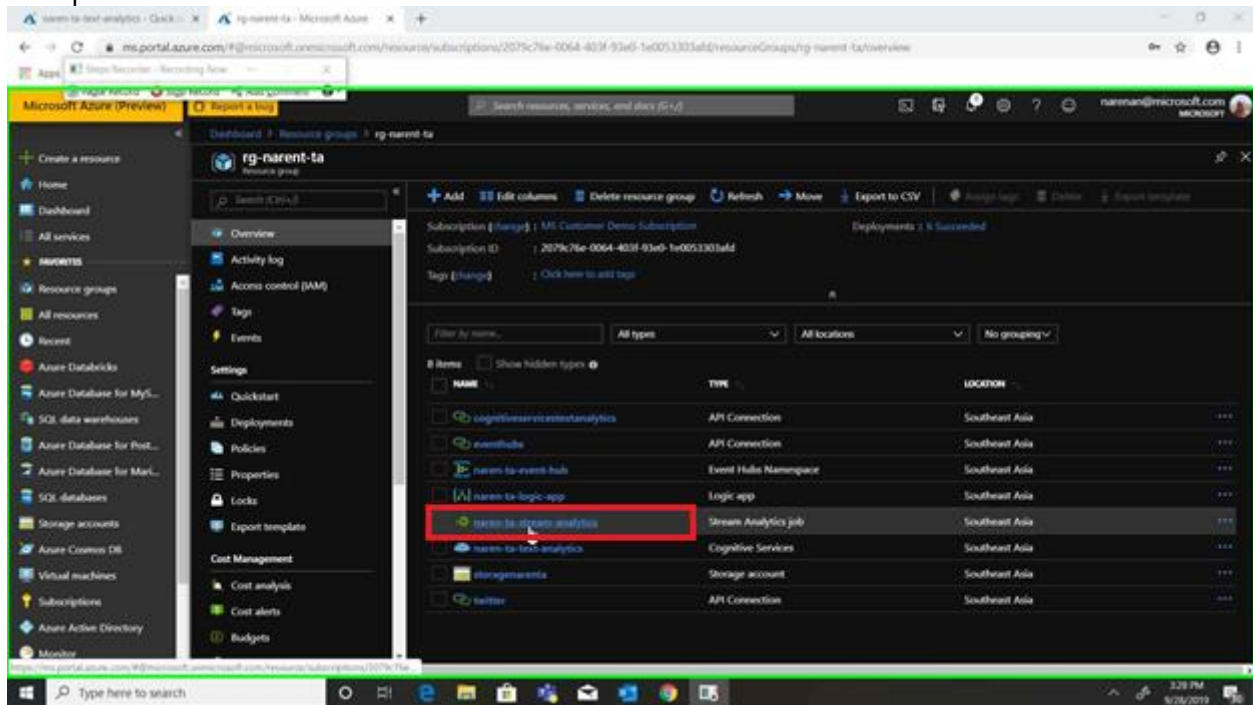


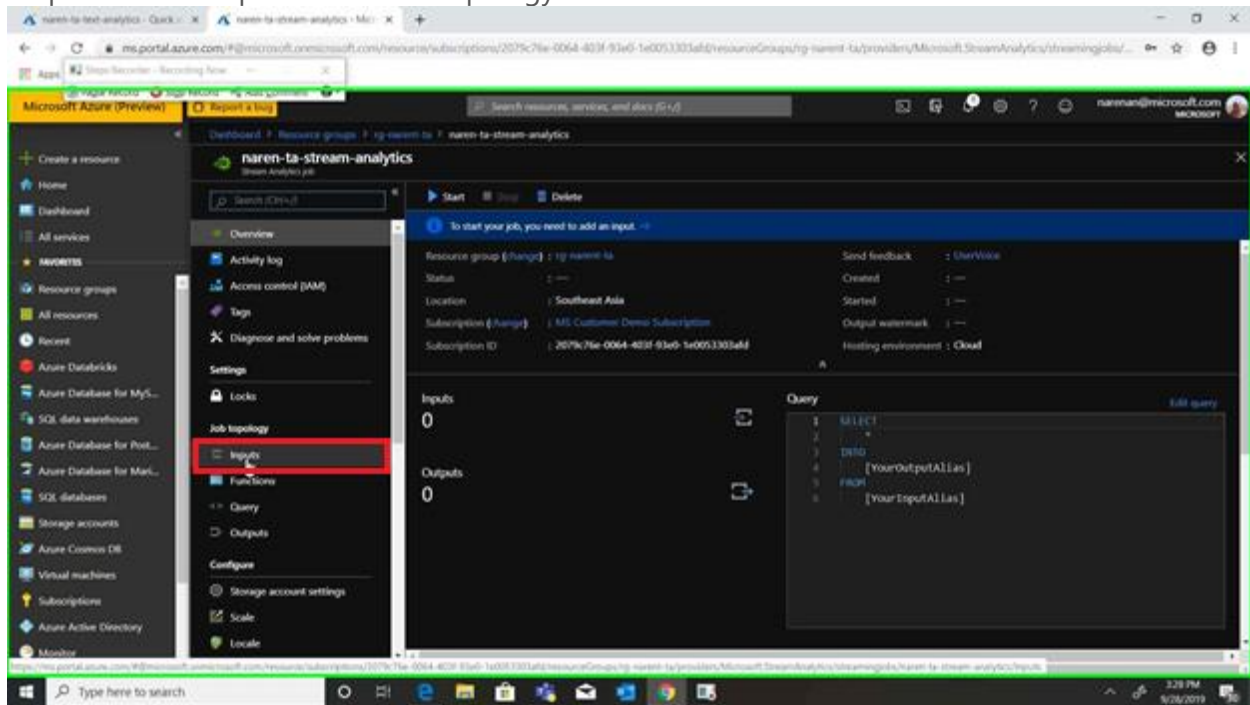
Configure Steam Analytics Job for Tweet Analytics

To work on Tweet analytics demo we will Configure Steam Analytics job which required for this demo.

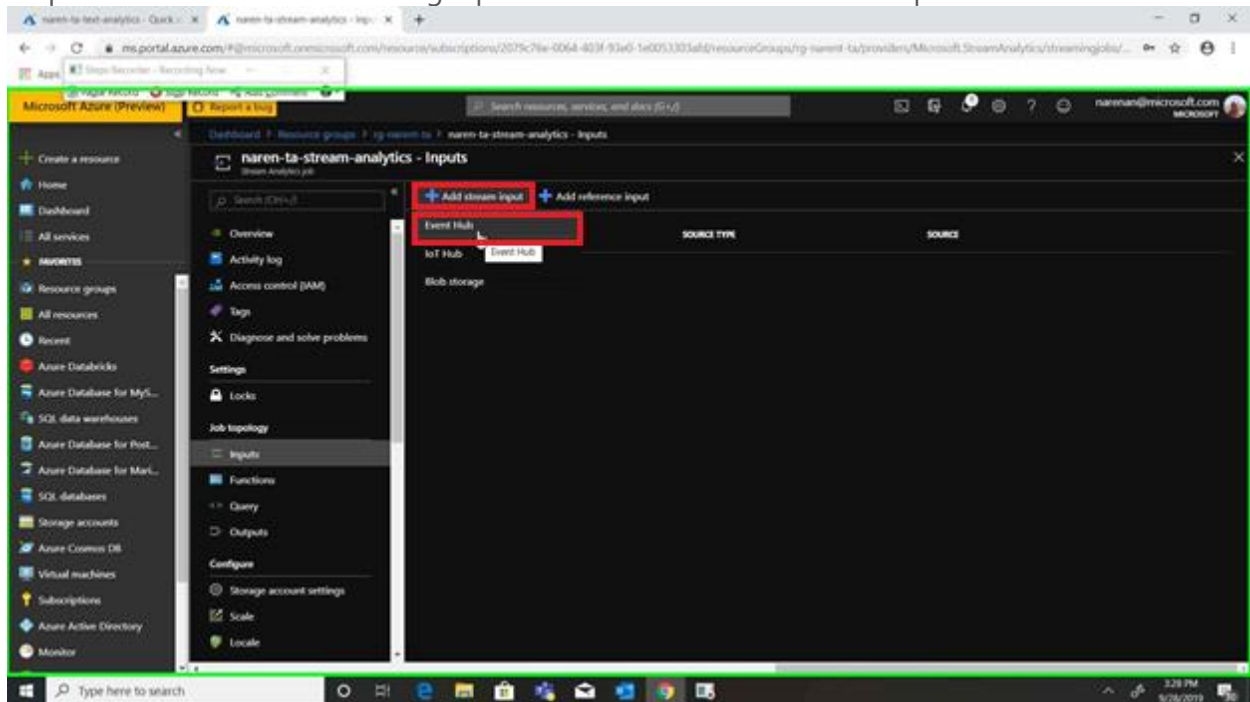
Step 1: Open Azure Portal and select Stream Analytics Job from the Resource Group which you have created for the Tweet Analytics Demo. In my case I have created rg-narent-ta as a Resource Group.



Step 2: Click on Input under "Job topology" from the blade

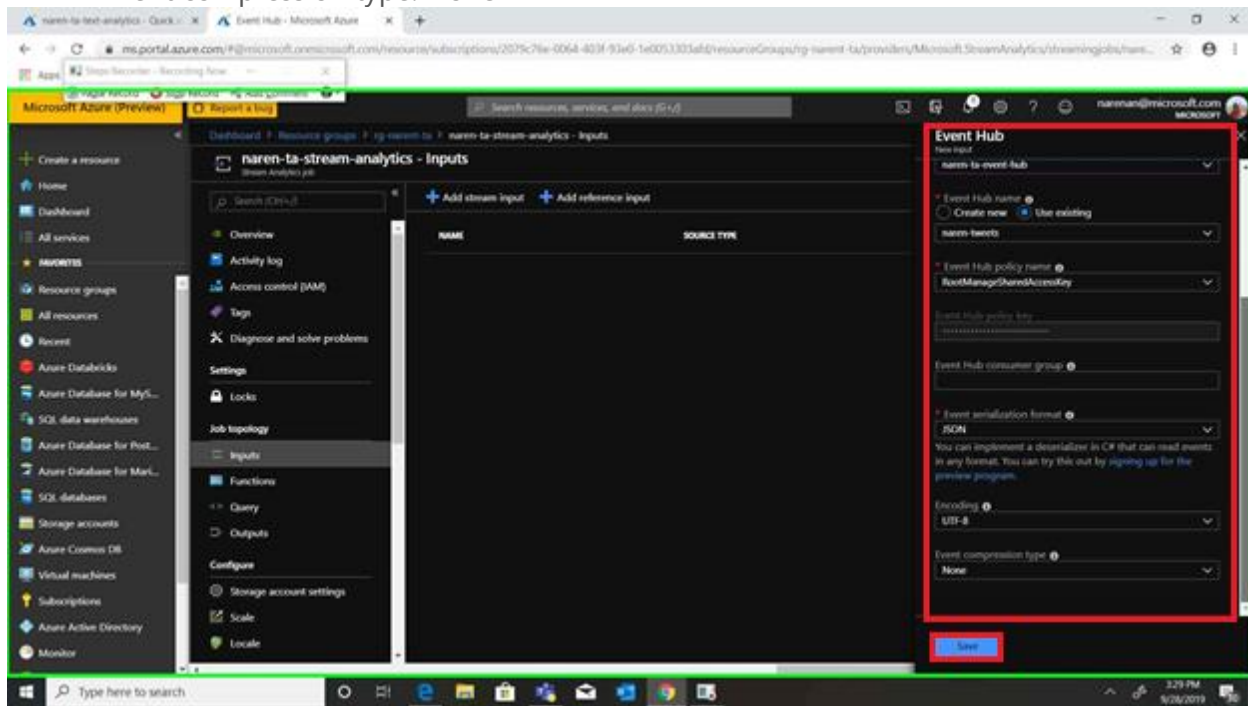


Step 3: Click on "+ Add streaming input" and select Event hub as an input

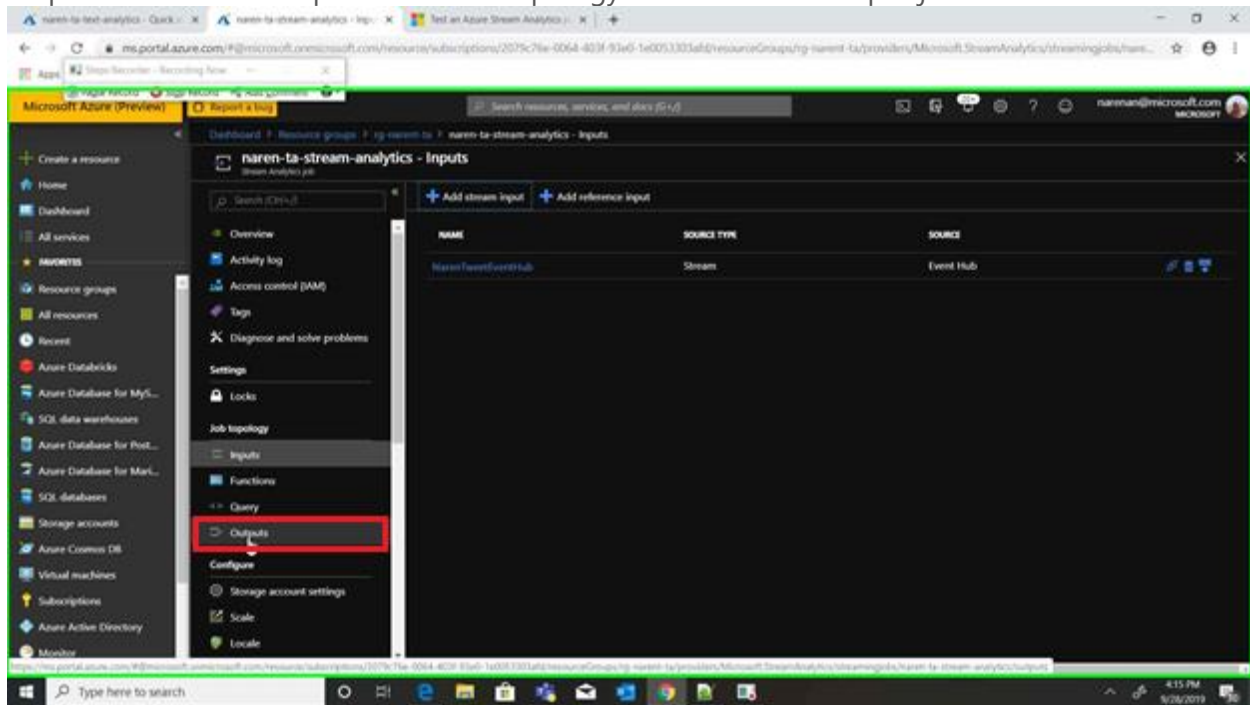


Step 4: In the input details blade enter the following information and click Save button to save the event hub input.

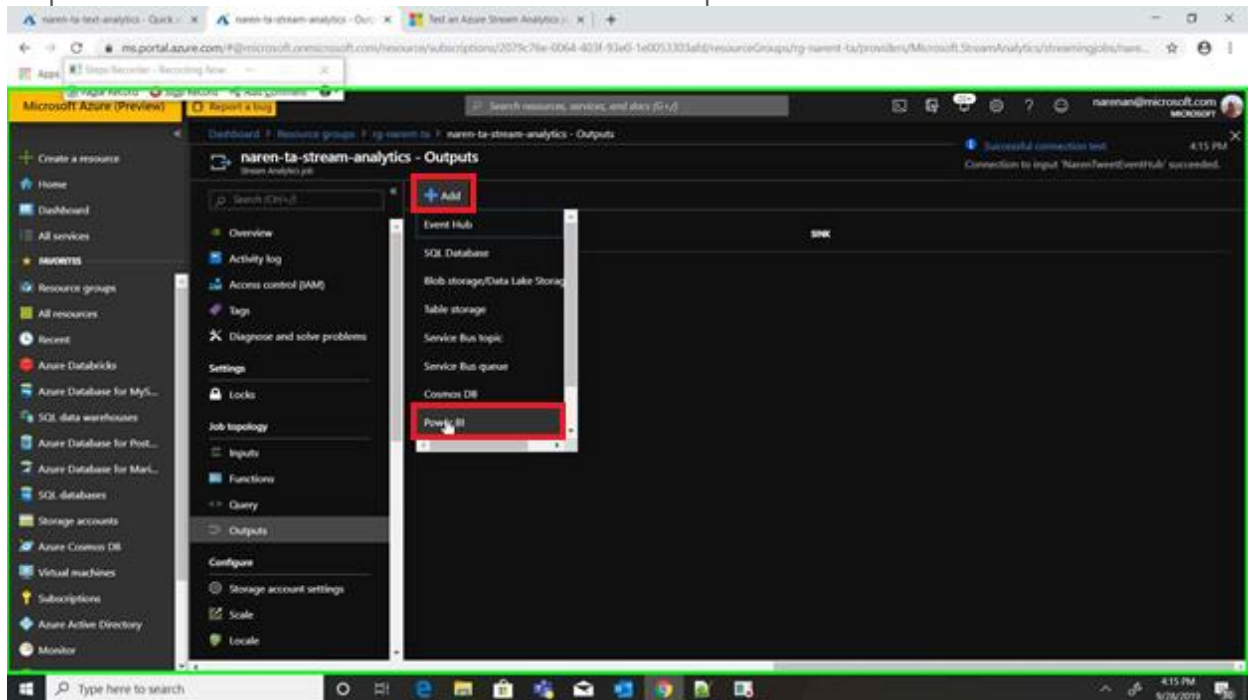
- Input alias: <Enter the input alias name>
- Enable "Select Event hub from your subscription"
- Subscription: <Select subscription from the drop-down list >
- Event hub Namespace: <Select Event hub Namespace from the drop-down list >
- Event hub Name: Enable Use Existing and <Select Event hub from the drop-down list>
- Event hub policy Name: <Select Event hub policy name from the drop-down list>
- Event serialization format: JSON
- Encoding: UTF-8
- Event compression type: None



Step 5: Click on the Output from "Job Topology" to create new output job

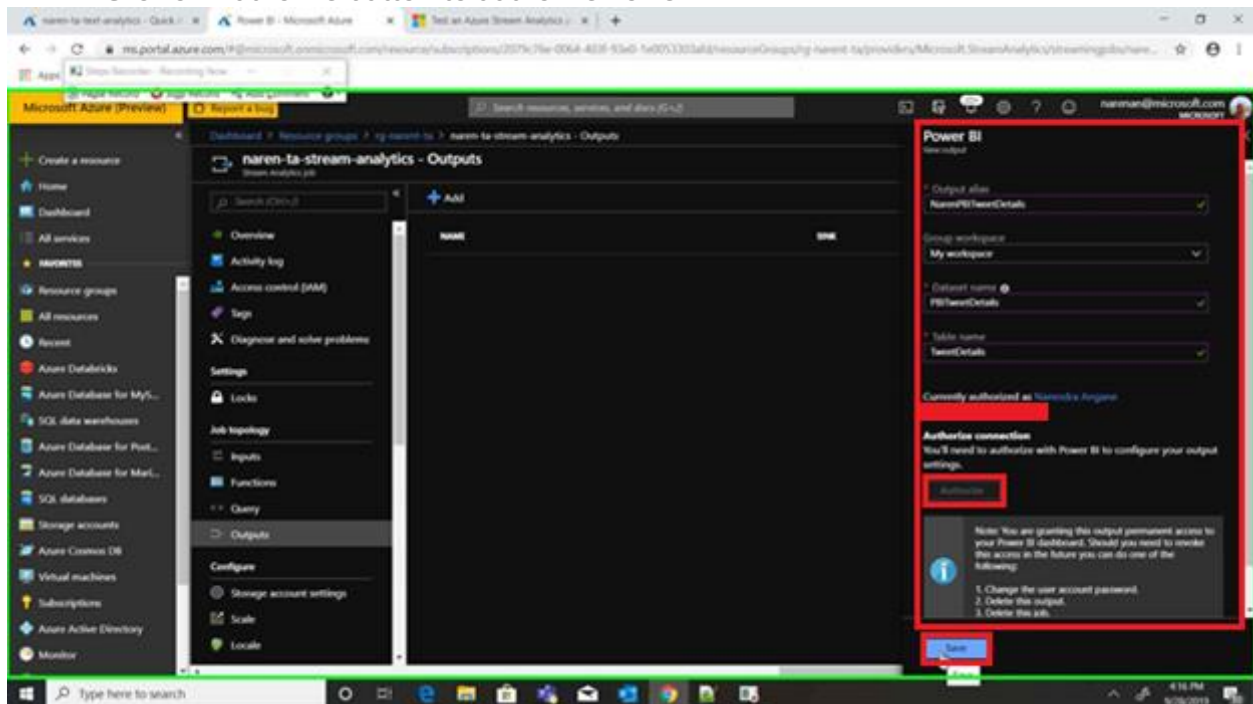


Step 6: Click on "+ Add" and select Power BI as an output

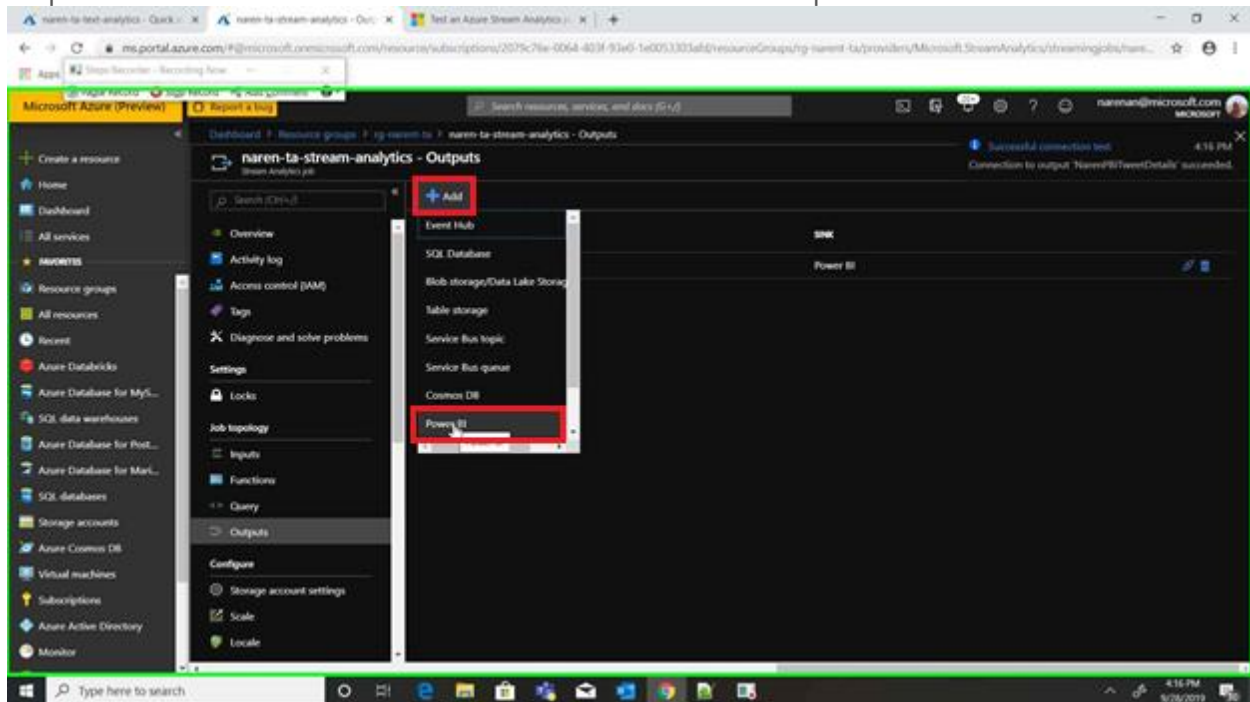


Step 7: In the Output details blade enter the following information and click Save button to save the Power BI Output. This output you will use to show the Tweet Details in Power BI. You will also need to Authorize the Power BI Account.

- Output Alias: <Enter Output Alias for Power BI Output>
- Group Workspace: <Select the Group Workspace from the drop-down list>
- Dataset Name: <Enter Dataset Name>
- Table Name: <Enter Table Name>
- Click on Authorize button to authorize Power BI

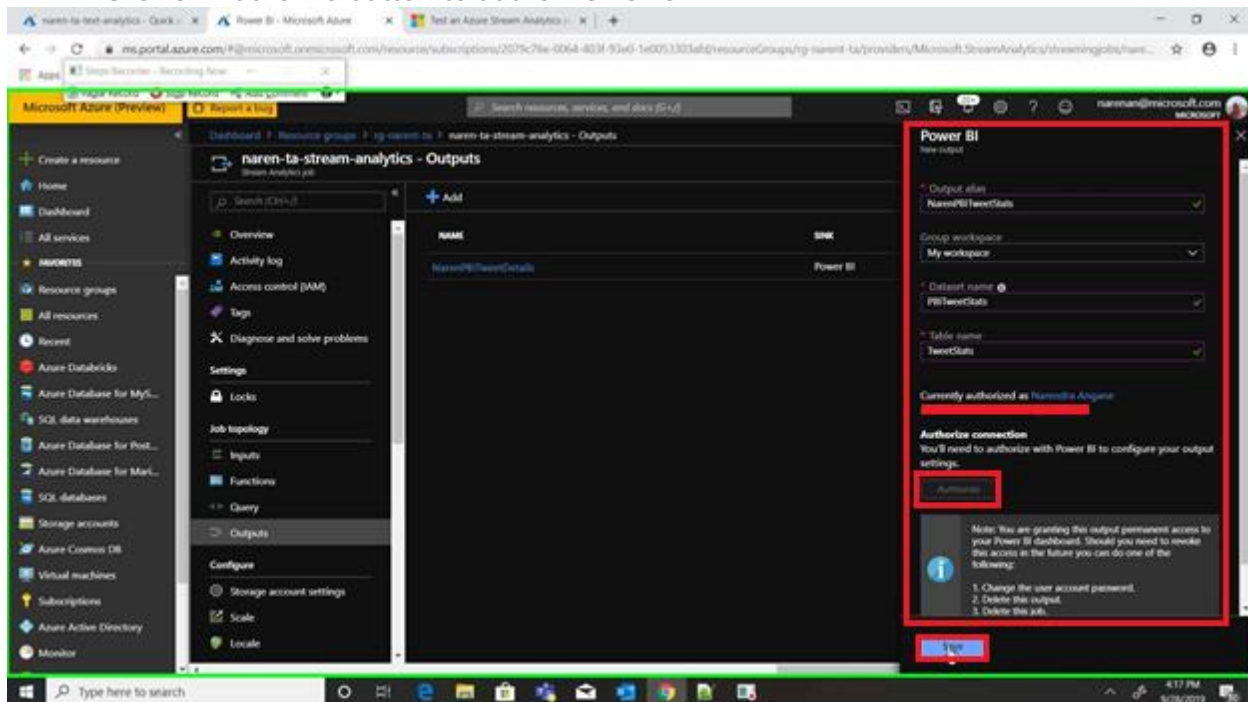


Step 8: Click on "+ Add" and select another Power BI as an output

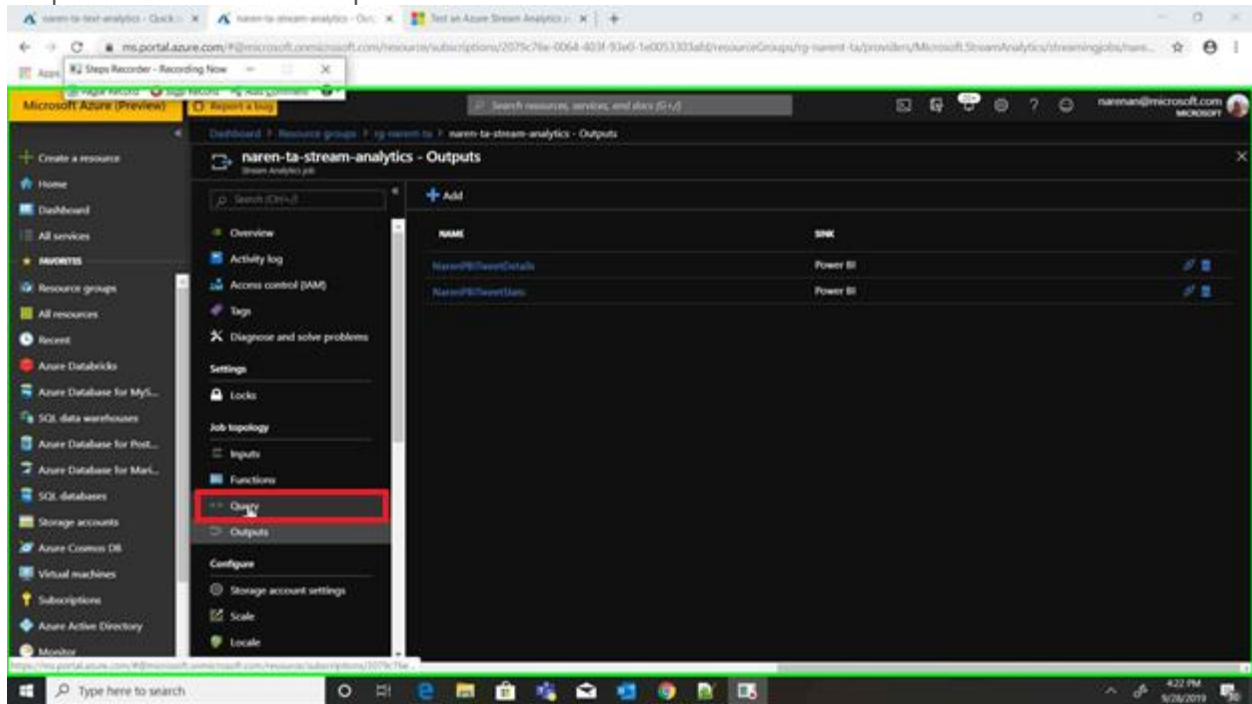


Step 9: In the Output details blade enter the following information and click Save button to save the Power BI Output. This output you will use to show the Tweet Stats in Power BI. You will also need to Authorize the Power BI Account.

- Output Alias: <Enter Output Alias for Power BI Output>
- Group Workspace: <Select the Group Workspace from the drop-down list>
- Dataset Name: <Enter Dataset Name>
- Table Name: <Enter Table Name>
- Click on Authorize button to authorize Power BI



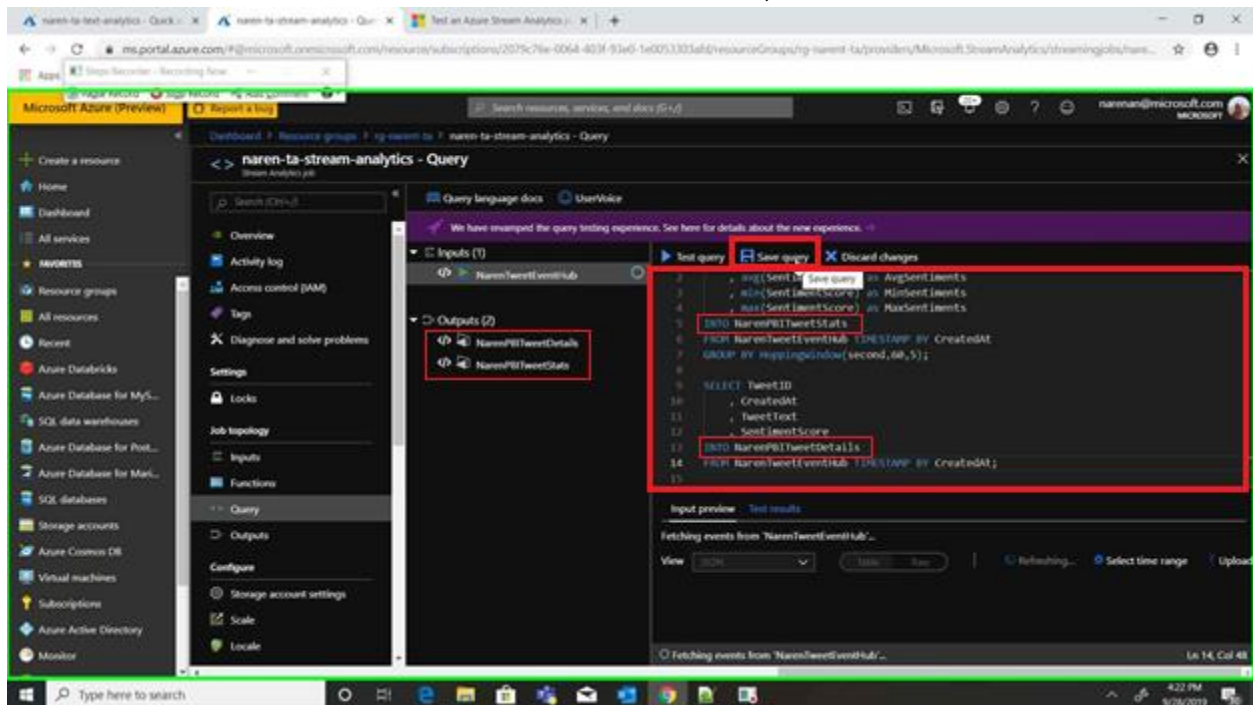
Step 10: Click on Query under "Job Topology" from the blade to write the query which send the output to the Power BI outputs



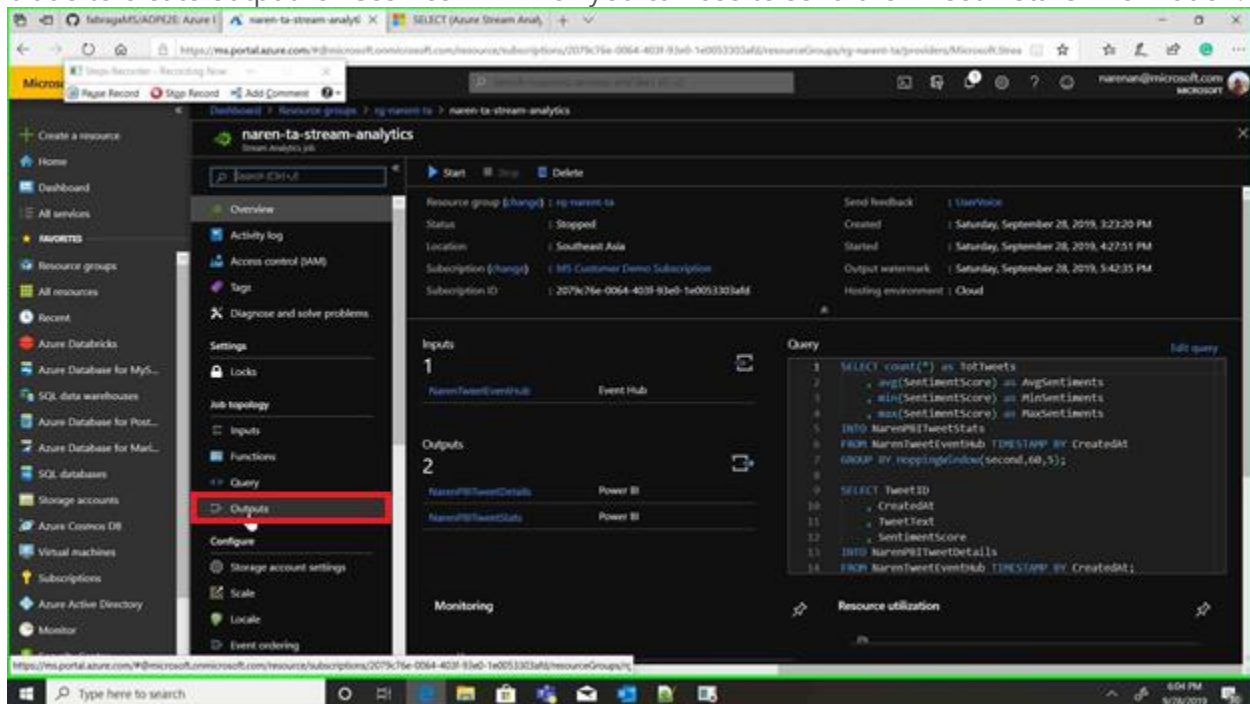
Step 11: Enter the following queries into the query window which send the output to the Power BI outputs which we have created for Tweet Details and Tweet Stats. Click Save Query button to Save the query.

```
SELECT count(*) as TotTweets
      , avg(SentimentScore) as AvgSentiments
      , min(SentimentScore) as MinSentiments
      , max(SentimentScore) as MaxSentiments
INTO NarenPBITweetStats
FROM NarenTweetEventHub TIMESTAMP BY CreatedAt
GROUP BY HoppingWindow(second,60,5);
```

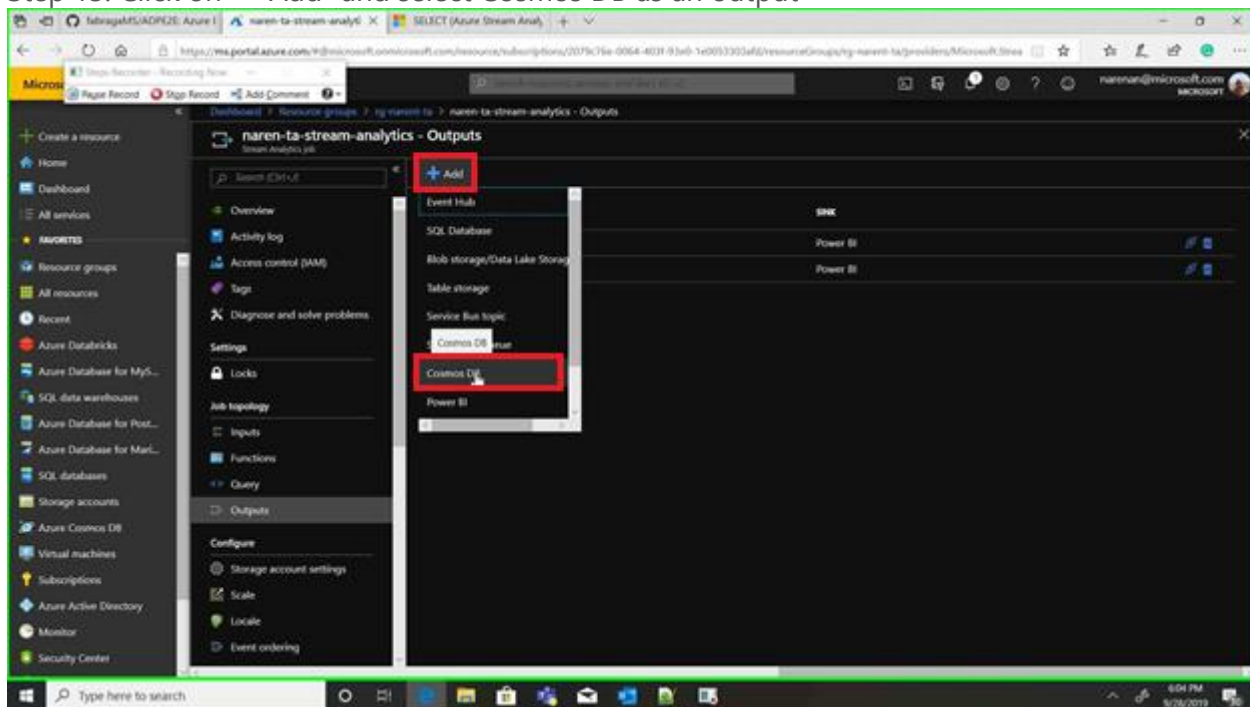
```
SELECT TweetID
      , CreatedAt
      , TweetText
      , SentimentScore
INTO NarenPBITweetDetails
FROM NarenTweetEventHub TIMESTAMP BY CreatedAt;
```



Step 12: After saving the queries successfully, click on the output under "Job Topology" from the blade to create output for Cosmos DB which you can use to send the Tweet Details information.

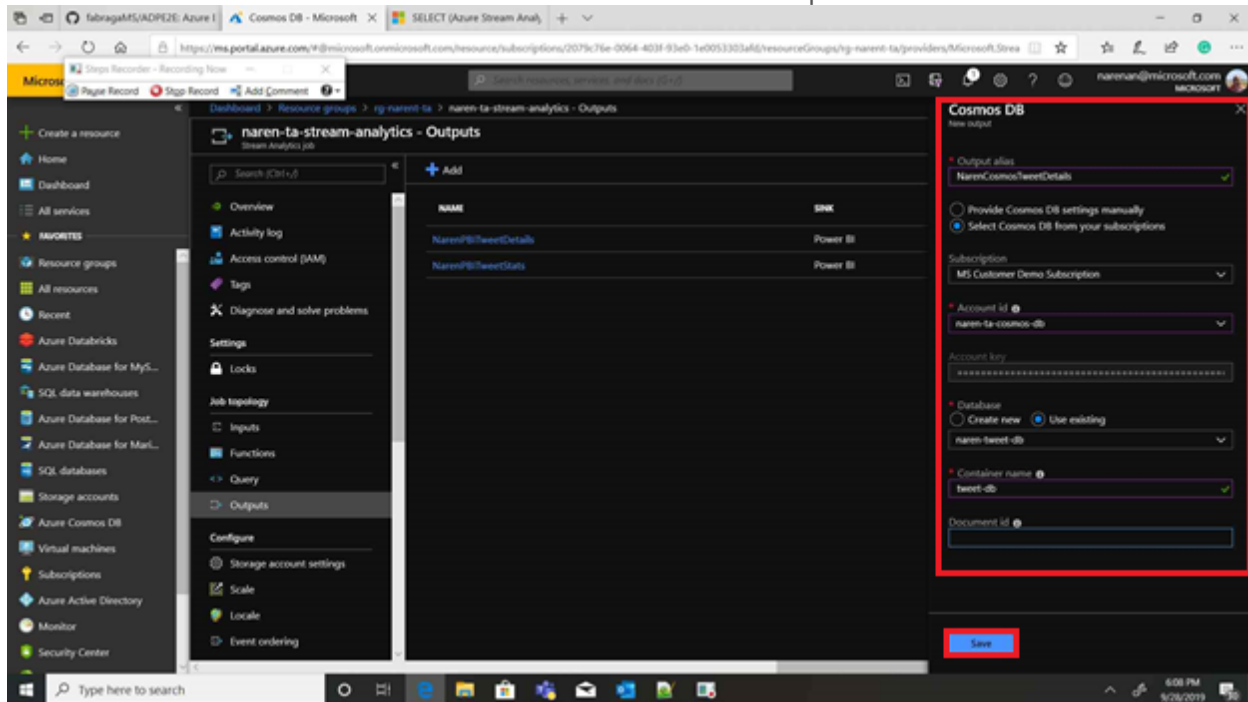


Step 13: Click on "+ Add" and select Cosmos DB as an output

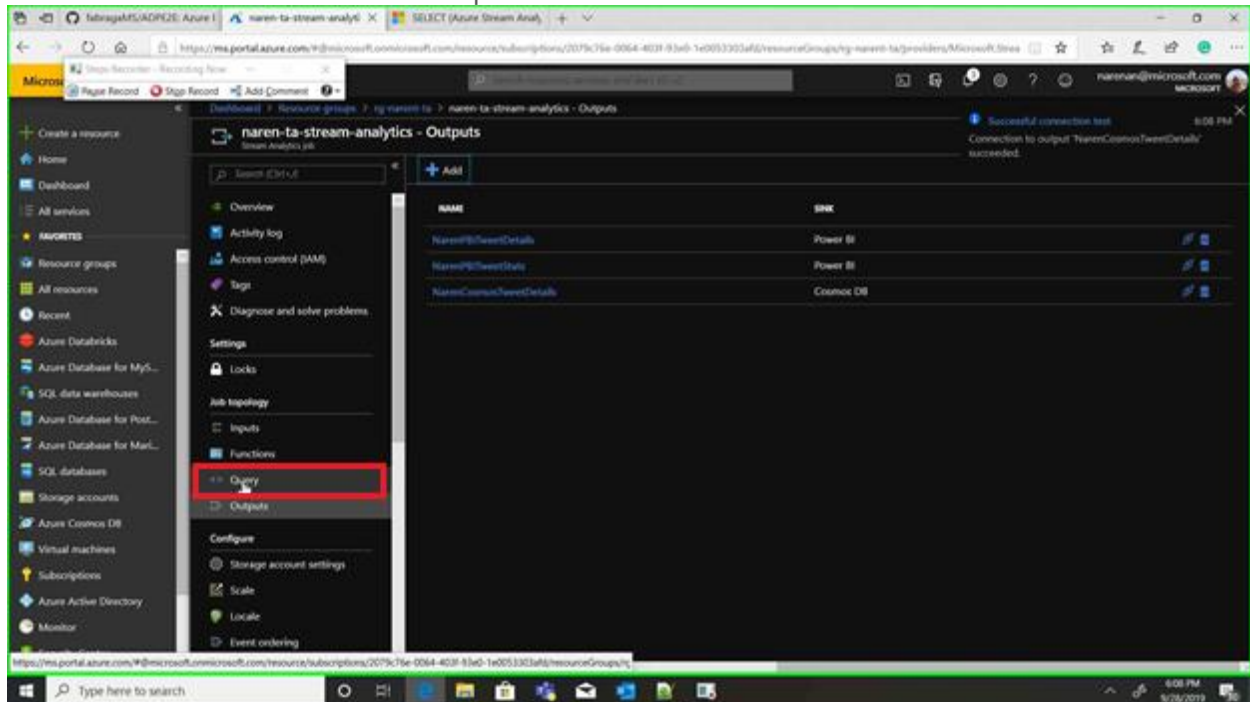


Step 14: In the Output details blade enter the following information and click Save button to save the Cosmos DB Output. This output you will use to send the Tweet Details to the Cosmos DB container.

- Output Alias: <Enter Output Alias for Cosmos DB Output>
- Enable "Select Cosmos DB from your subscription"
- Subscription: <Select Subscription from the drop-down list>
- Account id: <Select Account id from the drop-down list>
- Database: Select Use existing and <Select the database from the drop-down list>
- Container Name: <Select container name from the drop-down list>

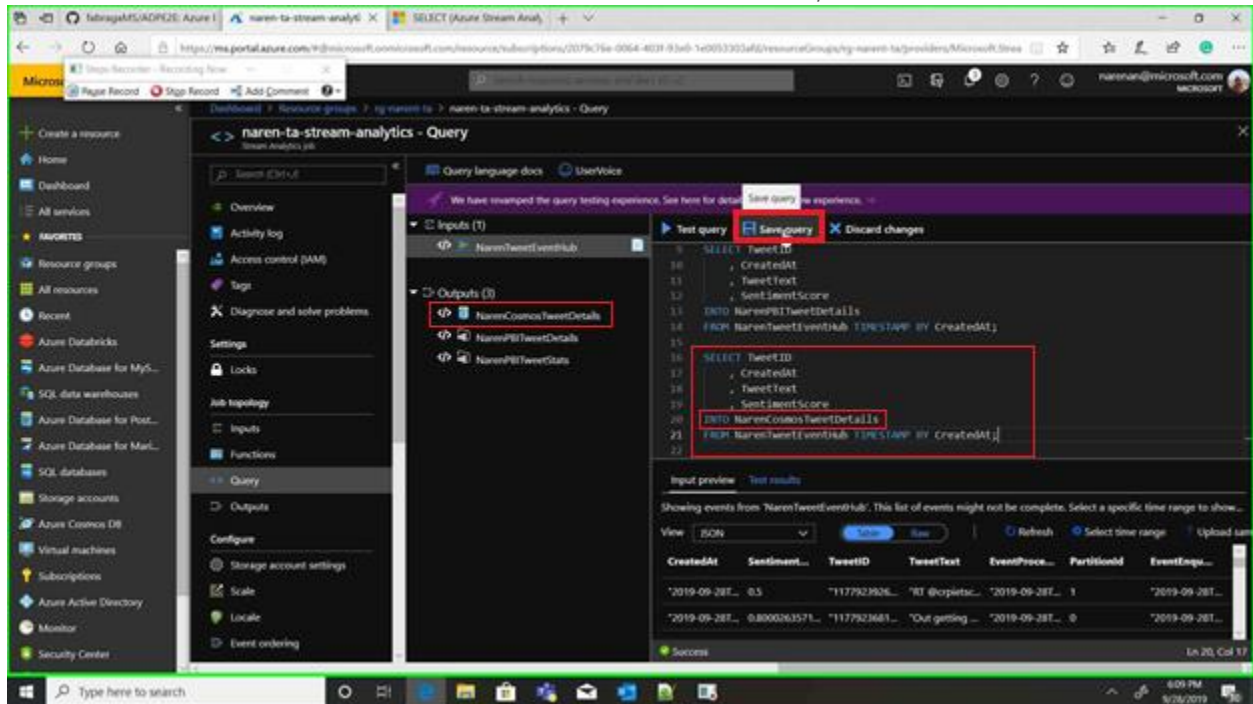


Step 15: Click on Query under "Job Topology" from the blade to write the query which send the Tweet Details to the Cosmos DB output

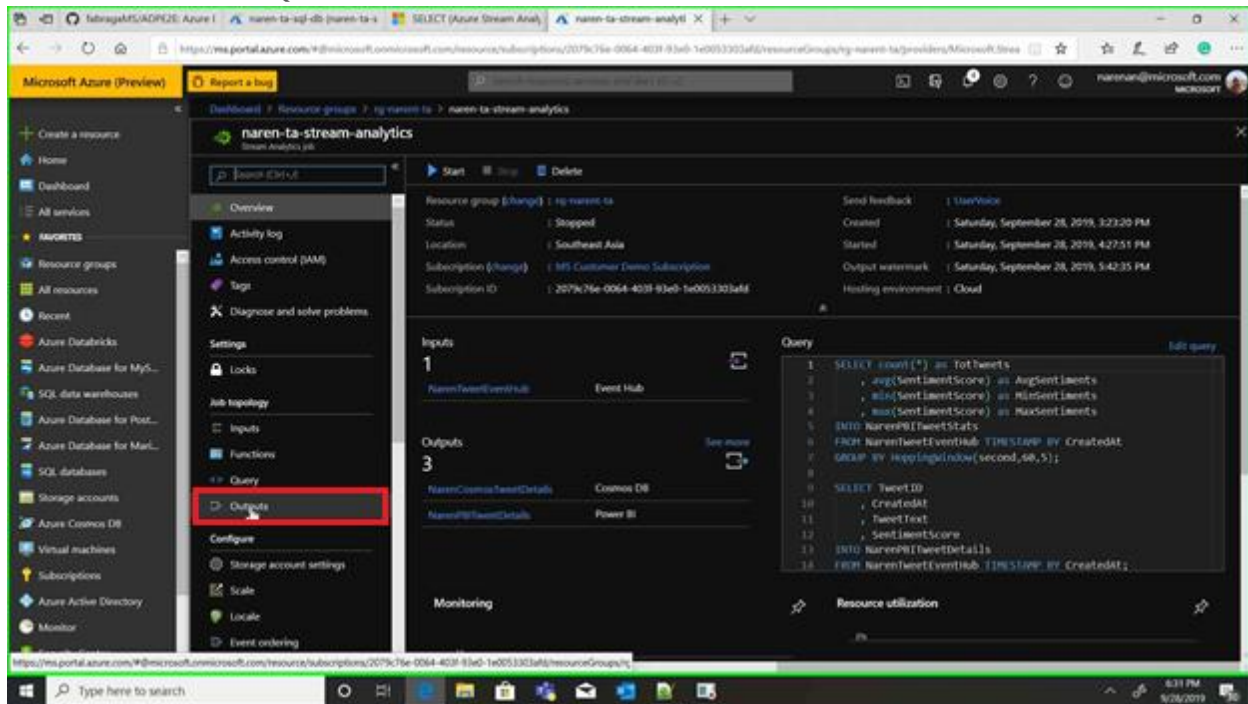


Step 16: In the query window go to the end of the query and enter the following query which send the Tweet Details output to the Cosmos DB Container. Click Save query button to save the query

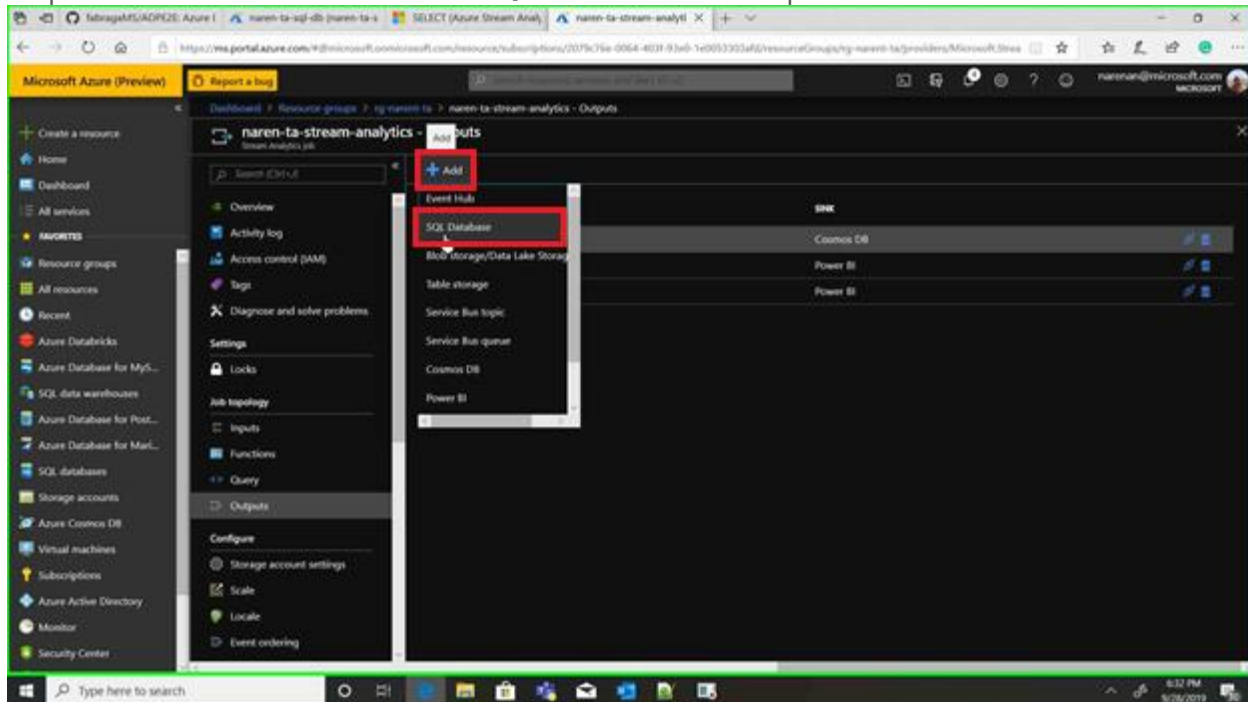
```
SELECT TweetID
      , CreatedAt
      , TweetText
      , SentimentScore
INTO NarenCosmosTweetDetails
FROM NarenTweetEventHub TIMESTAMP BY CreatedAt;
```



Step 17: After saving the queries successfully, click on the output under "Job Topology" from the blade to create output for SQL Database which you can use to send the Tweet Details information to the SQL Table.

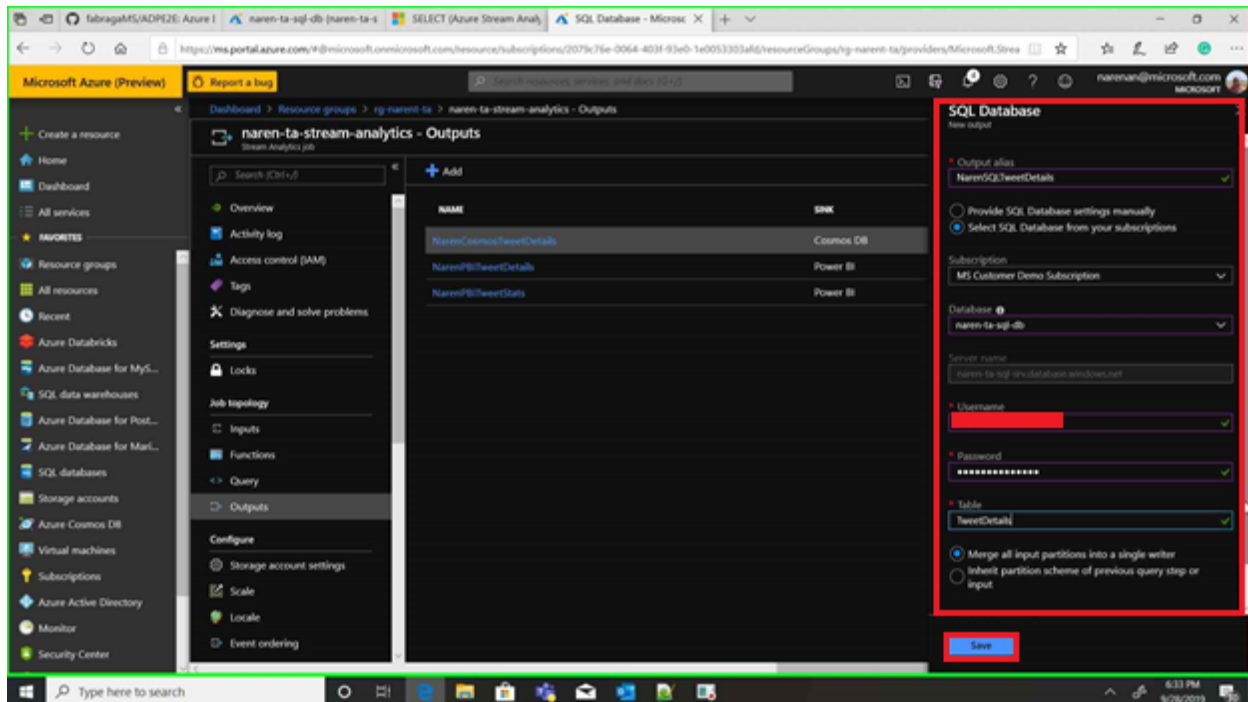


Step 18: Click on "+ Add" and select SQL Database as an output



Step 19: In the Output details blade enter the following information and click Save button to save the SQL Database Output. This output you will use to send the Tweet Details to the SQL Table.

- Output Alias: <Enter Output Alias for SQL Database Output>
- Enable "Select SQL Database from your subscription"
- Subscription: <Select Subscription from the drop-down list>
- Database: Select Use existing and <Select the database from the drop-down list>
- Username: <Enter Username>
- Password: <Enter Password>
- Table: <Enter Table name>



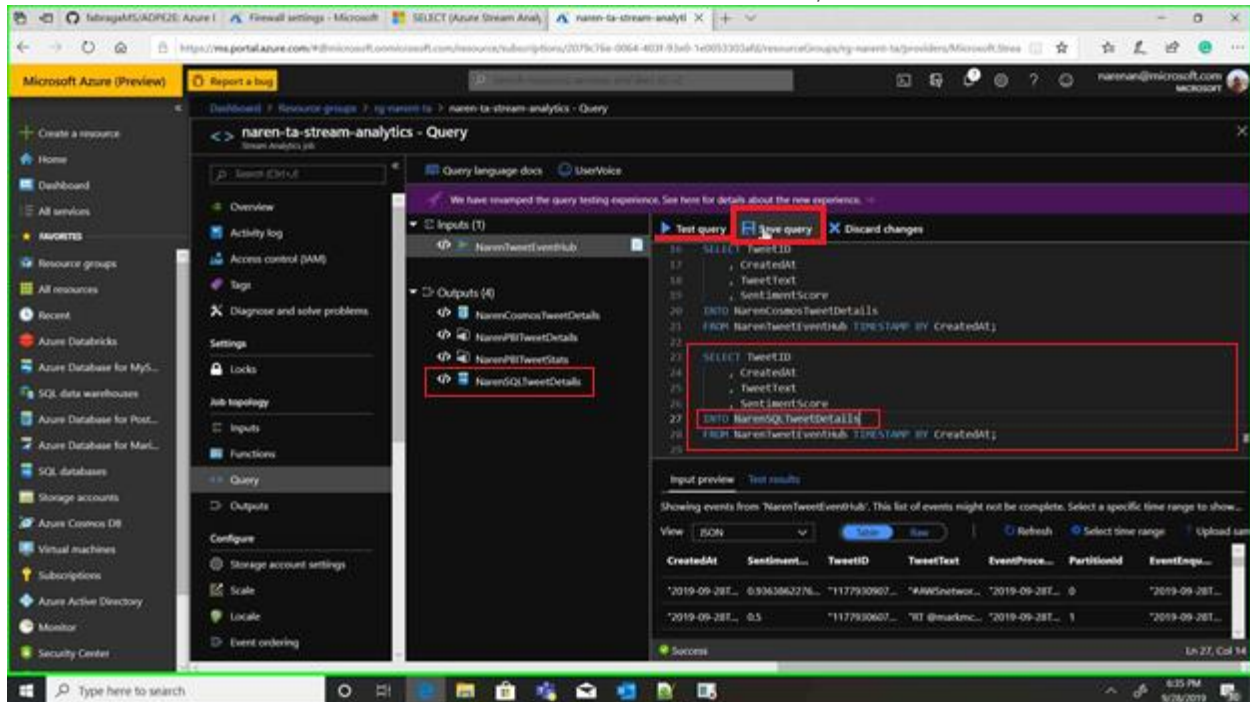
Step 20: Click on Query under "Job Topology" from the blade to write the query which send the Tweet Details to the SQL Database output

The screenshot shows the Microsoft Azure portal interface for a stream analytics job named 'naren-ta-stream-analytics'. The left sidebar contains navigation options like 'Home', 'Dashboard', 'All services', 'MAINTENANCE', 'Resource groups', 'All resources', 'Recent', 'Azure Databricks', 'Azure Database for MySQL', 'SQL data warehouses', 'Azure Database for PostgreSQL', 'Azure Database for MariaDB', 'SQL databases', 'Storage accounts', 'Azure Cosmos DB', 'Virtual machines', 'Subscriptions', 'Azure Active Directory', and 'Monitor'. The main pane displays the 'Job Topology' section, which includes 'Inputs', 'Functions', and 'Outputs'. The 'Query' step is highlighted with a red box. The 'Outputs' section shows a table with columns 'NAME' and 'SINK'. The table lists four outputs: 'NarenCosmosTweetDetails' (Cosmos DB), 'NarenPBITweetDetails' (Power BI), 'NarenPBITweetStats' (Power BI), and 'NarenSQLTweetDetails' (SQL Database). The 'Query' step is currently empty. The right pane shows the 'Output details' for the selected output, which includes fields for 'Database', 'Server name', 'Username', and 'Password', and a 'Table' dropdown set to 'TweetDetails'. A 'Max batch count' of 10000 is also visible. A warning message at the bottom right states: 'If the chosen resource and the stream analytics job are located in different regions, you will be billed to move data between regions.'

NAME	SINK
NarenCosmosTweetDetails	Cosmos DB
NarenPBITweetDetails	Power BI
NarenPBITweetStats	Power BI
NarenSQLTweetDetails	SQL Database

Step 21: In the query window go to the end of the query and enter the following query which send the Tweet Details output to the SQL Database table. Click Save query button to save the query. Also, you can click Test query button to test the query and validate the result set.

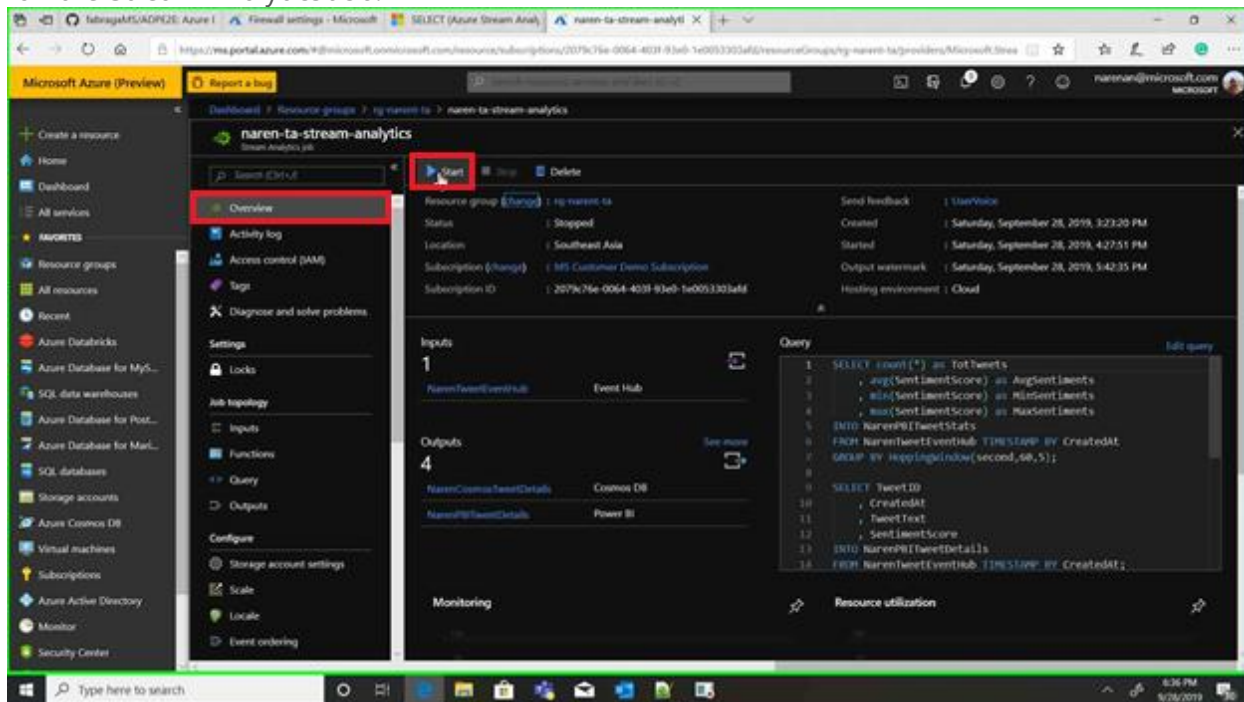
```
SELECT TweetID
      , CreatedAt
      , TweetText
      , SentimentScore
INTO NarenSQLTweetDetails
FROM NarenTweetEventHub TIMESTAMP BY CreatedAt;
```



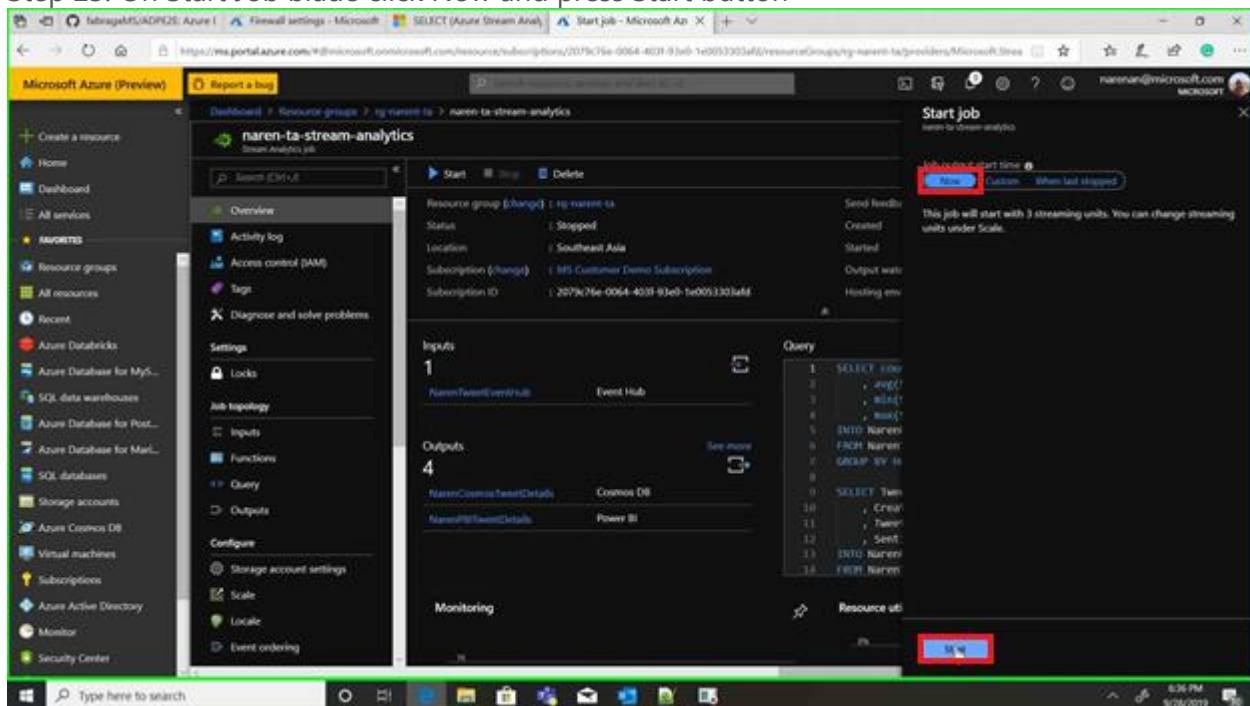
The screenshot shows the Microsoft Azure portal interface for a Stream Analytics job named 'naren-ta-stream-analytics'. The 'Query' tab is active, displaying a SQL query that selects tweet details from 'NarenTweetEventHub' and inserts them into 'NarenSQLTweetDetails'. The 'Test query' button is highlighted. Below the query editor, the 'Input preview' section shows a table of tweet data with columns: CreatedAt, SentimentScore, TweetID, TweetText, EventProcess, PartitionId, and EventEnque.

CreatedAt	SentimentScore	TweetID	TweetText	EventProcess	PartitionId	EventEnque
'2019-09-28T...	0.9361862276...	'1177930607...	'#AWSnetwor...	'2019-09-28T...	0	'2019-09-28T...
'2019-09-28T...	0.5	'1177930607...	'RT @madmc...	'2019-09-28T...	1	'2019-09-28T...

Step 22: After saving the queries successfully, go to the overview tab and click Start button to run the Stream Analytics Job.



Step 23: On Start Job blade click Now and press Start button



Step 24: Stream Analytics job is started now. This job will use tweets details for “#Azure” word as an input send by the event hub (thru logic apps) and forward it to the Power BI for real-time analytics. It also forwards this as a table to the SQL Database and as collection to the Cosmos DB.

The screenshot shows the Azure portal interface for a Stream Analytics job named 'naren-ta-stream-analytics'. The job is in a 'Running' state. The inputs are from 'NarenTweetEventHub' (Event Hub). The outputs are 'NarenCosmosTweetDetails' (Cosmos DB), 'NarenPBITweetDetails' (Power BI), and 'NarenSQLTweetDetails' (SQL Database). The query is as follows:

```

SELECT count(*) as TotTweets
, avg(SentimentScore) as AvgSentiments
, min(SentimentScore) as MinSentiments
, max(SentimentScore) as MaxSentiments
INTO NarenPBITweetStats
FROM NarenTweetEventHub T1
GROUP BY HoppingWindow(second,60,5)

SELECT TweetID
, CreatedAt
, TweetText
, SentimentScore
INTO NarenPBITweetDetails
FROM NarenTweetEventHub T1

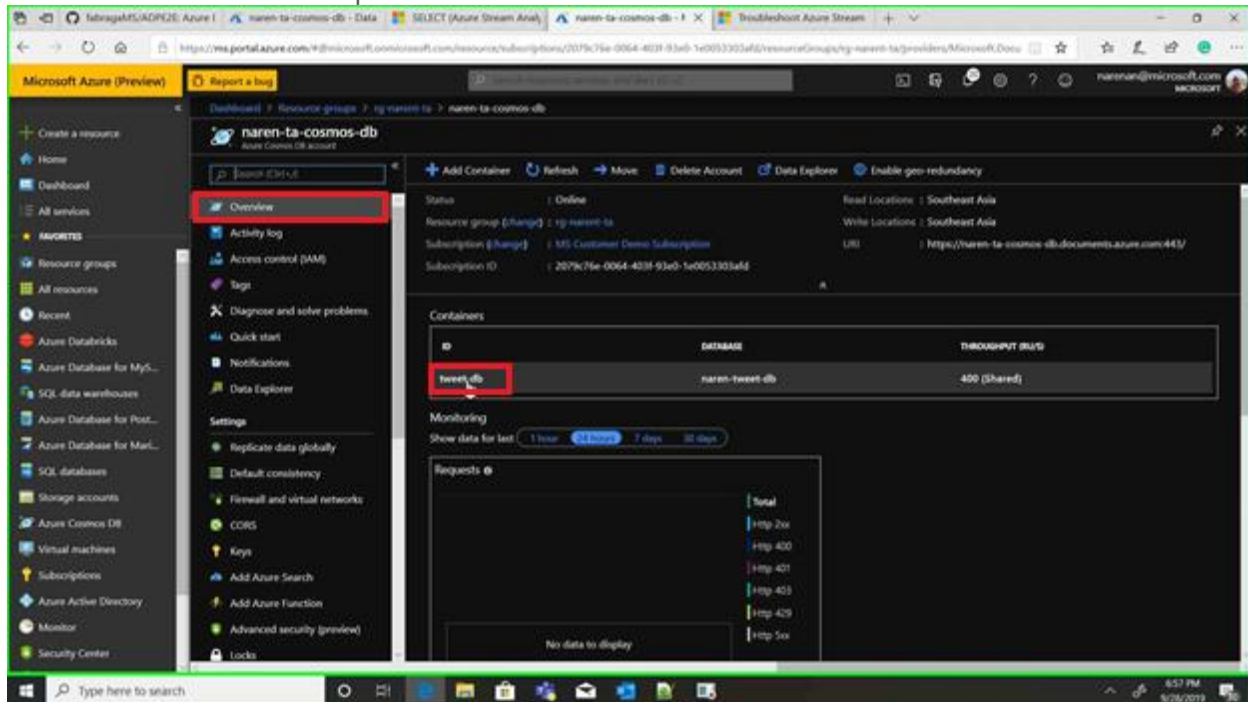
```

Step 25: Let's find out in Cosmos DB whether tweet details are storing it in collection or not. For this will go to the resource group where Cosmos DB is created and click on Cosmos DB name to open it.

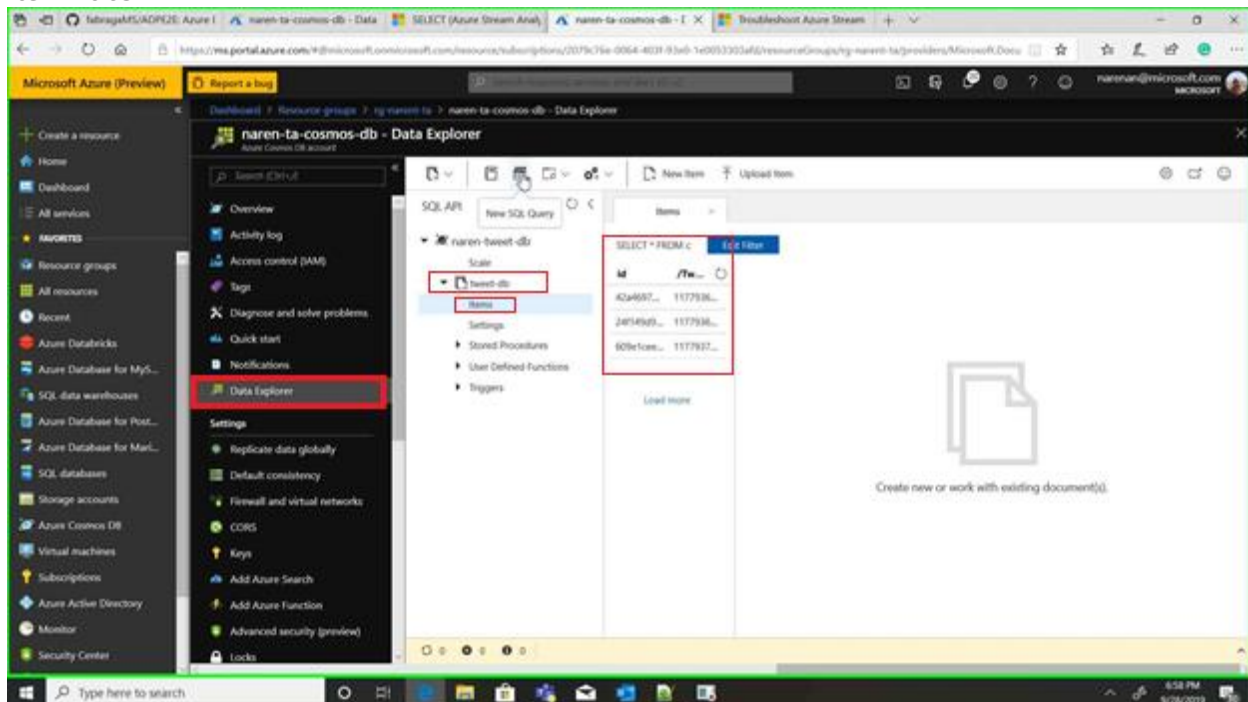
The screenshot shows the Azure portal interface for the 'rg-naren-ta' resource group. The 'naren-ta-cosmos-db' resource is highlighted, which is an Azure Cosmos DB account. The table below lists the resources in the resource group:

NAME	TYPE	LOCATION
cognitiveservicesstreamanalytics	API Connection	Southeast Asia
eventhubs	API Connection	Southeast Asia
naren-ta-cosmos-db	Azure Cosmos DB account	Southeast Asia
naren-ta-event-hub	Event Hubs Namespace	Southeast Asia
naren-ta-logic-app	Logic app	Southeast Asia
naren-ta-sql-srv	SQL server	Southeast Asia
naren-ta-sql-db (naren-ta-sql-srv/naren-ta-...)	SQL database	Southeast Asia
naren-ta-stream-analytics	Stream Analytics job	Southeast Asia
naren-ta-text-analytics	Cognitive Services	Southeast Asia
storage-naren-ta	Storage account	Southeast Asia

Step 26: Click Overview tab on Cosmos DB blade and select the container which we have used to store the Tweet Details output.

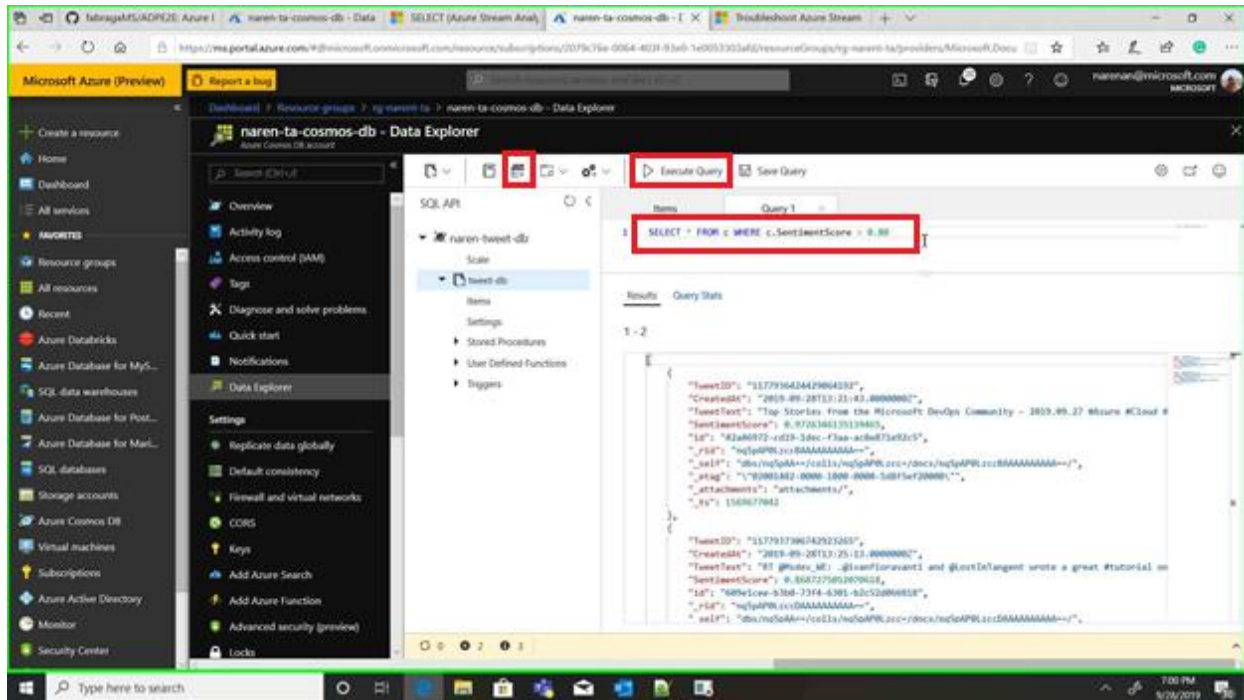


Step 27: Open the Data Explorer. Select appropriate containers. You will see that tweet details in Item Tabs

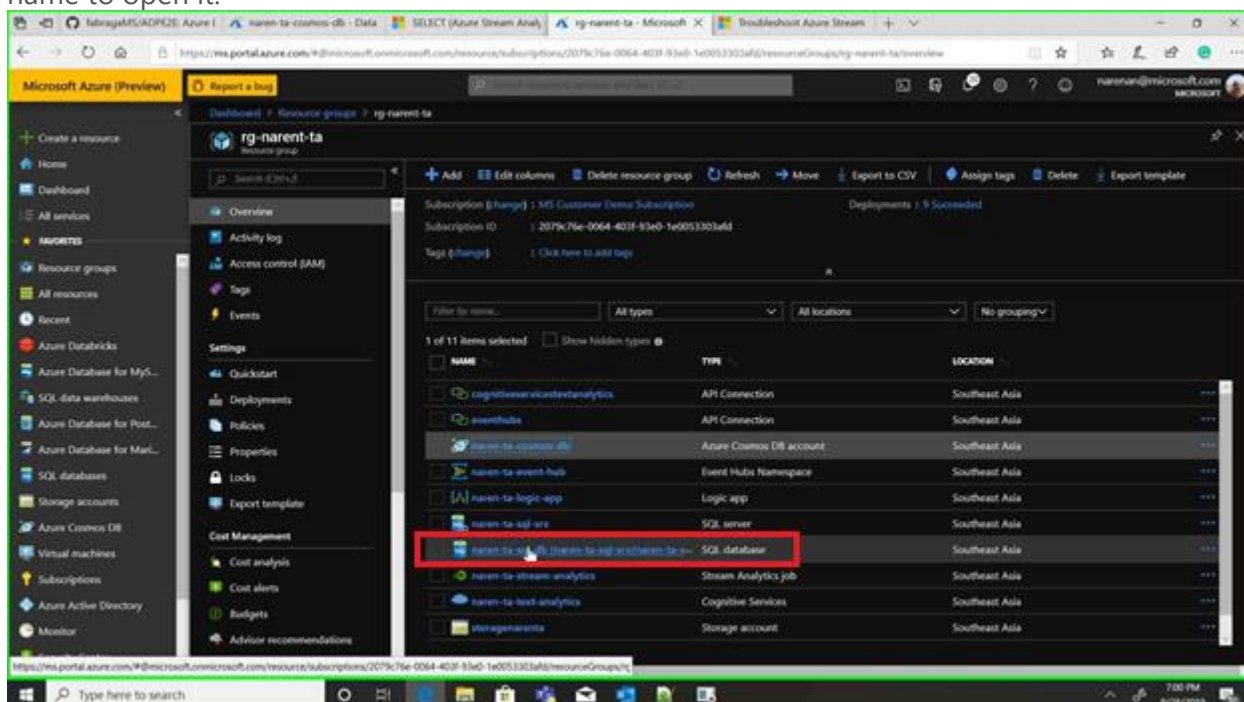


Step 28: Additionally, you can open the new query window and run the following query to view the tweet details where SentimentScore > 0.80. Now you can create application which use this container as a source, and you will enjoy the power of Cosmos DB.

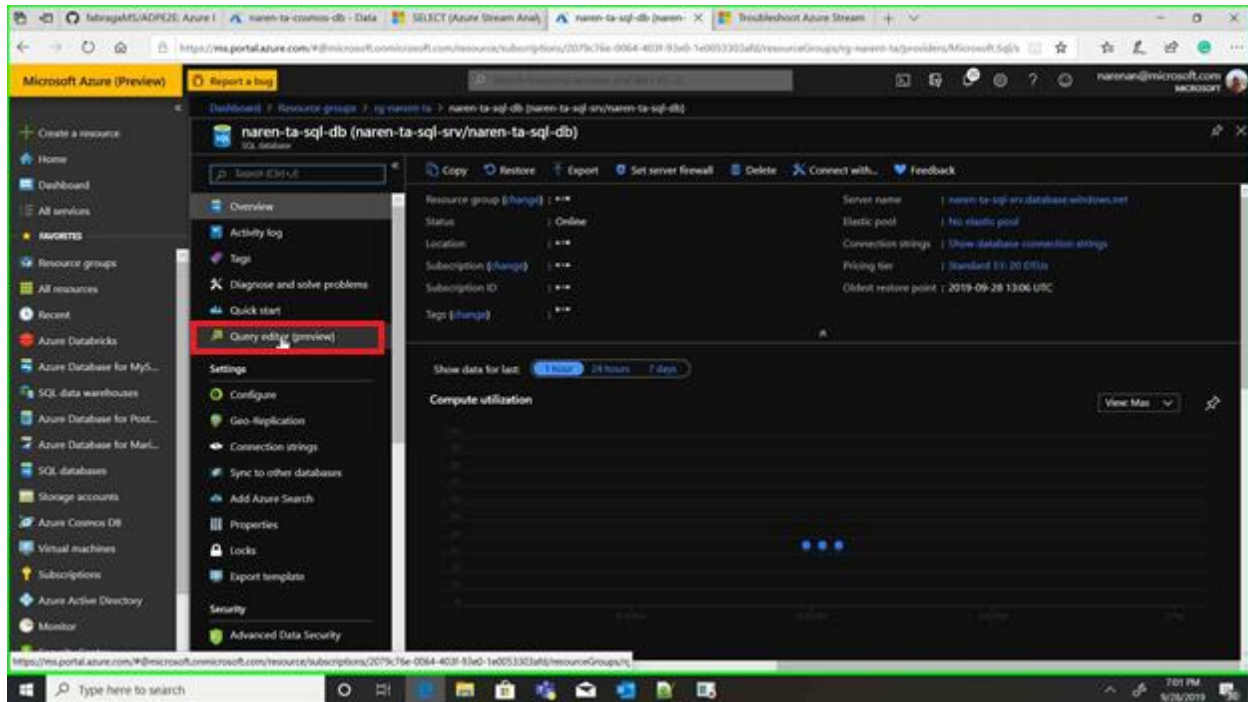
SELECT * FROM c WHERE c.SentimentScore > 0.80



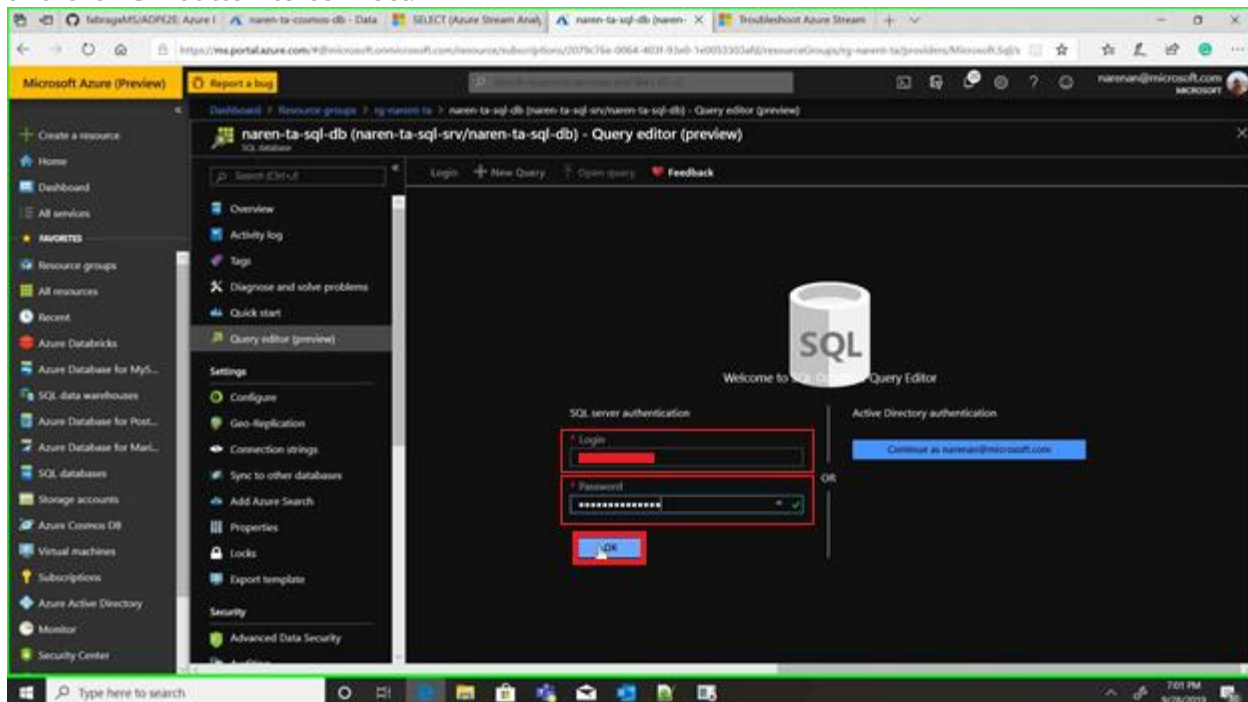
Step 29: Let's find out in SQL Database whether tweet details are storing it in the table or not. For this will go to the resource group where SQL Database is created and click on SQL Database name to open it.



Step 30: On SQL Database blade click on Query Edition to query the Table where we have stored tweet details.

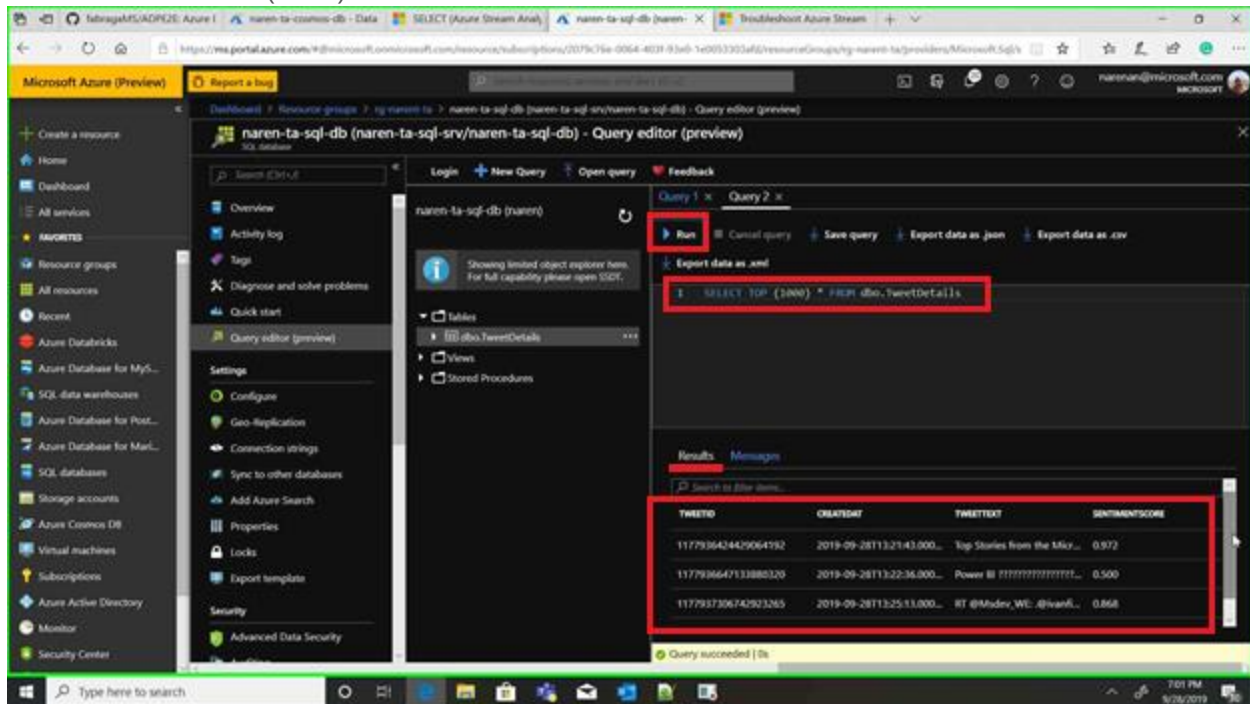


Step 31: Use SQL Authentication to connect to the SQL Database. Enter Username, Password and click OK button to connect.



Step 32: In query window type the following query and execute the Run button. You will see the query result in the result pane.

SELECT TOP (1000) FROM dbo.TweetDetails

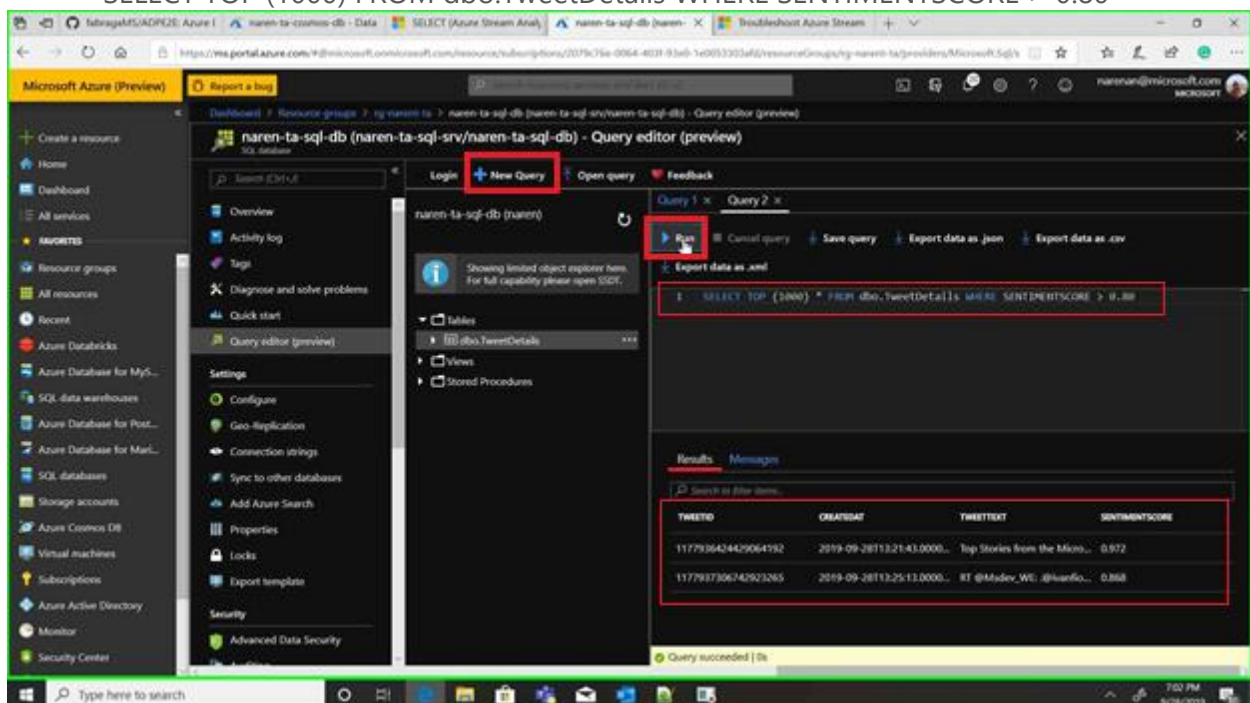


The screenshot shows the Microsoft Azure portal interface. In the center, the 'Query editor (preview)' window is open for a database named 'naren-ta-sql-db'. The query 'SELECT TOP (1000) * FROM dbo.TweetDetails' is entered in the query pane. The 'Run' button is highlighted with a red box. Below the query pane, the 'Results' pane displays a table with the following data:

TWEETID	CREATEDAT	TWEETTEXT	SENTIMENTSCORE
1177936424429064192	2019-09-28T13:27:43.000...	Top Stories from the Micro...	0.972
1177936647133880320	2019-09-28T13:22:36.000...	Power BI ???????????????...	0.500
1177937306742923265	2019-09-28T13:25:13.000...	RT @Mdev_WG: @hvanfo...	0.868

Step 33: Additionally, you can open the new query window and run the following query to view the tweet details where SentimentScore > 0.80. Now you can create application which use this container as a source, and you will enjoy the power of SQL Database.

SELECT TOP (1000) FROM dbo.TweetDetails WHERE SENTIMENTSCORE > 0.80



The screenshot shows the Microsoft Azure portal interface. In the center, the 'Query editor (preview)' window is open for a database named 'naren-ta-sql-db'. The query 'SELECT TOP (1000) * FROM dbo.TweetDetails WHERE SENTIMENTSCORE > 0.80' is entered in the query pane. The 'Run' button is highlighted with a red box. Below the query pane, the 'Results' pane displays a table with the following data:

TWEETID	CREATEDAT	TWEETTEXT	SENTIMENTSCORE
1177936424429064192	2019-09-28T13:27:43.000...	Top Stories from the Micro...	0.972
1177937306742923265	2019-09-28T13:25:13.000...	RT @Mdev_WG: @hvanfo...	0.868

Congratulations! Stream Analytics Job got executed successfully.