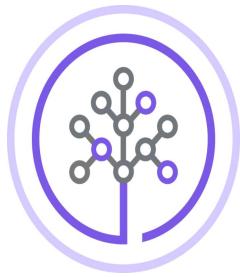


# Hands-on Lab: Analyzing DB2 Data With Cognos Analytics



# Skills Network

## 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.

The screenshot shows the 'Resource list /' page for a service instance named 'Db2-4y'. The instance is marked as 'Active'. Below the instance name, there are several navigation links: 'Manage', 'Getting started', 'Service credentials' (which is highlighted with a blue border), and 'Connections'. To the right of these links is a 'Service credentials' section with the following text: '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.' Below this text is a 'Learn more' link. At the bottom right of the main content area is a search bar with the placeholder 'Search credentials...'. The entire interface has a light gray background with blue highlights for active sections.

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

## Create credential

Name:

Service credentials-I

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": "LS0tLS1CRUdJTiBDRVJUSUZJQ0FURS0tLS0tCk1JSURFakNDQW
3VUFN0iR4SERBYUJnT1YK0kFNTIJUJwbFNUU0JFYkc5MVpD0kVZWFiJoWW1Ge1pYTXdTaGN0TWpBd01aSTVN
FZRUUREQk5KUwswZ1EyeHZkV1FnUkdGMF1XSmhjM1Z6TU1J0k1q0U5CZ2txCmhraUc5dzBCQVF瑞FBT0
iYjE4UKr4ZGwKTzRUL3FoUGMxMTREY1FUK0p1RXdhG13aG1jTGxaQnF2QWFMb1hxbmhqSVF0MG01L0x5
3M3M1ZUSU5yYmx3cnRIRU1vM1JWTKV6SKNHYW5LSXdZMWZVSUtrCldNM1R0SD15cnFsSGN0Z2pIULFmRK
OY3EKY210cHNqdDBPTnI0YnhJMVRyUWxEemNiN1hMSFBtWW91SuprdnVzMUZvaTEySmRNM1MrK31abFZP
C9E0WZhamNNN01Wd2V4a01S0TNKR1FJREFRQUJvMU13C1VUQWRCZ05WSFE0RUZnUVV1Q3JZanFJQzc1VU
JQzc1VUpxVmZEMDh1ZWdqeDZiUmN3RHdZRFZSMFRBUUgvQkFVd0F3RUiVekFOQmdrcWhraUc5dzBCQVFz
kRMB0tPd0hSRnFS0HgxZ2dRcGVEcFBnMk5SCkx3R08yek85SWZUMmhLaWd1d2o1WhnJ5SGxxcH1xQ0pLOH
1Ujd3ZFFuVjU0TVU4aERvNi9sVHRMRVB2Mnc3V1NPS1FDK013ejgrTFJMdjVHSW5BN1JySwNhKwozM0wx
G5YWkh6UG91cldYS1BoaGdXZ2J5CKNDcUdIK0NWNNQ1eFg3b05NS3VNSUNqRVZndnNLWnRqeTQ5VW5iNV
xVkxuN3F3VG1Tb01TU05RPT0KLS0tLS1FTkQgQ0VSVE1GSUNBVEutLS0tLQo=",
        "name": "1cbbb1b6-3a1a-4d49-9262-3102a8f7a7c8"
    },
    "composed": [
        "db2://lfn96733:d10xxWy1FWkzIe0Y@fbdb88901-ebdb-4a4f-a32e-9822b9fb237b.c1o
db?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.dat
word=<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**.

The screenshot shows the IBM Cloud interface for a service named "Db2-4y". The top navigation bar includes "IBM Cloud", a search icon, "Catalog", "Docs", "Support", and a "More" dropdown. Below the navigation, the service name "Db2-4y" is displayed with a green "Active" status and an "Add tags" button. A red box highlights the "Manage" button in the sidebar. The main content area has a "Getting started" section with a "Where can I find my credentials?" link, followed by a "Go to UI" button and a "Getting started docs" link.

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 broswe 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's a navigation bar with 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 several icons: a grid icon (selected with a red border), a SQL icon, a key icon, a table icon, a gear icon, a document icon, and a lightbulb icon. The main area has a title 'Load Data' and a subtitle 'You are loading the file'. It includes 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 this, there are three options: 'My Computer' (with a local disk icon), 'Amazon S3' (with an S3 bucket icon), and 'Cloud Object Storage' (with a cloud icon). To the right, a large 'File select' dialog is open, featuring a dashed rectangular area with the placeholder text 'Drag a file here'.

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	VARCHAR
United States	Maximum number of characters (1 - 32592)
China	30
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)

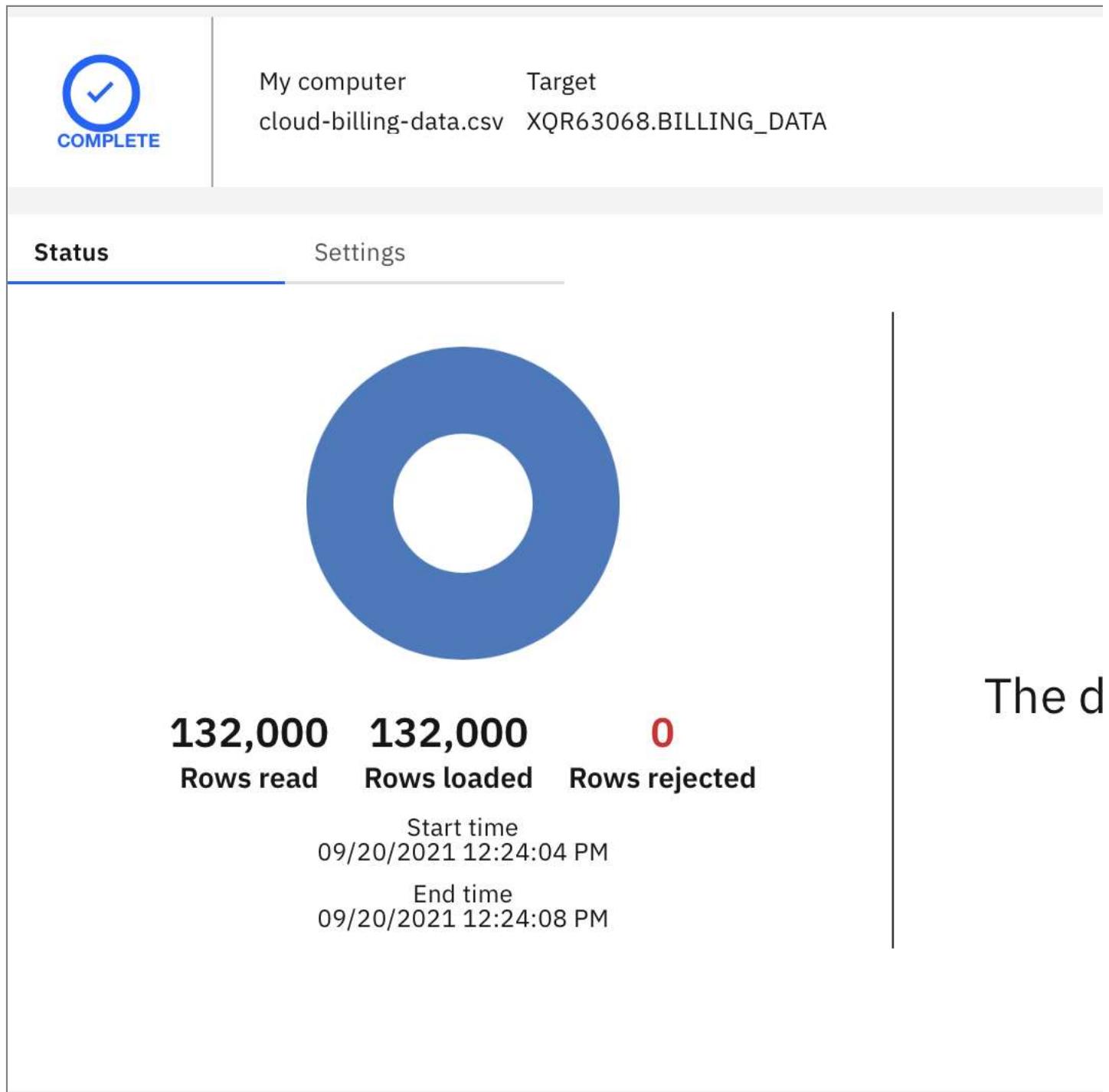
Time format: HH:MM:SS (Default)

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. Go to myibm.ibm.com, login with your IBM Cloud credentials 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**

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

The screenshot shows the IBM Cognos Analytics home interface. At the top left is a navigation menu icon (three horizontal lines). To its right, the text "IBM Cognos Analytics" is displayed. Below this, a dark header bar contains a house icon and the word "Home". A horizontal line separates this from the main content area. In the main area, there is a blue link labeled "+ New". Another horizontal line follows. Below it is a blue link labeled "Upload files" with an upward arrow icon. A third horizontal line is present. Underneath is a white folder icon followed by the text "Content". Another horizontal line follows. Then comes a blue clock icon followed by the text "Recent" and a right-pointing arrow. A fourth horizontal line follows. Finally, at the bottom, there is a red-bordered box containing a user icon and the text "Manage".

3. Choose the Data Server Connection.

# IBM Cognos Analytics

---

-  **People**  
Create and manage accounts and contacts
- 
-  **Data server connections**  
Create and manage connections
- 
-  **Customization**  
Manage themes and extensions
- 
-  **Collaboration**  
Manage collaboration settings
- 
-  **Secure Gateways**  
Create and manage Secure Gateways

4. Click on + to add a data server and choose IBM DB2 from the list shown.

## < Data server connections

Se



+

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**Name**

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**Modified**

Weather Company

25/05/2021  
8:57 PM

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5. Choose to **Connect Anonymously** and enter the jdbc url with your db2 user name and password that you copied earlier in Task 1. Click on **Test** to test the connection.

# IBM Cognos Analytics

## New data server connection

Owner: Unknown    Created:    Modified:    Type: Connection

General    **Settings**    Schemas    Permissions

Connection details    Edit >

Authentication method

Connect anonymously

Prompt for the user ID and password

Use an external namespace

Use the following signon:

**Test**

Not tested

Save

JDBC URL: `jdbc:db2:9822b9fb31/bludb:`

Driver class: `com.ibm.c`

Restore

Example

Connections

The screenshot shows the 'New data server connection' configuration page in IBM Cognos Analytics. On the right side, there are several fields: 'JDBC URL' containing 'jdbc:db2:9822b9fb31/bludb:', 'Driver class' containing 'com.ibm.c', 'Restore', 'Example', 'Connections', and two empty boxes. In the center, there's a section for 'Connection details' with an 'Edit' link. Below it is the 'Authentication method' section with four radio button options. The first option, 'Connect anonymously', is selected and highlighted with a red box. To its right is a 'Test' button, which is also highlighted with a red box. A status message 'Not tested' is shown next to it. At the bottom right is a blue 'Save' button.

- If the test succeeded and Cognos managed to connect to the Db2 instance, you will see **Success** with a green tick next to it. Click on the pencil icon, give the connection a name, **MyDB2**, and save it.

The screenshot shows the 'Edit IBM Db2 connec' page. At the top left, there's a list item 'MyDB2' with an edit icon (pencil) highlighted with a red box. Below it, the 'Edit' button is also highlighted with a red box. To the right, connection details are listed: Owner 'Unknown', Created: [redacted], Modified: [redacted], Type: Connection. Below these are tabs: General, Settings (highlighted), Schemas (with a red circle icon), and Permissions. On the left, under 'Connection details', there's an 'Edit >' link. Under 'Authentication method', the 'Connect anonymously' radio button is selected (highlighted with a red box). Below it are three other options: 'Prompt for the user ID and password', 'Use an external namespace', and 'Use the following signon:'. On the right, there's a 'Restore' button (highlighted with a blue box), a 'Example URL' section (with a dropdown arrow), 'Connection properties' (with a red box around the input field), 'Cloud certificate' (with a dropdown arrow), and 'Secure Gateway' (with a dropdown arrow). At the bottom left, there's a 'Test' button with a red box around it, followed by a 'Success' button (highlighted with a red box) and a 'Save' button (highlighted with a red box).

7. Go to the **Schema** and click on the '...' next to the schema name. Choose **Load Metadata** from the menu that appears.

MyDB2

Owner Sriram ... 39657) Created: 16/09/2021 3:20 AM  
Modified: 16/09/2021 7:48 AM  
Type: Connection

General Settings Schemas Permissions

Status Schema name Tables loaded

Status	Schema name	Tables loaded
○	AUDIT	
○	DB2INST1	
○	ERRORSCHEMA	
○	LFN96733	Tables loaded

Load metadata Load options

- Once the metadata is loaded you will see a green check mark next to the schema name and it will also indicate how many tables are available in the schema for analysis.

**MyDB2**

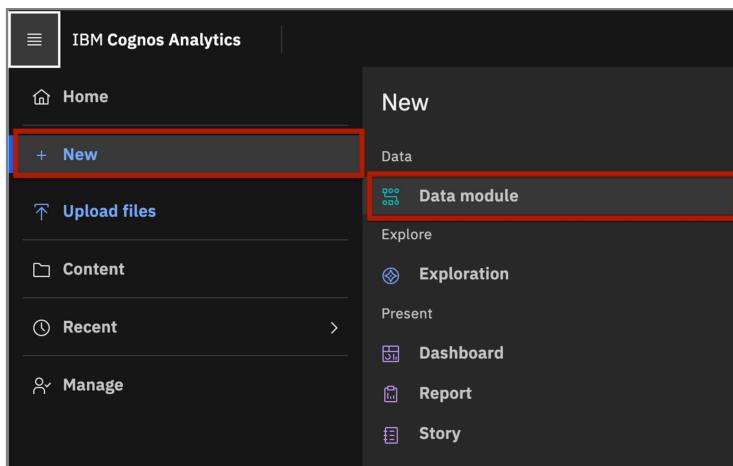
Owner Sriram ... 39657)      Created: 16/09/2021 3:20 AM  
Modified: 16/09/2021 7:48 AM  
Type: Connection

General Settings Schemas Permissions

Status	Schema name	Tables loaded
○	AUDIT	
○	DB2INST1	
○	ERRORSCHEMA	
✓	LFN96733	2 / 2

## Task 3 - Create Data Module in Cognos

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



- 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

Cancel OK

4. Choose the **Select Tables** option and click **OK**.

## 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

Available sources

Search

- ▼ LFN96733
  - ▶  Billing Data
  - ▶  Customer Loyalty

Customerid	Category	Country

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 the Power BI Data module interface. On the left, there's a navigation bar with icons for Home, Back, Forward, and Refresh. Below it, the 'Data module' title has a dropdown arrow and a plus sign. A search bar with the placeholder 'Search' is present. Under the main title, there are three items: 'New data module', 'Navigation paths', and 'Billing Data'. 'Billing Data' is expanded, showing columns for 'Customerid' and 'Category'. To the right, a grid view displays data with columns 'Customerid' and 'Category'. The data consists of 11 rows:

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

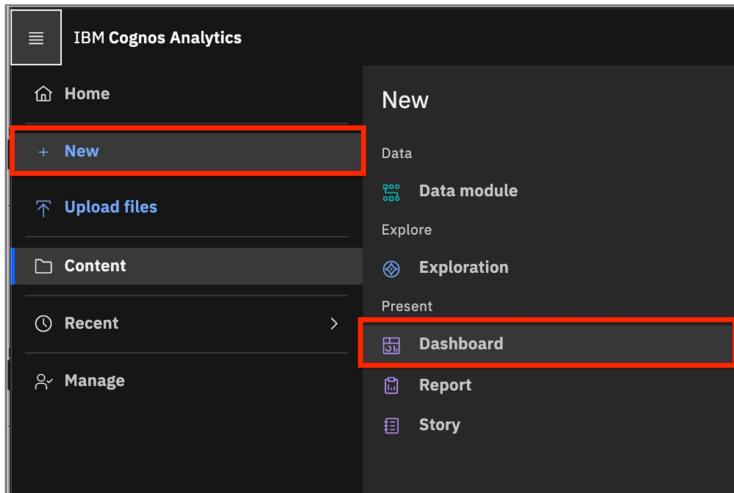
Type

Cancel

Save

## Task 4 - Create Dashboard

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



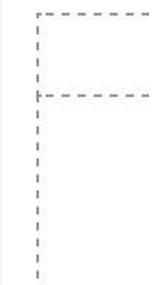
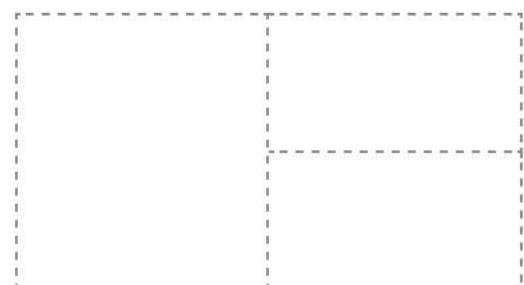
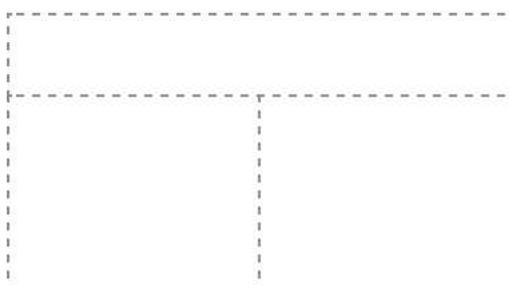
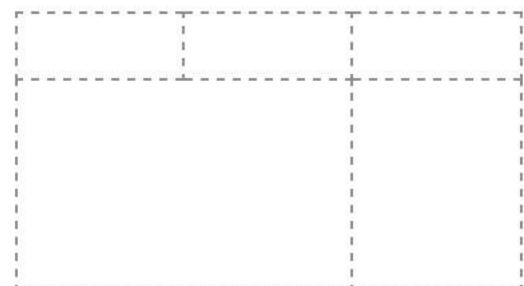
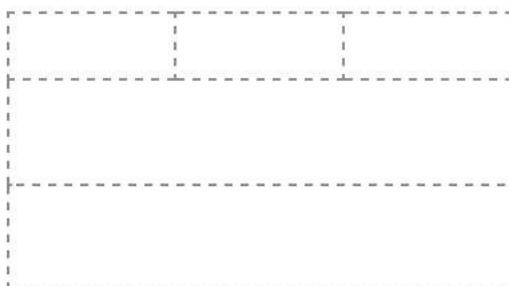
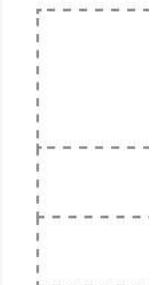
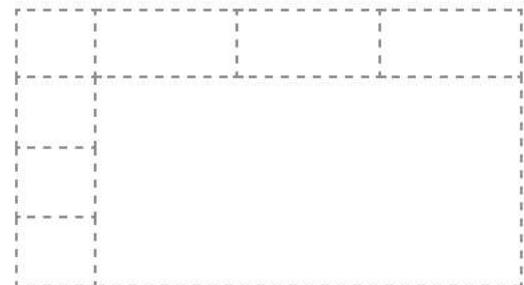
2. Choose the **Tabbed** as shown in the following image.

# 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. At the top, it says "IBM Cognos Analytics" and "New dashboard \*". Below the header is a toolbar with icons for message, edit (highlighted with a green checkmark), file, share, and search. To the right of the toolbar is a "Data" section with a plus sign and a "Select a source" button. A sidebar on the left contains icons for data, reports, dashboards, and analysis. On the right, there's a "Drag and drop data here" area labeled "All tabs" and a tab labeled "Tab 1". A large blue button at the bottom left says "Select a source +".

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

## Select a source

My content

Team content

Name	Type
 BillingDataManager	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 +
- ▼ Billing Data
  - Customerid
  - abc Category
  - ⌚ Country
  - abc Industry
  - ⌚ Month
- 🕒 Billedamount

All tabs

Drag and c

Tab 1 +

🕒 Billedamount

This screenshot shows the IBM Cognos Analytics interface. On the left, the 'Selected sources' pane displays a tree structure under the 'BillingDataModule'. The 'Billedamount' node is selected and highlighted with a blue border. On the right, a new dashboard tab is open, showing a single card with the 'Billedamount' metric. The top navigation bar includes icons for edit, share, and search, along with the current application name and a dashboard icon.



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 \* ▾

Selected sources /

BillingDataModule + :

Search

- Navigation paths +
- ▼ Billing Data
  - Customerid
  - ▶ abc Category
  - ▶ ⚙ Country
  - ▶ abc Industry
  - ▶ ⏰ Month
  - ▶ Billedamount

All tabs Drag and drop

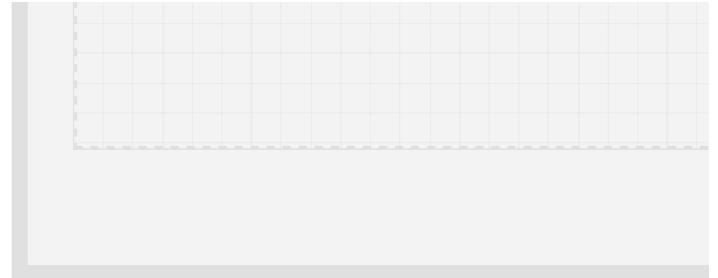
Tab 1 +

Billedamount ←

1 .

Bi

about:blank



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      +
- ▼ Billing Data
  - Customerid
  - abc Category
  - ⌚ Country
  - ▶ abc Industry
  - ⌚ Month
- └ Billedamount

All tabs

Drag and c

Tab 1      +

Billedamount

1.6

Billedamount

Industry

This screenshot shows the IBM Cognos Analytics interface. On the left, the 'Selected sources' pane is open, displaying the 'BillingDataModule'. Under 'Billing Data', the 'Industry' item is selected and highlighted with a blue border. Below it is the 'Billedamount' item. On the right, a 'Tab 1' dashboard is visible, featuring a large number '1.6' and a blue box at the bottom containing the text 'Billedamount' and 'Industry'. The top navigation bar includes links for 'My IBM', 'Home', and 'Top Nlp Courses - ...'. The status bar at the bottom 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 +

Billig Data

- Customerid
- abc Category
- 📍 Country
- abc Industry
- ⌚ Month

Billedamount

Tab 1 +

Billedamount

1.

Billedamount by Industry

120,000,000

100,000,000

80,000,000

60,000,000

40,000,000

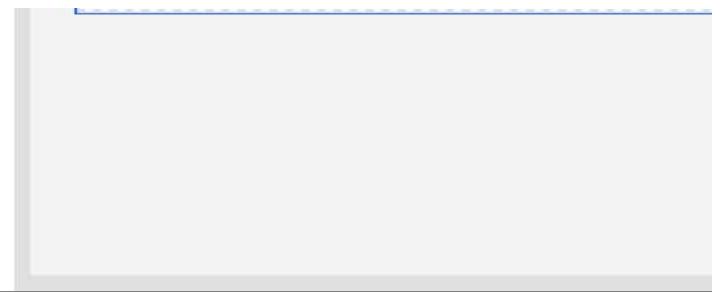
20,000,000

0

Billedamount (Sum)

Accounting Engineering Business Deve... Human Res

The screenshot shows the IBM Cognos Analytics workspace. On the left, the 'Selected sources' pane displays a tree structure of the 'BillingDataModule'. The 'Billedamount' node is currently selected, highlighted with a blue border. On the right, a 'Tab 1' panel contains a large number '1.' and a bar chart titled 'Billedamount by Industry'. The chart has a y-axis ranging from 0 to 120,000,000 and an x-axis with categories: Accounting, Engineering, Business Deve..., and Human Res. Four purple bars represent the Billedamount for each industry, with the Engineering bar reaching approximately 115,000,000.



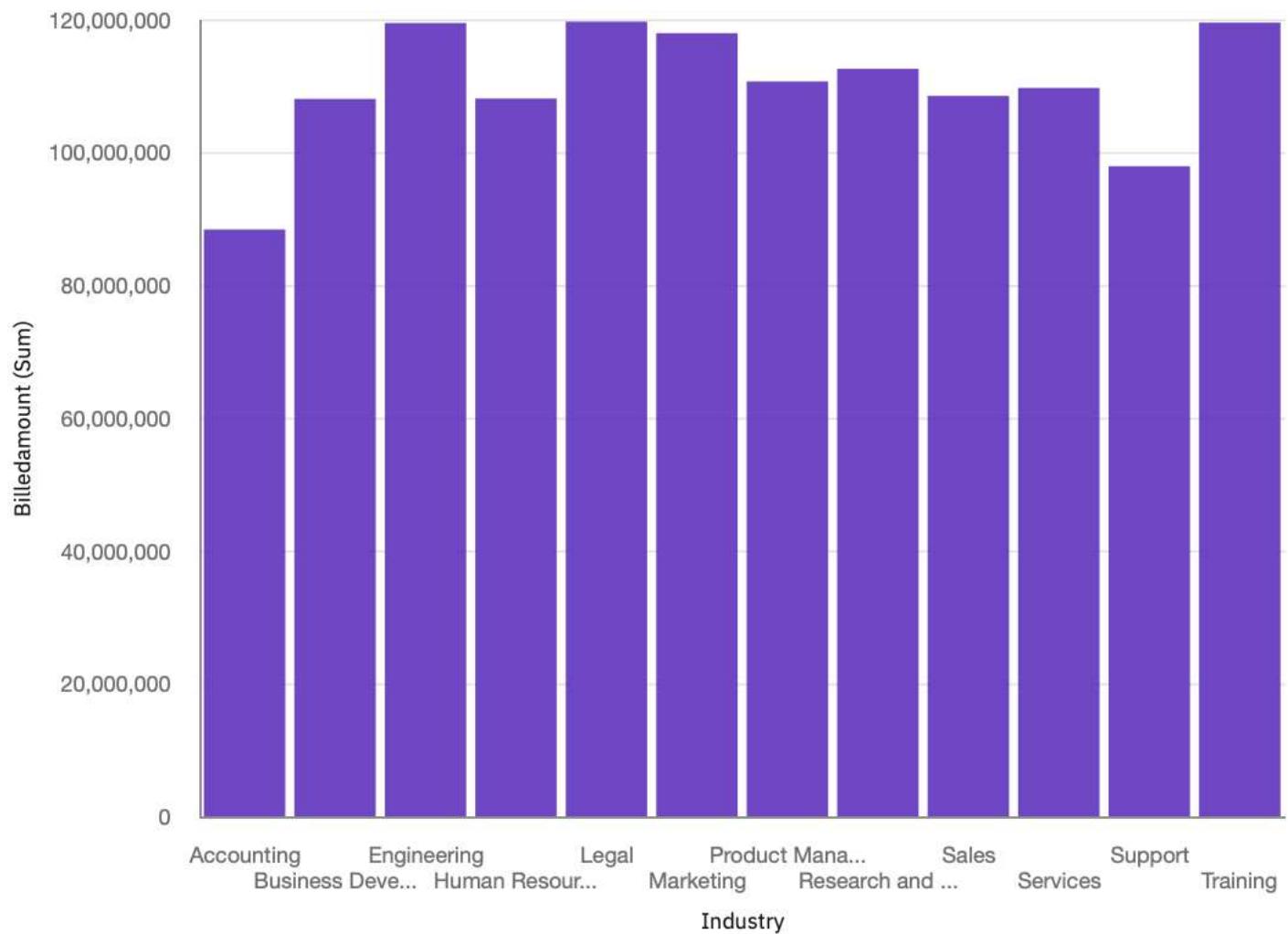
5. The finished dashboard will appear as in the following image.

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)

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## Changelog

Date	Version	Changed by	Change Description
2020-09-20	1.0	Lavanya	Created the lab
2021-10-07	1.1	Steve Hord	Copy Edit lab
2023-05-07	1.2	Vladislav Boyko	Indented images and added pages

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