Course Name: Database Systems	Course Code: CS363L
Assignment Type: Lab	Dated: 17-01-2022
Semester: 6 <sup>th</sup>	Session: 2019
Lab/Project/Assignment #: Lab 1	CLOs to be covered: CLO3
Lab Title: Introduction to DBMS and databases	Teacher Name: Ms. Darakhshan

## **Lab Evaluation:**

CLO3	Derive physical model from conceptual design methods					
Levels (Marks)	Level1	Level2	Level3	Level4	Level5	Level6
Cognitive (5)						
Report Marks (5)						
					Total	/10

# **Rubrics for Current Lab:**

Scale	Marks	Level	Rubric
Excellent	5	L1	Created GCP account and have explored GitHub dataset. + Rubric IV
			requirements
Very Good	4	L2	Generated database's scripts. + Rubrics III requirements
Good	3	L3	Created a new database. + Rubrics II requirements
Basic	2	L4	Installed SQL server and Management Studio and restored Northwind
			schema.
Barely	1	L5	Only installed MS SQL server
Acceptable			
Not	0	L6	Did not attempt anything
Acceptable			

# **Rubrics for Homework**

Scale	Marks	Level	Rubric
Excellent	5	L1	Properly formatted, less than 5% plagiarism. More than 1000 words.
			Downloaded the tool and have used it. Created sample databases. Have added
			all the working in the lab report with the help of screenshots. Have explained
			how the tool works.
Good	3	L2	Properly formatted. Less than 5% plagiarism. More than 1000 words. Explored
			the tool and have understand it. Have explained the tool in the document with
			the help of screenshots and text.
Barely	1	L3	Poorly formatted. Less than 5% plagiarism. Less than 500 words. Less than 2-
Acceptable			page document.
Not	0	L6	Did not submit the report
Acceptable			

## **LAB DETAILS:**

## **Lab Goals/Objectives:**

- Installation of DBMS
- Registration on BigQuery
- Google Cloud Platform Creation and reloading of database tables on DBMS

## **Theory/Relevant Material:**

Chap 1, TSQL Fundamentals – Professional (latest Ed.) by Itzik Ben-Gan

## **Lab Tasks:**

#### Part 1

#### **Installation of SQL Server**

- Download and Install MS SQL Server 2019 Express edition from <a href="https://www.microsoft.com/en-us/sql-server-downloads">https://www.microsoft.com/en-us/sql-server-downloads</a>
- Install the latest version of SQL Server Management Studio from <u>Download SQL Server Management</u> Studio (SSMS) SQL Server Management Studio (SSMS) | Microsoft Docs
- Instance of SQL Server should support both Windows based authentication and SQL Server Authentication.

#### **Create a New Database**

- Create a new database named Northwind. The steps are as follows
  - Step 1
     Open Microsoft SQL server management studio and connect it with the SQL server using Window based authentication as shown below

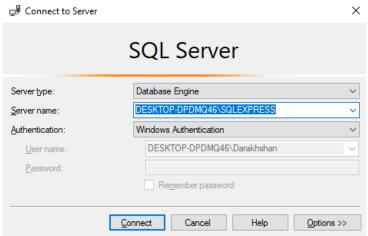


Figure 1

Step 2
 Right click on Databases and click on 'New Database'

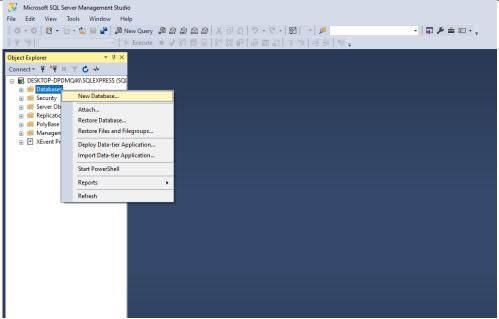
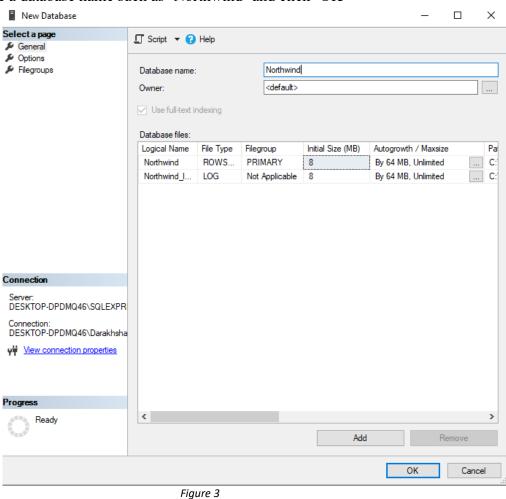


Figure 2

Step 3
Choose a database name such as 'Northwind' and click 'OK'



- Restore Schema using scripts northwind.sql available at <a href="https://drive.google.com/file/d/1V66pnAgWgJo6Y76XwkTTWrq0KdZGp-x9/view?usp=sharing">https://drive.google.com/file/d/1V66pnAgWgJo6Y76XwkTTWrq0KdZGp-x9/view?usp=sharing</a>.
   <a href="https://drive.google.com/file/d/1V66pnAgWgJo6Y76XwkTTWrq0KdZGp-x9/view?usp=sharing</a>.
   <a href="https://drive.google.com/file/d/1V66pnAgWgJo6Y76XwkTTWrq0KdZGp-x9/view?usp=sharing</a>.
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   <a href="https://drive.google.com/file/d/1V66pnAgWgJo6Y76XwkTTWrq0KdZGp-x9/view?usp=sharing</a>.
   <a href="https://drive.google.com/file/d/1V66pnAgWgJo6Y76XwkTTWrq0KdZGp
  - Step 1
     Download the script from the above mentioned link
  - Step 2
     Right click on the Northwind database and select New Query

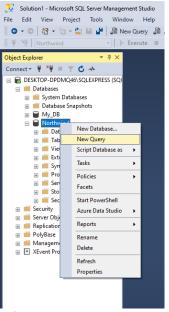


Figure 4

Step 3
Open the downloaded northwind.sql script in any editor (say Notepad) and copy the script in the newly created query window

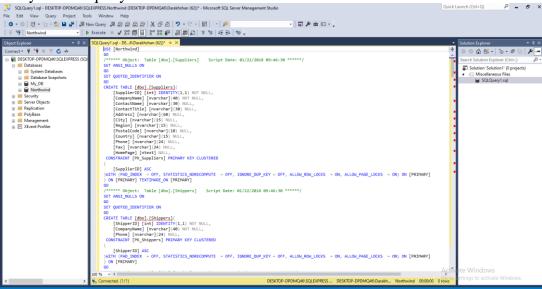


Figure 5

Step 4
 Execute the script by clicking on 'Execute' button

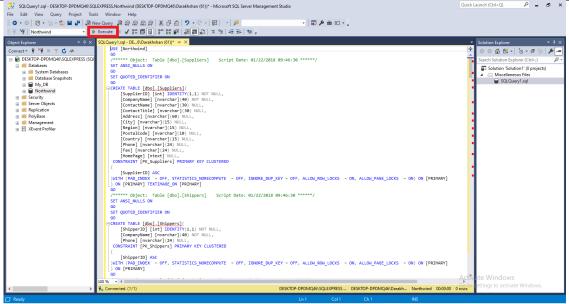


Figure 6

- Restore schema data using northwind\_data.sql available at <a href="https://drive.google.com/file/d/1wS9soGuKHe0LNrYZiiroXQHusJzGTCCf/view?usp=sharing">https://drive.google.com/file/d/1wS9soGuKHe0LNrYZiiroXQHusJzGTCCf/view?usp=sharing</a>. The steps are as follows
  - Step 1
     Download the script from the above mentioned link
  - Step 2
     Right click on the Northwind database and select New Query

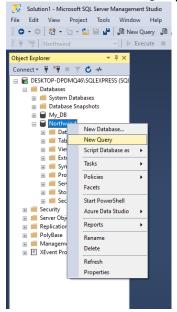


Figure 7

Step 3
 Open the downloaded northwind\_ data.sql script in any editor (say Notepad) and copy the script in the newly created query window

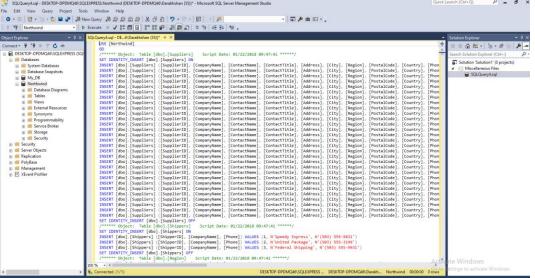


Figure 8

■ Step 4

Execute the script by clicking on 'Execute' button

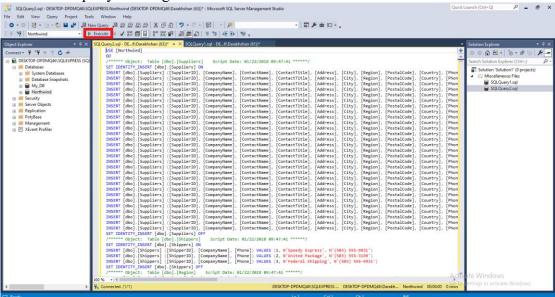


Figure 9

## Generate Scripts of a schema

• Step 1

Right click on your database and select Task -> generate script.

#### University Of Engineering and Technology, Lahore **Computer Engineering Department** 🗏 🛅 Databases 🛨 🚞 System Databases Database Snapshots New Database... Detach... New Query Script Database as Replication Take Offline AlwaysOr Bring Online Tasks Managen Shrink Policies Facets Back Up... Restore Start PowerShell Mirror... Reports Launch Database Mirroring Monitor... Rename Ship Transaction Logs... Delete Generate Scripts... Extract Data-tier Application... Properties Deploy Database to SQL Azure... Export Data-tier Application... Register as Data-tier Application... Upgrade Data-tier Application... Delete Data-tier Application.. Import Data... Export Data... Copy Database... Manage Database Encryption... Figure 10

Figure 1 Database\_Scripts\_With\_Data\_Select\_Option

Step 2 Click next in the introduction screen

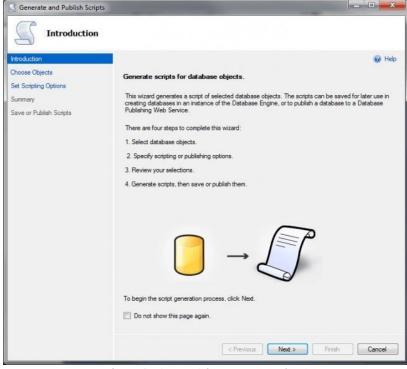


Figure 11 Database\_Scripts\_With\_Data\_Introduction

• Step 3
Select the database object which you are all you need and then click next.

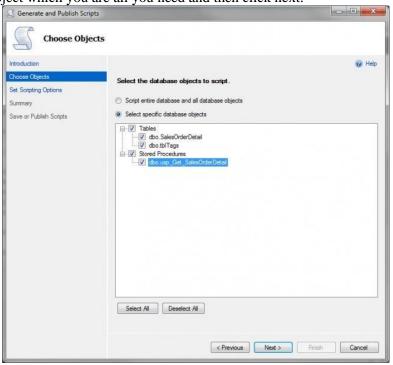


Figure 12

Step 4
 Now you will be shown a window which asks you about how your script should be published.

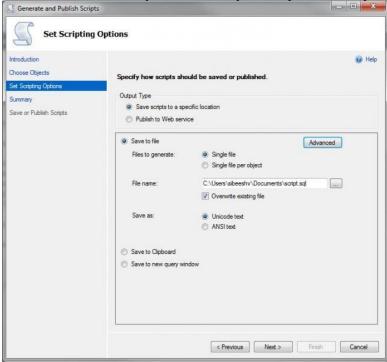


Figure 13 Database\_Scripts\_With\_Data\_Publish\_Options

Click advanced in that window.

• Step 5

Select 'Schema and data' from type of data to script option and then click OK.

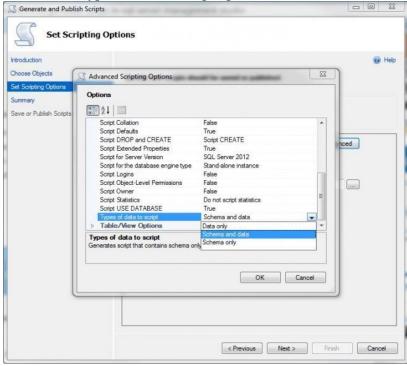


Figure 14 Database\_Scripts\_With\_Data\_Advanced

Click next.

• Step 6 Click finish, now check the script file, it must be having the insert queries too.

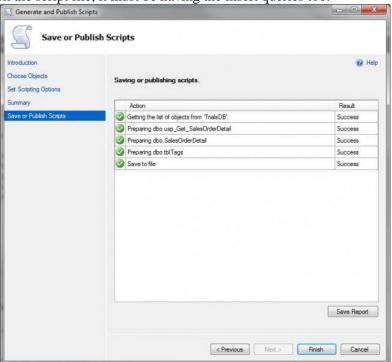


Figure 15 Database\_Scripts\_With\_Data\_Finish

Now what else is pending, go ahead and run your script.

#### Task 1

- 1. Create a new database named TestDB\_2019\_CE\_X
- 2. Create a new table named student using some attributes
- 3. Generate Scripts of your database
- 4. Restore your schema to another machine
- 5. Generate scripts of data
- 6. Restore data to other system as well

#### Task 2

- Google Cloud Platform (GCP) provides the cloud services for writing queries. Create an account on GCP big query. The steps are as follows
  - Step 1
     Go to the link <u>Google Cloud Platform</u> to create an account on GCP bigquery
  - Step 2 Click on 'Select a project' button

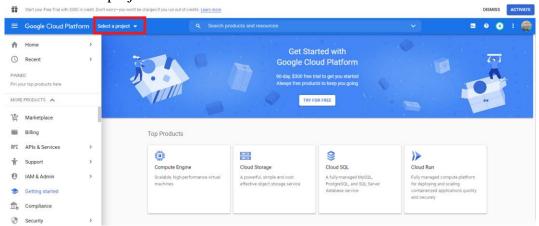


Figure 16

• Step 3

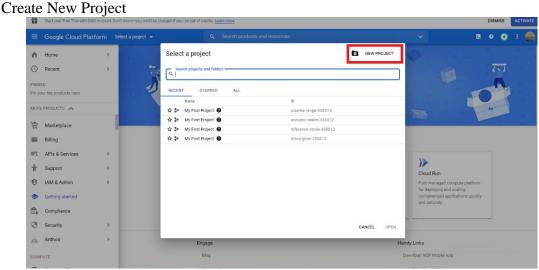


Figure 17

Step 4
 Now again click on "Select a project" to choose the created project to work with

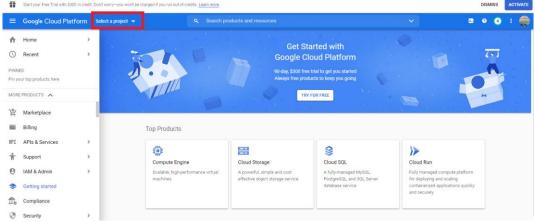


Figure 18

■ Step 5

Select the created project from the project's list

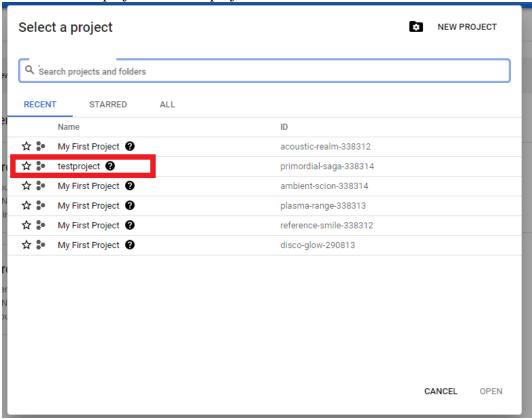


Figure 19

Step 6 Click on BigQuery resource

#### University Of Engineering and Technology, Lahore **Computer Engineering Department** DASHBOARD ACTIVITY RECOMMENDATIONS CUSTOMIZE Project info RPI APIs Google Cloud Platform status Requests (requests/sec) All services normal testproject Project number → Go to Cloud status dashboard Project ID primordial-saga-338314 Monitoring ADD PEOPLE TO THIS PROJECT Create my dashboard Set up alerting policies → Go to project settings Resources → Go to APIs overview View all dashboards BigQuery Data warehouse/analytics SQL Managed MySQL, PostgreSQL, SQL Server → Go to Monitoring Compute Engine VMs, GPUs, TPUs, Disks **RPI** Error Reporting Storage No sign of any errors, Have you set up Error Reporting? Multi-class multi-region object storage Figure 20 Step 7 You may read the available BigQuery guide or click on Done SANDBOX Set up billing to upgrade to the full BigQuery experience. Learn more ⑤ FEATURES & INFO ☑ SHORTCUT ※ DISABLE EDITOR TABS ⊕ EDITOR - × Q Welcome to BigQuery in the Cloud Console ⇌ Press Alt+F1 for Access (1) New to the BigQuery UI? The BigQuery UI helps you complete tasks like running queries, loading data, and even creating and training ML models. Check out the BigQuery <u>quickstart guide</u> to learn how to start performing data analysis on Google Cloud. primordial-saga-338314 Learn about new features íáí New improvements and updates are constantly on the way. We recommend periodically checking our <u>release notes</u> to stay up to date on what's new. 53 Figure 21

Here is the workspace overview where you will explore about BigQuery

Step 8

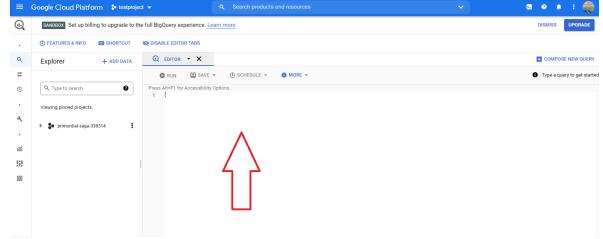


Figure 22

- Explore Bigquery sandbox.
- Explore public datasets
- Explore Github dataset

## **Homework Questions:**

- Write your understanding related to Bigquery and Github dataset in the file GCP\_2019\_CE\_X.docx and submit on google classroom.
- Explore one additional tool for database models, run it on your machine and write your learning experience in a document named as DBtool\_2019\_CE\_X.docx format.

## **Submission Instructions:**

• Submit your homework in .docx files format by Sunday, 23<sup>rd</sup> January, 2022 9 P.M