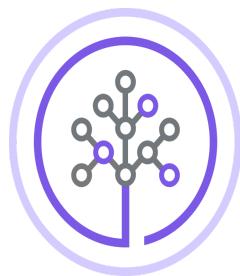


Hands-on Lab: Analyzing DB2 Data With Cognos Analytics



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.

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

The screenshot shows the 'Resource list' interface for a service named 'Db2-4y'. The 'Service credentials' tab is highlighted with a blue border. Other tabs include 'Manage', 'Getting started', and 'Connections'. To the right, there is a 'Service credentials' section with a description and a 'Learn more' link. A search bar at the bottom right says 'Search credentials...'. The URL in the address bar is 'https://cloud.ibm.com/resources/service-credentials/Db2-4y'.

Resource list /

Db2-4y Active Add tags

Manage Service credentials

Getting started

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

Connections

Q Search credentials...

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

Create credential

Name:

Service credentials-

Role: i

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 create
Service credentials-1	2021-09-20

```

"db2": {
    "authentication": {
        "method": "direct",
        "password": "REDACTED",
        "username": "REDACTED"
    },
    "certificate": {
        "certificate_base64": "LS0tLS1CRUdJTlBDRVJUSUZJQ0FURS0tLS0tCk1JSURFakNDQW3VlUFN0jR4SF瑞BYUJnTlYK0kFNTUJwbFNUUQJFYkc5MVpD0kVZWFlJoWW1Ge1pYTXdTaGN0TWpBd01qSTVN FZRUUREQk5KUWswZ1EyeHZkV1FnUkdGMF1XSmhjM1Z6TU1JQk1qQU5CZ2txCmhraUc5dzBCQVF瑞kFBT0iYjE4UKr4ZGwKTzRUL3FoUGMxMTREY1FUK0p1RXdhdG13aG1jTGxaQnF2QWFmb1hrbmhqSVFOMG01L0x5 3M3M1ZUSU5yYmx3cnRIRU1vM1JWTKV6SkNHYW5LSXdZMWZVSUtrCldNM1R0SD15cnFsSGN0Z2pIULFmRK OY3EKY21QcHNqdDBPTnI0YnhJMVRyUWxEemNiN1hMSFBrWW91SUPrdnVzMUZvaTEySmRNM1MrK31abFZP C9E0WZhamNNN01Wd2V4a01S0TNKR1FJREFRQUJvMU13C1VUQWRCZ05WSFE0RUZnUVV1Q3JZanFJQzc1VU JQzc1VUpvVmZEMDh1ZWdqeDZiUmN3RHdZRFZSMFRBUUgvQkFVd0F3RUIvekFOQmdrcWhraUc5dzBCQVFz kRMb0tPd0hSRnFS0HgxZ2dRcGVEcFBnMk5SCkx3R08yek85SWZUMmhLaWd1d2orWnJ5SGxxcH1xQ0pLOH 1Ujd3ZFFuVju0TVU4aERvNi9sVHRMRVB2Mnc3V1NPS1FDK013ejgrTFJMdjVHSW5BN1JySwNhKwozM0wx G5YWkh6UG91cldYS1BoaGdXZ2J5CkNDcUdIK0NWnQ1eFg3b05NS3VNSUNqRVZndnNLWnRqeTQ5VW5iNV xVkxuN3F3VG1TbD1TU05RPT0KLS0tLS1FTkQgQ0VSVE1GSUNBVEutLS0tLQo=",
        "name": "1cbbb1b6-3a1a-4d49-9262-3102a8f7a7c8"
    },
    "composed": [
        "db2://lfn96733:d10xxWy1FWkzIe0Y@fbdb88901-ebdb-4a4f-a32e-9822b9fb237b.c1o db?authSource=admin&replicaSet=replset"
    ],
    "database": "bludb",
    "host_ress": [
        "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 service details page for 'Db2-4y'. At the top, there's a navigation bar with 'IBM Cloud' and other links like 'Catalog', 'Docs', 'Support', and 'M...'. Below the navigation, the service name 'Db2-4y' is displayed with a green checkmark indicating it's 'Active'. There's also a link to 'Add tags' with a pencil icon. On the left, a sidebar menu has 'Manage' highlighted with a red box. Other options in the sidebar include 'Getting started', 'Service credentials', and 'Connections'. To the right, a 'Getting started' section is shown with the heading 'Where can I find my credentials?' and a sub-instruction: 'Get your username and password by clicking the left and selecting "New Credentials".' A blue button labeled 'Go to UI' with a right-pointing arrow is present, and a link to 'Getting started docs' is also visible.

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'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 menu icon, a file icon (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 is titled "Load Data". It has three radio buttons: "Source" (selected, indicated by a blue dot), "Target" (indicated by an empty circle), and "Define" (also indicated by an empty circle). Below this, a message says "You are loading the file". There are three data source options listed: "My Computer" (represented by a folder icon), "Amazon S3" (represented by an S3 icon), and "Cloud Object Storage" (represented by a cube icon). To the right, there's a "File select" section with a dashed drop zone and a red border. Inside this zone, the text "Drag a file here" is visible.

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) ▼ *i* 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**

about:blank

11/42

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)

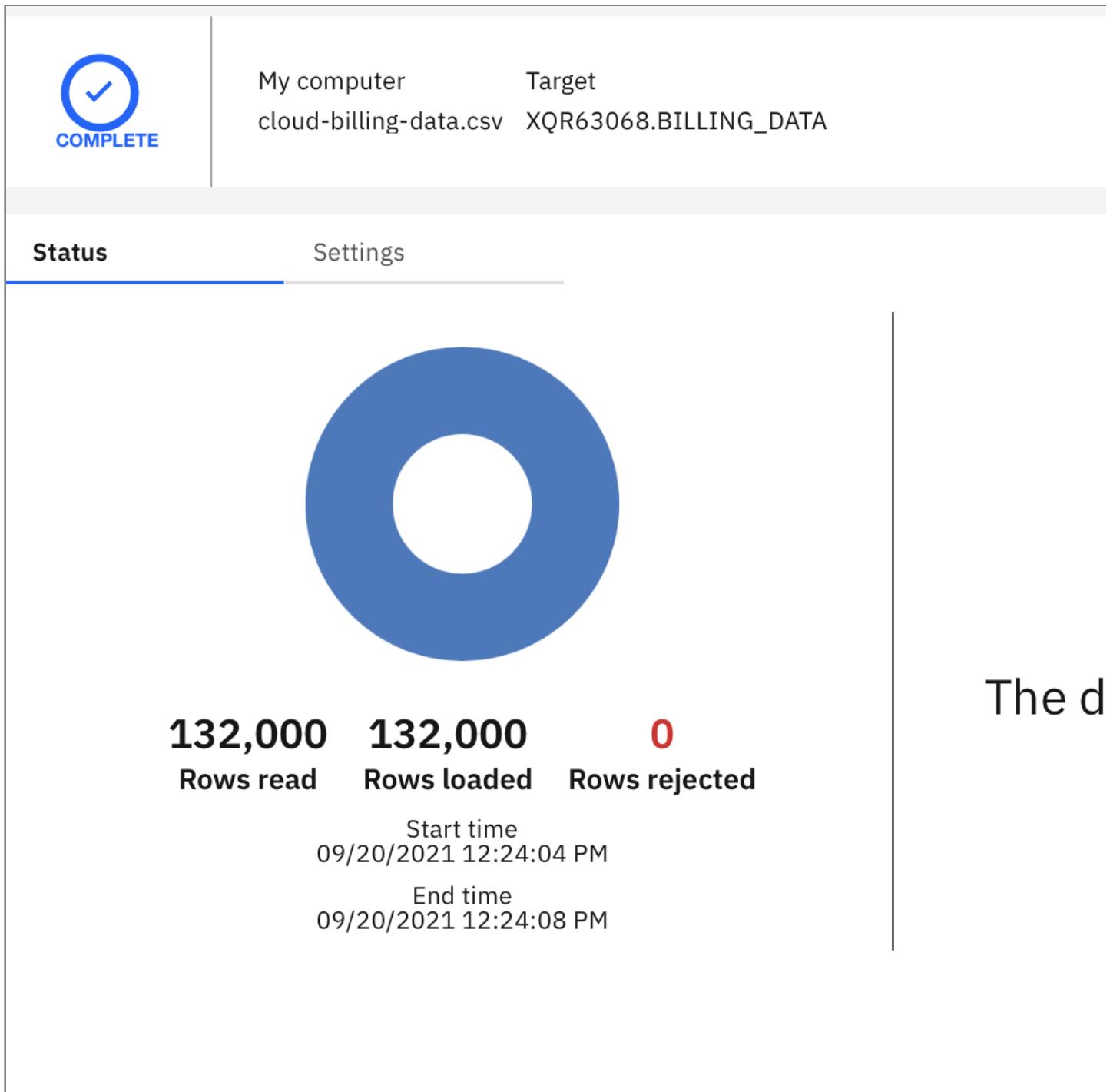
Time format: HH:MM:SS (Default)

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 Analytics
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 menu icon (three horizontal lines). To its right, the text "IBM Cognos Analytics" is displayed in white. Below this, a blue horizontal bar contains a house icon and the word "Home". A thin horizontal line separates this from the main content area. In the main area, there are several items listed:

- A blue plus sign followed by the text "+ New".
- A blue upward arrow followed by the text "Upload files".
- A blue folder icon followed by the text "Content".
- A blue clock icon followed by the text "Recent" and a right-pointing arrow.
- A blue user icon followed by the text "Manage". This item is highlighted with a red rectangular border.

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



+

—

Name

Modified



Weather Company

25/05/2021
8:57 PM

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](#)

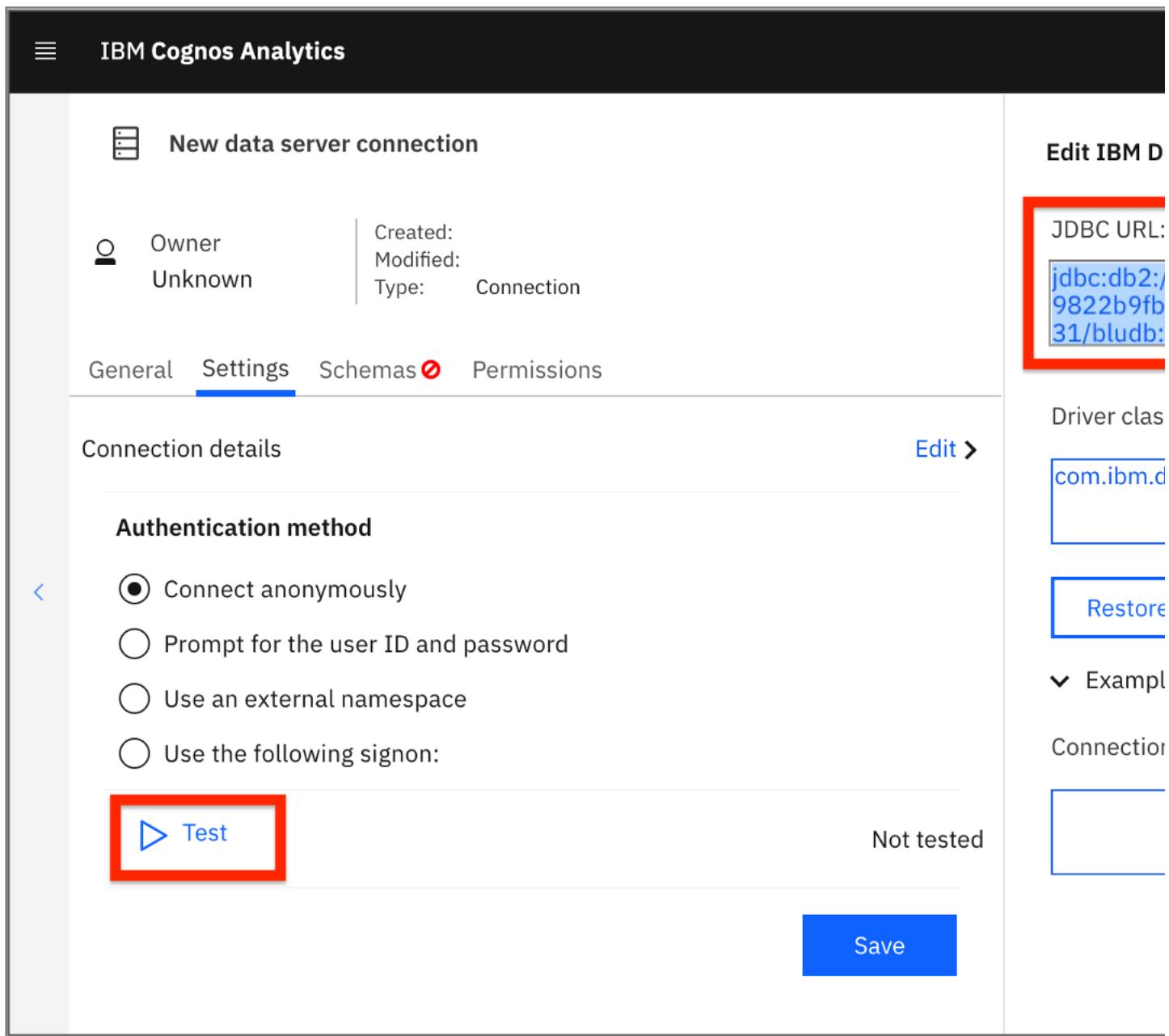
JDBC URL:
jdbc:db2:
9822b9fb
31/bludb:

Driver clas
com.ibm.d

Restore

ExAMPL

ConnecTion



6. 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.

MyDB2

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 Success

Save

Edit IBM Db2 connec

JDBC URL:
`jdbc:db2://fdbd88901
9822b9fb237b.c1og
31/bludb:user=lfn96`

Driver class name:
`com.ibm.db2.jcc.DB2`

Restore

Example URL

Connection propertie

Cloud certificate

Secure Gateway

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
	AUDIT	
	DB2INST1	
	ERRORSCHEMA	
	LFN96733	Load metadata

Load metadata

Load options

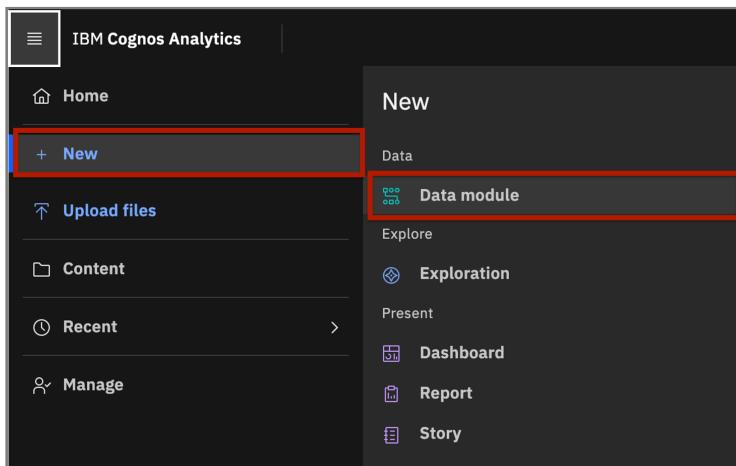
- Once the metadata is loaded you will see a green check mark next to the schema name and it will also indicate how many tables are available in the schema for analysis.

The screenshot shows the IBM Data Studio interface. At the top left is the connection icon and name "MyDB2". Below it, the owner information is listed: "Owner Sriram ... 39657" with creation and modification dates. The "Schemas" tab is selected, showing a list of schemas: AUDIT, DB2INST1, ERRORSCHEMA, and LFN96733. The LFN96733 schema is checked. To the right, there's a sidebar with a search bar and a decorative 3D cube graphic.

Status	Schema name	Tables loaded
<input type="radio"/>	AUDIT	
<input type="radio"/>	DB2INST1	
<input type="radio"/>	ERRORSCHEMA	
<input checked="" type="radio"/>	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

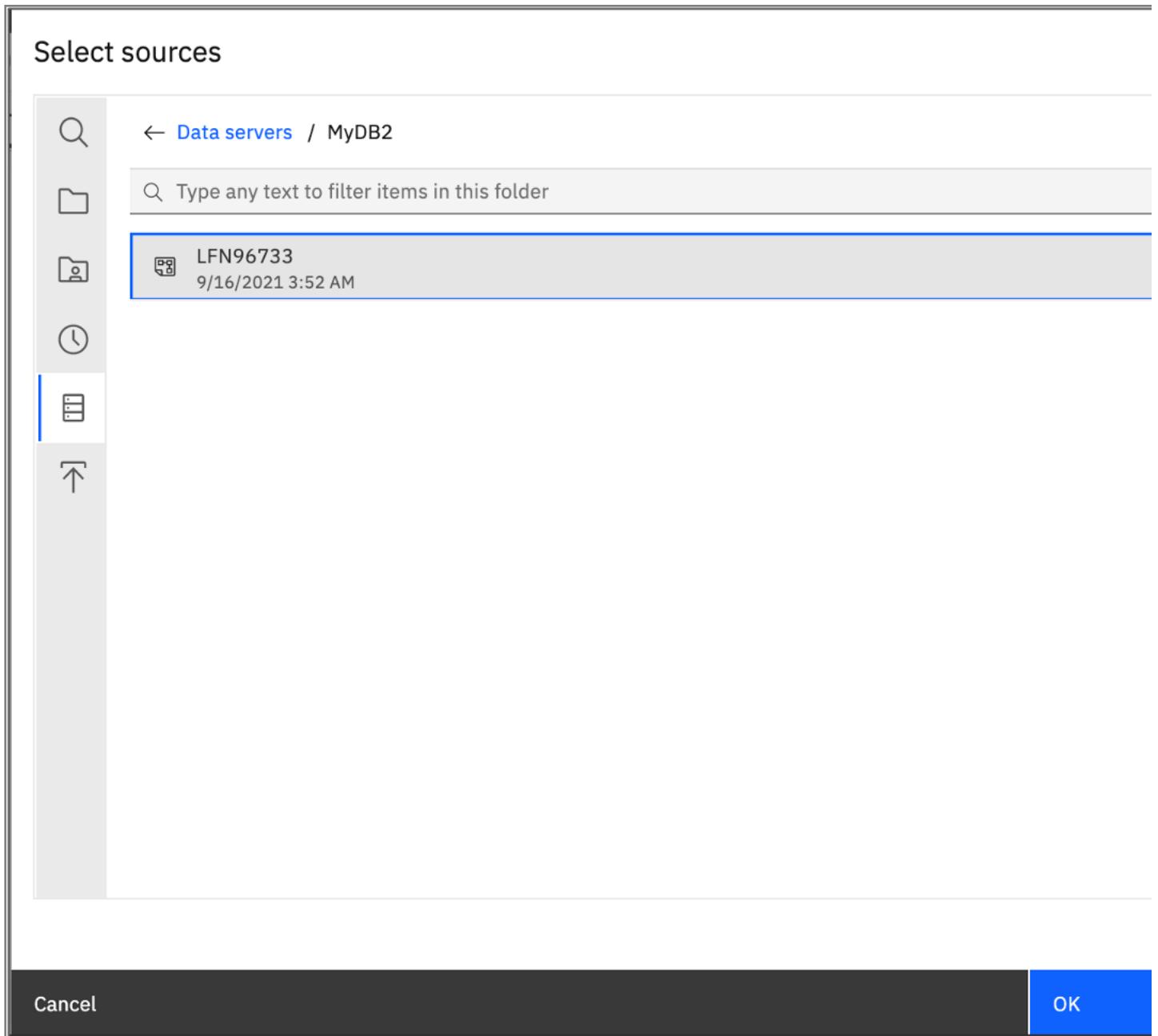


[Weather Company](#)

5/25/2021 8:57 PM



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



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 a data modeling interface with a toolbar at the top containing icons for file, search, and navigation. Below the toolbar, a sidebar on the left displays a 'Data module' section with a search bar and a 'New data module' button. A 'Navigation paths' section is also present. Under 'Billing Data', several fields are listed: Customerid, Category, Country, Industry, Month, and Billedamount. The 'Customerid' field is currently selected, indicated by a blue border. On the right side, a 'Grid' tab is active, showing a table with columns 'Customerid' and 'Category'. The table contains 11 rows of data, all categorized as 'Individual' except for one row which is 'Company'. The data is as follows:

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

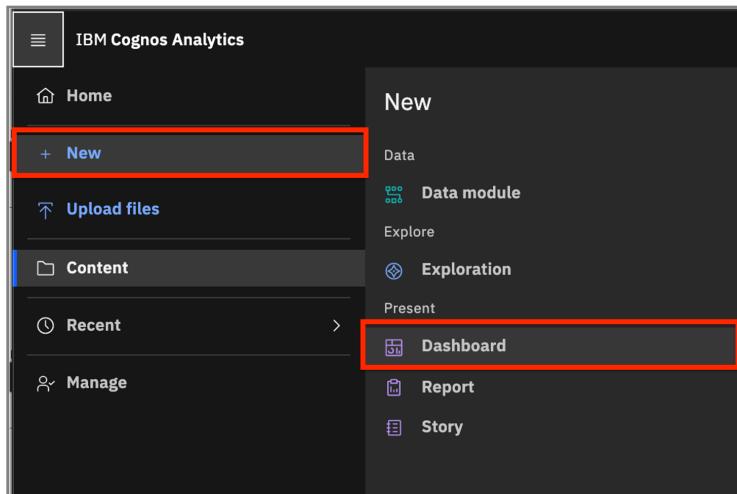
Name	Type
------	------

Cancel Save

The screenshot shows the 'Save as' dialog in IBM Cognos. The 'Name' field is populated with 'BillingDataModule|'. The 'Selected destination' dropdown is set to 'My content', which is highlighted with a red box. Below the destination are two tabs: 'My content' (selected) and 'Team content'. A table below shows columns for 'Name' and 'Type'. At the bottom are 'Cancel' and 'Save' buttons, with 'Save' also highlighted with a red box.

Task 4 - Create Dashboard

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



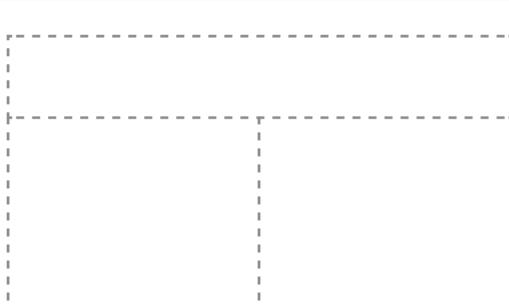
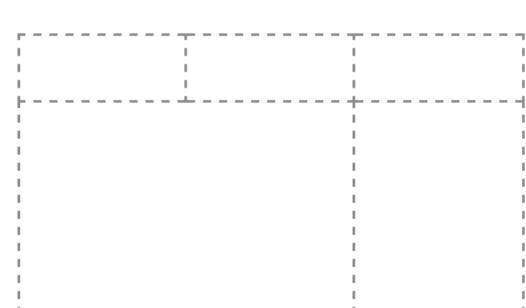
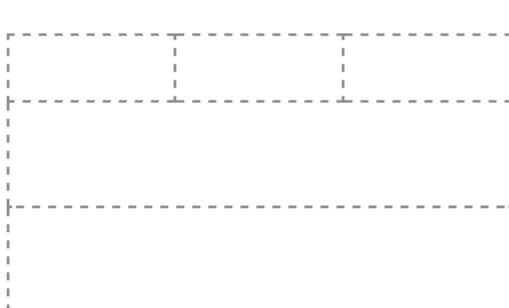
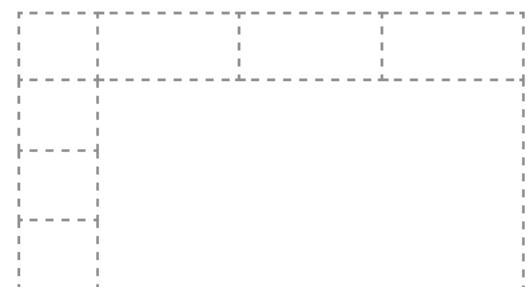
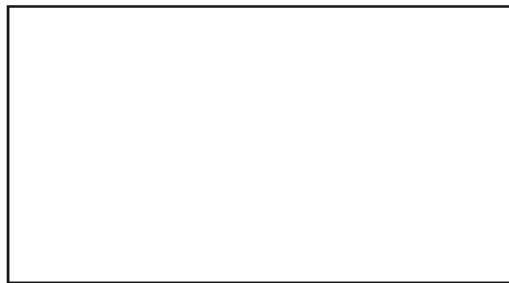
2. Choose the **Tabbed** as shown in the following image.

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 "IBM Cognos Analytics" and the dashboard name "New dashboard *" are visible. Below the header is a toolbar with various icons: a speech bubble, a green "Edit" button with a checkmark, a refresh arrow, a dropdown menu, a share icon, a search icon, and a refresh/circular arrow icon. To the left, there's a sidebar with icons for Data, Report, Scorecard, and Model. The main area is divided into two sections: "Data" on the left and "All tabs" on the right. The "Data" section contains a large cube icon and the text "Select a source" with the instruction "Click select a source to add data to use to build a dashboard." A blue button labeled "Select a source" with a plus sign is present. The "All tabs" section has a tab labeled "Tab 1". A placeholder text "Drag and drop data here" is located above the "All tabs" area.

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 d

Tab 1 +

Billedamount

This screenshot shows the IBM Cognos Analytics interface. On the left, the 'Selected sources' pane is open, displaying the 'BillingDataModule'. Under 'Billing Data', several dimensions are listed: Customerid, Category, Country, Industry, Month, and Billedamount. The 'Billedamount' item is highlighted with a blue border. On the right, a 'New dashboard' tab is active, showing a single tab labeled 'Tab 1'. Inside the dashboard area, the 'Billedamount' dimension is currently being拖动 (dragged). The interface includes various icons for navigation and search, and a sidebar with several small icons.



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

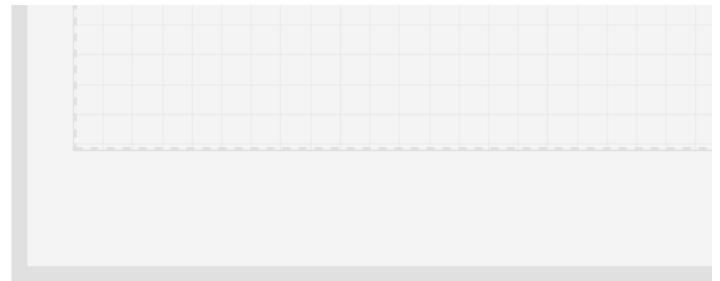
All tabs

Drag and d

Tab 1 +

Billedamount ←

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
- Billing Data
 - Customerid
 - Category
 - Country
 - Industry
 - Month
- Billedamount

All tabs

Drag and d

Tab 1

Billedamount

1.6

Bi

Billedamount

Industry

Dro

about:blank

37/42



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
- Category
- Country
- Industry
- Month

Billedamout

Tab 1 +

Billedamout

1.

Billedamout by Industry

120,000,000

100,000,000

80,000,000

60,000,000

40,000,000

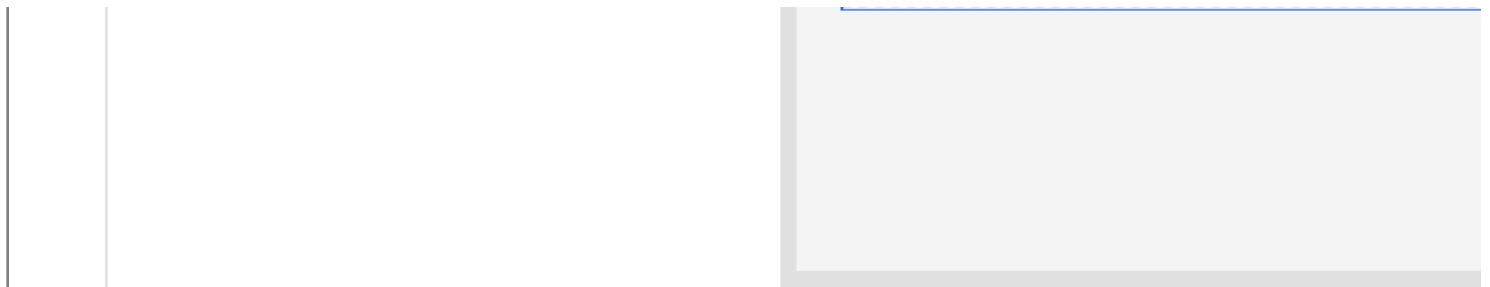
20,000,000

0

Billedamout (Sum)

Accounting Engineering
Business Deve... Human Res

Industry	Billedamout (Sum)
Accounting	~90,000,000
Engineering	~115,000,000
Business Dev...	~120,000,000
Human Res	~108,000,000



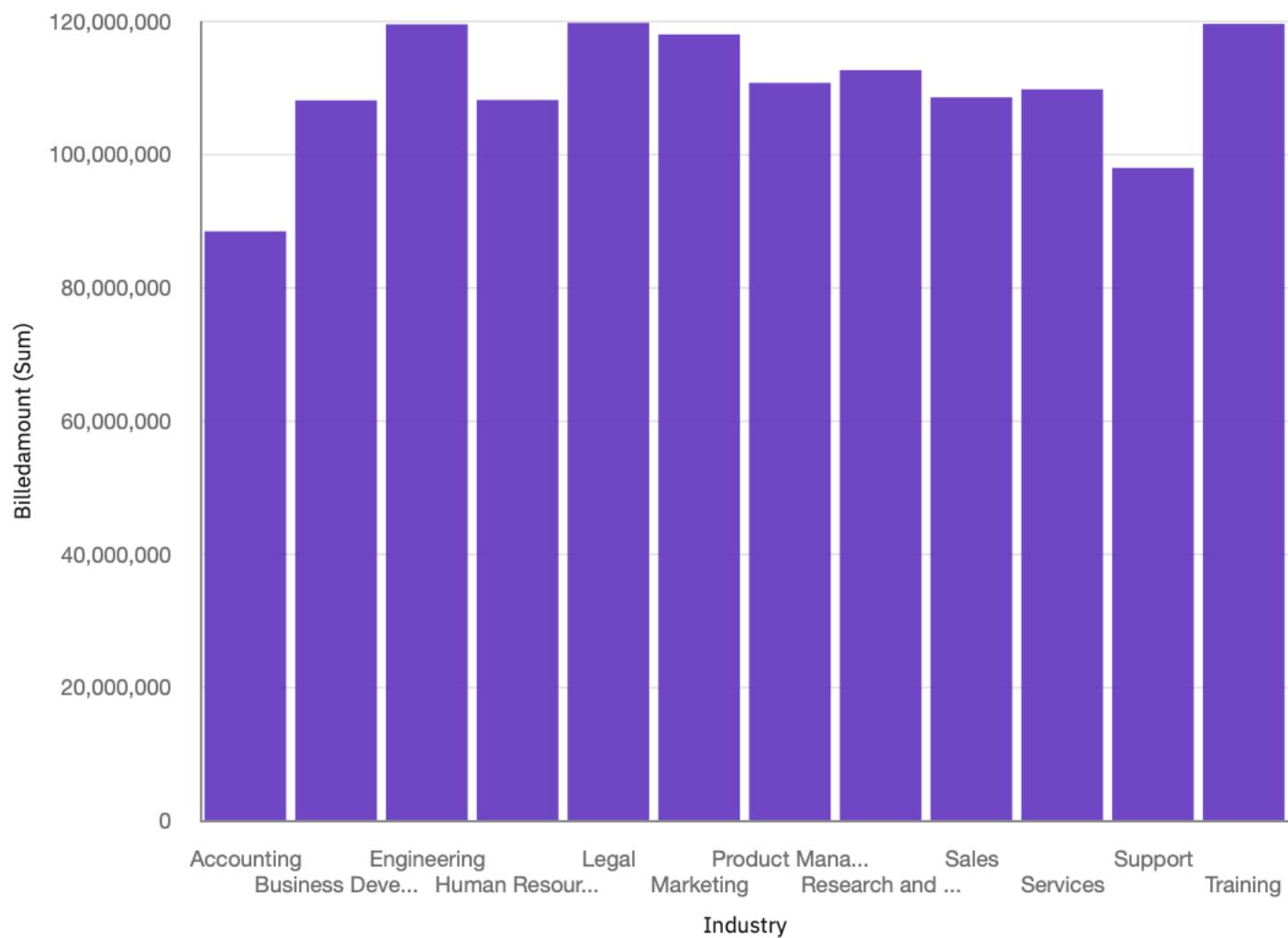
5. The finished dashboard will appear as in the following image.

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](#)

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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