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**CLOUD APPLICATION DEVELOPMENT**

**PROJECT 5: BIG DATA ANALYSIS WITH IBM CLOUD DATABASE**

# Introduction:

In this part we will begin to build our project.

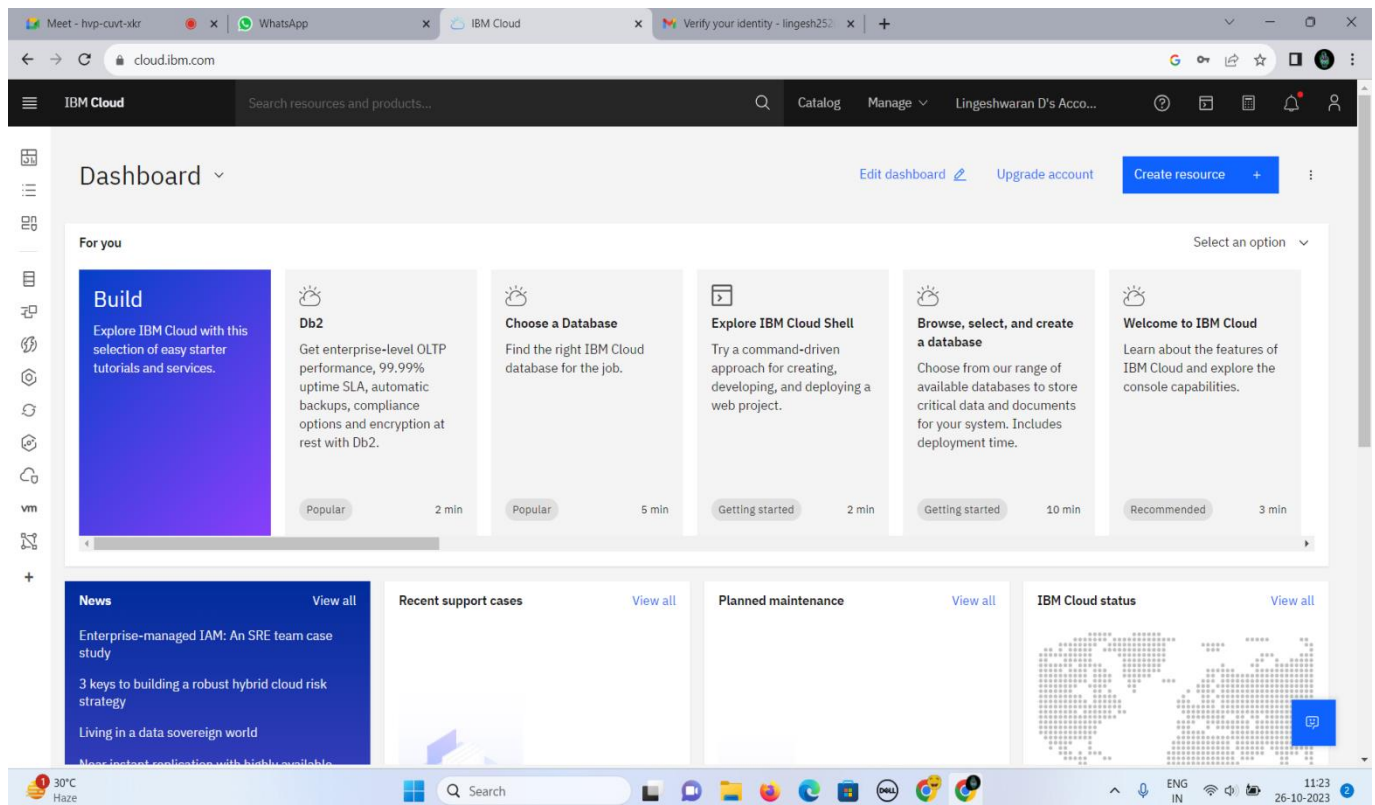
Start building the big data analysis solution using IBM Cloud Databases. Create an IBM Cloud account, choose the appropriate database service (e.g., Db2, MongoDB), and set up a database instance.

Develop queries or scripts to explore and analyze the selected dataset. Perform basic data cleaning and transformation as needed.

## Step 1:

\*Login our IBM Cloud Account

\*Search Db2



## Step 2:

\*Create our free Database 2 server

\*Select a location

The screenshot shows the IBM Cloud console interface for the Db2 service. The browser tabs at the top include 'Meet - hvp-cvvt-xkr', 'WhatsApp', 'IBM Cloud', 'Db2 - IBM Cloud', and 'Verify your identity - lingesh252'. The URL bar shows 'cloud.ibm.com/catalog/services/db2'. The page header includes the IBM Cloud logo, a search bar, and navigation links for 'Catalog', 'Manage', and the user account 'Lingeshwaran D's Acco...'. The main content area is titled 'Catalog / Db2' and describes it as 'A next generation SQL database. Formerly dashDB For Transactions.' Below this, there are two tabs: 'Create' (active) and 'About'. The 'Create' tab is divided into two sections: 'Select a location' and 'Select a pricing plan'. In the 'Select a location' section, a dropdown menu shows 'Sydney (au-syd)' as the selected option. In the 'Select a pricing plan' section, a table lists available plans. The 'Standard' plan is selected, showing its features and pricing details. A right-hand sidebar contains a 'Summary' section with details like 'Location: Sydney', 'Plan: Standard', and 'Service name: Db2-ag'. Below this, there is a warning message: 'This paid plan cannot be added to an IBM Cloud trial account. You can add a credit card to create a Pay-As-You-Go account. If a free plan for this service is available, you can choose to add it.' At the bottom of the sidebar, there is a checkbox for 'I have read and agree to the following license agreements:' with a 'Terms' link, and buttons for 'Upgrade' and 'Add to estimate'. The bottom of the screen shows a Windows taskbar with various application icons and system tray information including '30°C Haze', 'ENG IN', and the date '26-10-2023'.

IBM Cloud

Search resources and products...

Catalog Manage Lingeshwaran D's Acco...

Catalog / Db2

A next generation SQL database. Formerly dashDB For Transactions.

Create About

Type Service

Provider IBM

Last updated 10/19/2023

Category Databases

Compliance EU Supported HIPAA Enabled IAM-enabled

Location Sydney Frankfurt London Dallas Sao Paulo Toronto Tokyo Milan 01

Select a location

Sydney (au-syd)

Select a pricing plan

Displayed prices do not include tax. Monthly prices shown are for country or location: [United States](#)

Plan	Features and capabilities	Pricing
Standard	Instance with flexible scaling of compute and storage Base instance starts at 8 GB RAM x 20 GB Storage	\$0.142 USD/Instance-Hour \$0.000282 USD/Gigabyte-Hours \$0.101 USD/Virtual Processor Core-Hour \$0.000031 USD/BACKUP_GIGABYTE_HOURS \$0.10 USD/SERVICEENDPOINT_INSTANCE_HOURS

The starting configuration provides one SQL database per service instance residing on shared compute slices, with 2 sharable vCPUs (8 GB of memory), and 20 GB of storage for data and logs. All database deployed across multi-tenant compute infrastructure. Scale

Summary

Db2 [Estimate costs](#)

Location: Sydney  
Plan: Standard  
Service name: Db2-ag  
Resource group: Default

This paid plan cannot be added to an IBM Cloud trial account. You can add a credit card to create a Pay-As-You-Go account. If a free plan for this service is available, you can choose to add it.

☐ I have read and agree to the following license agreements: [Terms](#)

Upgrade

Add to estimate

30°C Haze

Search

ENG IN

11:24 26-10-2023

### Step 3:

\*Select a location london(eu-gb)

\*Create our Database 2 server

Figure 1:

The screenshot shows the IBM Cloud catalog page for the Db2 service. The 'Create' tab is active, and the 'About' tab is also visible. The page is titled 'Db2' and describes it as 'A next generation SQL database. Formerly dashDB For Transactions.' The 'Create' tab has two sub-tabs: 'Create' and 'About'. The 'Create' sub-tab is selected, and it shows a 'Select a location' dropdown menu with 'London (eu-gb)' selected. Below this, there is a 'Select a pricing plan' section. The pricing plan table shows the 'Lite' plan as the selected option. The table has three columns: 'Plan', 'Features and capabilities', and 'Pricing'. The 'Lite' plan is free and includes 200 MB of data storage, 5 simultaneous connections, and a shared multitenant system. The pricing is listed as 'Free'. The 'Features and capabilities' section also includes a note about the free plan's limitations and a warning that lite plan services are deleted after 30 days of inactivity. On the right side of the page, there is a 'Summary' panel showing the selected location (London), plan (Lite), service name (Db2-ag), and resource group (Default). At the bottom of the page, there is a 'Create' button and an 'Add to estimate' button. The page also includes a search bar, a catalog link, and a user profile link.

IBM Cloud

Search resources and products...

Catalog / Db2

A next generation SQL database. Formerly dashDB For Transactions.

Create About

Type Service

Provider IBM

Last updated 10/19/2023

Category Databases

Compliance EU Supported HIPAA Enabled IAM-enabled

Location Sydney Frankfurt London Dallas Sao Paulo Toronto Tokyo Milan 01

Select a location

London (eu-gb)

Select a pricing plan

Displayed prices do not include tax. Monthly prices shown are for country or location: [United States](#)

Plan	Features and capabilities	Pricing
Lite	<b>200 MB of data storage</b> 5 simultaneous connections Shared multitenant system	Free

The Free plan provides a free Db2 service for development and evaluation. The plan has a set amount of limitations as shown. You can continue using the free plan for as long as needed, however, users are asked to re-extend their free account every 90 days by email. If you do not re-extend, your free account is cleaned out a further 90 days later. This helps provide free resources for everyone.

**Lite plan services are deleted after 30 days of inactivity.**

Summary

Db2 Free

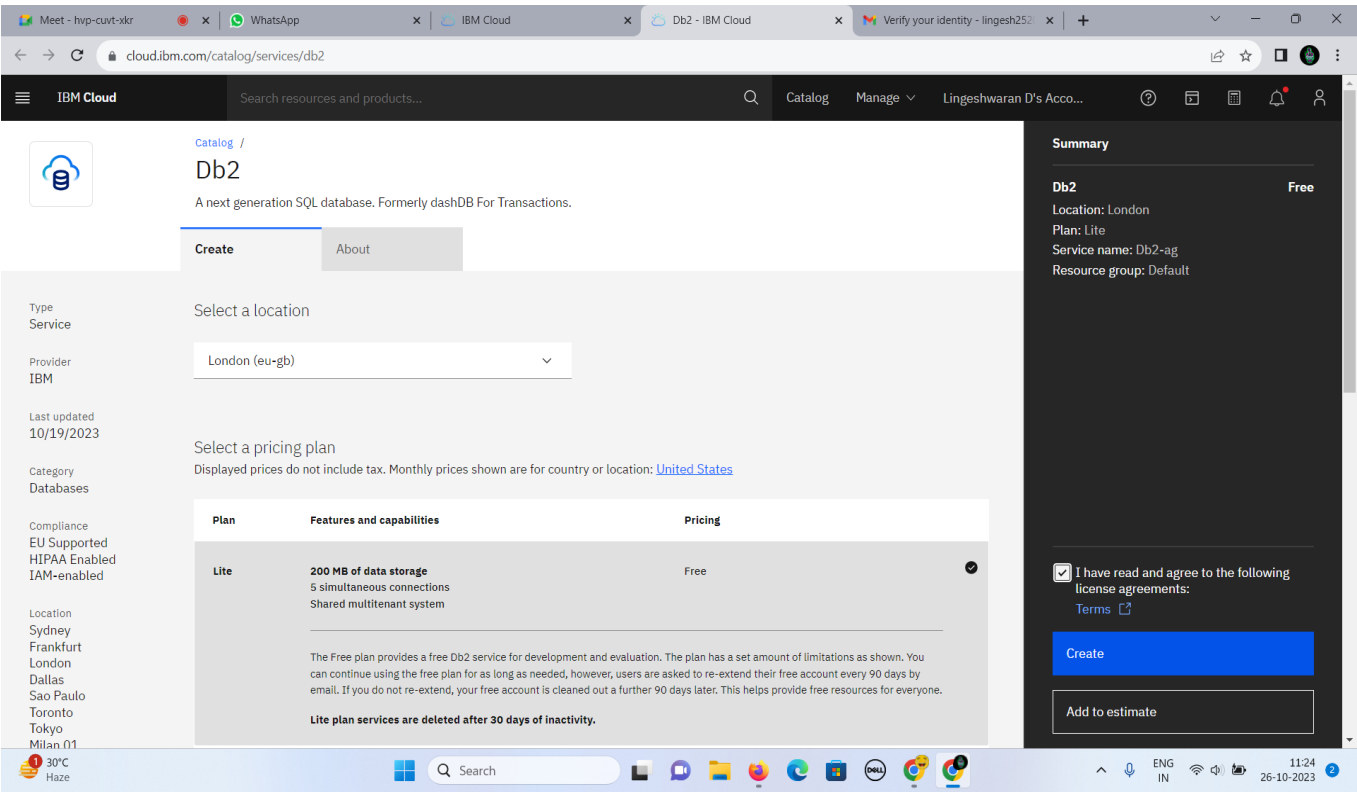
Location: London  
Plan: Lite  
Service name: Db2-ag  
Resource group: Default

☐ I have read and agree to the following license agreements:  
[Terms](#)

Create

Add to estimate

Figure 2



## Step 4:

\*Goto dashboard

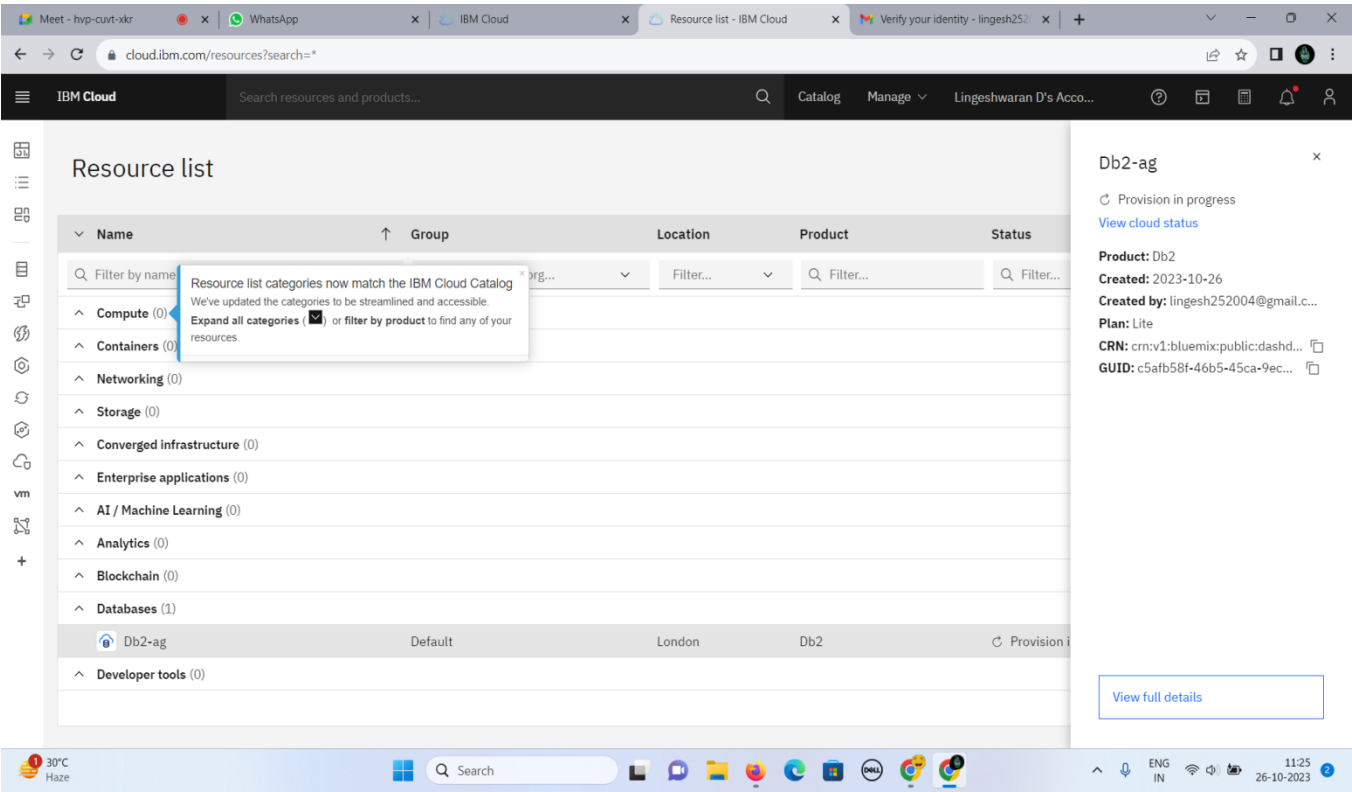
\*select your Database server 2(Db2-ag)

Figure 1:

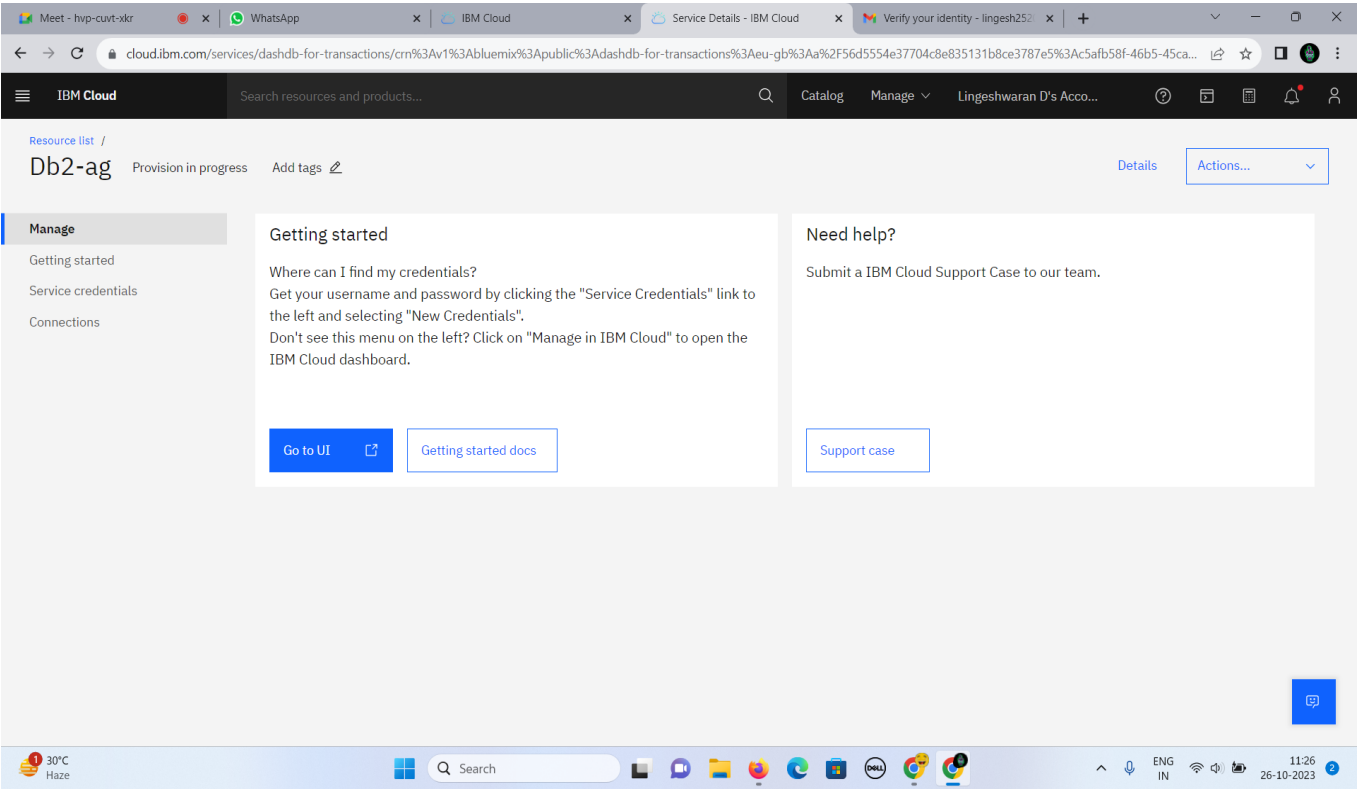
The screenshot displays the IBM Cloud Resource list dashboard. The browser address bar shows the URL `cloud.ibm.com/resources?search=*`. The dashboard header includes the IBM Cloud logo, a search bar, and navigation links for Catalog, Manage, and the user profile (Lingeshwaran D's Acco...). A sidebar on the left contains icons for various resource categories. The main content area is titled "Resource list" and features a table with columns: Name, Group, Location, Product, Status, and Tags. A tooltip is visible over the "Compute" category in the sidebar, stating: "Resource list categories now match the IBM Cloud Catalog. We've updated the categories to be streamlined and accessible. Expand all categories (icon) or filter by product to find any of your resources." The table lists several resource categories, including Compute (0), Containers (0), Networking (0), Storage (0), Converged infrastructure (0), Enterprise applications (0), AI / Machine Learning (0), Analytics (0), Blockchain (0), Databases (1), and Developer tools (0). The "Databases (1)" category is expanded, showing a single resource: "Db2-ag" with a status of "Provision in progress". The Windows taskbar at the bottom shows the date and time as 11:25 on 26-10-2023.

Name	Group	Location	Product	Status	Tags
Compute (0)					
Containers (0)					
Networking (0)					
Storage (0)					
Converged infrastructure (0)					
Enterprise applications (0)					
AI / Machine Learning (0)					
Analytics (0)					
Blockchain (0)					
Databases (1)					
Db2-ag	Default	London	Db2	Provision in progress	
Developer tools (0)					

Figure 2:



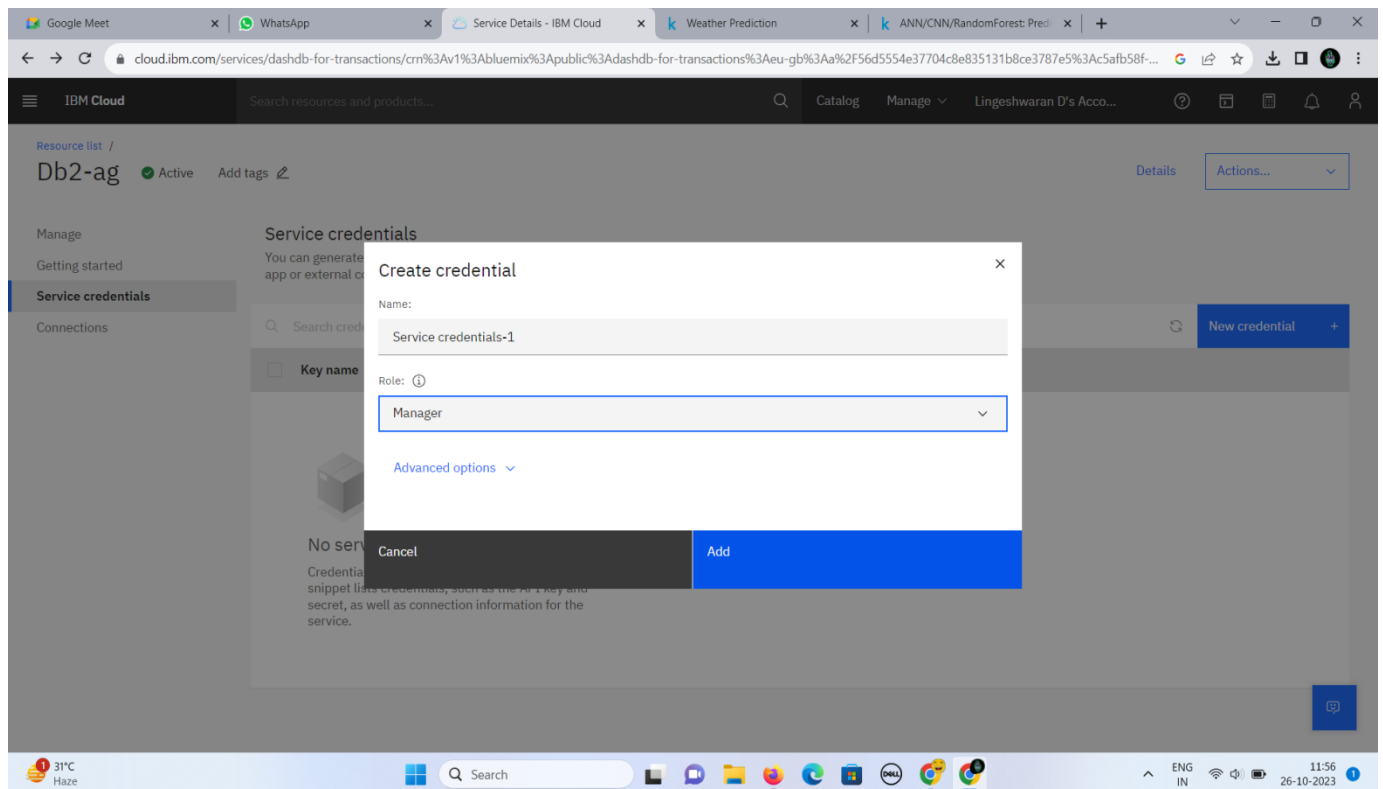
# Db2-ag Interface





## Step 5:

### \*Create your Server Credential-1

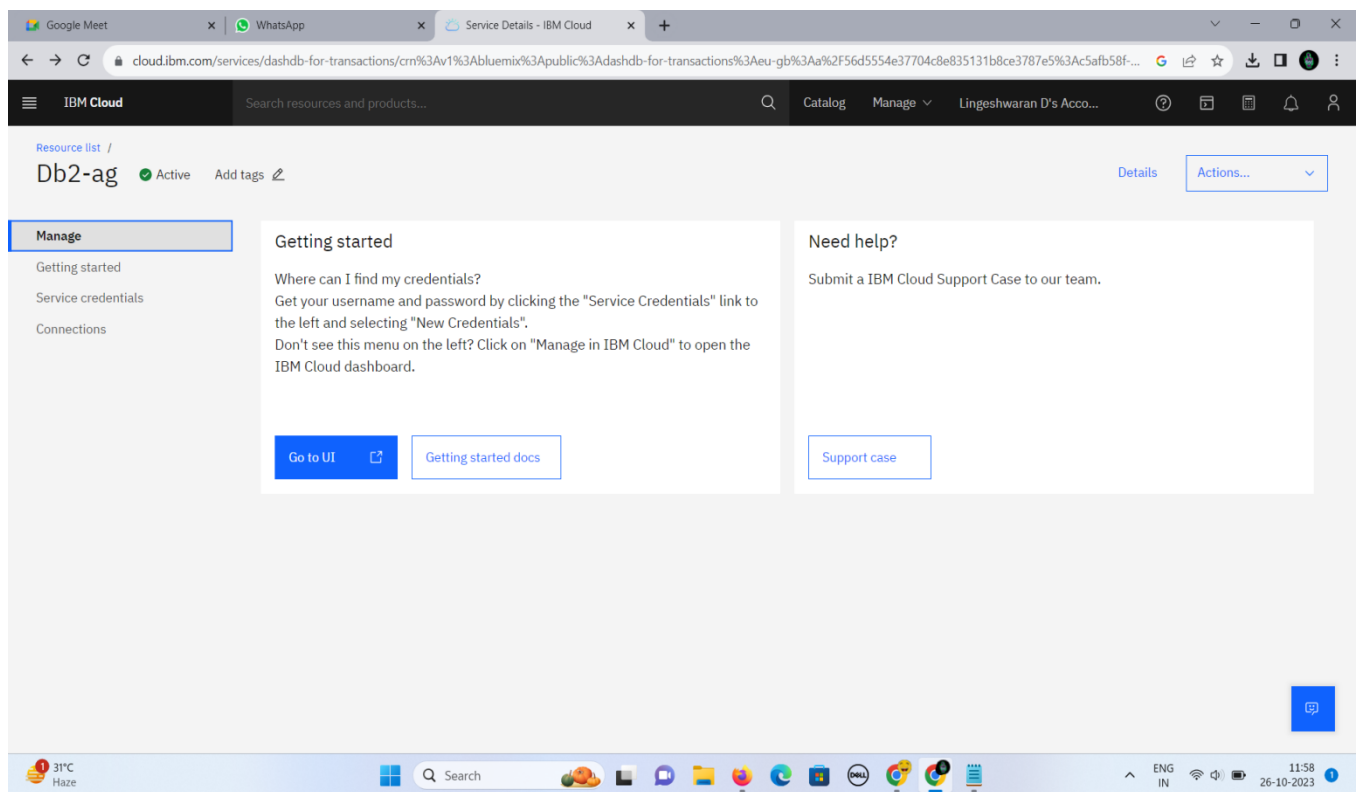


\*After create server credential,then it show's our UserID,Password,Host Address

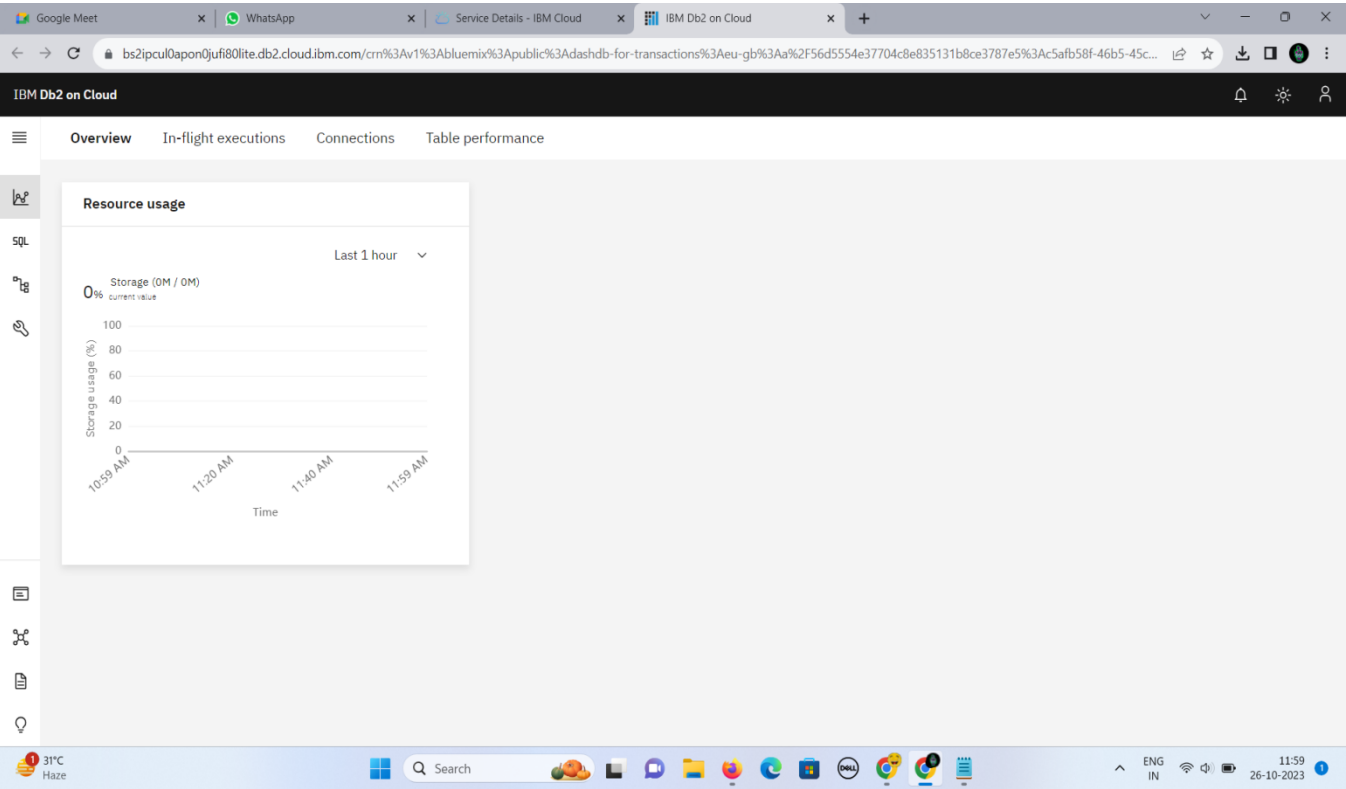
[illegible]

## Step 6:

\*click “Go To UI” for your data file upload

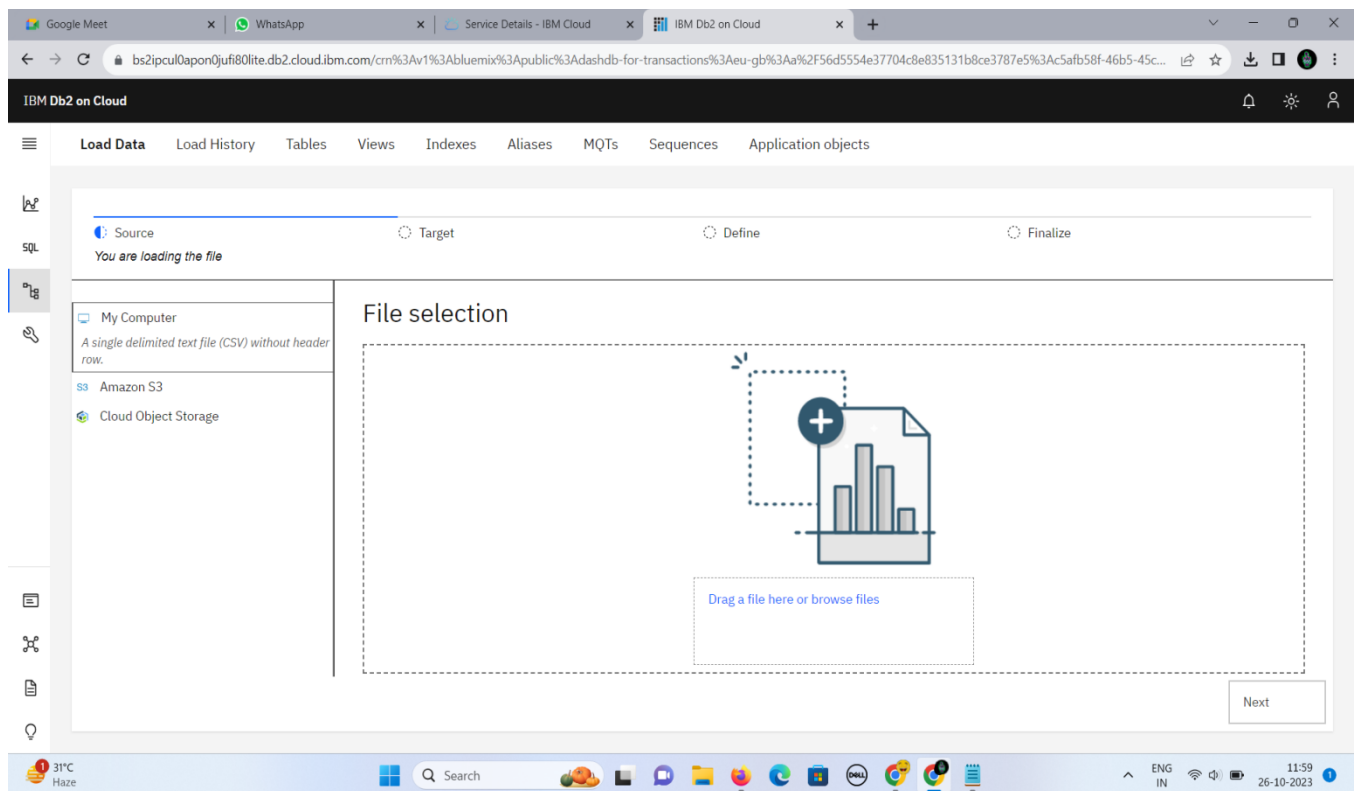


\*select your Load Data

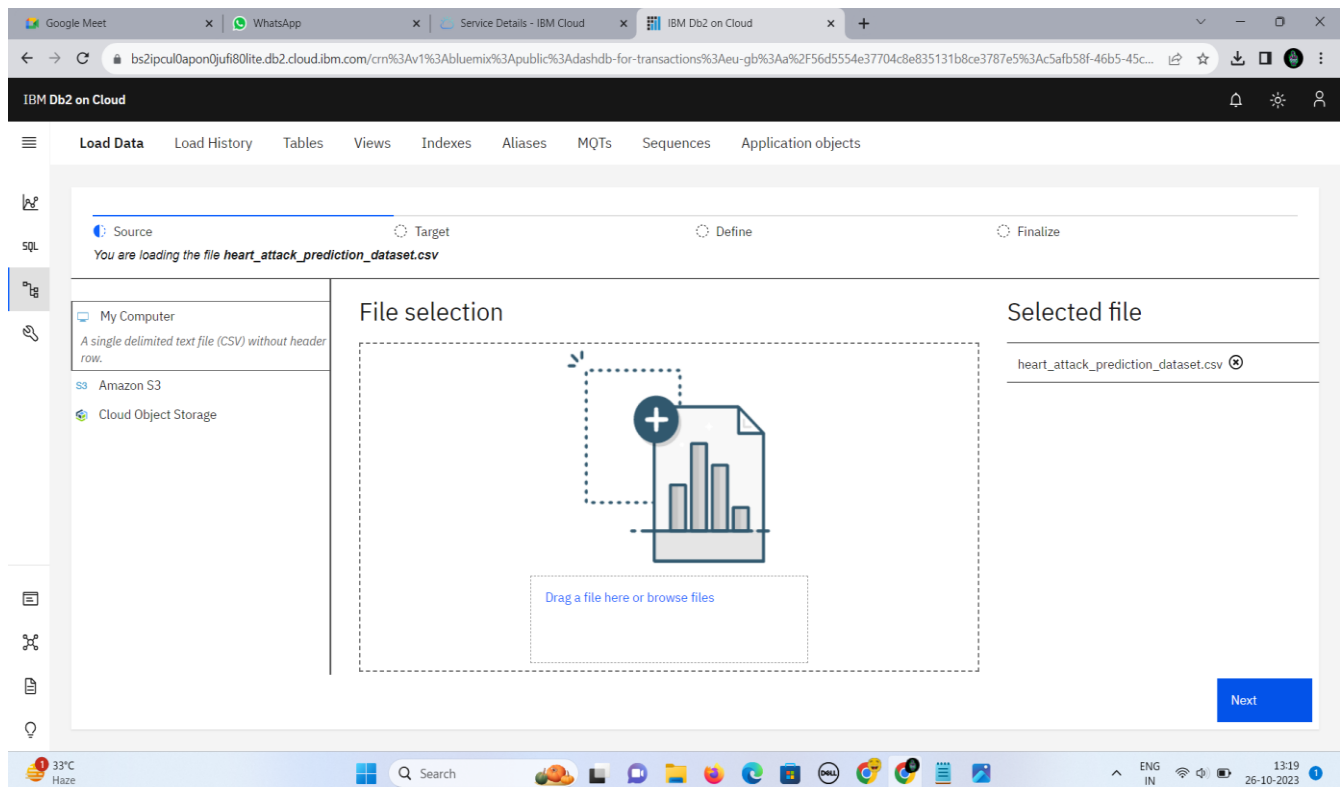


## Step 7:

\*upload our csv file data from “My Computer”



\*upload our csv file (“heart\_attack\_prediction\_dataset.csv”)



\*The server read your data completely and upload your data on your server and completing your data upload process

Google MeetWhatsAppService Details - IBM CloudIBM Db2 on Cloud

bs2ipcul0apon0ufi80lite.db2.cloud.ibm.com/crn%3Av1%3Abluemix%3Apublic%3Adashdb-for-transactions%3Aeu-gb%3Aa%2F56d5554e37704c8e835131b8ce3787e5%3Ac5afb58f-46b5-45c...

IBM Db2 on Cloud

Load DataLoad HistoryTablesViewsIndexesAliasesMQTsSequencesApplication objects

Load details

COMPLETE

My computer

Target

heart\_attack\_prediction\_dataset.csv

QJT83972.HEART

View Table

Load More Data

StatusSettings

8,763

8,763

0

Rows read

Rows loaded

Rows rejected

Start time

10/26/2023 1:20:53 PM

End time

10/26/2023 1:20:57 PM

The data load job succeeded.

You can now work with your data.

ErrorsWarnings

No errors

33°C Haze

Search

ENG IN13:2126-10-2023

## Step 8:

\*After completely uploading our dataset

\*Go To SQL section and execute Data Cleaning and transformation queries

The screenshot displays the IBM Db2 on Cloud web interface. The left sidebar shows the 'SQL' section selected. The main area contains a SQL editor with a 'CREATE TABLE' statement for a table named 'hearts'. The table has 22 columns with various data types including VARCHAR, INT, DECIMAL, and CHAR. Below the editor, a 'History' tab is active, showing a table with columns: Script, Date, Status, and Runtime. The table contains one entry for the current script.

```
1 CREATE TABLE hearts(  
2   PATIENT_ID VARCHAR(50),  
3   SEX VARCHAR(10),  
4   HEART_RATE INT,  
5   DIABETES INT,  
6   FAMILY_HISTORY INT,  
7   SMOKING INT,  
8   OBESITY INT,  
9   ALCOHOL_CONSUMPTION INT,  
10  EXERCISE_HOURS_PER_WEEK DECIMAL(10, 2),  
11  DIET CHAR(10),  
12  PREVIOUS_HEART_PROBLEMS INT,  
13  MEDICATION_USE INT,  
14  STRESS_LEVEL INT,  
15  SEDENTARY_HOURS_PER_DAY DECIMAL(10, 2),  
16  INCOME INT,  
17  BMI DECIMAL(10, 2),  
18  TRIGLYCERIDES INT,  
19  PHYSICAL_ACTIVITY_DAYS_PER_WEEK INT,  
20  SLEEP_HOURS_PER_DAY INT,  
21  COUNTRY CHAR(10),  
22  CONTINENT CHAR(10).
```

Script	Date	Status	Runtime
Untitled - 1	Oct 26, 2023 2:01:31 PM	✓ 1	0.084 s



## Conclusion:

In this part we will create a IBM cloud account and start to build the Big Data Analysis using a IBM Cloud database by using a the appropriate database service (e.g., Db2) and set up a database instance.

Developing queries ,exploring and analyzing the selected dataset. Performed basic data cleaning and transformation as needed.