
"table": 56,
"price": 343
 78.
 79.
 80.
 81.
 82.
             {
   "_id": "8",
   "carat": 0.23,
   "cut": "Very Good",
   "color": "E",
   "clarity": "VS2",
   "denth": 63.8,
 83.
 84.
 85.
 86.
 87.
 88.
                     "depth": 63.8,
"table": 55,
"price": 339
 89.
 90.
 91.
 92.
 93.
               {
    "_id": "9",
    "carat": 0.23,
    "cut": "Very Good",
    "color": "H",
    "clarity": "VS1",
    "depth": 61,
    ""
 94.
  95.
  96.
 97.
 98.
 99.
100.
101.
                     "table": 57,
102.
                      "price": 323
103.
104.
               {
    "_id": "10",
    "carat": 0.31,
    "cut": "Very Good",
    "color": "J",
    "clarity": "SII",
    "depth": 59.4,
    "table": 62,
    "price": 346
105.
106.
107.
108.
109.
110.
111.
112.
                      "price": 346
113.
114.
Copied!
```

▼ Click here for Hint

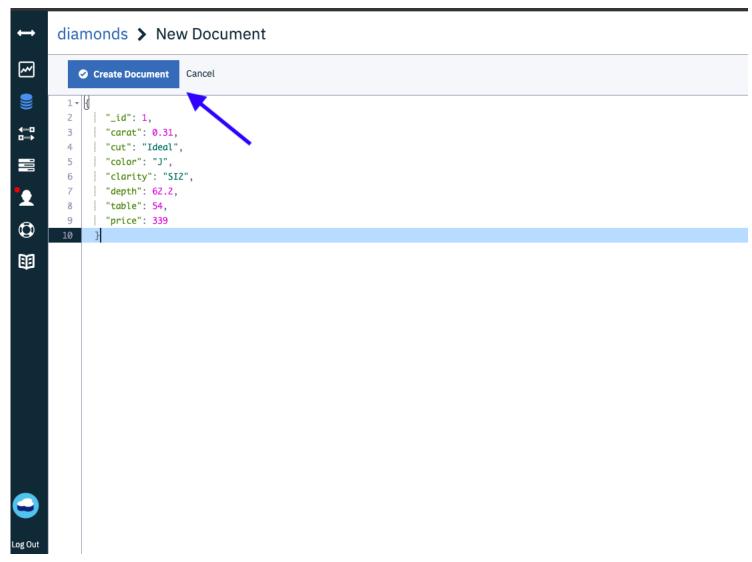
Click on Create Document

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.

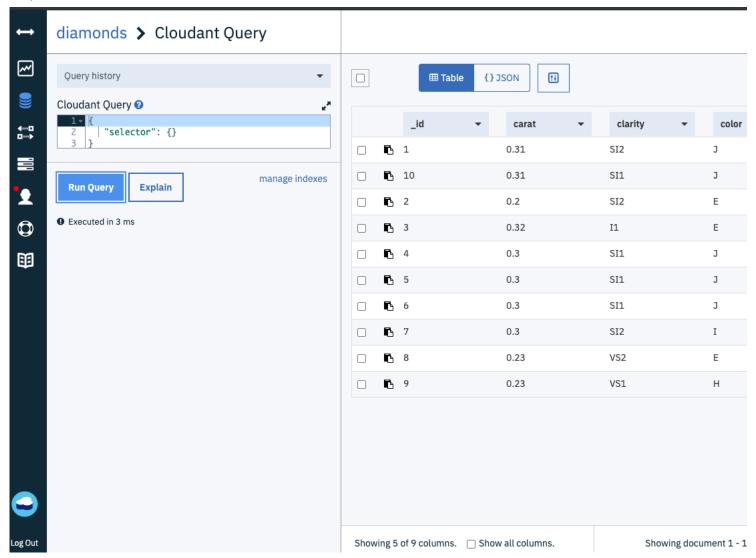
Write the query in JSON form in the query box.

Click on Run Query

Refer to Exercise 4 if you wish to revise this topic.

▼ Click here for Solution

about:blank 16/20



4. Write a query to fetch all documents with <code>_id</code> greater than 2

▼ Click here for Hint

Go to the Query page.

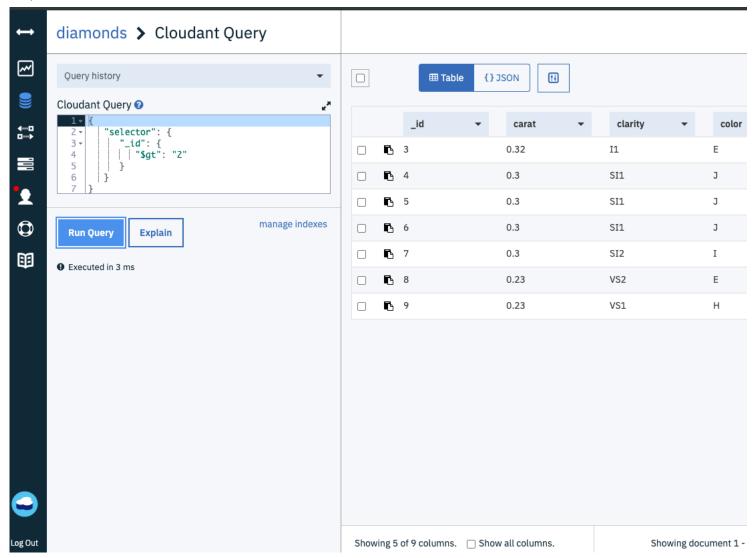
Write the query in JSON form in the query box.

Click on Run Query

Refer to Exercise 4 if you wish to revise this topic.

▼ Click here for Solution

about:blank 17/20



 $5. \textit{ Write a query to fetch all documents with $_$ia less than 4}\\$

▼ Click here for Hint

Go to the Query page.

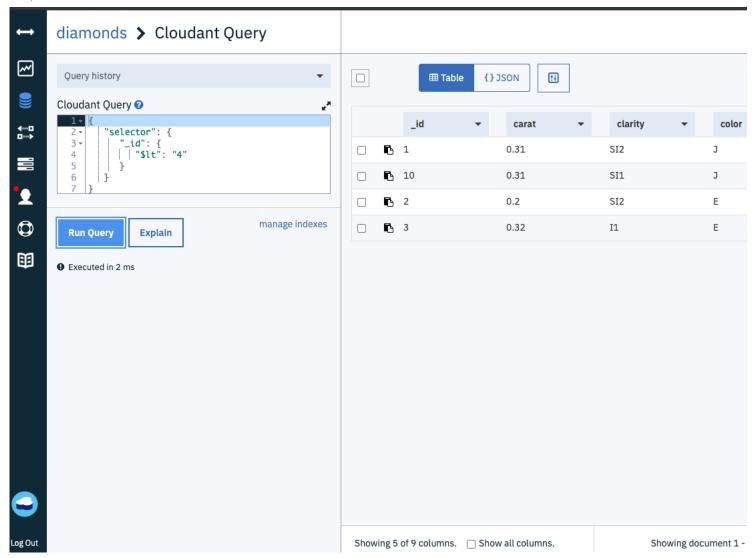
Write the query in JSON form in the query box.

Click on Run Query

Refer to Exercise 4 if you wish to revise this topic.

▼ Click here for Solution

about:blank 18/20



6. Set the price of the diamond with $_ia~7$ to 352

lacktriangle Click here for Hint

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

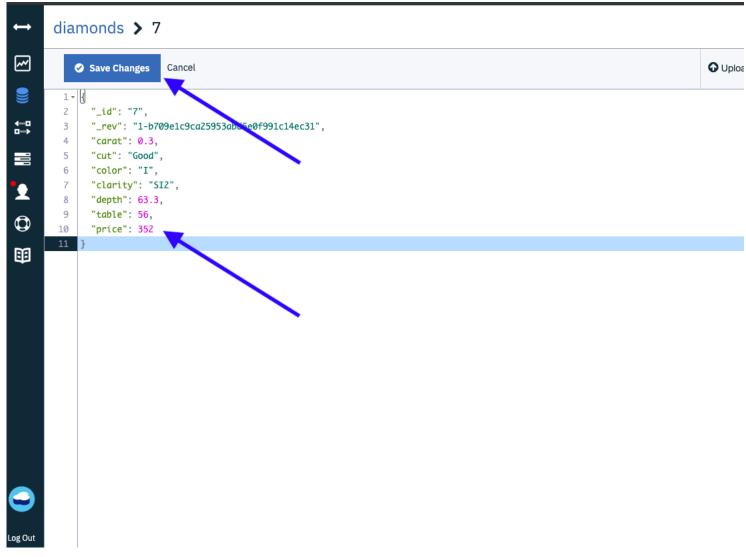
Make the changes.

Click on Save Changes

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

▼ Click here for Solution

about:blank 19/20



- 7. Delete the document with $_id3$
- ► Click here for Hint
- ► Click here for Solution

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 Sannaredd	y Added hints and solutions to practice exercises
2021-04-6	0.1	Ramesh Sannaredd	y Created initial version of the lab

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about:blank 20/20