



Cloud Developer Certification Preparation

Exercise 6.3:
Managing instances of the IBM Bluemix data services

Exercise 6.3: Managing instances of the IBM Bluemix data services

In this exercise, you'll learn the basics of managing the following data services in IBM Bluemix.

- Cloudant NoSQL Database
- dashDB
- SQL Database

Start the Cloudant database

1. From a browser, log in to Bluemix: <http://bluemix.net>.
2. Make sure you're in the Dashboard tab. If you're not, click **Dashboard** at the top of the page.
3. Click **USE SERVICES OR APIS**.
4. Scroll down to the **Data Management** section and click **Cloudant NoSQL DB**.



5. Under **App**, select **Leave unbound**.
6. Click **CREATE** to create a new instance of Cloudant NoSQL DB.
7. Click **Launch when the service** landing page appears to launch the dashboard.

Create a database

1. From the dashboard, click **Add New Database**, enter `mydatabase` as the name, and click **Create**.



You'll see the administration window for the new database.

Exercise 6.3: Using IBM Bluemix data services

Add data to an existing database

1. Click the + icon next to **All Documents** and select **New Doc** from the context menu.

The screenshot shows the IBM Bluemix Data Services interface. On the left is a sidebar with icons for Databases, Replication, Warehousing, Active Tasks, Account, Support, and Documentation. The main area is titled 'mydatabase'. Under 'Changes', there is a section for 'All Documents' which has a context menu open. The menu items are 'Add new', 'New Doc' (which is highlighted in orange), 'New View', and 'New Search Index'. The 'New Doc' item has a small '+' icon next to it.

A new JSON document appears with a single attribute named `_id`. This is the unique identifier of your new document.

2. Modify the `_id` value and add the fields `field2` and `field3` as shown:

The screenshot shows the 'New Document' editor. At the top right are 'Save' and 'Cancel' buttons. The main area displays a JSON document with the following code:
1 {
2 " _id": "myuniqueid1",
3 "field2": "value2",
4 "field3": "value3"
5 }

3. Click **Save** to save your changes.
4. Click the **Arrow** icon to go back to the database view.

Exercise 6.3: Using IBM Bluemix data services

The screenshot shows the IBM Bluemix Data Services interface. On the left is a sidebar with icons for Databases, Replication, Warehousing, Active Tasks, and Account. The main area has a title bar 'myuniqueid1' with a back arrow icon circled in red. Below the title are 'Save' and 'Cancel' buttons. The central content area contains a JSON document:

```
1+ {  
2 "id": "myuniqueid1",  
3 "_rev": "3-48064c82ff845f27e862a0f51f503b73",  
4 "field2": "value2",  
5 "field3": "value3"  
6 }
```

Edit documents in a database

1. From the database view in the dashboard, click **All Documents**. A summary of the documents in the database appears on the right.

The screenshot shows the IBM Bluemix Data Services interface. The sidebar includes Databases, Replication, Warehousing, Active Tasks, Account, Support, and Documentation. The main area has a title bar 'mydatabase' with a dropdown arrow icon. Below it are 'Permissions', 'Changes', and 'All Documents' (which is highlighted and has a '+' icon). To the right is a search bar 'Document ID' and 'Query Options' buttons, followed by an 'API URL' link. The 'All Documents' panel shows a single document entry:

id "myuniqueid1"

```
"_id": "myuniqueid1"  
"_rev": "1-6ca934ef03131c337ea407e5f25a40f8"  
"value"  
"rev": "1-6ca934ef03131c337ea407e5f25a40f8"  
"key": "myuniqueid1"
```

2. Click the **Pencil** icon of your only document to edit it. Add the field **field4** as shown:

The screenshot shows the IBM Bluemix Data Services interface. The sidebar includes Databases, Replication, Warehousing, Active Tasks, and Account. The main area has a title bar 'myuniqueid1' with a back arrow icon. Below the title are 'Save' and 'Cancel' buttons. The central content area contains a JSON document with the addition of 'field4':

```
1+ {  
2 "id": "myuniqueid1",  
3 "_rev": "1-6ca934ef03131c337ea407e5f25a40f8",  
4 "field2": "value2",  
5 "field3": "value3",  
6 "field4": "value4"  
7 }
```

3. Click **Save** to save your changes.
4. Click the **Arrow** icon to go back to the database view.

The screenshot shows the IBM Bluemix Data Services interface. The sidebar includes Databases, Replication, Warehousing, Active Tasks, and Account. The main area has a title bar 'myuniqueid1' with a back arrow icon circled in red. Below the title are 'Save' and 'Cancel' buttons.

Exercise 6.3: Using IBM Bluemix data services

Clone documents in a database

- From the database view in the dashboard, click **All Documents**. A summary of the documents in the database appears on the right.

The screenshot shows the IBM Bluemix dashboard with the 'Databases' service selected. In the center, under 'All Documents', a single document is highlighted with the ID 'myuniqueid1'. The document's content is displayed in a modal window:

```
_id: "myuniqueid1"
_rev: "1-6ca934ef0331c337ea407e5f25a40f6"
"value"
"key": "myuniqueid1"
```

- Click the **Pencil** icon of your only document to edit it.
- Click **Clone Document** in the document editor.

The screenshot shows the document editor for the document 'myuniqueid1'. The 'Clone Document' button is highlighted with a red box. The document content is as follows:

```
_id: "myuniqueid1",
_rev: "1-d75b851533626d5bd87c863b1d4d4db2",
"field1": "value1",
```

You'll be prompted to accept a system generated unique id for the new clone or to provide your own value.

- Change the id to myuniqueid2.

The screenshot shows the 'Clone Document' dialog box. The 'Set new documents ID:' field contains the value 'myuniqueid2'. At the bottom, there are 'Cancel' and 'Clone' buttons.

- Click **Clone**. Your clone is added to the database.
- Click the **Arrow** icon to go back to the database view.

The screenshot shows the database view with the newly cloned document 'myuniqueid2' listed. The 'Save' button is visible at the bottom left.

Exercise 6.3: Using IBM Bluemix data services

Create a simple query of all documents in a database

1. From the database view in the dashboard, click **All Documents**. A summary of the documents in the database appears on the right.
2. Click **Query Options**, select **Include Docs**, and click **Query**.

The screenshot shows the IBM Bluemix database interface. On the left, there's a sidebar with options like 'Permissions', 'Changes', 'All Documents', and 'All Design Docs'. The 'All Documents' option is selected. On the right, a modal window titled 'Query Options' is open. It has a checked checkbox for 'Include Docs'. Below it is a section for 'Keys' with tabs for 'By Key(s)' and 'Between Keys'. Under 'Additional Parameters', there are options for 'Update Sequence' (set to 'None'), 'Descending', 'Skip', and '# of rows'. At the bottom of the modal are 'Query' and 'Cancel' buttons. The background shows two document entries: one with id "myuniqueid1" and another with id "myuniqueid2".

3. Verify that all the fields in your two documents are present.

This screenshot shows the results of the query. The 'All Documents' section in the sidebar is highlighted. The main area displays two documents. The first document has an id of "myuniqueid1" and contains fields: "_id": "myuniqueid1", "_rev": "4-fc3b291c51ffe8e31ce16c3721529e19", "field2": "value2", "field3": "value3", "field4": "value4". The second document has an id of "myuniqueid2" and contains fields: "_id": "myuniqueid2", "_rev": "1-152a96754fbd0fd08f8a611925cece7c", "field2": "value2", "field3": "value3", "field4": "value4". Both documents are shown with edit icons next to their respective IDs.

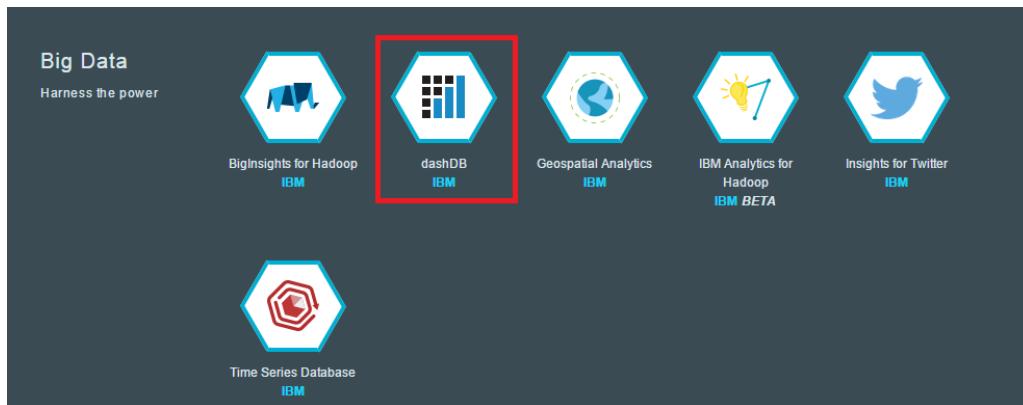
Exercise 6.3: Using IBM Bluemix data services

Exercise 6.3.1: Managing instances of dashDB

In this section, you'll learn the basics of managing the dashDB service in IBM Bluemix.

Launch the dashDB Dashboard

1. From a browser, log in to Bluemix: <http://bluemix.net>.
2. Make sure you're in the Dashboard tab. If you're not, click **Dashboard** at the top of the page.
3. Click **USE SERVICES OR APIS**.
4. Scroll down to the **Big Data** section and click **dashDB**.



5. Under **App**, select **Leave unbound**.
6. Click **CREATE** to create a new instance of dashDB.
7. Click **Launch** when the service's landing page shows the dashDB console.

Create a new table

1. From the dashDB console, click **Tables**.

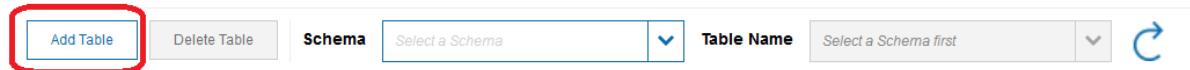
A screenshot of the IBM dashDB console. The left sidebar has a 'Tables' tab selected. The main area displays a message: 'Welcome. Your database is ready.' It says, 'Welcome to IBM dashDB. You can load your data, run SQL queries against the data, and use tools to explore predictive analysis and in-database analytics.' Below that, it says, 'Sample data is already loaded. Start exploring the power of dashDB!' There are two buttons at the bottom: 'Load your data' and 'Go to your tables'. The top right corner shows '0%' completion and the text 'dashDB-rc'.

Exercise 6.3: Using IBM Bluemix data services

2. Click Add Table.

Create, drop, and work with tables

For existing tables, you can view details, browse data, and export data. [Learn more](#)



Some sample DDL to create a table is generated for you.

A screenshot of a modal dialog box titled 'Add a table to the selected schema'. The dialog has a 'Browse' button for selecting files, a 'Yes' radio button for the first row containing column names, a separator character input field (set to ','), and a text area for DDL statements. The DDL statement is: 'CREATE TABLE MYTABLE (COL1 INT, COL2 VARCHAR(5));'. At the bottom are 'Cancel' and 'Run DDL' buttons.

3. Use the sample DDL for this exercise. Click Run DDL.

4. Click OK in the dialog that indicates the DDL ran successfully and then click Cancel to exit the dialog with the sample DDL.

Browse an existing table

1. In the dashDB console, select **GOSALES** as the **Schema** and **BRANCH** as the **Table Name** and then click **Browse Data**.

Create, drop, and work with tables

For existing tables, you can view details, browse data, and export data. [Learn more](#)



2. Verify that the data in the BRANCH table is displayed.

Exercise 6.3: Using IBM Bluemix data services

Table Definition [Browse Data](#)

Click a row to see its details.

Address Book Data									
Branch Code	Address1	Address1 MB	Address2	Address2 MB	City	City MB	Prov State	Prov State MB	Postal Zone
6	75, rue du Faubourg St-Honoré	75, rue du Faubourg St-Honoré			Paris	Paris			F-75008

3. Verify that you can click a row to see all the data for the row.

Table Definition [Browse Data](#)

Click a row to see its details.

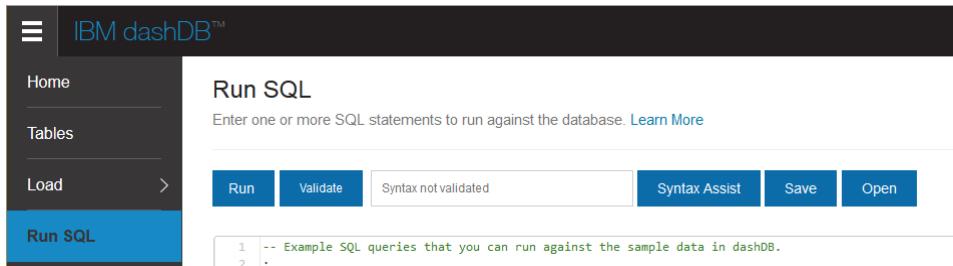
[Results](#) > [Record Details](#)

Branch Code:	6
Address1:	75, rue du Faubourg St-Honoré
Address1 MB:	75, rue du Faubourg St-Honoré
Address2:	--
Address2 MB:	--
City:	Paris
City MB:	Paris

Exercise 6.3: Using IBM Bluemix data services

Run SQL Scripts

1. In the dashDB console, click **Run SQL** in the left navigation.



A sample script is preloaded that runs against the sample data in dashDB.

2. Click **Run** to run the sample script.
3. Navigate through the results to see the data that is returned.

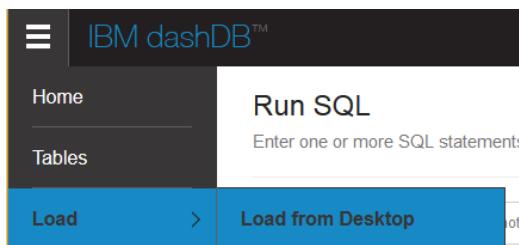
Status	Run time (seconds)	Statement	Date
✓ Succeeded - BLUDB	0.23		6/24/2015, 12:39:24 PM
✓ Succeeded	0.064	SELECT * FROM GOSALESDW.EMP_EXPENSE_F...	6/24/2015, 12:39:25 PM

Run Query in Excel via ODC fileLog  

DAY_KEY	ORGANIZATION_KEY	POSITION_KEY	EMPLOYEE_KEY	EXPENSE_TYPE_KEY	ACCO...
20100131	11101	43639	4001	2120	8052
20100131	11101	43639	4001	2122	8054

Import CSV data

1. Download the file **IDS_CCSV.zip** file to your local machine from http://databank.worldbank.org/data/download/IDS_CCSV.zip. This file contains data that is maintained by the World Bank and has data about each country's external debt.
2. Extract the contents of the file into a folder of your choice.



3. In the dashDB console, click **Load > Load from Desktop**.

Exercise 6.3: Using IBM Bluemix data services

4. Click **Browse files**, select **IDS_Series.csv**, which is one of the files in the ZIP file that you just downloaded, and click **Load File**.

Do a one-time load from an Excel file or from a delimited text file such as a comma-separated value (CSV) file. [Learn more](#)

1. Upload a file 2. Choose the target 3. Select a table 4. Load complete

Supported filetypes: XLS, XLSX, CSV

File name:

Specify the codepage, separator, and date or time formats of the source file.

Row one contains the column names Yes No

Code page:

Separator character:

comma
 tab
 colon
 other:

Does the file have columns that contain dates or times? Yes No

5. Click **Next**.

6. Select **Create a new table and load**.

1. Upload a file 2. Choose the target 3. Select a table 4. Load complete

Load into an existing table
 Create a new table and load

7. Click **Next**.

8. Accept the defaults for the new table definition and click **Finish**. You'll see a preview of the data in the new table and the number of rows that were imported.

Exercise 6.3: Using IBM Bluemix data services

1. Upload a file 2. Choose the target 3. Define new table 4. Load complete

Load from desktop succeeded for table **IDS_SERIES** in schema **DASH103566** [Load more data](#)

Quick Stats:

Number of rows committed = 215

Number of rows loaded = 215

Number of rows rejected = 0

Number of rows deleted = 0

Number of rows skipped = 0

Number of rows read = 215

[View the log for this load](#)

[View full table structure and details](#)

IDS_SERIES										
SERIES_CODE	TOPIC	DATASHEET	INDICATOR_N	SHORT_DEFINITION	LONG_DEFINITION	PERIODICITY	BASE_PERIOD	AGGREGATION_RATIO	GENERAL_COMMENT	ALERT_CODES
DTINROFFT	Economic Policy & Debt Extent: External debt: Terms	International Debt Statistics	Average interest rates on new external debt coming from official sources, including	Interest rate represents the average interest rate on all new publications and new publications.	Interest rate represents the average interest rate on all new publications and new publications.	Annual		Weighted average		

Exercise 6.3.2: Managing instances of an SQL database

In this section you'll go through the basics of managing the SQL Database service in IBM Bluemix.

Launch the SQL Database console

1. From a browser, log in to Bluemix: <http://bluemix.net>.
2. Make sure you're in the Dashboard tab. If you're not, click **Dashboard** at the top of the page.
3. Click **USE SERVICES OR APIs**.
4. Scroll down to the **Data Management** section and click **SQL Database**.



5. Under **App**, select **Leave unbound**.
6. Click **CREATE** to create a new instance of SQL Database.
7. Click **Launch** when the service landing page appears to launch the dashboard.

Create a new table

1. From the SQL Database console, click **Work with Tables**.
2. Click the + icon to enter the SQL DDL to create a new table. Some example DDL is created. Use that DDL and add a line to insert some data. Add the following line:

```
INSERT INTO MYTABLE VALUES(1, 'Hello');
```

Exercise 6.3: Using IBM Bluemix data services

Create, drop, and work with tables

For existing tables, you can view details, browse data, and export data.

The screenshot shows the 'Run DDL' interface. On the left, there's a schema selection dropdown and a table name input field. On the right, there are two main sections: one for selecting an Excel or CSV file to define the table, and another for editing DDL statements. The DDL editor contains the following code:

```
CREATE TABLE MYTABLE
(
    COL1 INT,
    COL2 VARCHAR(5)
);

INSERT INTO MYTABLE VALUES(1,'Hello');
```

At the bottom, there are 'Cancel' and 'Run DDL' buttons.

3. Click **Run DDL** to create the table.

Browse an existing table

1. In the SQL Database console, select your schema and **MYTABLE** as the **Table Name**.
2. Click **Browse Data**.

Create, drop, and work with tables
For existing tables, you can view details, browse data, and export data.

The screenshot shows the 'Browse Data' interface for the 'MYTABLE' table. On the left, there's a schema selection dropdown and a table name input field. On the right, there are two tabs: 'Table Definition' and 'Browse Data'. The 'Browse Data' tab is active and displays the table structure:

Column Name	Data Type	Length	Scale	Allow Nulls
COL1	INTEGER	4	0	YES_TEXT
COL2	VARCHAR	5	0	YES_TEXT

At the bottom, there are pagination controls and a page number indicator '10 | 25 | 50'.

3. Verify that your single row of data is displayed.

Exercise 6.3: Using IBM Bluemix data services

The screenshot shows the IBM SQL Database interface. At the top, there's a blue header bar with icons for refresh, up, and search. Below it is a table titled 'Results' with two columns: 'COL1' and 'COL2'. The first row contains the values '1' and 'Hello'. Below the table is a navigation menu with tabs: 'Getting Started' (selected), 'Manage', and 'Set Up'. Under 'Manage', there are links for 'Work with Tables', 'Load Data', and 'Run Query'. A tooltip for 'Run Query' says: 'For existing tables, you can run SQL queries, browse data, and export data.'

Run SQL Scripts

1. From the SQL Database console navigation menu, click **Manage > Run Query**.
2. Click **Select Tables and Columns**.
3. Select your schema and your table and verify that all columns are selected. Click **Apply**.
4. Click **Run Query**.
5. Verify that the query results are returned.

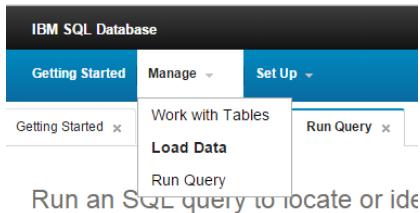
The screenshot shows the 'Select Tables and Columns' dialog. It has a sidebar on the left labeled 'Select columns' with a circular arrow icon. The main area has two tabs: 'Schema' (selected) and 'Table Name'. Under 'Schema', 'USER04938' is listed. Under 'Table Name', 'MYTABLE' is listed. To the right, there are buttons for 'Select all' (with checked checkboxes for 'COL1' and 'COL2'), 'Clear all', and 'Apply'.

Exercise 6.3: Using IBM Bluemix data services

Import CSV data

If you've already downloaded the IDS_CSV.zip file, skip to Step 3.

1. Download the file **IDS_CSV.zip** to your local machine from http://databank.worldbank.org/data/download/IDS_CSV.zip. This file contains data that is maintained by the World Bank and has data about each country's external debt.
2. Extract the contents of the file into a folder of your choice.
3. In the SQL Database console select **Manage > Load Data**.



4. Click **Browse files**, select **IDS_Series.csv**, and click **Load File**.

Do a one-time load from an Excel file or from a delimited text file such as a comma-separated value (CSV) file

1. Upload a file 2. Choose the target 3. Select a table 4. Load complete

Supported filetypes: Excel files, CSV

File Name:
Maximum file size 20 MB

Specify the codepage, separator, and date or time formats of the source file.

Row one contains the column names Yes | No

Code page Default for ASCII systems is 1208.

Separator character:

comma
 tab
 colon
 other

Does the file have columns that contain dates or times? Yes | No

5. Click **Next**.

6. Select **Create a new table and load**.

1. Upload a file 2. Choose the target 3. Select a table 4. Load complete

Load into an existing table
 Create a new table and load

7. Click **Next**.

Exercise 6.3: Using IBM Bluemix data services

8. Accept the defaults for the new table definition and click **Finish**. You'll see a preview of the data in the new table and the number of rows that were imported.

Quick load succeeded for table **IDS_Series** in schema **USER04938** [Load more data](#)

Quick Stats:

Number of rows committed = 215
Number of rows loaded = 215
Number of rows rejected = 0
Number of rows deleted = 0
Number of rows skipped = 0
Number of rows read = 215

[View the log for this load](#)

[View full table structure and details](#)

Preview of Table: "IDS_Series"

Series Code	Topic	Dataset	Indicator Name	Short definition	Long definition	Periodicity	Base Period	Aggregation method	General comments
BX.KLT.DI NV.CD.DT	Economic Policy & Debt: Balance of payments; Capital & financial account	International Debt Statistics	Foreign direct investment, net inflows in reporting economy (DRS, current US\$)	Foreign direct investment is net inflows of investment to acquire a lasting interest in or management control	Foreign direct investment (net) shows the net change in foreign investment in the reporting country. F	Annual		Sum	Note: Data starting from 2005 are based on the sixth edition of the IMF's Balance of Payments Manual (B

Now, you've learned the basics of managing the following data services in IBM Bluemix:

- Cloudant NoSQL Database
- dashDB
- SQL Database