

Skills Network

Hands-on Lab: Analyzing DB2 Data With Cognos Analytics

Objective for Exercise:

- To create a dashboard with Billing data on DB2 using Cognos Analytics and analyze the regionwise spend.

Prerequisites

Prior to starting this lab please ensure you have completed the previous labs to:

- [Create an IBM Cloud Account](#)
- [Provision an instance of DB2 on Cloud](#)
- [Provision an instance of Cognos Analytics](#)

Task 1- Load the data in DB2

If you have service credentails created, skip steps 1 and 2.

1. Click on **Service Credentials** and create new credentials.

A screenshot of the IBM Cloud Service Credentials page. At the top, it shows "Resource list / Db2-4y" with an "Active" status and an "Add tags" button. Below this, there are five navigation links: "Manage", "Getting started", "Service credentials" (which is highlighted with a blue border), and "Connections". To the right, there is a "Service credentials" section with the subtext: "You can generate a new set of credentials for cases where you want to manually connect an app or external consumer to an IBM Cloud service." It includes a "Learn more" link and a search bar at the bottom labeled "Search credentials...".

Resource list /

Db2-4y Active Add tags

Manage

Getting started

Service credentials

Connections

Service credentials

You can generate a new set of credentials for cases where you want to manually connect an app or external consumer to an IBM Cloud service.

[Learn more](#)

Search credentials...

2. Give the credential a name and **Manager** privilege and add it.

Create credential

Name:

Service credentials-1

Role: ⓘ

Manager



[Advanced options](#) ▾

Cancel

Add

3. Click on the down arrow next to the credential. You will see the credential details. Make a note of the username, password and jdbc connection url. These will be used in later part of the lab to connect from Cognos.

Service credentials

You can generate a new set of credentials for cases where you want to manually connect an app or external consumer to an IBM Cloud service. [Learn more](#)

 Search credentials...

| Key name | Date created |
|-----------------------|--------------|
| | |
| Service credentials-1 | 2021-09-20 |

```

"db2": {
    "authentication": {
        "method": "direct",
        "password": "REDACTED",
        "username": "REDACTED"
    },
    "certificate": {
        "certificate_base64": "LS0tLS1CRUdJTiBDRVJUSUZJQ0FURS0tLS0tCk1JSURFakNDQW3VUFN0jR4SFERYUJnT1YK0kFNTUUwbENUU0JEYkc5MVpD0kVZWFi0WW1Ge1pYTXdTaGN0TWpBd01qSTVNFZRUUREQk5KUwswZ1EyeHZkV1FnUkdGMF1XSmhjM1Z6TU1JQk1qQU5CZ2txCmhraUc5dzBCQVF瑞FBT0iYjE4UKr4ZGwKTzRUL3FoUGMxMTREY1FUK0p1RXdhG13aG1jTGxaQnF2QWFMb1hrbmhqSVFOMG01L0x53M3M1ZUSU5yYmx3cnRIRU1vM1JWTkV6SkNHYW5LSXdZMWZVSUtrCldNM1R0SD15cnFsSGN0Z2pIU1FmRkOY3EKY21QcHNqdDBPTnI0YnhJMVRyUWxEemNiN1hMSFBzWW91SUprdnVzMUZvaTEySmRNM1MxK3labFZPC9E0WZhamNNN0lWd2V4a01S0TNKR1FJREFRQUJvMU13C1VUQWRCZ05WSFE0RUZnUVV1Q3JZanFJQzc1VUJQzc1VUpxVmZEMDh1ZWdqeDZiUmN3RHdZRFZSMFRBUUgvQkFVd0F3RUIvekFOQmdrcWhraUc5dzBCQVFzkRMb0tPd0hSRnFSOHgxZ2dRcGVEcFBnMk5SCkx3R08yek85SWZUMmhLaWd1d2orWnJ5SGxxcH1xQ0pLOH1Ujd3ZFFuVju0TVU4aERvNi9sVHRMRVB2Mnc3V1NPS1FDK013ejgrTFJMdjVHSW5BN1JySwNhKwozM0wxG5YWkh6UG91cldYS1BoaGdXZ2J5CkNDcUdIK0NWNNQ1eFg3b05NS3VNSUNqRVZndnNLWnRqeTQ5VW5iNVxVkxuN3F3VG1TbD1TU05RPT0KLS0tLS1FTkQgQ0VSVE1GSUNBVEutLS0tLQo=",
        "name": "1cbbb1b6-3a1a-4d49-9262-3102a8f7a7c8"
    },
    "composed": [
        "db2://lfn96733:dl0xxWy1FWkzIe0Y@fbdb88901-ebdb-4a4f-a32e-9822b9fb237b.c1odbd?authSource=admin&replicaSet=replset"
    ],
    "database": "bludb",
    "host_ros": [
        "fbdb88901-ebdb-4a4f-a32e-9822b9fb237b.c1ogj3sd0tgtu01qde00.databases.appd"
    ],
    "hosts": [
        {
            "hostname": "fbdb88901-ebdb-4a4f-a32e-9822b9fb237b.c1ogj3sd0tgtu01qde00",
            "port": 32731
        }
    ],
    "jdbc_url": [
        "jdbc:db2://fbdb88901-ebdb-4a4f-a32e-9822b9fb237b.c1ogj3sd0tgtu01qde00.datword=<your_password>;sslConnection=true;"
    ]
}

```

*Note: You have to replace the placeholder for username and password in the jdbc url string with actual username and password. Remove the angle brackets.

4. Go to the [data link](#). Right-click and choose **Save AS....** Save the file in your local system as *cloud-billing-dataset.csv*.
5. Once the instance is created from the db2 instance page, choose **Manage** from the left menu and click on **Go to UI**.

Resource list /

Db2-4y

Active Add tags

Manage

Getting started

Service credentials

Connections

Getting started

Where can I find my credentials?
Get your username and password by clicking the left and selecting "New Credentials".

Go to UI

[Getting started docs](#)

6. Click on the **Data** icon on the left menu, choose **Load Data** and browse and select the file, **cloud-billing-dataset.csv** which you saved in your local system.

The screenshot shows a user interface for managing data loads. At the top, there are tabs: 'Load Data' (which is highlighted with a red border), 'Load History', 'Tables', 'Views', and 'Indexes'. On the left, there's a vertical sidebar with icons: a grid (highlighted with a red border), a key, a table, a gear, a document, and a lightbulb. The main area has three radio buttons: 'Source' (selected, indicated by a blue circle), 'Target' (indicated by an empty circle), and 'Define' (also indicated by an empty circle). Below these buttons, the text 'You are loading the file' is displayed. To the right, there's a section titled 'File select' with a dashed box for dragging files. Inside this section, there are three options: 'My Computer' (with a folder icon), 'Amazon S3' (with an S3 icon), and 'Cloud Object Storage' (with a cube icon). The 'My Computer' option is described as 'A single delimited text file (CSV) without header row.'

7. Choose the **Schema**, click on **New Table +** and create a new table with the name **BillingData** and click on **Create**.

Source Target Define

You are loading the file **cloud-billing-dataset.csv**

Select a load target

Schema

Find schemas

XQR63068 

Table

New table +

Find tables in XQR63068

No entries found.

8. You will see the table is added to the schema. Click on **Next** to load the data from the file.

Source Target Define

You are loading the file **cloud-billing-dataset.csv** into **XQR63068.BILLINGDATA**

Select a load target

Schema

Find schemas

XQR63068



Table

Find tables

BILLINGDATA

9. The table is loaded. You will see that each column has data type and column width auto generated based on the content. Edit column attributes by clicking on the pencil icon next to the respective attributes to change the width of **country** column to varchar of 30 and **month** column to varchar of 7.

Source Target

You are loading the file **cloud-billing-dataset.csv** into **XQR63068.BILLINGDATA**

Code page (character encoding): 1208 (UTF-8) ▾  Separat

| | CUSTOMERID SMALLINT | CATEGORY VARCHAR(10) | COUNTRY VARCHAR(22) |
|----|------------------------|-------------------------|------------------------|
| 1 | 1 | Individual | Indonesia |
| 2 | 614 | Individual | United States |
| 3 | 615 | Individual | China |
| 4 | 616 | Individual | Russia |
| 5 | 617 | Individual | Chile |
| 6 | 618 | Individual | Nicaragua |
| 7 | 41 | Company | Brazil |
| 8 | 619 | Individual | Russia |
| 9 | 620 | Individual | China |
| 10 | 956 | Individual | Peru |

| month |
|------------|
| VARCHAR(6) |
| 2009-1 |
| 2009-1 |
| 2009-1 |
| 2009-1 |
| 2009-1 |

Edit column data type

Data type

VARCHAR ▾

Maximum number of characters
(1 - 32592)

7

Close OK

| country | VARCHAR(22) |
|---------------|-------------|
| Indonesia | |
| United States | |
| China | |
| Russia | |
| Chile | |

Edit column data type

Data type

VARCHAR ▾

Maximum number of characters
(1 - 32592)

30

Close **OK**

10. Once the column attributes are changed, check to see if it reflects and then click on **Next**

Source Target

You are loading the file **cloud-billing-dataset.csv** into **XQR63068.BILLING DATA**

Code page (character encoding): 1208 (UTF-8) ▾  Separator: ,

| | CUSTOMERID SMALLINT | CATEGORY VARCHAR(10) | COUNTRY VARCHAR(30) |
|----|------------------------|-------------------------|------------------------|
| 1 | 1 | Individual | Indonesia |
| 2 | 614 | Individual | United States |
| 3 | 615 | Individual | China |
| 4 | 616 | Individual | Russia |
| 5 | 617 | Individual | Chile |
| 6 | 618 | Individual | Nicaragua |
| 7 | 41 | Company | Brazil |
| 8 | 619 | Individual | Russia |
| 9 | 620 | Individual | China |
| 10 | 956 | Individual | Peru |

11. Review the settings and click on **Begin Load** to load the data.

Source Target

You are loading the file **cloud-billing-dataset.csv** into **XQR63068.BILLINGDATA**

Review settings

Summary

Code page: 1208 (Default)

Separator: , (Default)

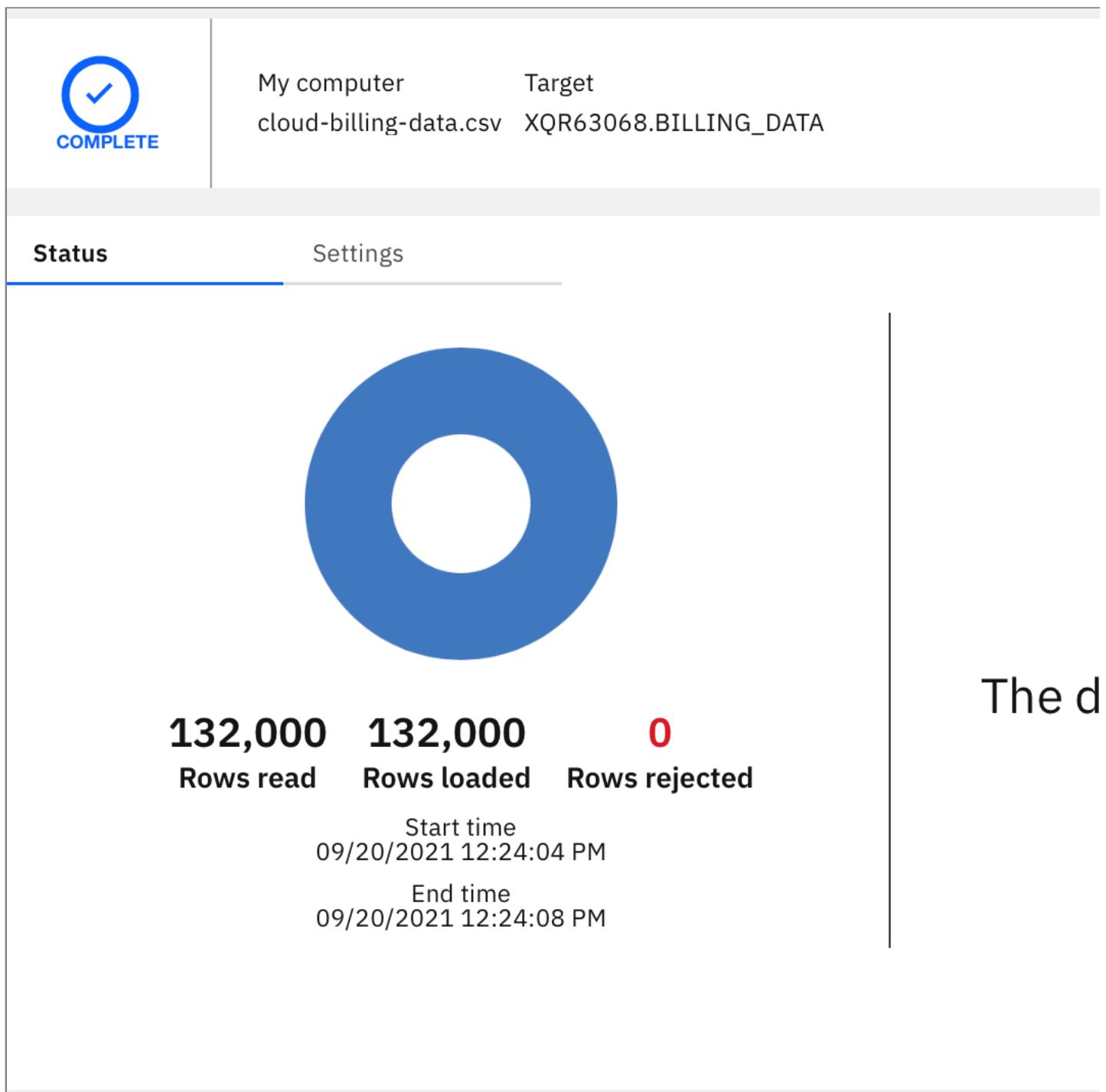
Time format: HH:MM:SS (Default)

Date format: YYYY-MM-DD (Default)

Timestamp format: YYYY-MM-DD HH:MM:SS (D)

String delimiter: (Default)

12. If the data is successfully loaded, you get a message on the screen indicating the number of rows that have been loaded.



Task 2 - Connect Cognos to DB2

1. Navigate to myibm.ibm.com. Login with your IBM Cloud credentails and launch **Cognos Analytics**.



[My IBM](#) [Profile](#) [Billing](#)

Products

Trials

2 Offerings



IBM Cloud

Active

[Launch](#)

[Manage](#)



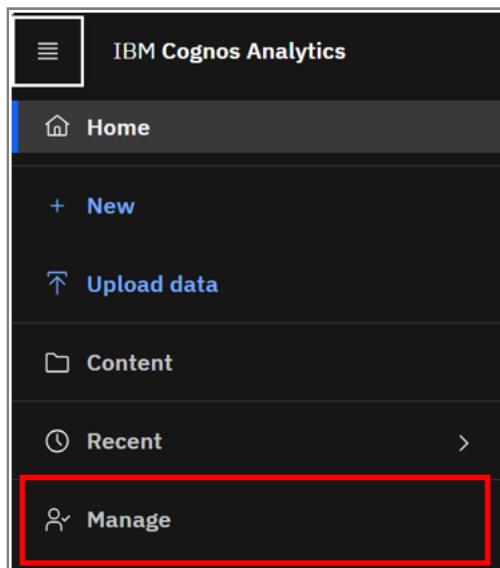
**IBM Cognos Analytic
Cloud - Trial**

Active

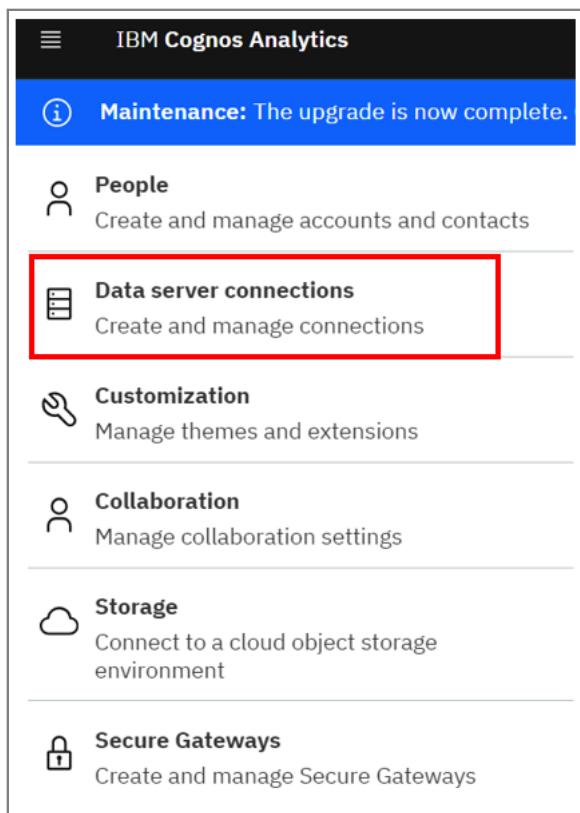
Expires on 16 Oct 2021

[Launch](#)

- Click the hamburger menu on the upper left and select **Manage**.



3. Select **Data Server Connections**.



4. Click on **Add data Server** to add a new server.

The screenshot shows the 'Data server connections' page in IBM Cognos Analytics. At the top, there are navigation links for 'IBM Cognos Analytics' and 'Data server connections'. A search bar and a notification badge (23) are also present. The main content area is titled 'Data server connections' with the sub-instruction: 'Manage existing connections to data sources or create new connections that can be used across the platform.' Below this, a table lists a single connection:

| Name | Modified Time |
|-----------------|--------------------|
| Weather Company | 3/31/2022, 8:44 PM |

5. Provide a name **MyDB2** to the connection. Select **IBM Db2** from the list in the Connection type. Click on **Next**.

The screenshot shows the 'Create data server connection' dialog. On the left, a sidebar has three options: 'Type' (selected), 'Connection', and 'Commands'. The main panel contains fields for 'Name' (set to 'MyDB2') and 'Description (optional)'. Below these, a dropdown for 'Connection type' is set to 'IBM Db2'. At the bottom, there are 'Cancel', 'Previous', and 'Next' buttons, with 'Next' being highlighted.

6. Provide hostname, port, and database for JDBC URL. (While adding the database, make sure to add the username, password, and the SSL connection to true as shown below:

1. 1

1. `jdbc:db2://<Hostname>:<Port>/<Database>:user=<username>;password=<Password>;sslConnection=true;`

Copied!

IBM Cognos Analytics Data server connections

Create data server connection

Type: IBM Db2

Details

JDBC URL: `jdbc:db2://<hostname>:<port>/<databasename>:user=<username>;password=<Password>;sslConnection=tr`

Driver class name (optional): com.ibm.db2.jcc.DB2Driver

Cancel Previous Next

7. Then **Scroll down**. Select **Connect Anonymously** from the **Method** drop-down list. Select **Select all** in **Dispatcher**. Then Click on **Test Connection** to test the connection. If the test succeeded you will see **Test connection successfull**. Click on **Next**.

IBM Cognos Analytics Data server connections

Create data server connection

Type: IBM Db2

Method: Connect anonymously

Test connection

Dispatchers (required): Select dispatcher (8)

Select all

Test connection

Test connection successful View

Cancel Previous Next

8. Select all check boxes for Command type and Click on **Create**.

Type

Connection

Commands

Specify the commands that the database executes when certain events occur. ⓘ

4 items selected

| Command type | Database commands |
|---|-------------------|
| <input checked="" type="checkbox"/> Open connection commands | (None) |
| <input checked="" type="checkbox"/> Open session commands | (None) |
| <input checked="" type="checkbox"/> Close session commands | (None) |
| <input checked="" type="checkbox"/> Close connection commands | (None) |

Cancel Previous Create

9. Click on the Data Server **MyDB2** created previously.

Data servers /

Search

| Name | Modified Time |
|-----------------|---------------------|
| MyDB2 | 11/27/2023, 5:30 AM |
| Weather Company | 3/31/2022, 8:44 PM |

Manage existing connections to data sources or create new connections that can be used across the platform.

10. On the right side, click on the three dots and select **Assets** from the menu that appears.

The screenshot shows the 'Data server connections' page in IBM Cognos Analytics. At the top, there's a navigation bar with 'IBM Cognos Analytics' and 'Data server connections'. A blue header bar indicates '1 item selected'. Below it is a table with one row, showing a checked checkbox next to 'MyDB2', the name 'Name', and the modified time '11/27/2023, 5:30 AM'. There's also a 'Copy or move to' button.

11. Select the **schema** in which you have loaded the tables in DB2 and click on **Load**.

The screenshot shows the 'Assets' page in IBM Cognos Analytics. The connection type is set to 'IBM Db2'. A message says 'Select the assets you want to import for use in Cognos Analytics. You can come back and update your selection at any time.' Below is a table with assets:

| Asset | Status | Tables loaded |
|-------------|------------|----------------------|
| ERRORSCHEMA | NOT loaded | Load |
| SQL01770 | Not loaded | Load |
| SQL79964 | Not loaded | Load |
| WQG83713 | Not loaded | Load |

At the bottom, there's a 'Done' button.

12. Once the data is loaded, you can see that how many tables available in the schema for analysis.

Connection type
IBM Db2

Select the assets you want to import for use in Cognos Analytics. You can come back and update your selection at any time.

| Asset | Status | Tables loaded |
|-------------|------------|---------------------|
| ERRORSCHEMA | NOT loaded | Load |
| SQL01770 | Not loaded | Load |
| SQL79964 | Not loaded | Load |
| WQG83713 | Loaded | 1 / 1 tables loaded |

Items per page: 20 | Page 1 | Done

Task 3 - Create Data Module in Cognos

- From the menu, choose **New** and then from the submenu choose **Data Module**.

- Home
- + New
 - Upload files
- Content
- Recent
- Manage

New

- Data
 - Data module
- Explore
- Exploration
- Present
- Dashboard
- Report
- Story

- Click the **Data servers** icon and choose the **MyDB2** connection that we created in the previous task.

Select sources



Data servers



Type any text to filter items in this folder



[MyDB2](#)

9/16/2021 3:20 AM



[Weather Company](#)

5/25/2021 8:57 PM



3. Choose the schema from where you want to load data.

Select sources

← Data servers / MyDB2

Type any text to filter items in this folder

LFN96733
9/16/2021 3:52 AM

The screenshot shows a file selection dialog titled "Select sources". On the left is a sidebar with icons for search, folder, file, and refresh. The main area shows a list with one item: "LFN96733" followed by the date and time "9/16/2021 3:52 AM". A blue border highlights this item. At the bottom are "Cancel" and "OK" buttons.

4. Choose the **Select Tables** option and click **OK**.
If there is only one table in your schema, you will be redirected directly to step 6.

Add tables

Specify how to add tables to your data module.



Select tables

Select the tables that you want to include in your data module, and create the data module manually.

Cancel

5. It will list the tables available in the schema. For this lab, we will use the **Billing data** table. Choose the table and click on **OK**. If you want to view the data you may click on **Refresh**.

Select tables

| Customerid | Category | Country |
|------------|----------|---------|
| | | |

Available sources

Search

LFN96733

Billing Data

Customer Loyalty

[Previous](#)

6. The **Data module** loaded with the data appears. Click on **Save**, once you see that the data is correctly loaded.

The screenshot shows a data management interface with a left sidebar and a main content area. The sidebar has a red box around its top-left corner. It contains a 'Data module' section with a search bar, a 'New data module' button, a 'Navigation paths' section, and a 'Billing Data' section which is expanded and highlighted with a blue border. The main content area displays a grid of data with the following columns: Customerid and Category. The data rows are:

| Customerid | Category |
|------------|------------|
| 1 | Individual |
| 614 | Individual |
| 615 | Individual |
| 616 | Individual |
| 617 | Individual |
| 618 | Individual |
| 41 | Company |
| 619 | Individual |
| 620 | Individual |
| 956 | Individual |
| 621 | Individual |

7. You can now save it with an appropriate name under **My Content**.

Save as

Name

BillingDataModule|

Selected destination: My content

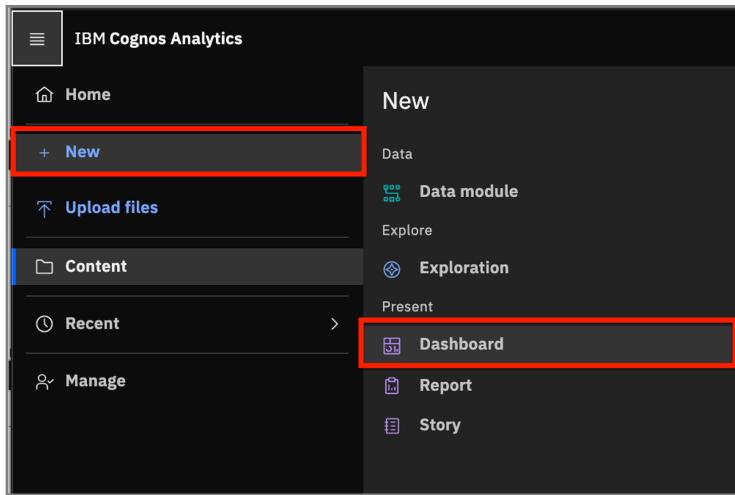
My content Team content

| Name | Type |
|------|------|
| | |

Cancel Save

Task 4 - Create Dashboard

1. From the IBM Cognos menu, choose, **New** and click on **Dashboard**.



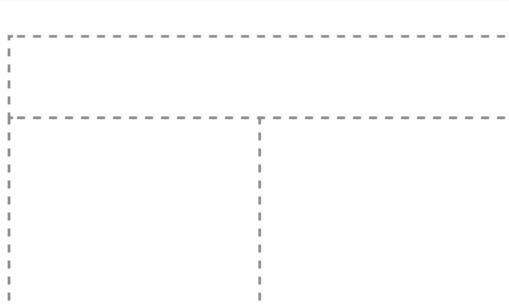
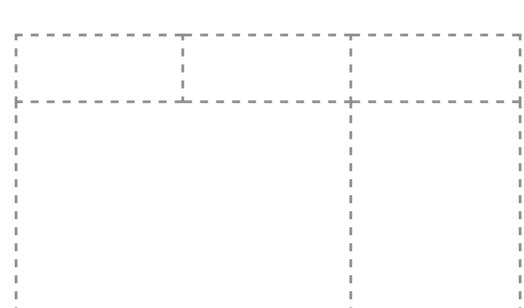
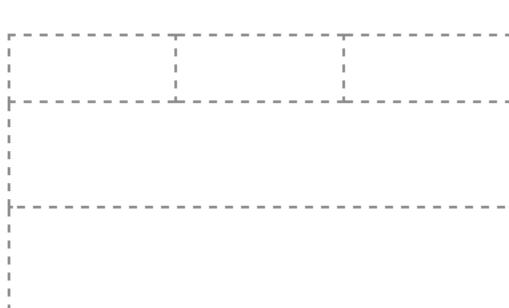
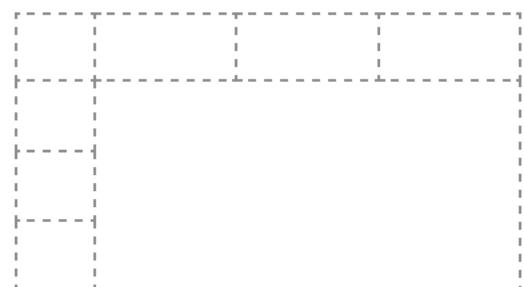
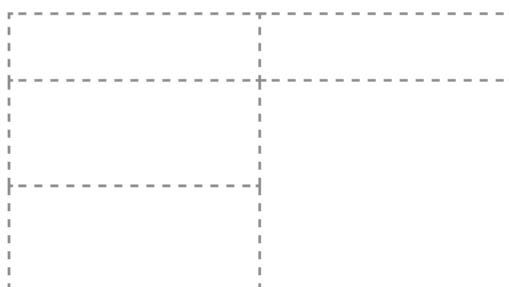
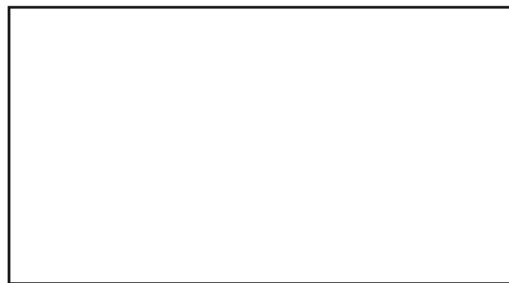
2. Choose the **Tabbed** as shown in the following image.

Create a dashboard

Select a template for your dashboard

Tabbed

Infographic



3. Click on **Select Source** to choose the source for the template.

The screenshot shows the IBM Cognos Analytics interface for creating a new dashboard. At the top, the title bar reads "IBM Cognos Analytics" and "New dashboard *". Below the title bar is a toolbar with various icons: a speech bubble, a green "Edit" button with a checkmark, a file icon, a share icon, a refresh icon, a double arrow icon, and a magnifying glass icon. To the right of the toolbar is a search bar. On the left side, there is a sidebar with several icons: a gear and wrench icon labeled "Data", a chart icon, a gear icon, a play/pause icon, and a 3D cube icon. Below these icons is the text "Select a source" and the instruction "Click select a source to add data to use to build a dashboard." At the bottom of the sidebar is a blue button with the text "Select a source" and a plus sign. To the right of the sidebar is a main workspace area. The top right corner of the workspace has the text "Drag and drop data here". Below this is a tab labeled "Tab 1" with a plus sign. The main workspace area is currently empty, showing a grid pattern.

4. From the list, choose the data module we just created and click on **Add**.

Select a source

My content

Team content

| Name | Type |
|---|-------------|
|  BillingDataModule | Data module |

Cancel

Add

Task 5 - Visualization

You will now see the table listed on the left panel with all the attributes.

1. Drag and drop the **Billed Amount** on the template.

IBM Cognos Analytics | New dashboard * ▾

Selected sources /

BillingDataModule + ⋮

Search

- Navigation paths +
- Billig Data
 - Customerid
 - Category
 - Country
 - Industry
 - Month
- Billedamount**

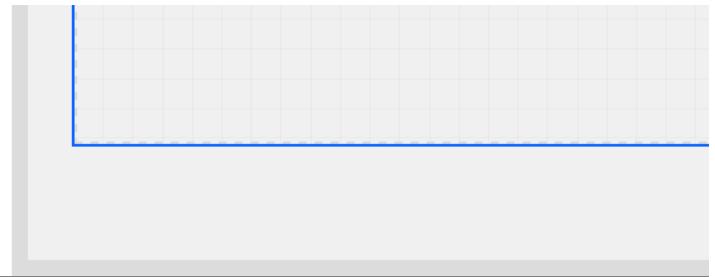
All tabs

Drag and c

Tab 1 +

Billedamount

This screenshot shows the IBM Cognos Analytics interface. On the left, there's a sidebar with various icons and a search bar. Below the search bar is a tree view of selected sources under 'BillingDataModule'. The 'Billedamount' node is highlighted with a blue border. On the right, there's a 'New dashboard' tab with a single tab named 'Tab 1'. Inside 'Tab 1', the 'Billedamount' node is also highlighted with a blue border. The overall interface has a clean, modern design with a light gray background and blue highlights for selected items.



2. The total billed amount will now appear on the Dashboard. The size and position can be adjusted as per requirement and the text display can be edited and formatted by double-clicking on it.

IBM Cognos Analytics | New dashboard * | Edit | Summary | Drag and c

Selected sources /

BillingDataModule + :

Search

Navigation paths +

Billing Data

- Customerid
- Category
- Country
- Industry
- Month
- Billedamount

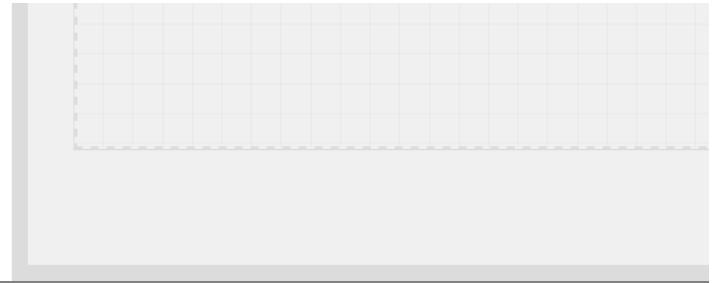
All tabs

Tab 1 +

Billedamount 

1 . 

Bi



3. Drag and drop **Billed Amount** and **Industry** onto the dashboard as shown in the following image. With this, we can visualize the build amount per industry.

My IBM | Home | Top Nlp Courses - ...

IBM Cognos Analytics | New dashboard * ▾

Selected sources /

BillingDataModule + :

Search

- Navigation paths +
- Billig Data
 - Customerid
 - Category
 - Country
 - Industry
 - Month
- Billedamount

All tabs

Drag and c

Tab 1 +

Billedamount

1.6

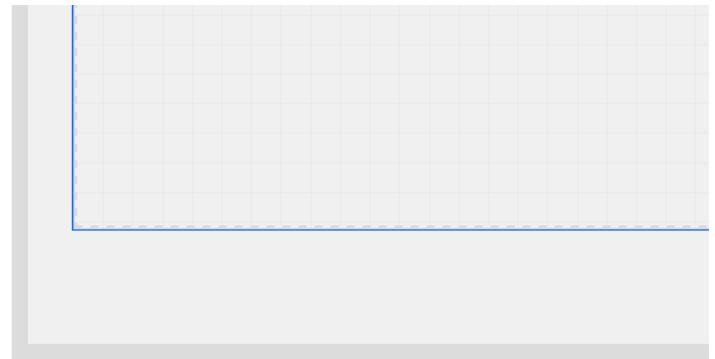
Bi

Billedamount

Industry

Dro

The screenshot shows the IBM Cognos Analytics interface. On the left, the 'Selected sources' pane displays a tree structure under 'BillingDataModule'. The 'Industry' node is currently selected, highlighted with a blue border. Other nodes include 'Customerid', 'Category', 'Country', 'Month', and 'Billedamount'. To the right, a 'New dashboard' tab is open, showing a large number '1' followed by a decimal point and '6'. Below this, there's a blue box containing the text 'Billedamount' and 'Industry'. The top navigation bar includes links for 'My IBM', 'Home', and 'Top Nlp Courses - ...'. The bottom status bar shows 'about:blank'.



4. Drag and drop **Billed Amount, Country and Industry** onto the dashboard as shown in the following image. This will generate a heat map of spending by country and by industry.

IBM Cognos Analytics New dashboard * ↴

Selected sources /

BillingDataModule

Search

Navigation paths +

Billing Data

- Customerid
- Category
- Country
- Industry
- Month

Billedamount

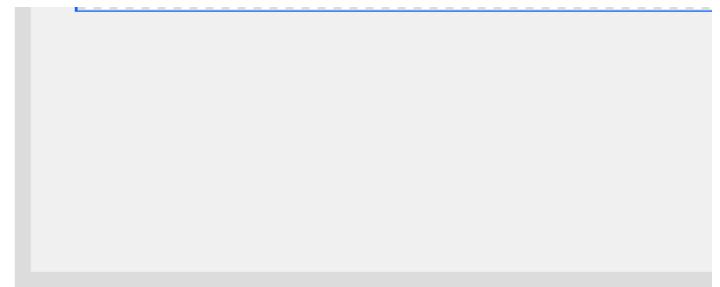
Tab 1 +

Billedamount

1.

Billedamount by Industry

| Industry | Billedamount (Sum) |
|-----------------|--------------------|
| Accounting | ~89,000,000 |
| Engineering | ~110,000,000 |
| Business Dev... | ~120,000,000 |
| Human Res | ~108,000,000 |



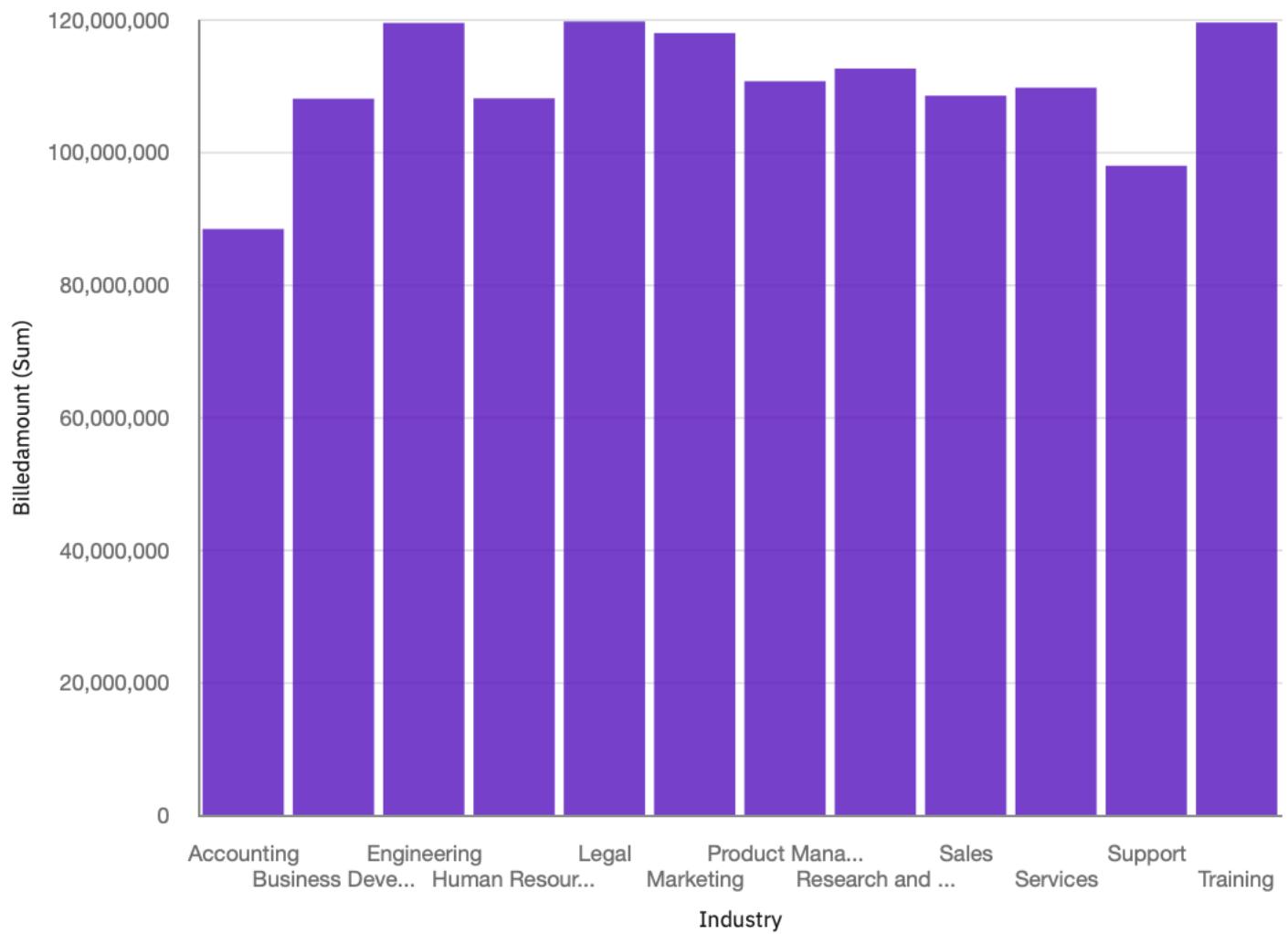
5. The finished dashboard will appear as in the following image.

Billedamount

1.32B

Billedamount

Billedamount by Industry



6. Optionally, try to change the properties and settings to see how the dashboard changes. You can also observe the billed amount changing as you click on a region on the heat map or the bar graph.

Credits

Author(s)

[Lavanya T S](#)

