

Sr.no	Date	Topic	Sign
01		Import the legacy data from different Sources (Excel, Sqlserver, Oracle etc) and load in target system	

A) Data Extraction from MSSQL and MSQEL

Step 1 :- Create two database in SQL Server

- a) Database EMPI-229738
- b) Database EMP2-229738

Step 2 :- Create a table in EMPI-229738 . name as employee-229738 and insert data into it.

EMPI-229738 → Tables → Right Click → New Table → (Insert Data) ID, Name → (Set ID as a primary key) Right Click on ID → Save the Table → Right click on the tables and refresh it → Right click on tables → Edit Top 200 Rows.

Step 3 :- open SQL data tools applications and create a new project

Start Menu → SQL Server Data Tools → New Project → Select 'Integration Services' and Integration Services Project, Project name will be 229738-pract1a.

Step 4 :- Drag one dataflow in the control : flow task and Double click on the data flow task.

Drag Data Flow Task → Double click on it → Drag OLE DB (source and destination)

We need to connect OLE DB source to OLE DB destination.

Step 5 :- In a data flow task , go to SSIS tool base and go to the other sources and drag one OLEDB Source and one OLE DB Destination and make the connection.

(Double click on OLE DB Source) New → delete → NEW → (Servername : -) → (Select DB) EMPI-229738 → Text connection → OK → OK → OK → (Name of the table)

Select the table.

Step 6:- New configuration one source (from where to copy your table) · Double click on OLE DB Sources and click New and create a Database connection then click OK, similarly in OLE DB destination also.

(Double click on OLE DB Destination) New → Delete → (Server Name : .) → Select DB EMP2-229738 → Text connection → OK → OK → OK → Change the table name click on OK → Mapping → Click on OK.

Step 7:- Run the project and go the SQL Server and check EMP2-229738 the table Employee-229738 has successfully inserted. Select the Employee-229738 table → Right click on it and Select top 1000 rows.

1a)

1a

Object Explorer

Connect ▾ . (SQL Server 11.0.3128 - DESKTOP-D9DQURU\Admin)

Databases

- System Databases
- Database Snapshots
- AdventureWorks2012
- MYDB1
- MYDB2
- ReportServer
- ReportServerTempDB
- SalesDW
- EMP1_229738
- EMP2_229738

EMP1_229738

Database Diagrams

Table

- New Table...
- New FileTable...
- Filter
- Start PowerShell
- Reports
- Refresh

DESKTOP-D9DQURU...738 - dbo.Table_1

Column Name	Data Type	Allow Nulls
ID	nchar(10)	<input type="checkbox"/>
Name	varchar(50)	<input type="checkbox"/>

ReportServer

ReportServerTempDB

SalesDW

EMP1_229738

Tables

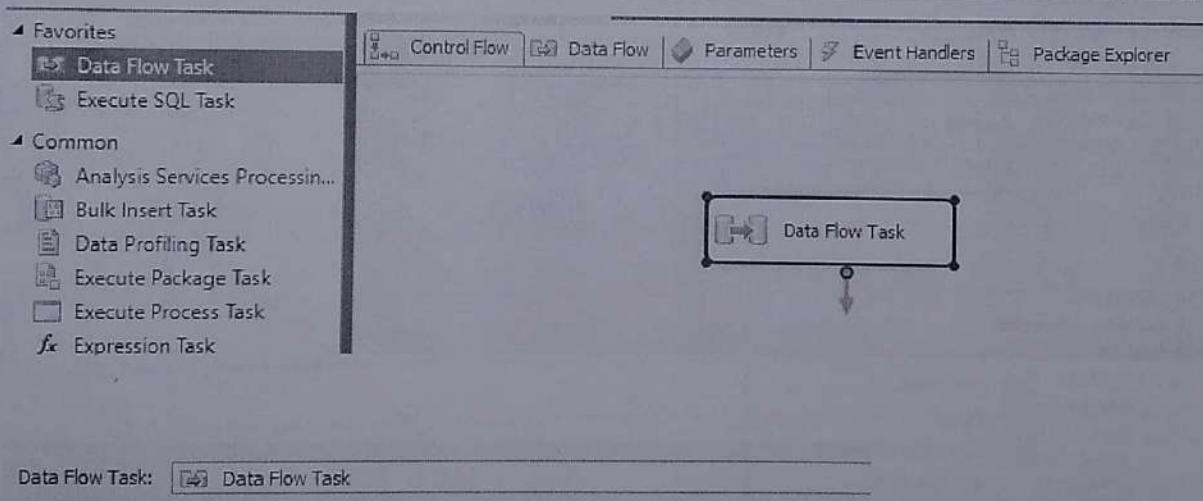
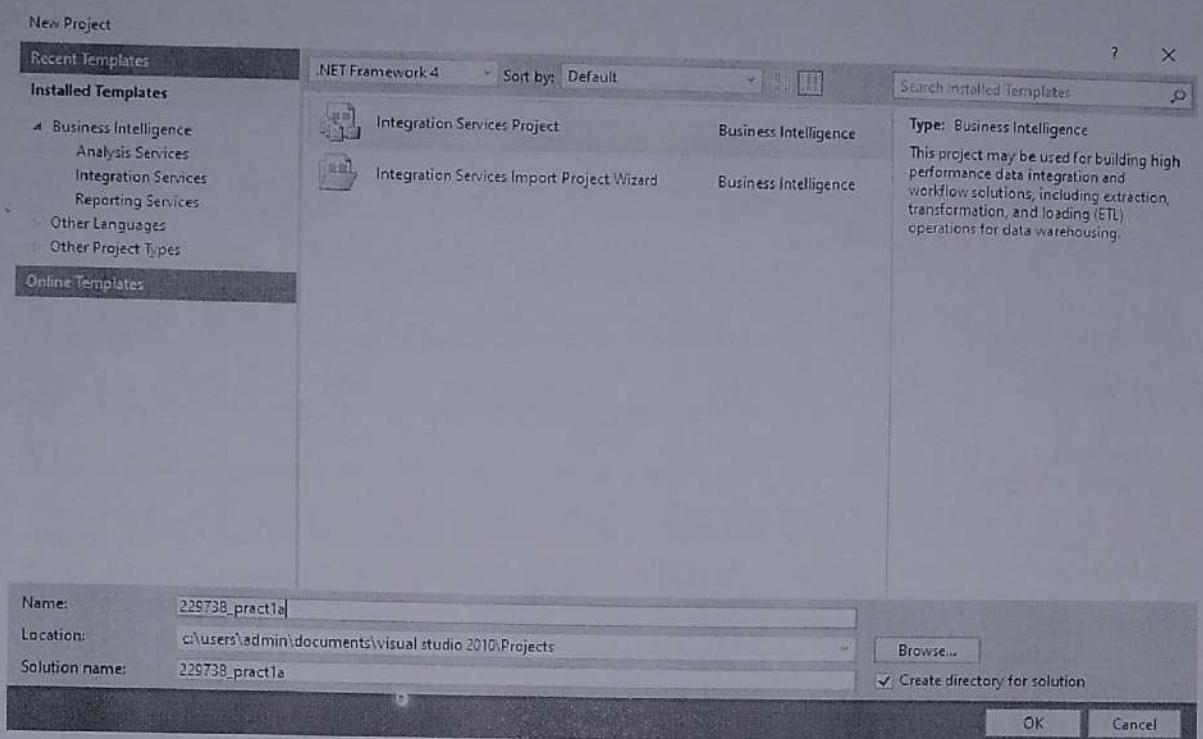
- System Tables
- FileTable
- dbo.emp

Views

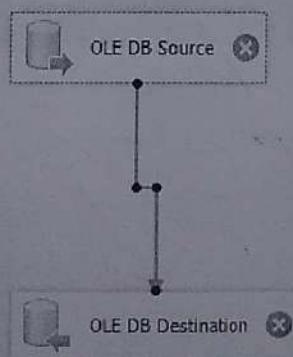
Synonyms

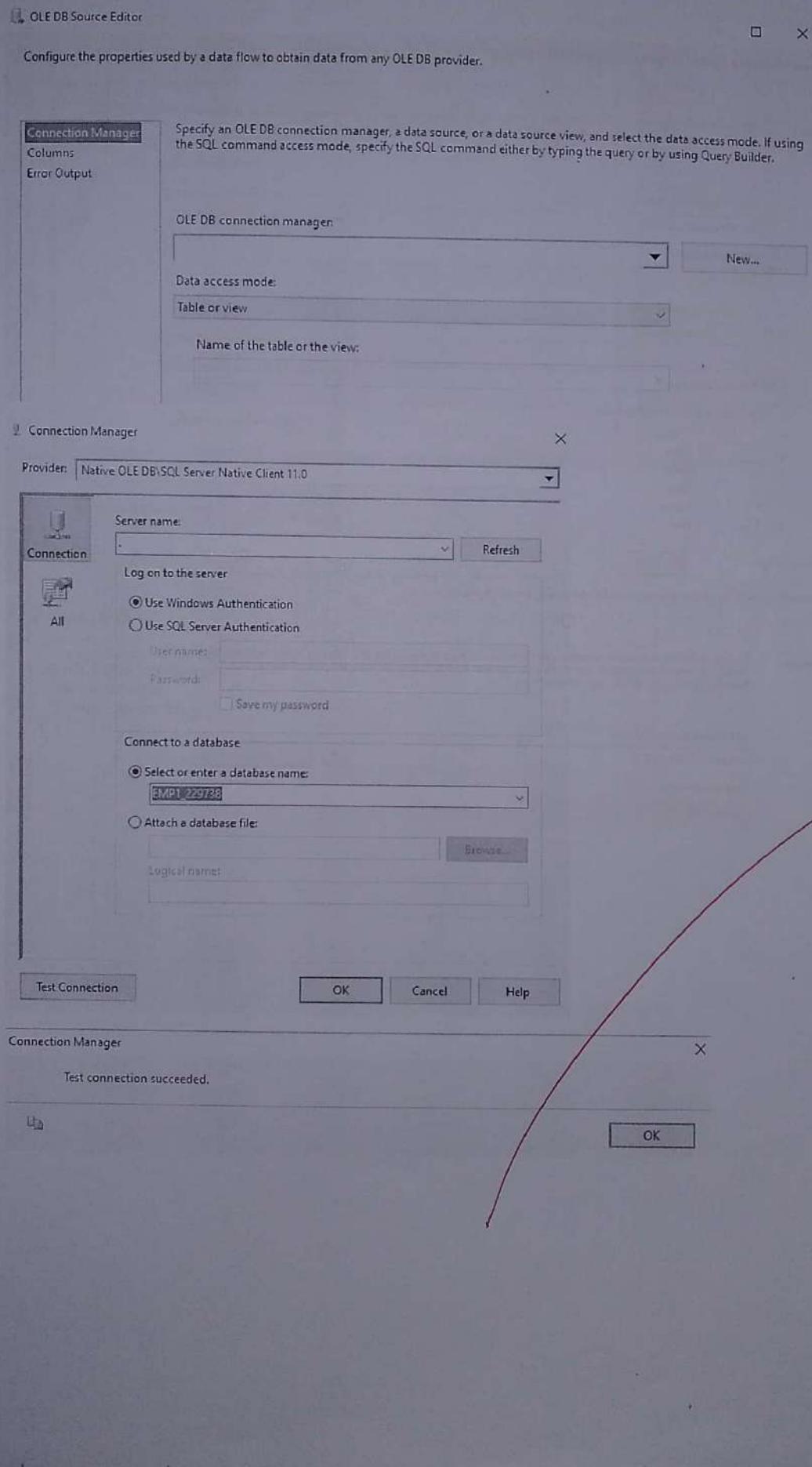
DESKTOP-D9DQURU...8 - dbo.employee

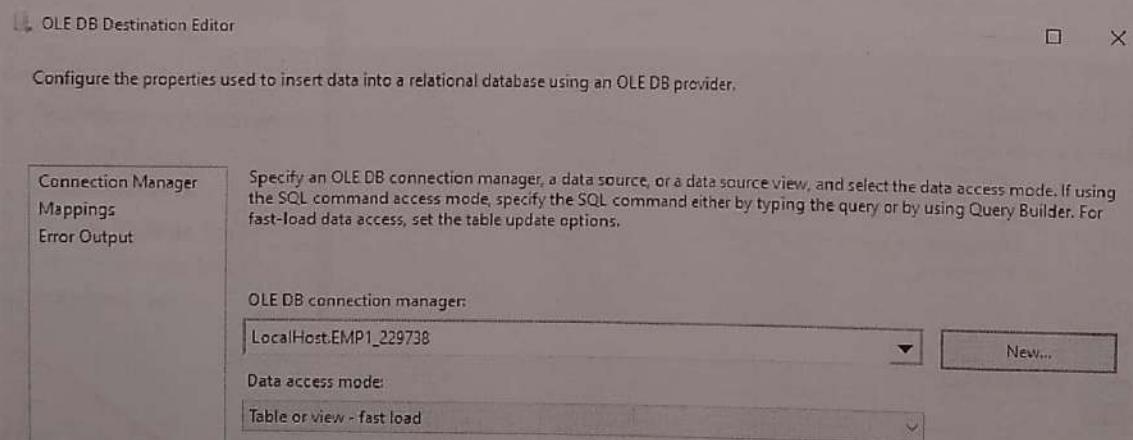
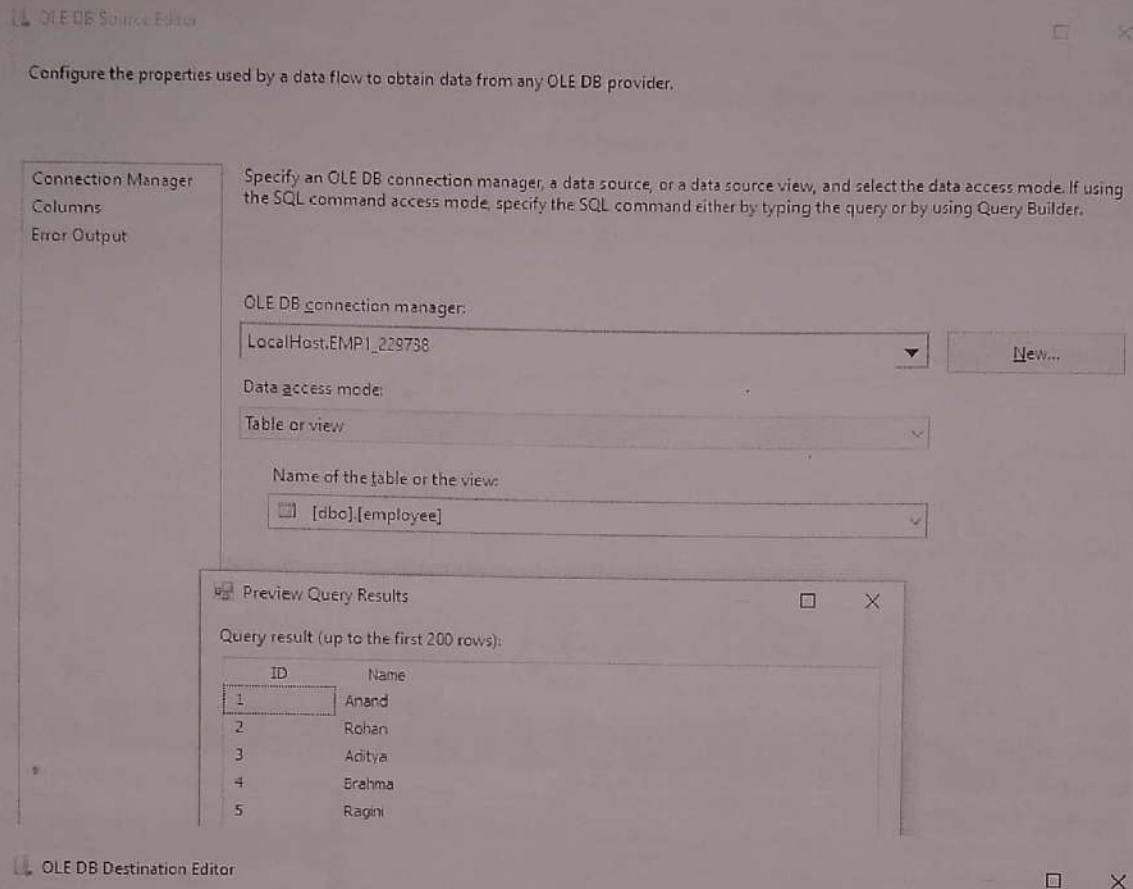
ID	Name
1	Anand
2	Rohan
3	Aditya
4	Brahma
5	Ragini
NULL	NULL

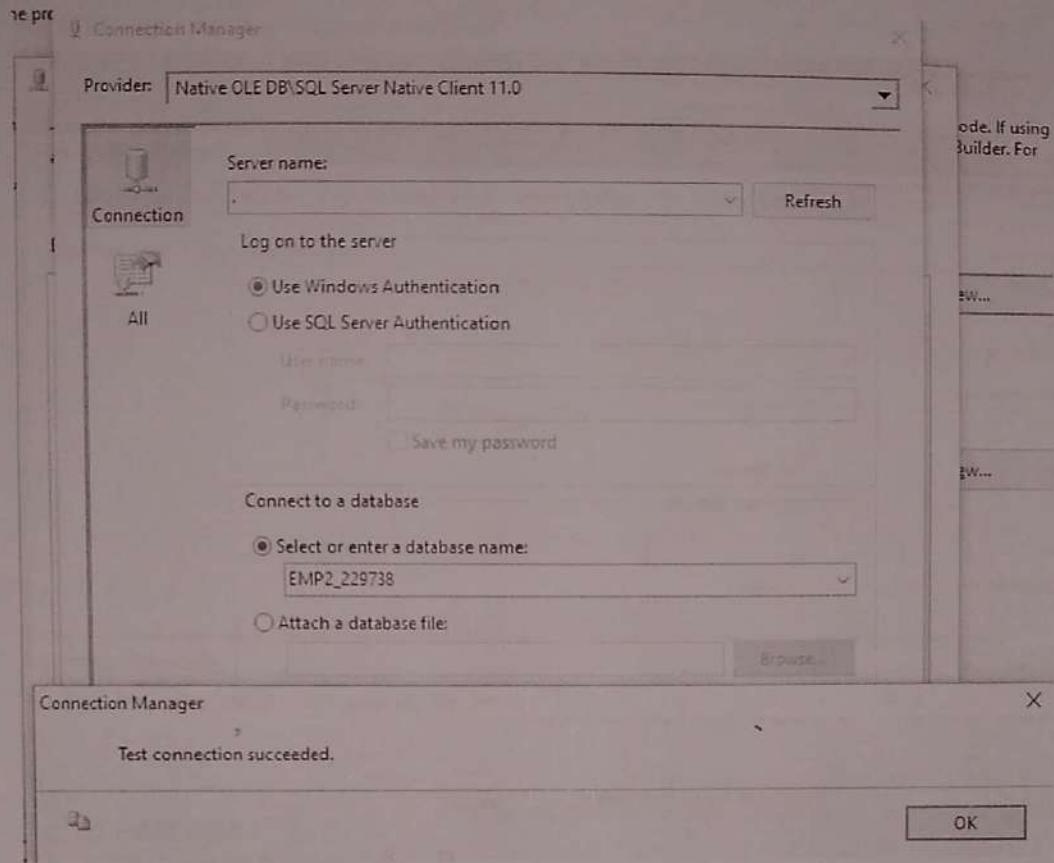


Data Flow Task: Data Flow Task



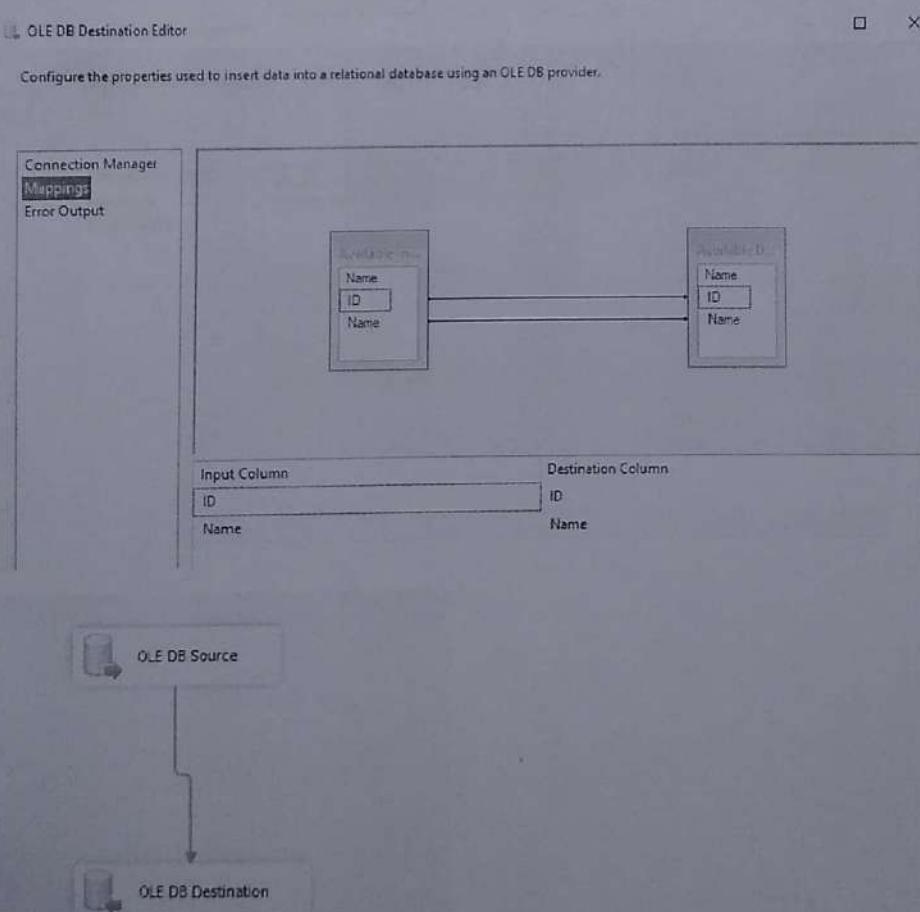
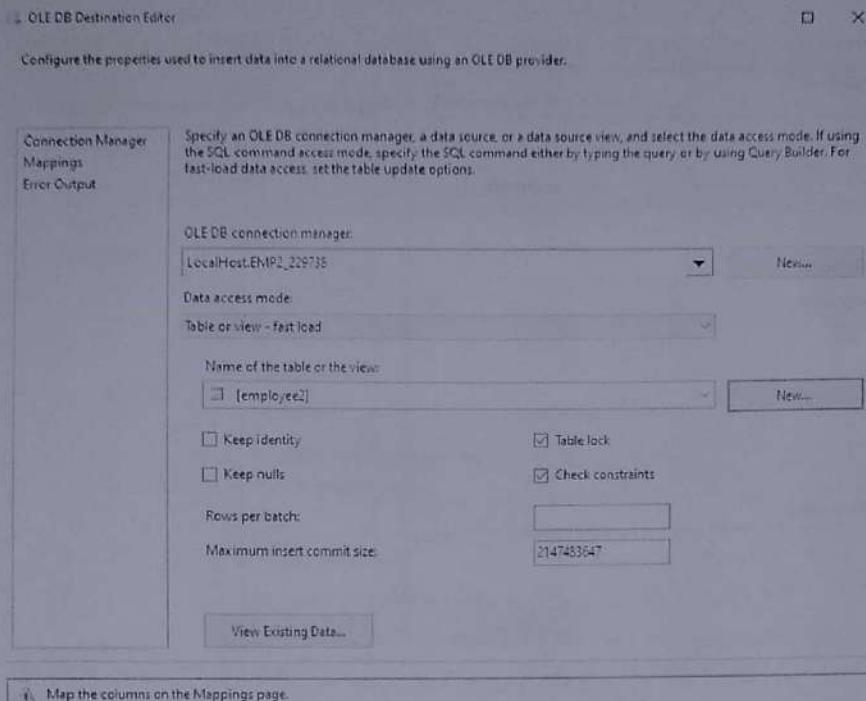


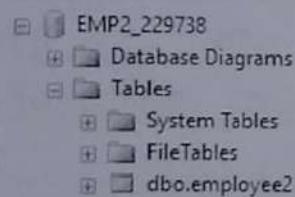
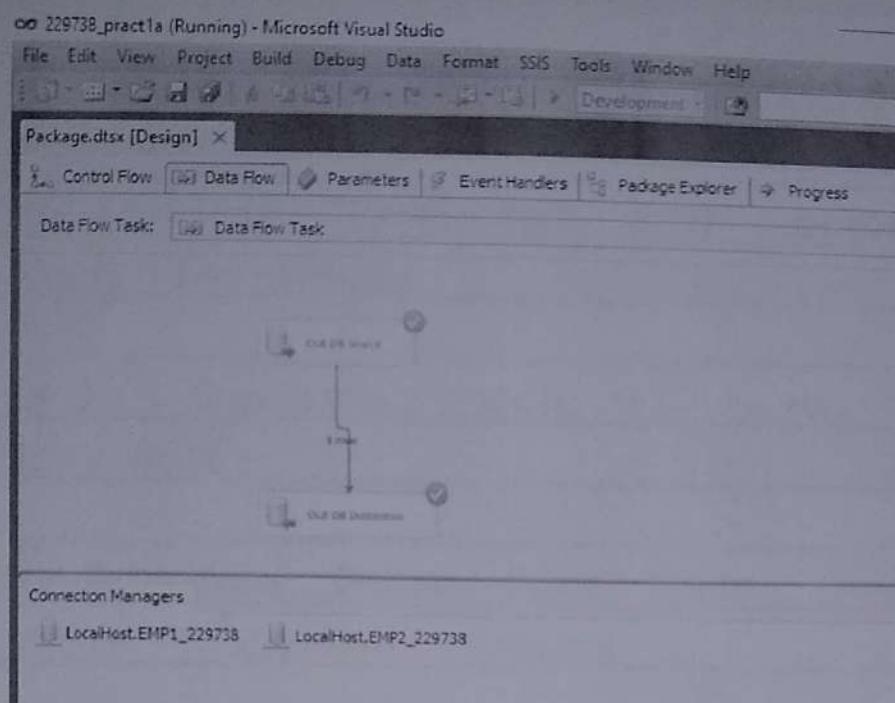




A 'Create Table' dialog box is open, showing the following SQL script:

```
CREATE TABLE [employee2] (
    [ID] nvarchar(10),
    [Name] varchar(50)
)
```





Object Explorer

SQLQuery1.sql - (...) - DESKTOP-D9DQURU\Admin (32) × DESKTOP-D9DQURU

```
***** Script for SelectTopNRows command follows. *****  
SELECT TOP 1000 [id]  
,[Name]  
FROM [EMP2_229738].[dbo].[employee2]
```

100 %

Results Messages

ID	Name
1	Anand
2	Ranjan
3	Aditya
4	Brahma
5	Ragni

B) Extract Data from Excel to MSSQL.

Step 1 :- Create Excel file with appropriate column name and insert few records.

Step 2 :- Open SSMS, create an empty database (means no table in it)

Step 3 :- Open Server Data Tools, create new project and Select Integration Services.

Step 4 :- Drag two data flow tasks from SSIS toolbox and make the connection

Step 5 :- Drag Excel Source and OLE DB Destination from SSIS toolbox and connect them.

Step 6 :- Right click on connection Manager in Solution Explorer. Select Excel Type and browse the excel file and then click OK

Step 7 :- Double click on Excel Source and set the connection manager to excel file and select the sheet1 of excel.

Step 8 :- Double click on OLE DB destination, delete the existing connection manager and set the new by putting server name as '!' and select the destination database → click "Test Connection" → OK

Step 9 :- Click on new to set the table schema here, and give the name of the table. Click on OK and then do mapping and execute we will get an error,

to solve this error so right click on project name in solution explorer and go to the properties, expand configuration properties and select Debugging in that → set the Run 64BIT Runtime to false → Apply then OK and the execute.

Now go the ssms and now you see the records in the empty database.

Practical 1-b

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Rollno	Name											
2	1	Anand											
3	2	Ragini											
4	3	Akanksha											
5	4	Ruchika											
6	5	Rohan											
7	6	Abhinav											
8	7	Sakshi											
9													

File Edit View Project Debug Tools Window Help

master

Object Explorer

SQLQuery1.sql - [...9DQURU\Admin (S)] - Microsoft SQL Server Management Studio

Object Explorer

Connect . (SQL Server 11.0.3128 - DESKTOP-D9DQURU)

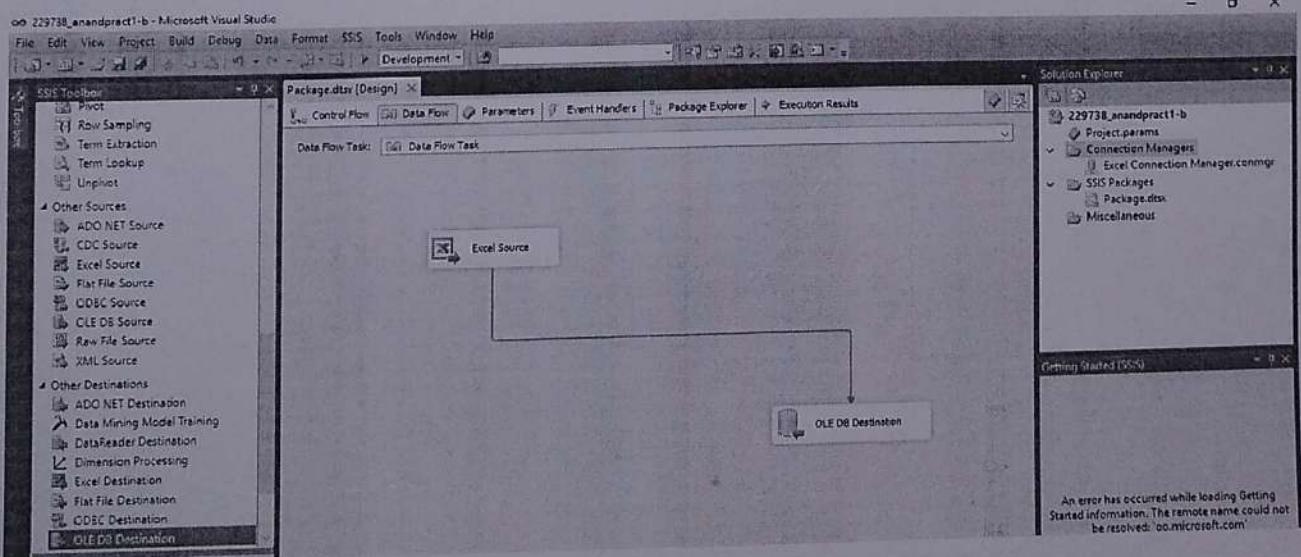
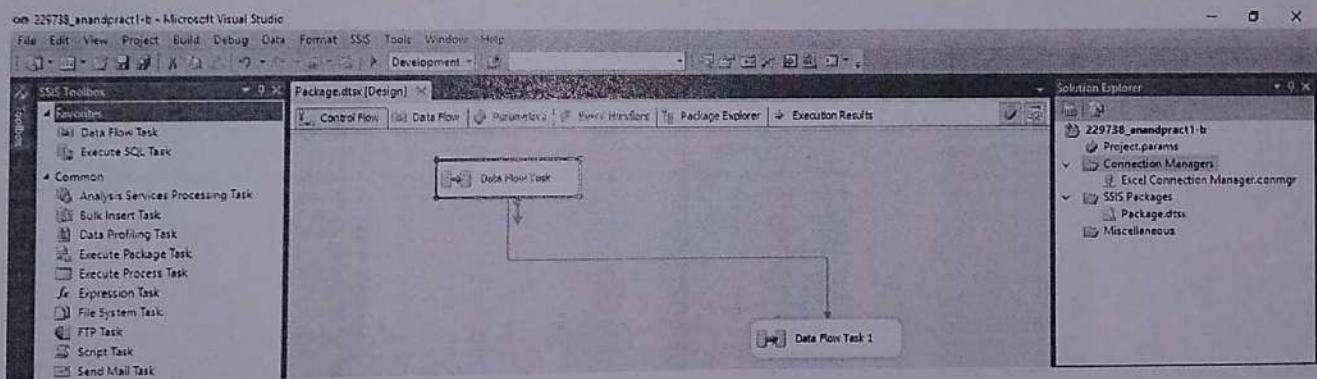
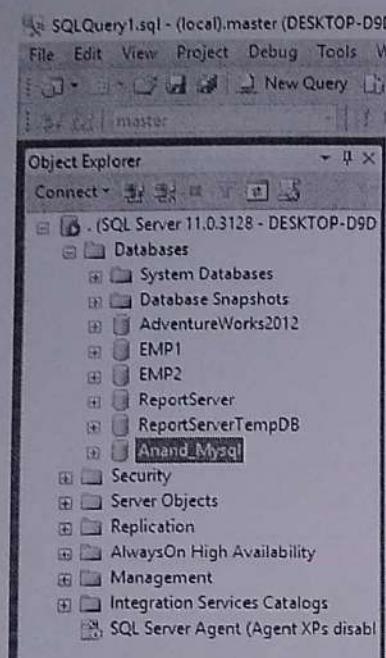
- Databases
 - System Databases
 - AdventureWorks
 - AdventureWorksLT
 - EMPI
 - EMP2
 - ReportServer
 - ReportServerTempDB
 - Anand_Mysql
 - Database Diagrams
 - Tables
 - System Tables
 - FileTables
 - dbo.Anandtab
 - Views
 - Synonyms
 - Programmability
 - Service Broker
 - Storage
 - Security
 - Security
 - Server Objects
 - Replication
 - AlwaysOn High Availability
 - Management
 - Integration Services Catalogs
 - SQL Server Agent (Agent XPs disabled)

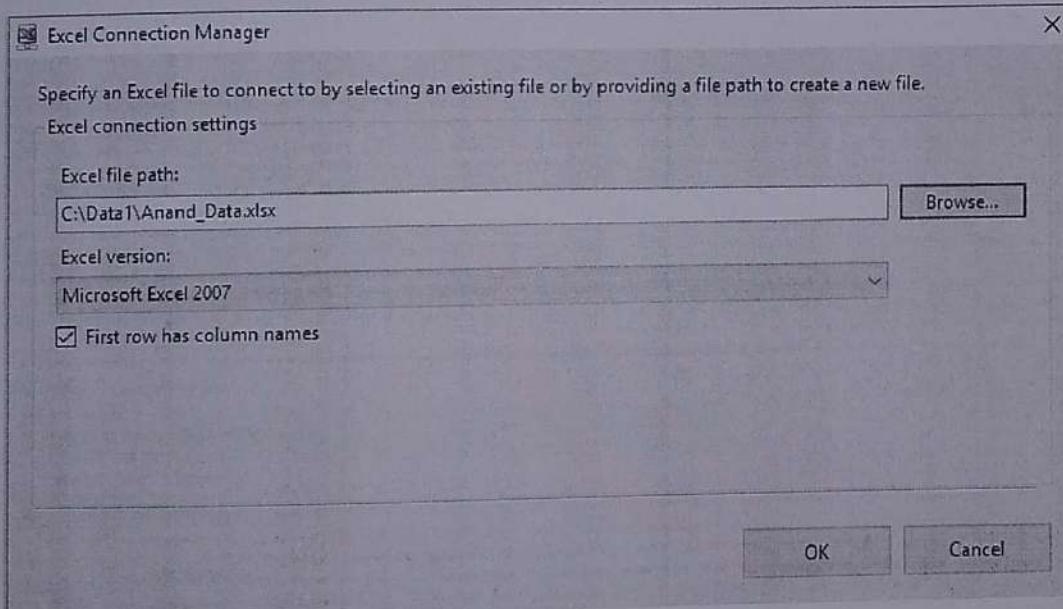
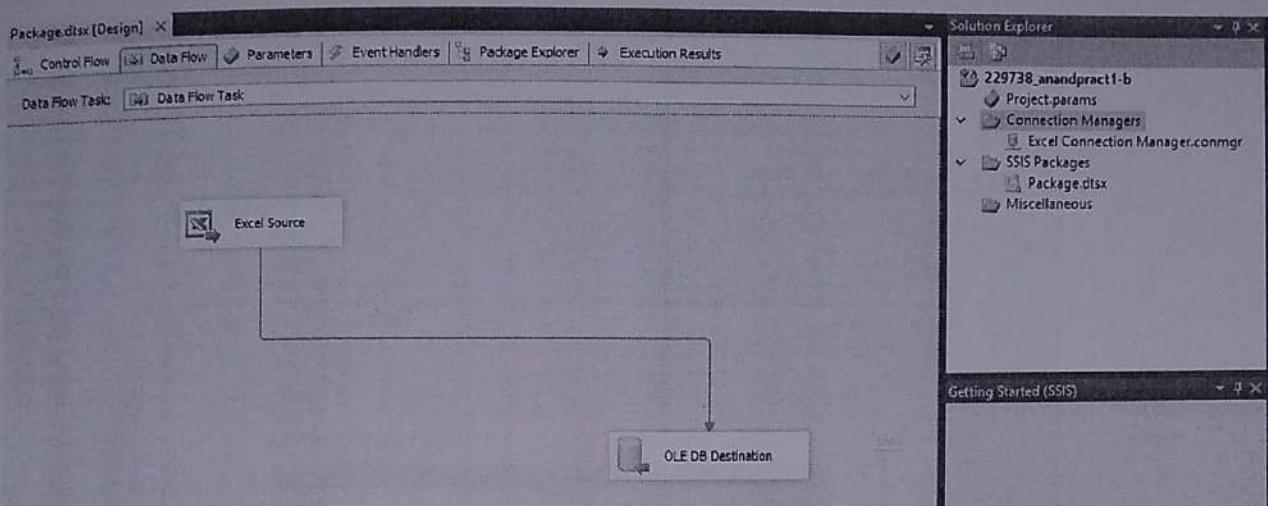
SQLQuery1.sql - [...9DQURU\Admin (S)]

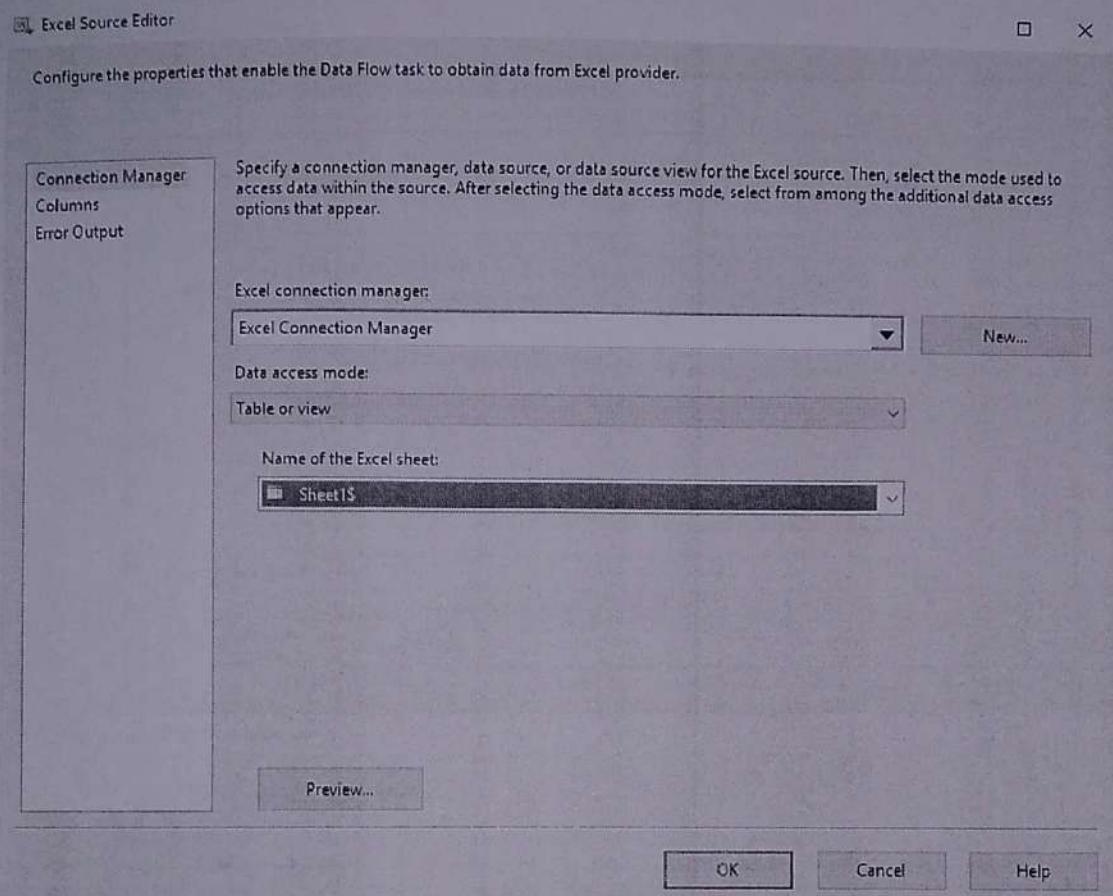
```
===== Script for SelectTopNRows command from SSMS =====
SELECT TOP 1000 [Rollno]
,[Name]
FROM [Anand_Mysql].[dbo].[Anandtab]
```

Results Messages

Rollno	Name
1	Anand
2	Ragini
3	Akanksha
4	Ruchika
5	Rohan
6	Abhinav
7	Sakshi







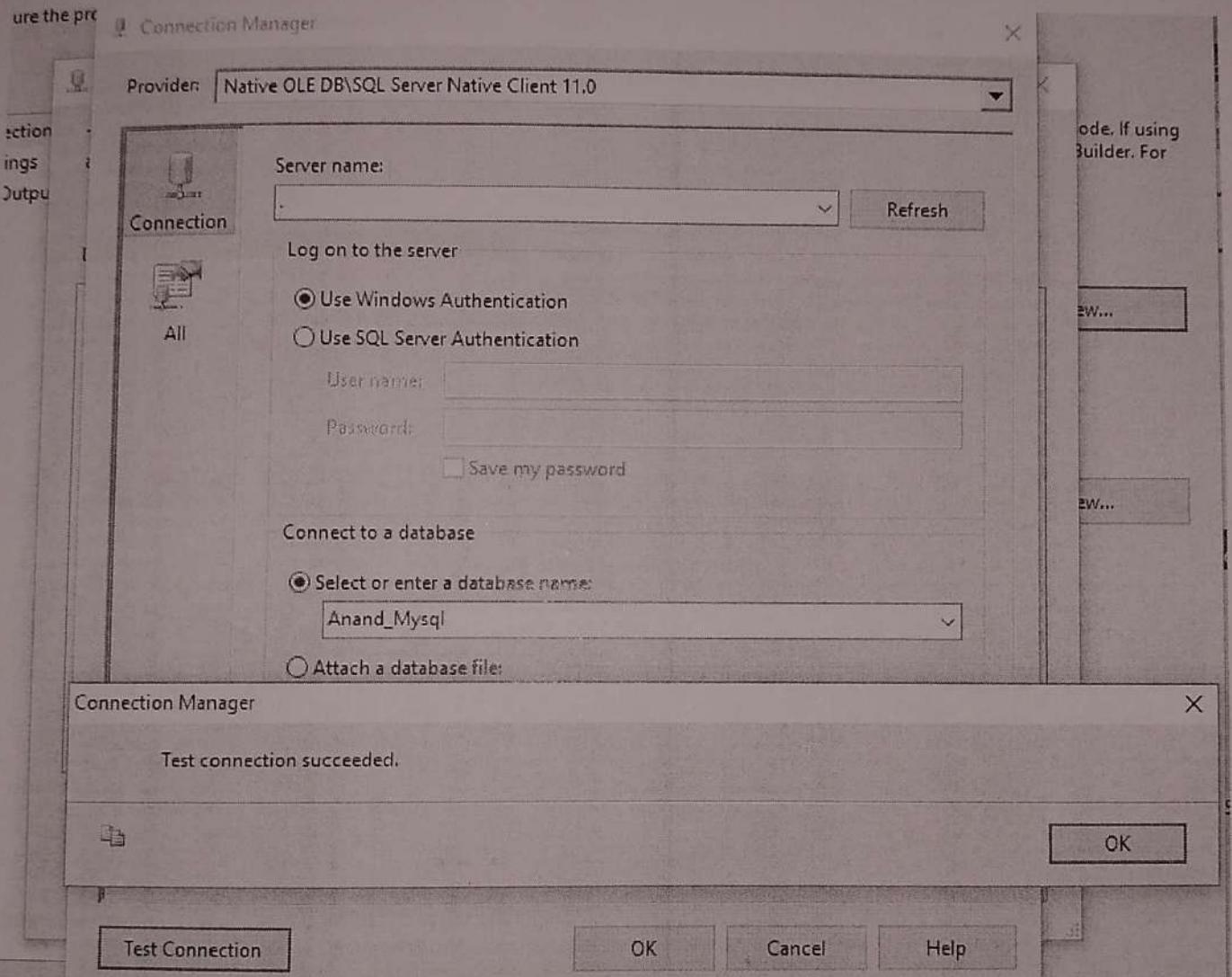
Preview Query Results

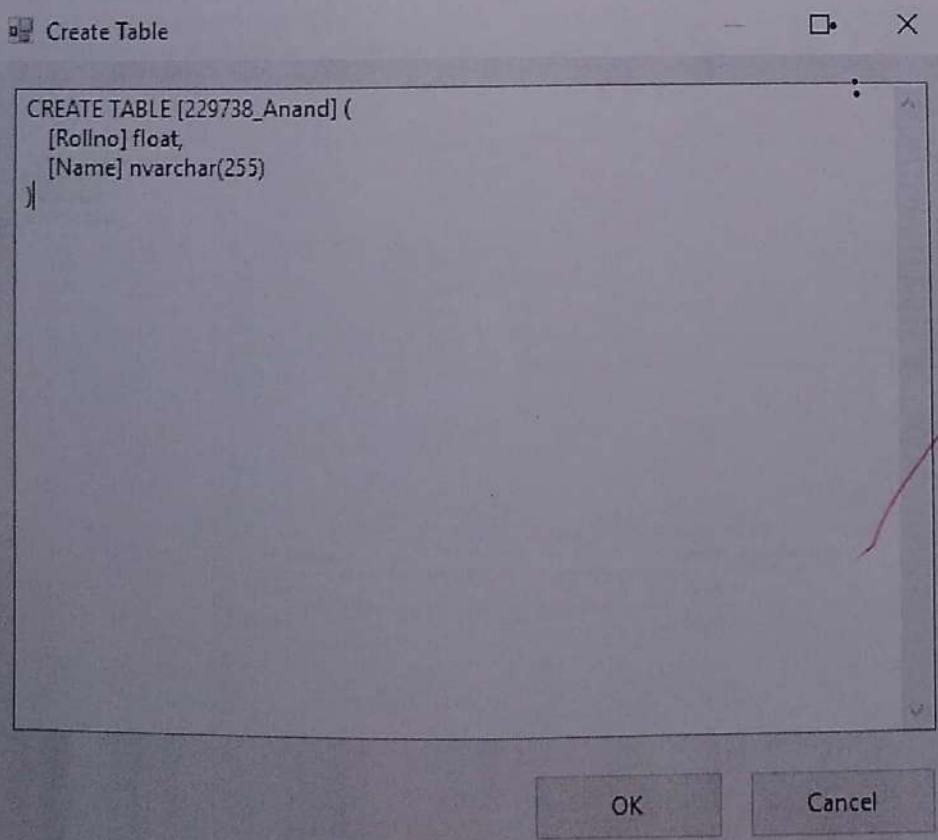
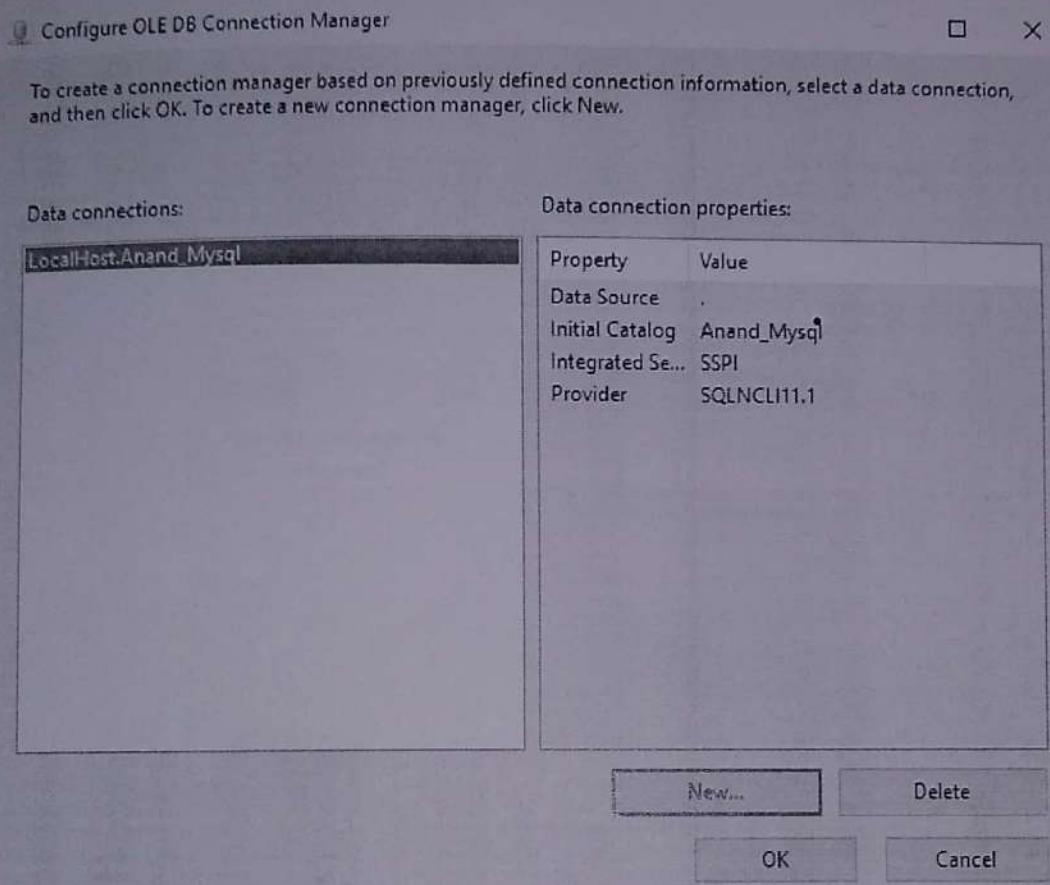
Query result (up to the first 200 rows):

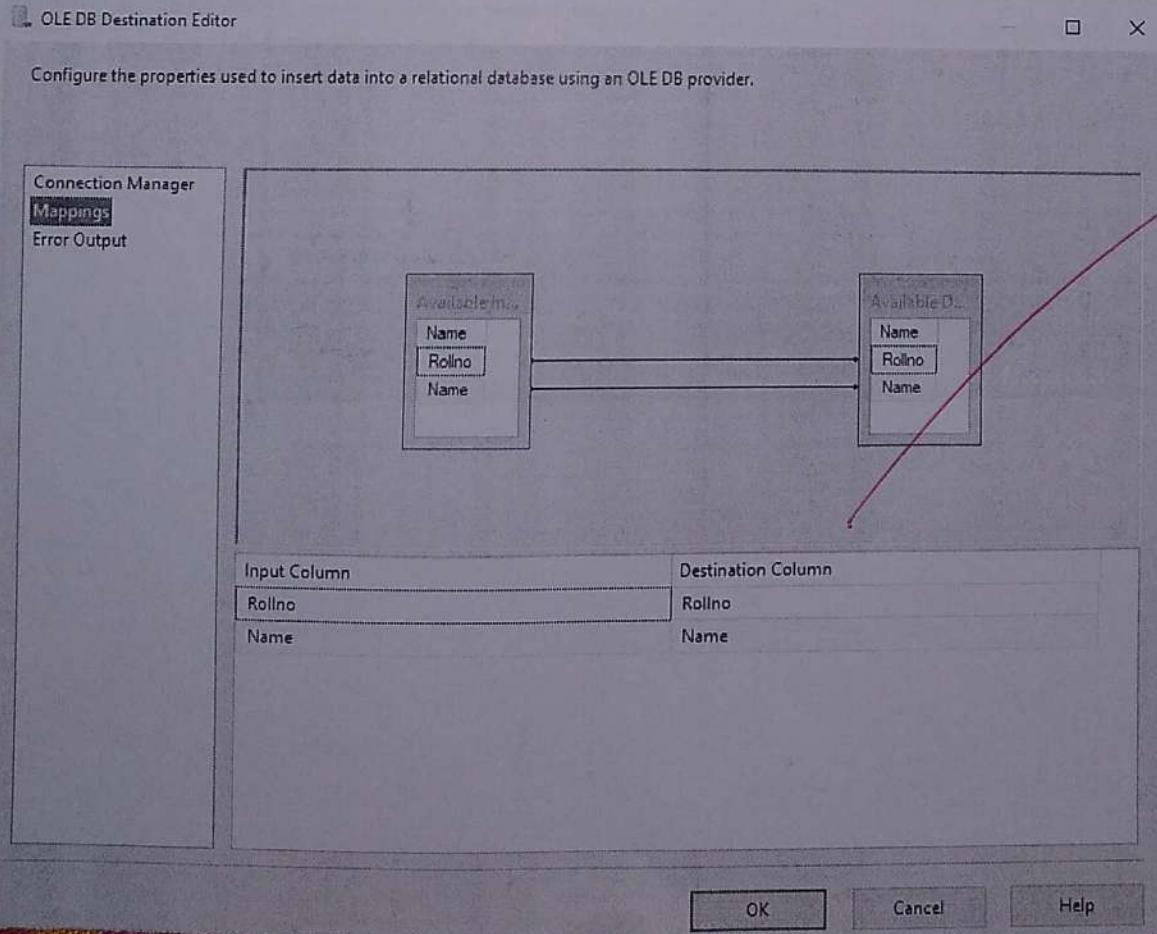
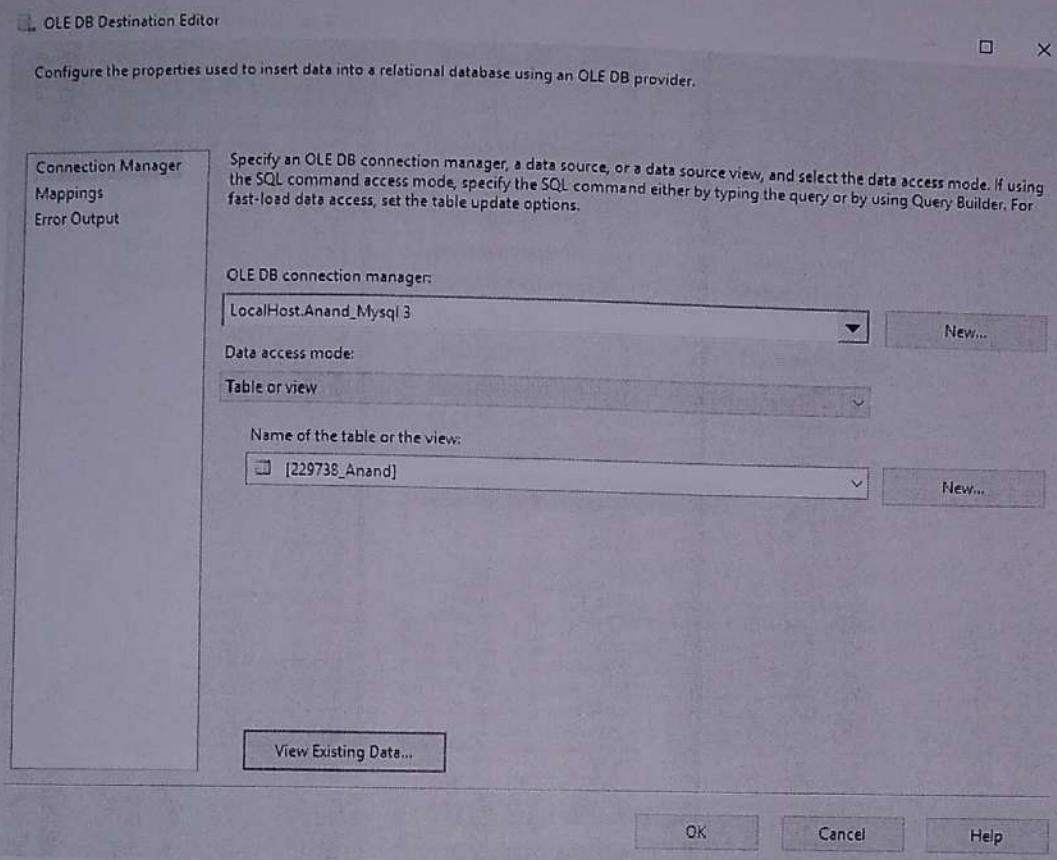
Rollno	Name
1	Anand
2	Ragini
3	Akanksha
4	Ruchika
5	Rohan
6	Abhinav
7	Sakshi

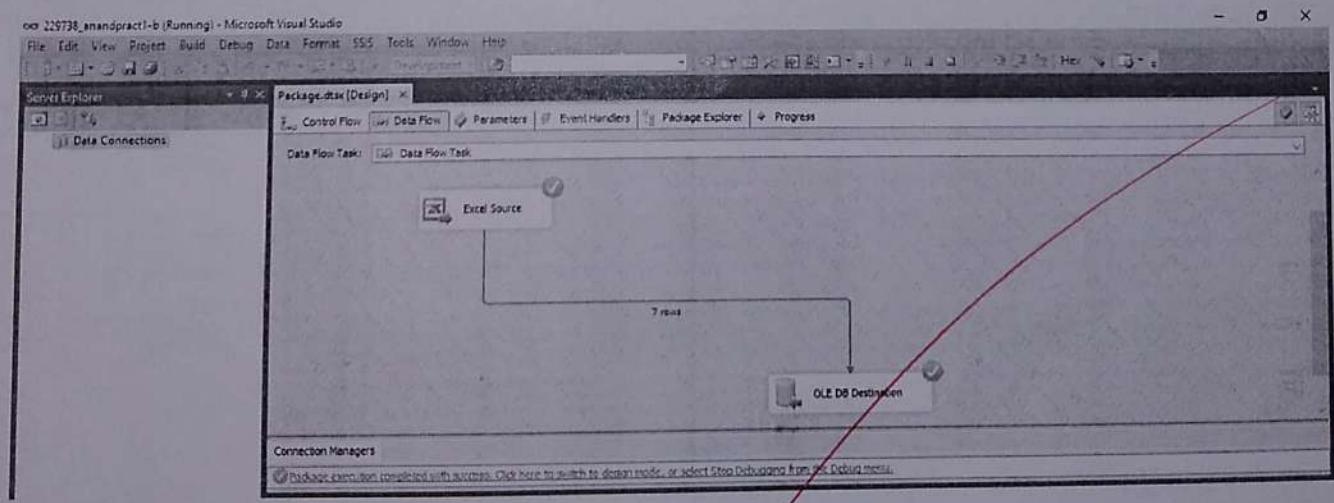
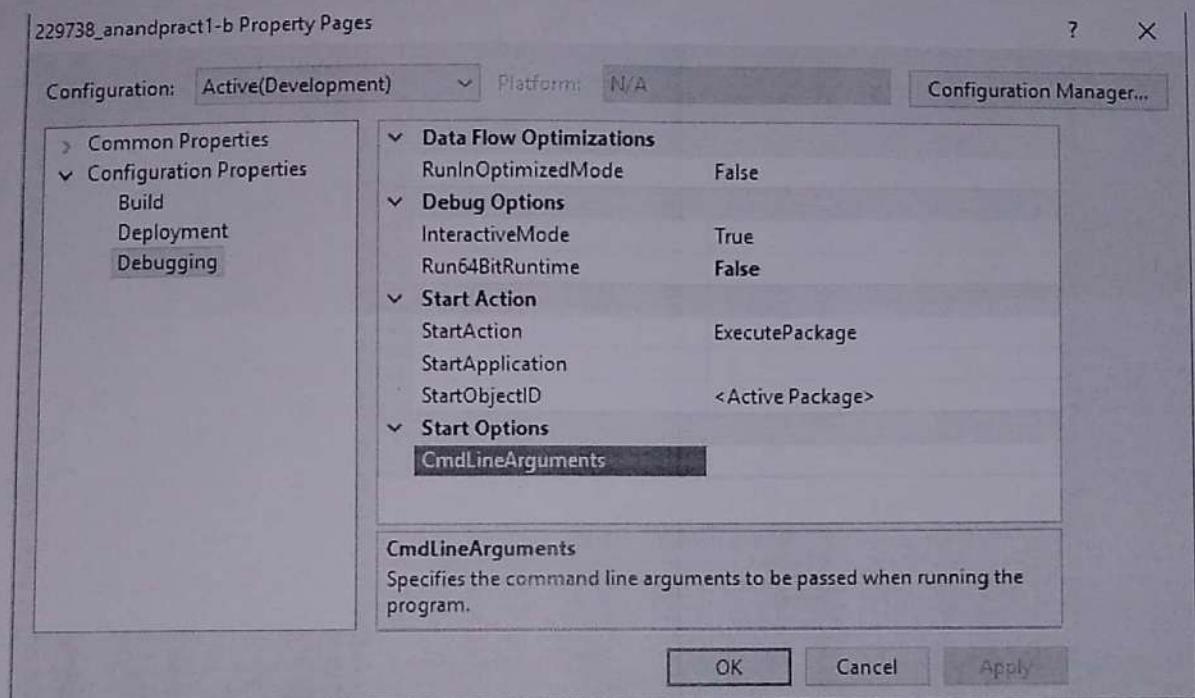
Close

This screenshot shows the 'Preview Query Results' dialog box. It displays a table with two columns: 'Rollno' and 'Name'. The data consists of seven rows with the following values: (1, Anand), (2, Ragini), (3, Akanksha), (4, Ruchika), (5, Rohan), (6, Abhinav), and (7, Sakshi). At the bottom right of the preview window is a 'Close' button.









SQLQuery1.sql - (local).master (DESKTOP-D9DQURU\Admin (S3)) - Microsoft SQL Server Management Studio

File Edit View Project Debug Tools Window Help

New Query Execute Debug

Object Explorer

SQLQuery1.sql - (.9DQURU\Admin (S3))

```
***** Script for SelectTopNRows command from SSMS *****
SELECT TOP 1000 [Rollno]
,[Name]
FROM [Anand_Mysql].[dbo].[AnandTab]
```

Results Messages

	Rollno	Name
1	1	Anand
2	2	Ragini
3	3	Akanksha
4	4	Ruchika
5	5	Rohan
6	6	Abhinav
7	7	Sakshi

Sr.no	Date	Topic	Sign
02	22/12/22	perform the ETL process to construct the database in sqlserver	Q

To avoid duplication entries in the database

Step 1 :- Create the first database in Sql Server Management system → Anand . Create table in it name as Anand - Data . Insert the record in the table.

Step 2 :- Create second Database in SSMS named it as Anand - Destination.

Step 3 :- Open data tools of visual studio → create new project .

Step 4 :- Drag Data flow task from SSIS . Double click on dragged Data flow task.

Step 5 :- Take OLE DB Source and OLE DB Destination from SSIS tool box and connect them.

Step 6 :- Make the OLE DB connection manager for source (MYDB1) / Anand .

Step 7 :- Make the OLE DB connection manager for Destination Anand - Destination . Create table and map it .

Step 8 :- Run the setup and go the SQL SSMS and check Anand - Destination .

Step 9 :- Again execute the same and check Anand - Destination . we will have appended data . in the same data . (redundant data) .

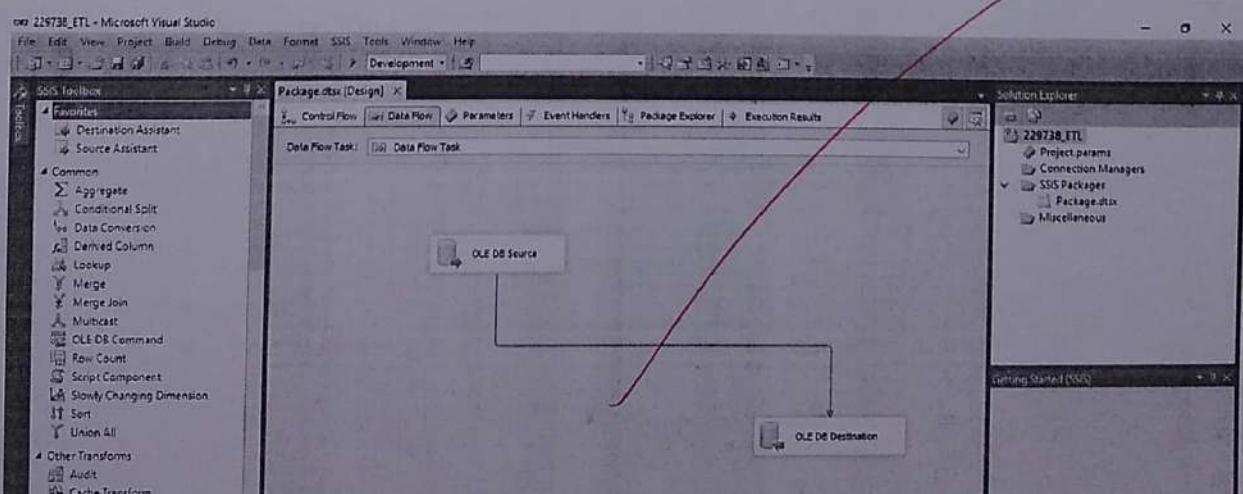
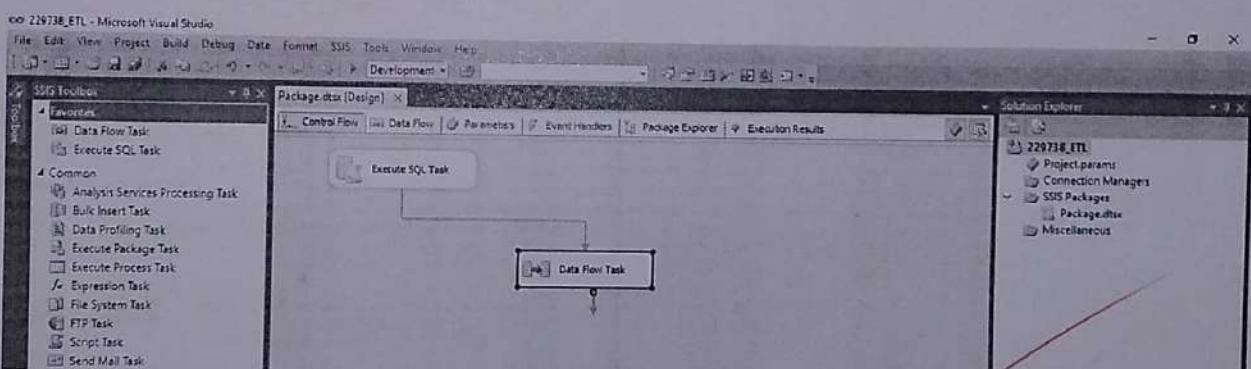
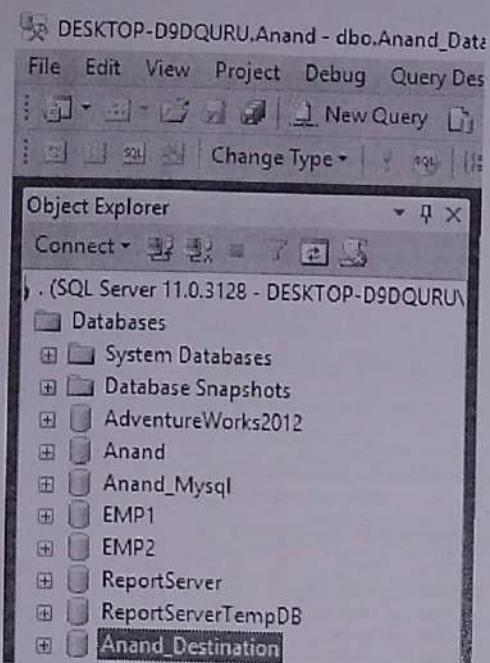
Step 10:- To avoid such redundancy go the control flow tab and drag execute SQL task from SSIS just before the data flow task tool and double click on it.

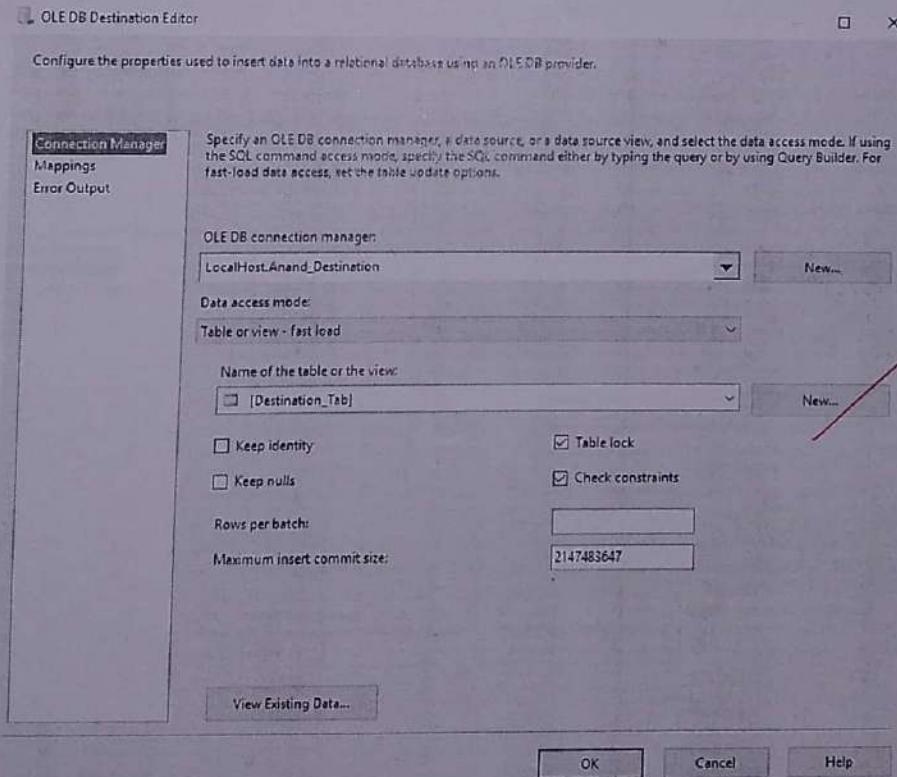
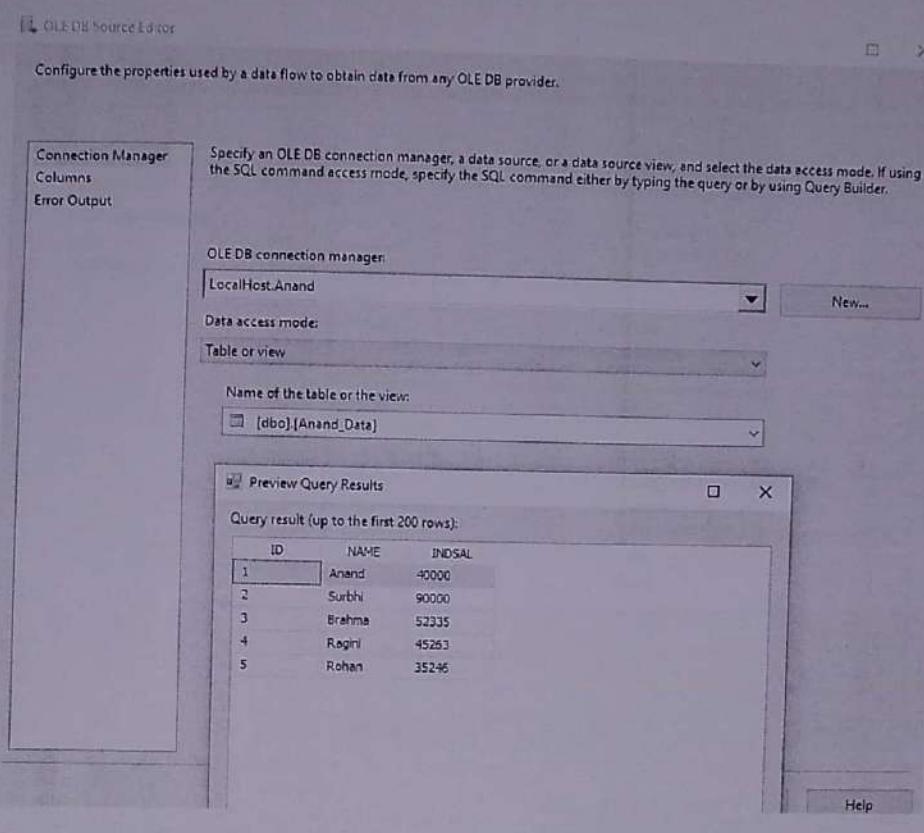
Step 11:- Set the connection value as 2nd database i.e destination database Anand-destination. in SQL Statement section and set the value of SQL statement as "TRUNCATE TABLE table_name" and click on Parse query button. Here we will get error for making bypass value to false. Once it done, we will execute the same set again and refresh the table in the Anand-Destination. Now there is no redundancy in the table as many time we execute the setup.

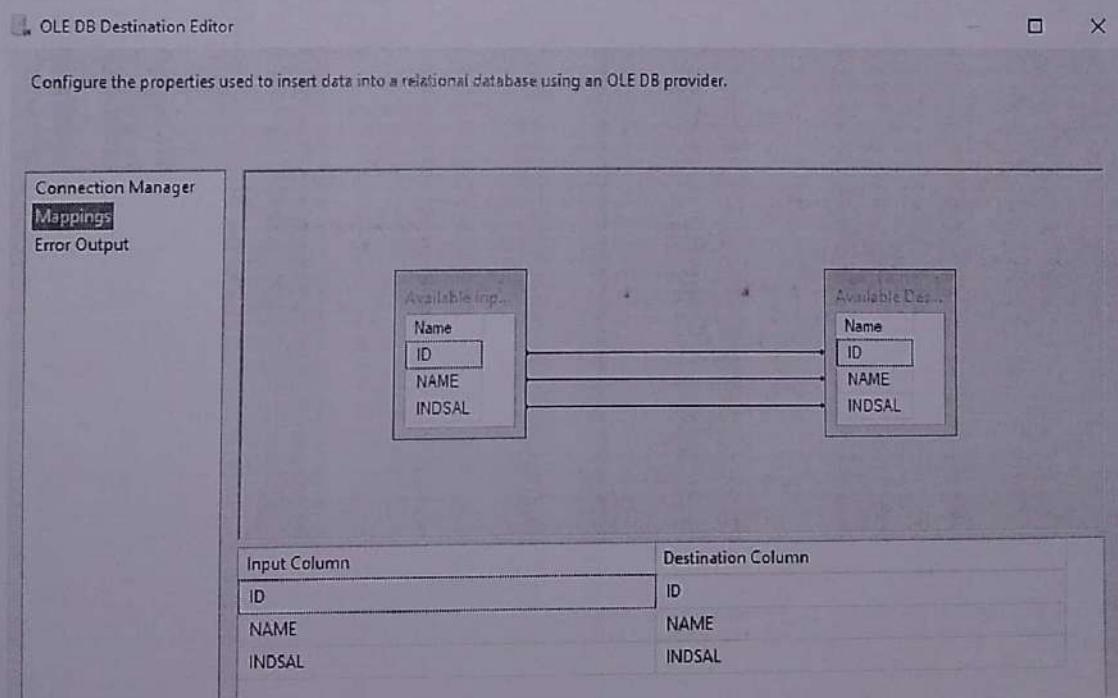
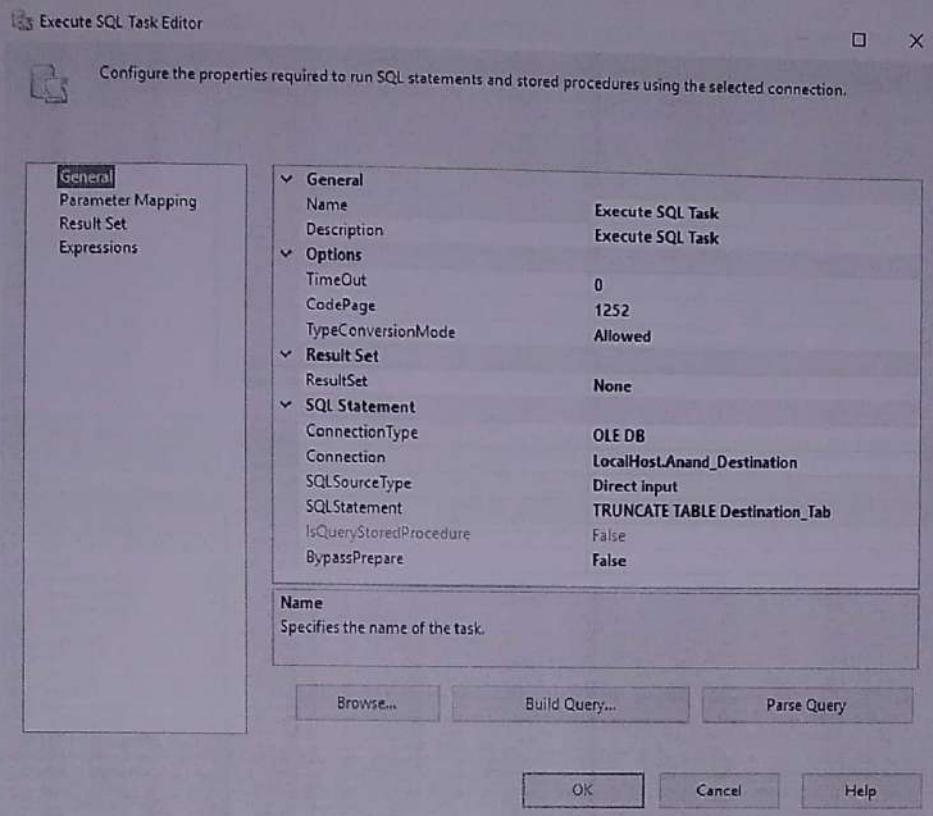
ETL Practical :-

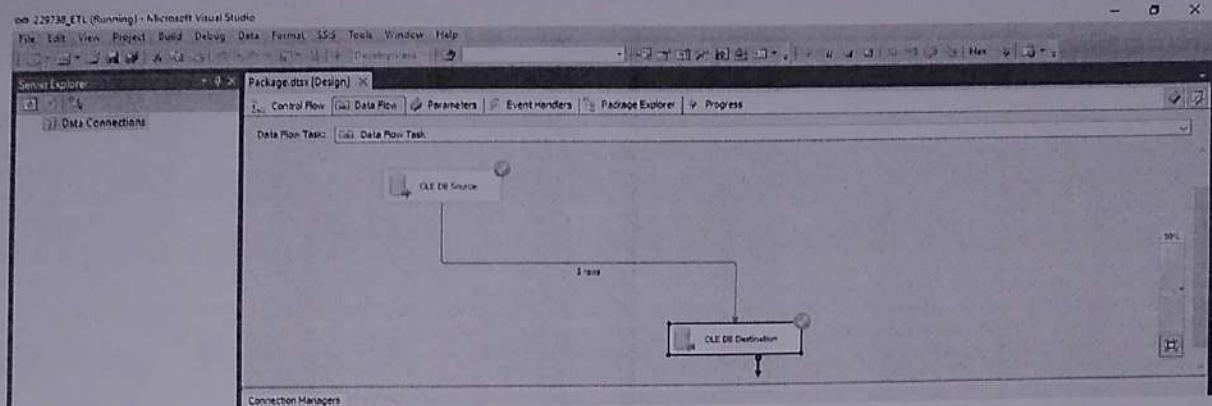
The screenshot shows the Microsoft SQL Server Management Studio interface. The title bar reads "DESKTOP-D9DQURU.Anand - dbo.Anand_Data - Microsoft SQL Server Management Studio". The menu bar includes File, Edit, View, Project, Debug, Query Designer, Tools, Window, Help. The toolbar has various icons for connecting, saving, and executing queries. The Object Explorer on the left shows the database structure: System Databases, Database Snapshots, AdventureWorks2012, Anand (selected), Database Diagrams, Tables, System Tables, FileTables, and dbo.Anand_Data. The main pane displays a table named "Anand" with three columns: ID, NAME, and INDSAL. The data in the table is as follows:

ID	NAME	INDSAL
1	Anand	40000.0000
2	Surbhi	90000.0000
3	Brahma	52335.0000
4	Ragini	45263.0000
5	Rohan	35246.0000
NULL	NULL	NULL









The screenshot shows the Microsoft SQL Server Management Studio (SSMS) interface. A query window titled "SQLQuery2.sql" is open, displaying the following T-SQL code:

```
/*===== Script for SelectTopRows command from SSMS =====*/
SELECT TOP 1000 [ID]
,[NAME]
,[INDSAL]
FROM [Anand_Destination].[dbo].[Destination_Tab]
```

The results pane shows the output of the query:

ID	NAME	INDSAL
1	Anand	40000.00
2	Subh	50000.00
3	Briama	52115.00
4	Ragni	45263.00
5	Rohan	35246.00

Sr.no	Date	Topic	Sign
03	03/01/23	Create a Data Staging area for the Selected database.	YB

Step 1 :- Create MYDB1 - Anand i.e. 1st database in SSMS.
Create Table called My Table

Insert 5 relevant entries.

Step 2 :- Create 2nd database i.e. MYDB2 - Anand

Step 3 :- Create new project in Server Data Tools. Drag and execute SQL Task and Data Flow Task and Connect it.

Step 4 :- Double click on Data Flow Task, add OLE DB Source and Destination. In source, derived column from column tool of SSIS Tool box. Then take OLE DB destination.

Step 5 :- Make the OLE DB source of MYDB1 - Anand and add table.

Step 6 :- Make the connection from OLE DB Source to derived column and double click on derived column. Give the derived column name and set the expression.

Step 7 :- Make the connection in OLE DB destination from MYDB2 - Anand and create the table.

Step 8 :- Go the control flow task and Double Click on the SQL Execute task.

Set the connection value to the destination database
use - 'TRUNCATE Table table-name query in the

SQL statement. Make the Bypass value to false
annotation and click on Please query and execute the setup.

Practical 3

DESKTOP-D9DQURU.Anand - dbo.Anand_Data - Microsoft SQL Server Management Studio

File Edit View Project Debug Query Designer Tools Window Help

Object Explorer

SQLQuery1.sql [..9DQURU\Admin (3)] DESKTOP-D9DQURU... - dbo.Anand_Data DESKTOP-D9DQURU... - dbo.Anand_Data

ID	NAME	INDSAL
1	Anand	40000.0000
2	Surbhi	90000.0000
3	Brahma	52335.0000
4	Ragini	43263.0000
5	Rohan	35246.0000
NULL	NULL	NULL

DESKTOP-D9DQURU.Anand - dbo.Anand_Data

File Edit View Project Debug Query Des

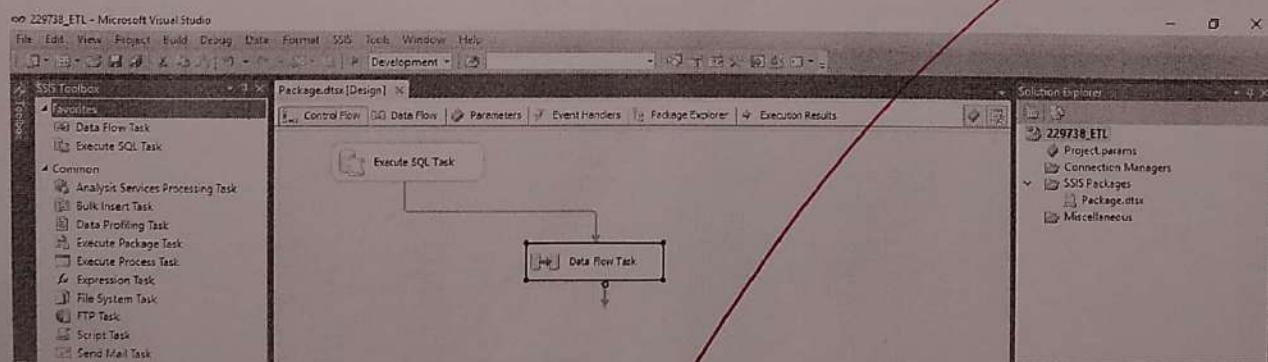
Object Explorer

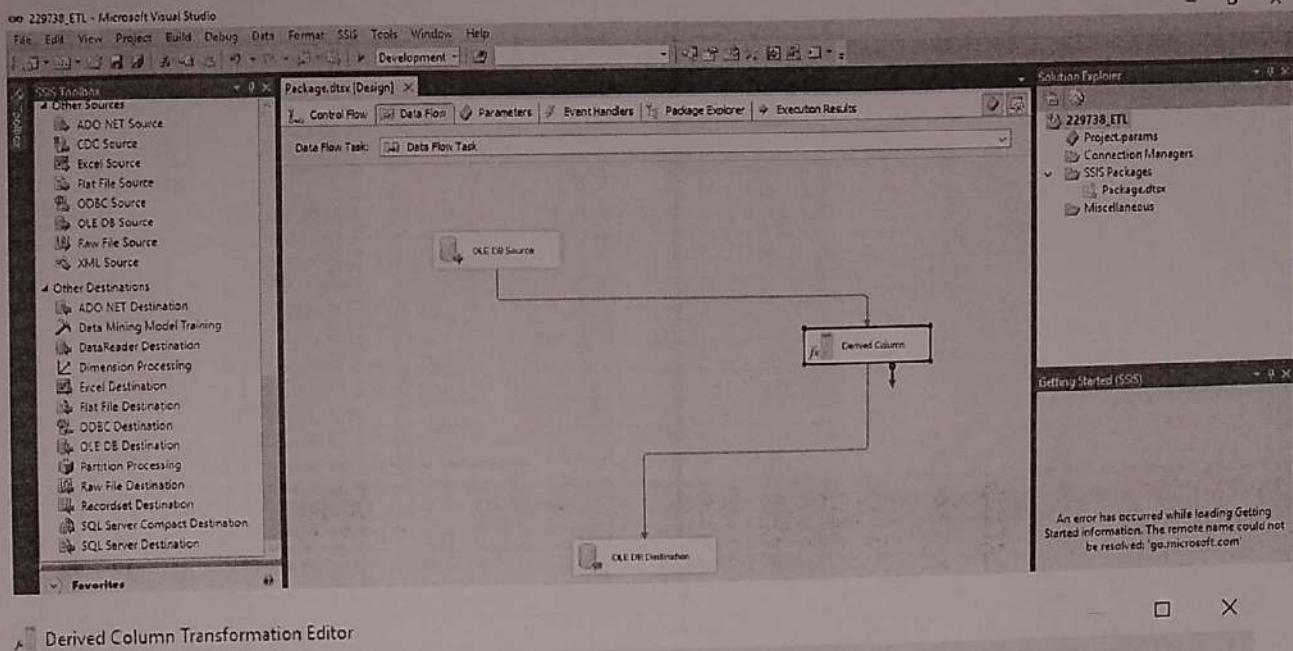
Connect ▾

. (SQL Server 11.0.3128 - DESKTOP-D9DQURU\)

Databases

- + System Databases
- + Database Snapshots
- + AdventureWorks2012
- + Anand
- + Anand_Mysql
- + EMP1
- + EMP2
- + ReportServer
- + ReportServerTempDB
- + Anand_Destination





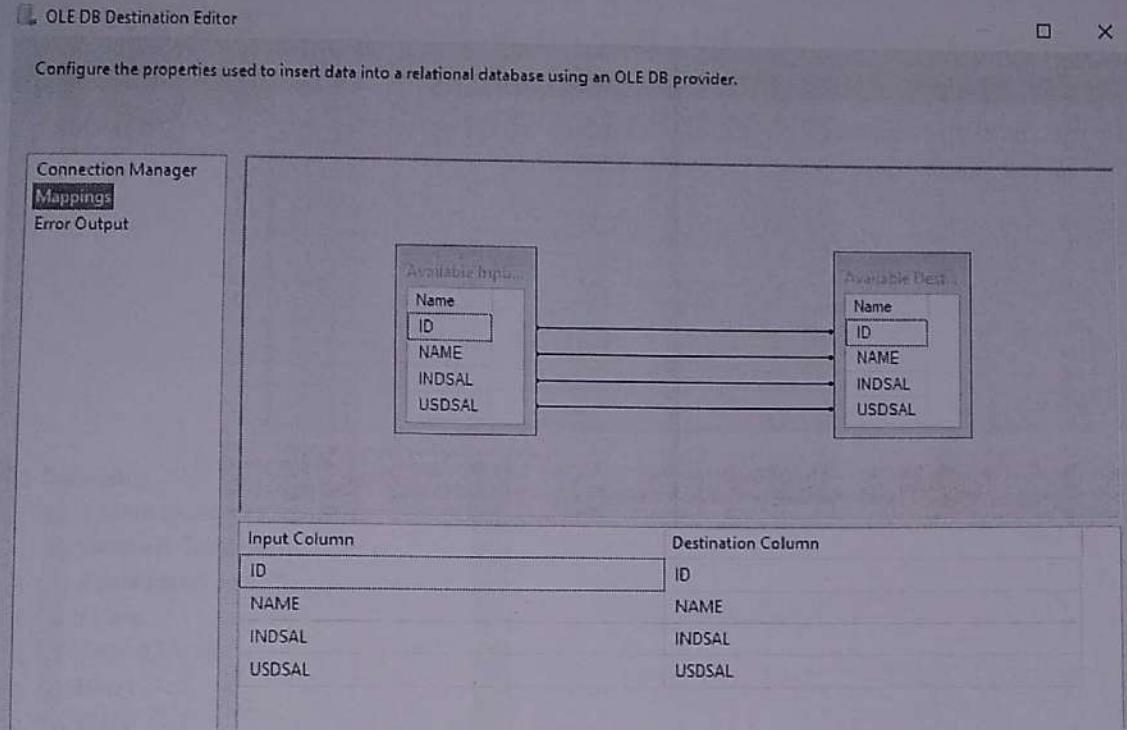
Derived Column Transformation Editor

Specify the expressions used to create new column values, and indicate whether the values update existing columns or populate new columns.

Derived Column Name	Derived Column	Expression	Data Type
USDSAL	<add as new column>	INDSAL / 82	numeric [DT_NUMERIC]

Configure Error Output...

OK Cancel Help



Execute SQL Task Editor

Configure the properties required to run SQL statements and stored procedures using the selected connection.

General

- Parameter Mapping
- Result Set
- Expressions

General

- Name: Execute SQL Task
- Description: Execute SQL Task

Options

- TimeOut: 0
- CodePage: 1252
- TypeConversionMode: Allowed

Result Set

- ResultSet: None

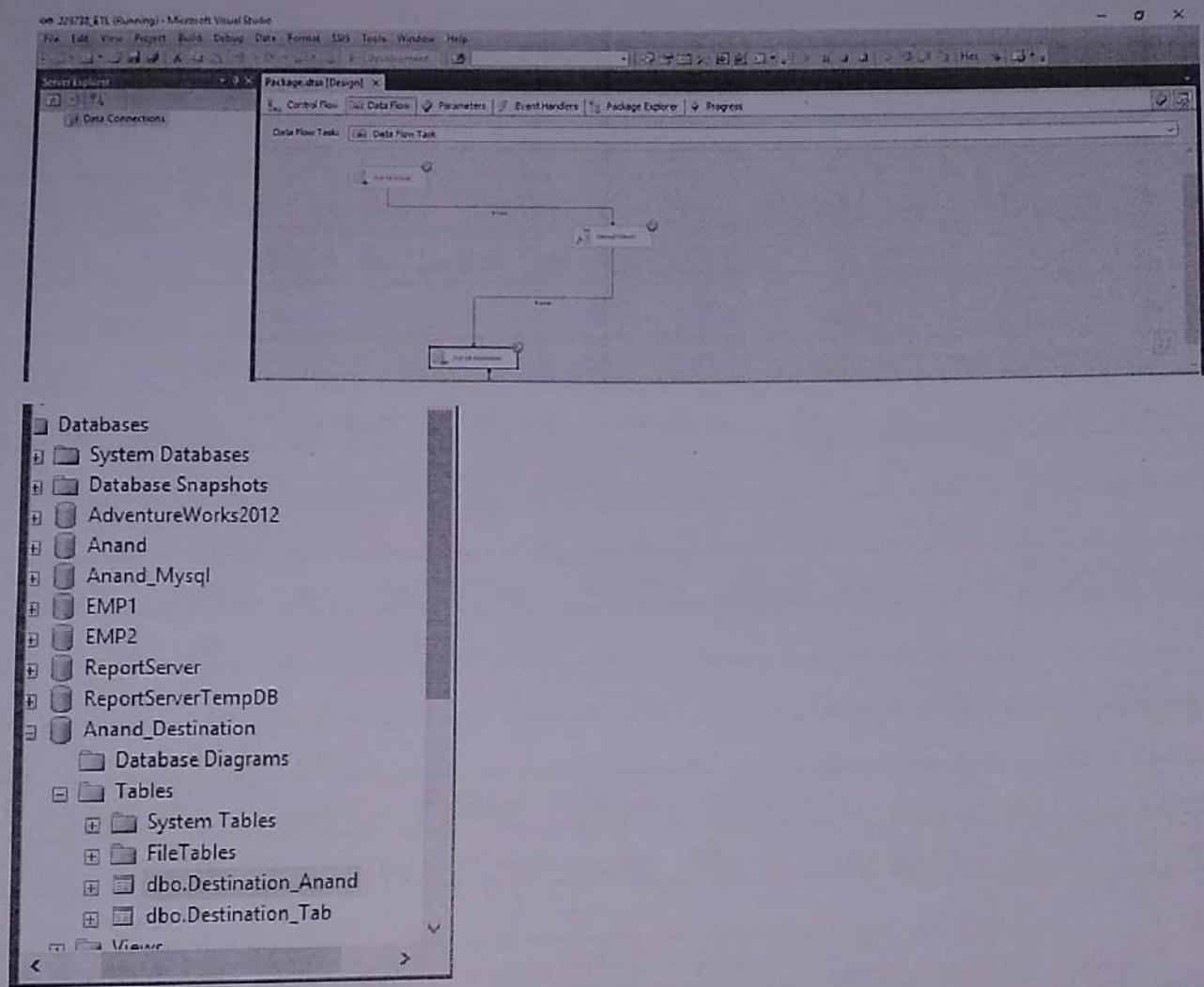
SQL Statement

- ConnectionType: OLE DB
- Connection: LocalHost.Anand_Destination
- SQLSourceType: Direct input
- SQLStatement: TRUNCATE TABLE Destination_Anand
- IsQueryStoredProcedure: False
- BypassPrepare: False

Name
Specifies the name of the task.

Buttons:

- Browse...
- Build Query...
- Parse Query
- OK
- Cancel
- Help



SQLQuery3.sql - (local).master (DESKTOP-DSDQURU\Admin (58)) - Microsoft SQL Server Management Studio

File Edit View Query Project Debug Tools Window Help

New Query Execute Debug

master SQLQuery3.sql - (DESKTOP-DSDQURU\Admin (58)) SQLQuery2.sql - (DESKTOP-DSDQURU\Admin (51)) SQLQuery1.sql - (DESKTOP-DSDQURU\Admin (53)) (DESKTOP-DSDQURU\., dbo.Anand_Data

Object Explorer

Connect SQL Server 11.0.3128 - DESKTOP-DSDQURU

- Databases
- System Databases
- Database Snapshots
- AdventureWorks2012
- Anand
- Anand_Mysql
- EMP1
- EMP2
- ReportServer
- ReportServerTempDB
- Anand_Destination
- Database Diagrams
- Tables
- System Tables
- FileTables
- dbo.Destination_Anand
- dbo.Destination_Tab

SQLQuery3.sql - (DESKTOP-DSDQURU\Admin (58))

```
***** Script for SelectTopNRows command from SSMS *****
--SELECT TOP 1000 [ID]
--,[NAME]
--,[INDSAL]
--,[USDSAL]
--FROM [Anand_Destination].[dbo].[Destination_Anand]
```

Results Messages

ID	NAME	INDSAL	USDSAL
1	Anand	40000.00	487.80487804870487
2	Subhi	90000.00	1097.560975609756097
3	Brahma	52335.00	638.231707317073170
4	Ragini	45263.00	551.98780487048704870
5	Rohan	35246.00	429.829269292692926

Query executed successfully.

(local) (11.0 SP1) DESKTOP-DSDQURU\Admin ... master 00:00:00 3 rows

Sr.no	Date	Topic	Sign
4	5/01/23	Practical No. 4	

A) Create the ETL map and setup the schedule for execution.

Step 1 :- Open SSMS, create two database (source, destination). Create one table in source database.

Step 2 :- Open SQL Server Data tools. Create New Project from the SSIS Toolbox, drag & execute SQL tool and data flow task on the control flow.

Double click on dataflow task from the toolbox drag 3 tools on the window.

- 1. OLE DB Source
- 2. Derived column (from common task)
- 3. OLE DB Destination and make the connections.

Step 3 :- Double click on OLE DB Source and make the connection manager for the source database from SSMS.

Double click on Derived Column set the appropriate expression in the derived column.

Double click on OLE DB Destination and set the connection manager for source database from the SSMS.

Step 4 :- Go to the control flow. Double click on the Execute SQL Task make the connection value to Destination database.

- Set the SQL Statement as 'TRUNCATE Table Table-name' and make bypass value to false and click on pass query.

Step 5 :- Go to the SSMS Right click on integration service catalog select create catalog.

Enable the CLR Integration so that other service get enabled. Set the password (as per choice) → click on OK.

Go to the data tools and click on the project name on solution explorer click on deploy then click on next.

Give the server name as '.' Click on path click on close.

Step 6 :- Go to SSMS. Right Click on SQL Server Agent Click on new (If new is not enable then click on start)

Click on new and then click on job. set the job name as EDL-auto

Test same name in the description (not necessary).

Step 7 :- Click on step option. Now click on new give the step name change the type : SQL Server Integration Service package

Give the server name as '.' Select the package by expanding SSIS package to package (.dtsx)

Then go to the schedule click on new name the schedule set the frequency as daily and also daily frequency to 10s or as per our choice and then observe the changes in the database.

It updated the database at every 10 seconds. as mention in the schedule.

Practical 4

Object Explorer

Connect ▾

- (SQL Server 11.0.3128 - DESKTOP-D9DQURU\Admin)
 - Databases
 - System Databases
 - Database Snapshots
 - AdventureWorksLT
 - ReportServer
 - ReportServerTempDB
 - SalesDW
 - EMP1_229738
 - MYDB1_Anand
 - testAnand
 - test_1Anand
 - Anand_Source
 - Anand_Destination

DESKTOP-D9DQURU...rce - dbo.Table_1 × DESKTOP-D9DQURU...tion - db

Column Name	Data Type	Allow Nulls
id	nchar(10)	<input type="checkbox"/>
name	varchar(50)	<input type="checkbox"/>
sal	money	<input type="checkbox"/>

Choose Name

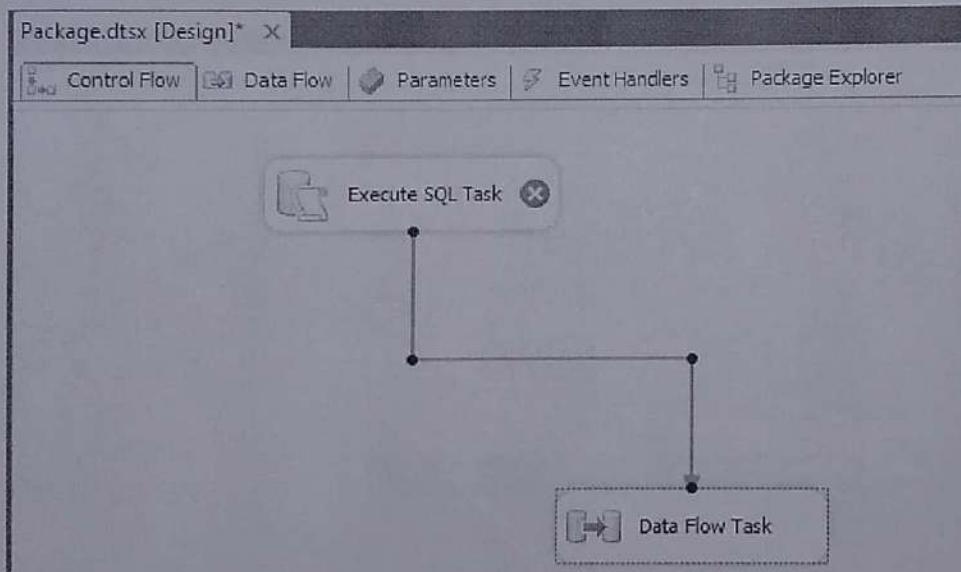
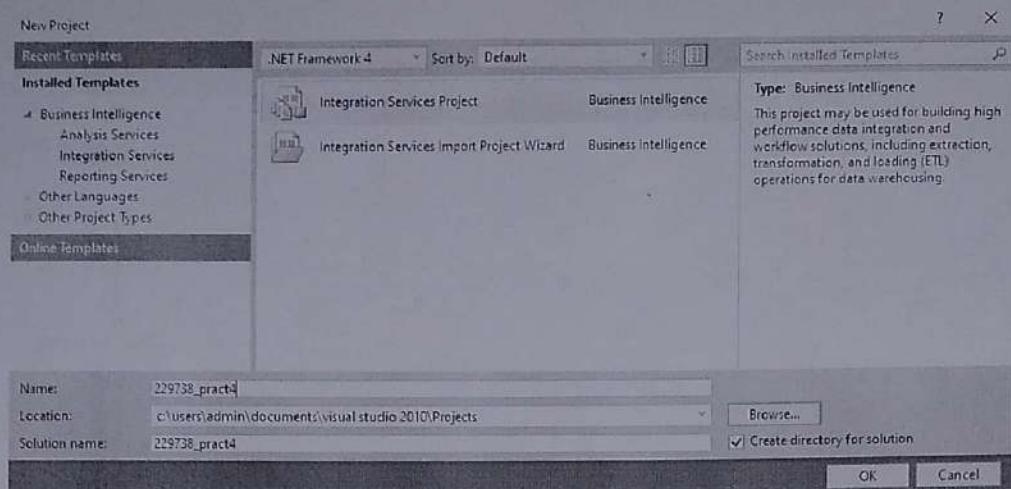
Enter a name for the table:

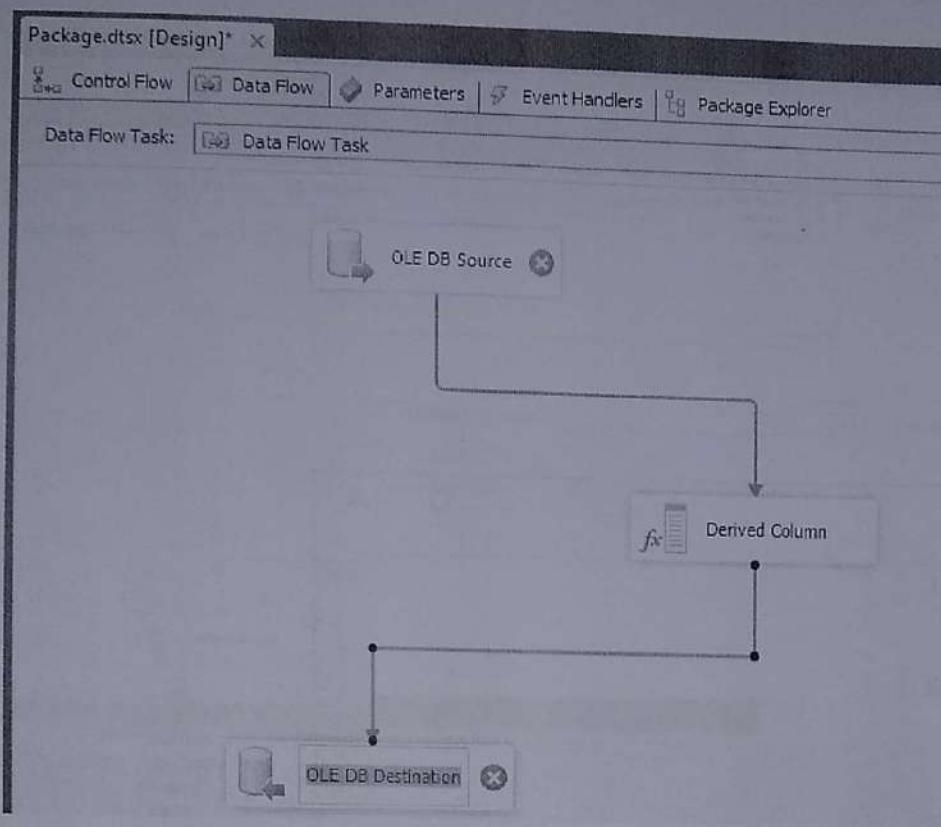
Data

OK Cancel

DESKTOP-D9DQURU...Source - dbo.Data × SQLQuery1.sql - (...9DQURU\Admin (53))

	id	name	sal
▶	1	Anand	40000.0000
	2	Rohan	50000.0000
	3	Surbhi	400520.0000
	4	Sandeep	41000.0000
*	NULL	NULL	NULL





OLE DB Source Editor

Configure the properties used by a data flow to obtain data from any OLE DB provider.

Connection Manager
Columns
Error Output

Specify an OLE DB connection manager, a data source, or a data source view, and select the data access mode. If using the SQL command access mode, specify the SQL command either by typing the query or by using Query Builder.

OLE DB connection manager:

localhost>Anand_Source

New...

Data access mode:

Table or view

Name of the table or the view:

[dbo].[Data]

Preview Query Results

Query result (up to the first 200 rows):

	id	name	sel
1	Anand	40000	
2	Rohan	50000	
3	Surbhi	400520	
4	Sandeep	41000	

Derived Column Transformation Editor

Specify the expressions used to create new column values, and indicate whether the values update existing columns or populate new columns.

Variables and Parameters

- Columns
 - id
 - name
 - sal

Mathematical Functions

- String Functions
- Date/Time Functions
- NULL Functions
- Type Casts
- Operators

Description:

Derived Column Name	Derived Column	Expression	Data Type
usdsal	<add as new column>	sal/82	numeric [DT_NUMERIC]

Create Table

```
CREATE TABLE [DATA_1] (
    [id] nvarchar(10),
    [name] varchar(50),
    [sal] money,
    [usdsal] numeric(30,15)
)
```

Execute SQL Task Editor

Configure the properties required to run SQL statements and stored procedures using the selected connection.

General

Parameter Mapping

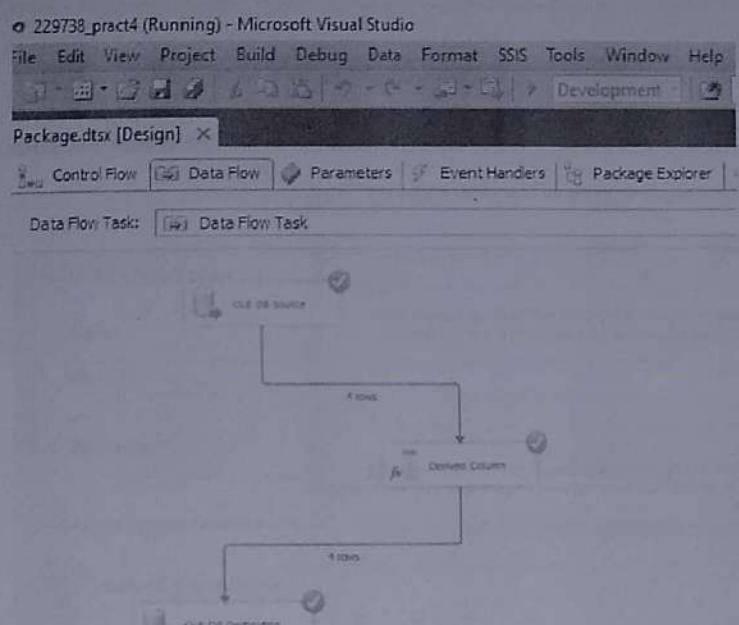
Result Set

Expressions

Name	Value
Description	Execute SQL Task
Options	
TimeOut	0
CodePage	1252
TypeConversionMode	Allowed
Result Set	
ResultSet	None
SQL Statement	
Connection Type	OLE DB
Connection	localhost>Anand_Destination
SQLSourceType	Direct input
SQLStatement	TRUNCATE TABLE DATA_1
IsQueryStoredProcedure	False
BypassPrepare	False

The query parsed correctly.

OK



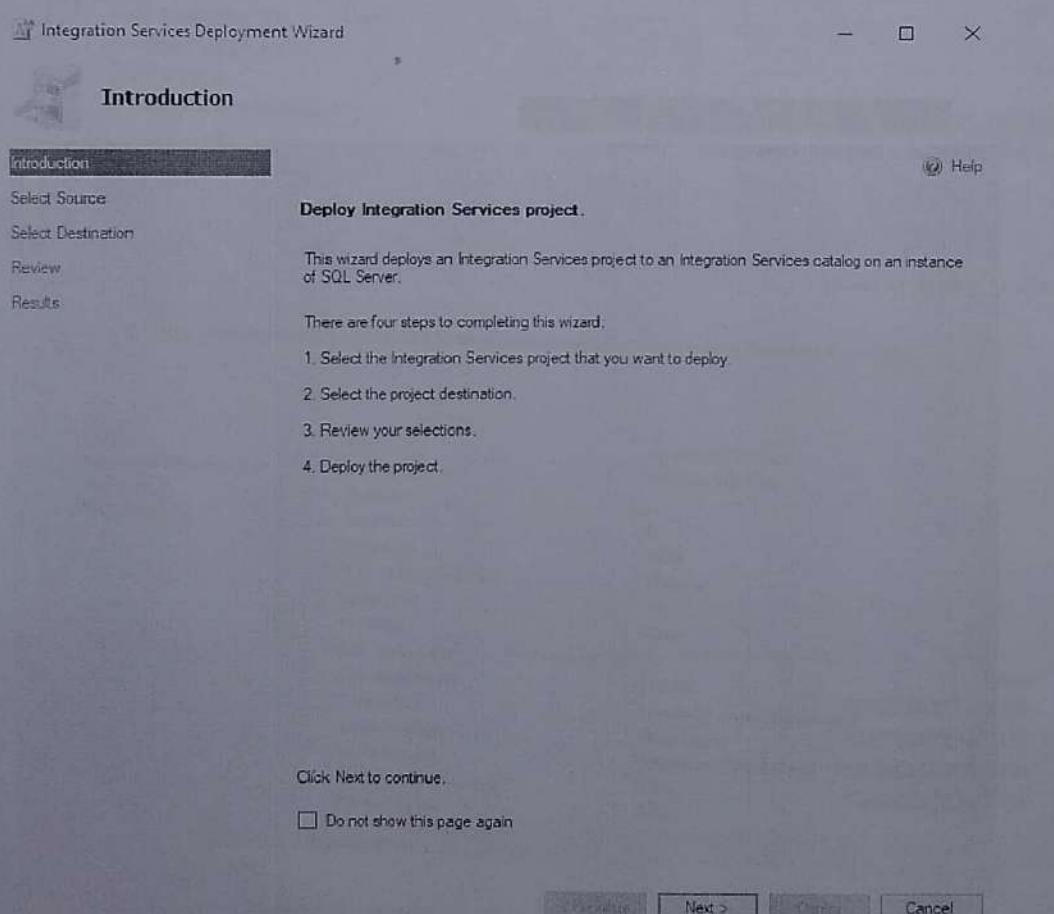
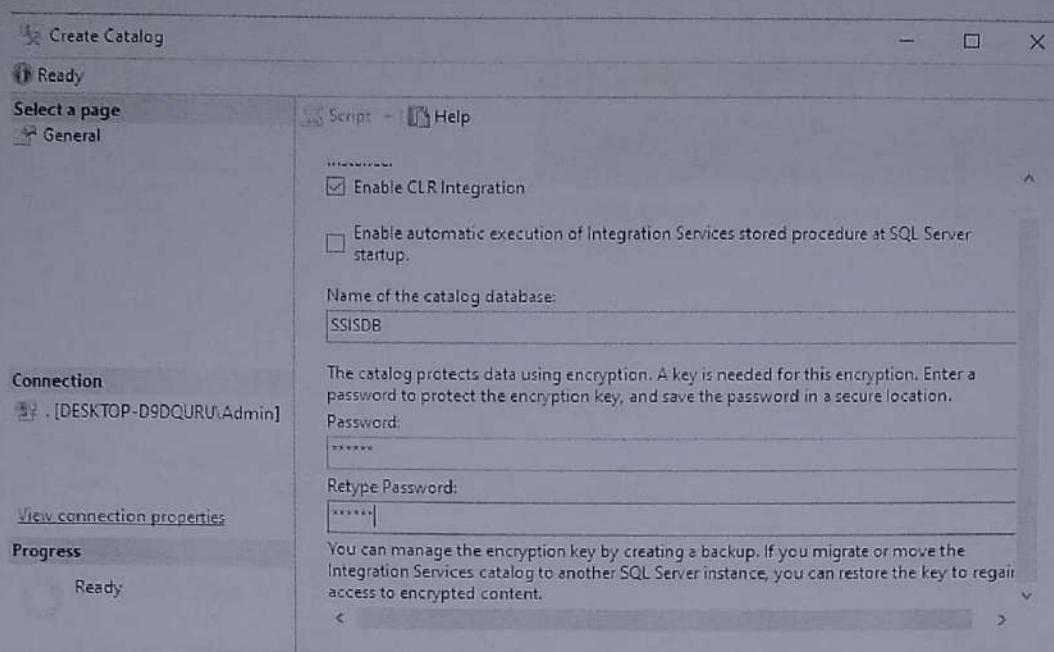
SQLQuery1.sql - (...9DQURU\Admin (53)) ×

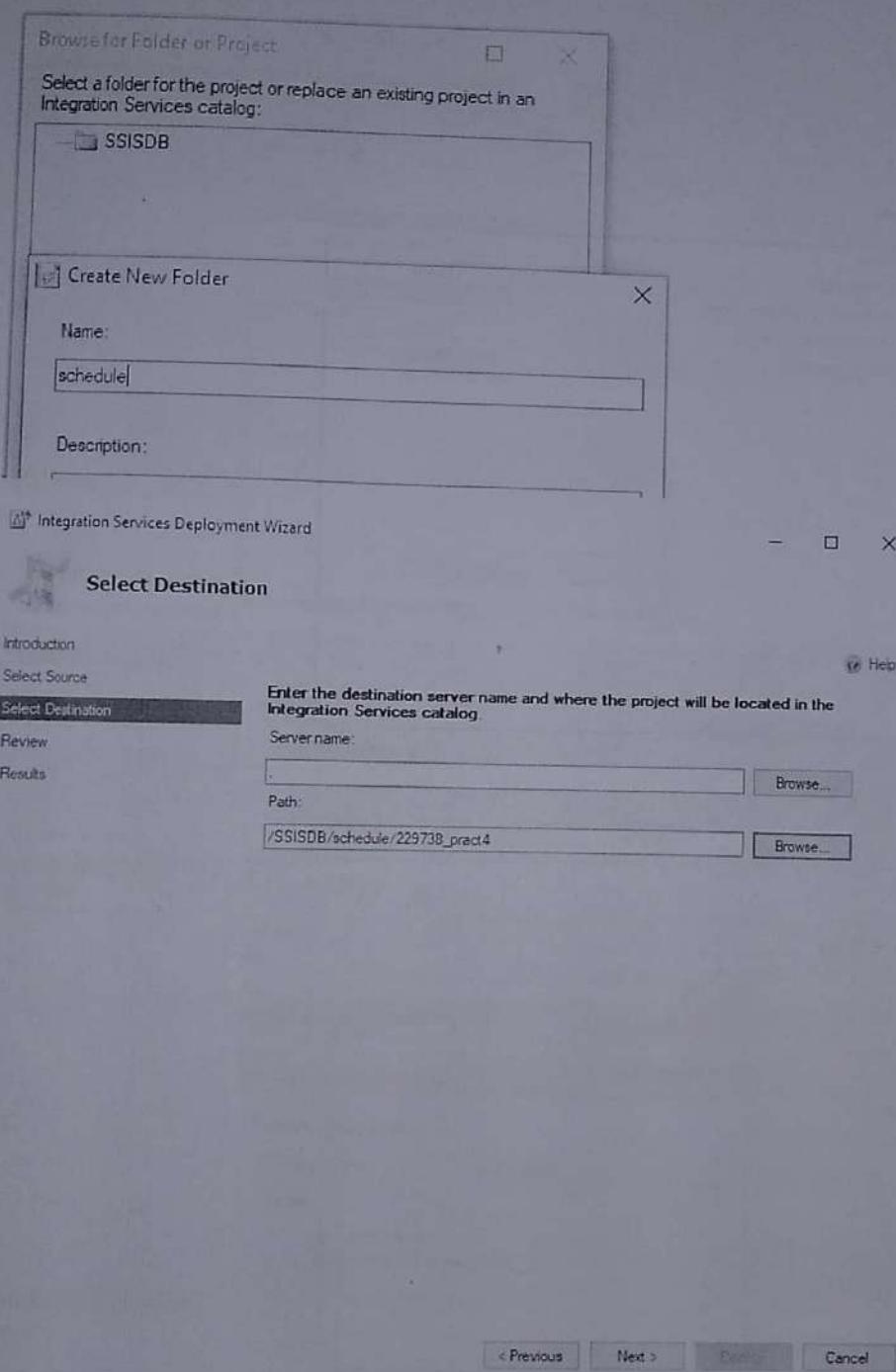
```
***** Script for SelectTopNRows command from SSMS *****/
SELECT TOP 1000 [id]
      ,[name]
      ,[sal]
      ,[usdsal]
  FROM [Anand_Destination].[dbo].[Anand]
```

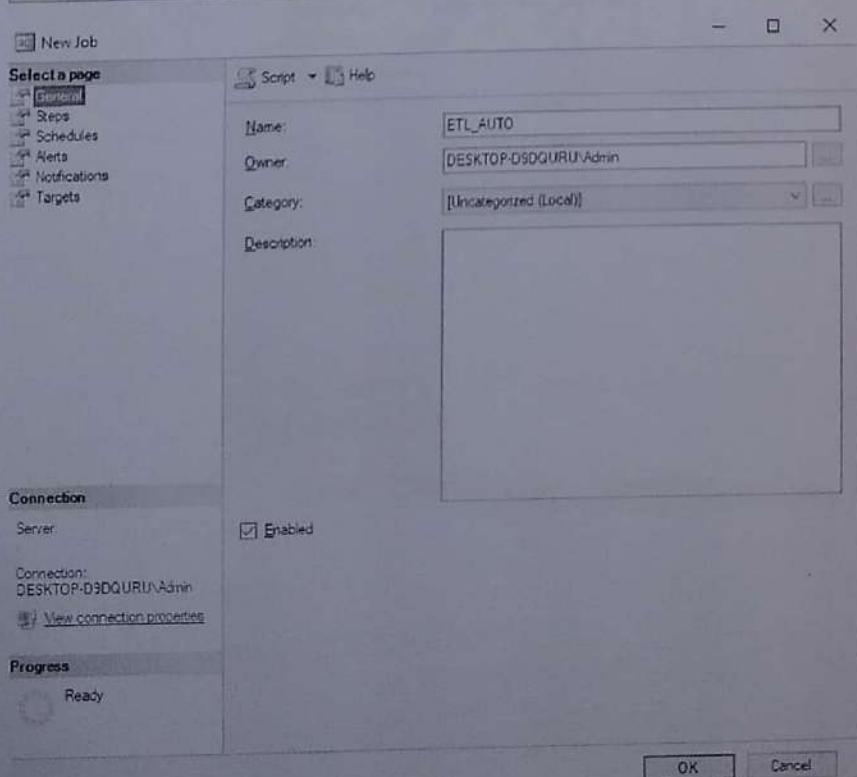
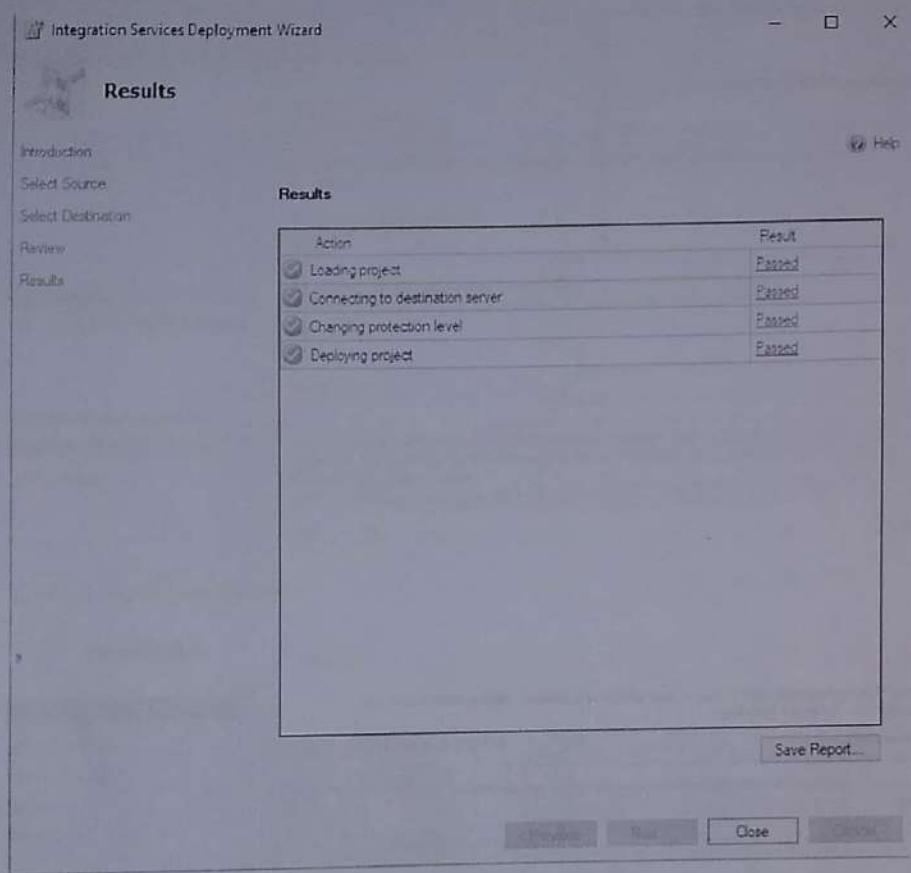
100 %

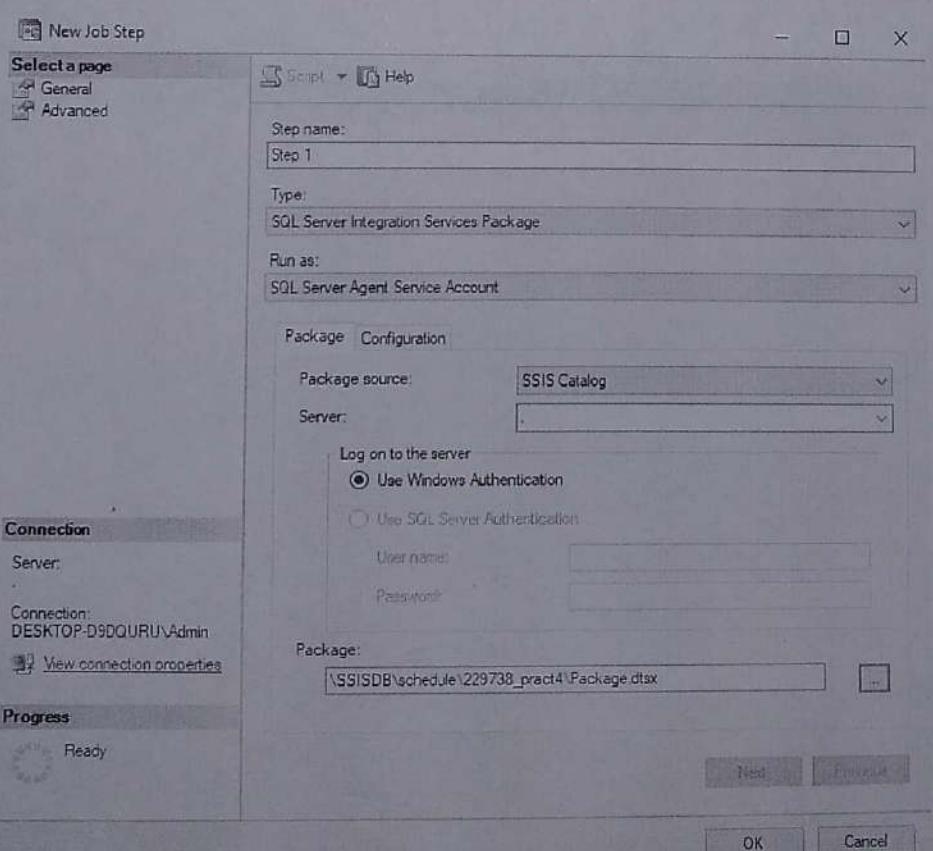
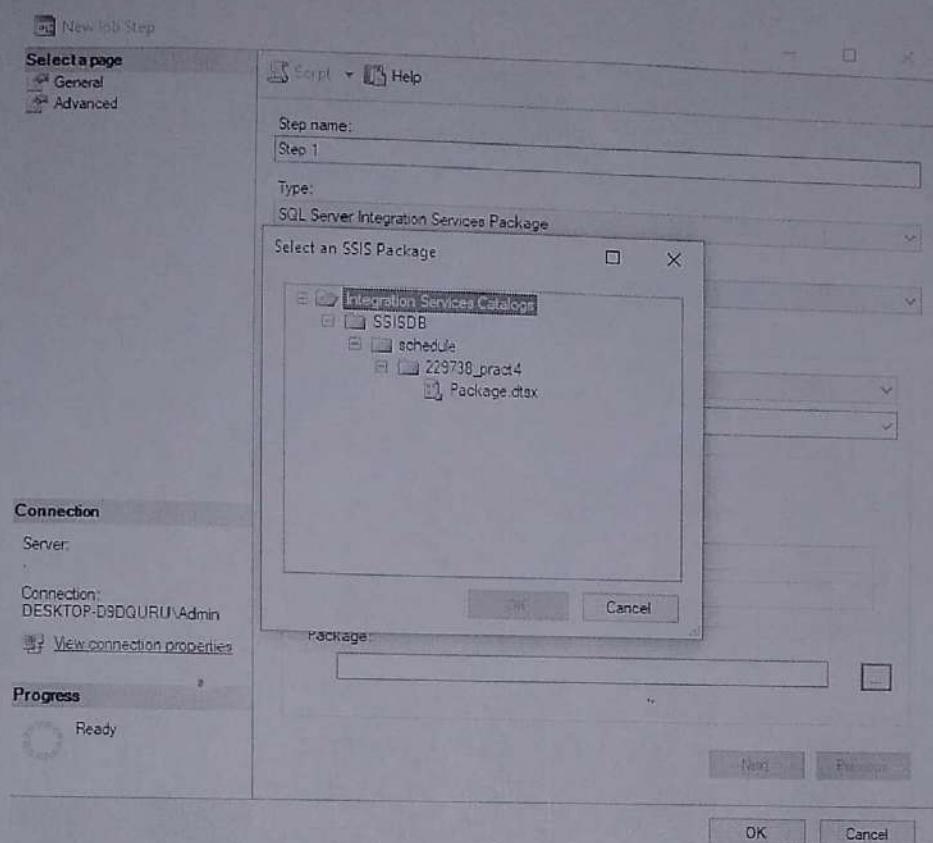
Results Messages

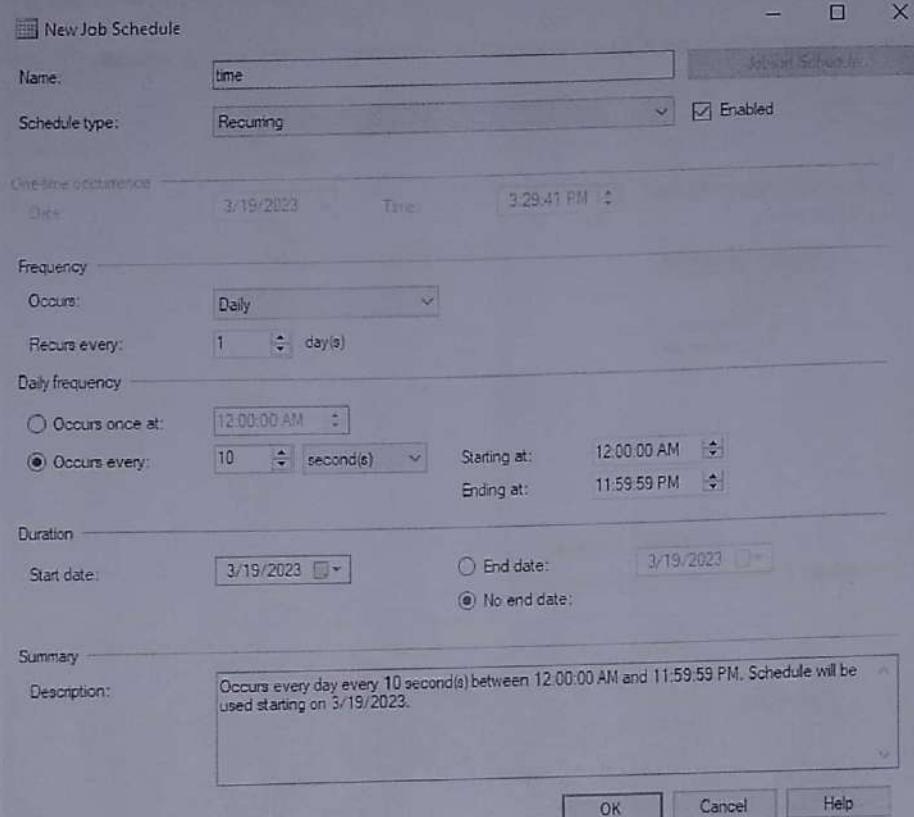
	<input type="checkbox"/>	id	name	sal	usdsal
1	<input type="checkbox"/>	1	Anand	40000.00	487.004878048780487
2	<input type="checkbox"/>	2	Rohan	50000.00	609.756097560975609
3	<input type="checkbox"/>	3	Surbhi	400520.00	4884.390243902439024
4	<input type="checkbox"/>	4	Sandeep	41000.00	500.000000000000000











SQLQuery2.sql - (...9DQURU\Admin (62)) × DESKTOP-D9DQURU...Source - dbo.Data SQLQuery1.sql - (...9DQURU\Admin (53))

```
***** Script for SelectTopNRows command from SSMS *****/
SELECT TOP 1000 [id]
,[name]
,[sal]
,[usdsal]
FROM [Anand_Destination].[dbo].[Anand]
```

100 %

Results Messages

	id	name	sal	usdsal
1	1	Anand	40000.00	437.804878048780487
2	2	Rohan	50000.00	609.756097560975609
3	3	Surbhi	400520.00	4884.390243902439024
4	4	Sandeep	41000.00	500.000000000000000
5	5	Ram	451200.00	5502.439024390243902
6	6	Indra	45780.00	558.292682926829268
7	7	Pawan	978460.00	11932.439024390243902

B) Execute the MDX queries to extract the data from the datawarehouse.



- Designing cube in MSSQL and perform MDX queries in MSSQL.

Step 1:- we need to insert database script in ssms.
(This script has 5000 lines of SQL command).

Step 2:- Go to the ssms click on new query (Below the file menu) and paste the SQL command which are copied from Datawarehouse house script and click on execute.

Step 3:- Go to the server data tool

Create a new project in analysis services. Select analysis services multidimensional option.

Right click on data sources in solution explorer and select new data sources.

Next → Delete the entire setup → New → put (-) dot as a server name → Select the database which is created through script in ssms → Test connection → OK → Next → inherit → finish.

Right click on datasource view in solution explorer

Next → Next → Now select the table from database and add to the cube → Next → finish.

Now you can see the new schema on the window
Right click on cubes (in solution explorer)

Select new cube → Next → Next → Select table →

Next → Next → Give the cube name → finish.

Step 4 :- Double click on the table which you went to add in the cube and select the attributes of the table we can set the hierarchy of the attributes.

Step 5 :- Now right click on the project name in the solution explorer → properties → deployment → processing option → Do not process → Server mode → Deploy all → Apply → OK

Step 6 :- Right click on project name in the solution explorer → Deploy → Wait for Deployment process.

Step 7 :- Right click on the project name in the solution explorer → process → Run. There will be error message which will show the list of errors related to the connections. In that error list we have to select OLE DB error (2nd error). Copy the details in the notepad.

Step 8 :- Go to the SSMS → security → New → login and paste the string which is copied in the notepad as a login name → Now select the database.

Step 9 :- User mapping Select the database (created in SSMS) → Select db-datareader → OK

Step 10 :- Go to the database tool → Right click on the project name → process → run → close.

Step 11 :- Double click on cube (DW-Cube.cube) and then go to the browser tag. Now drag the field on the browser.

- MDX Query (Multiple dimensional executable query)

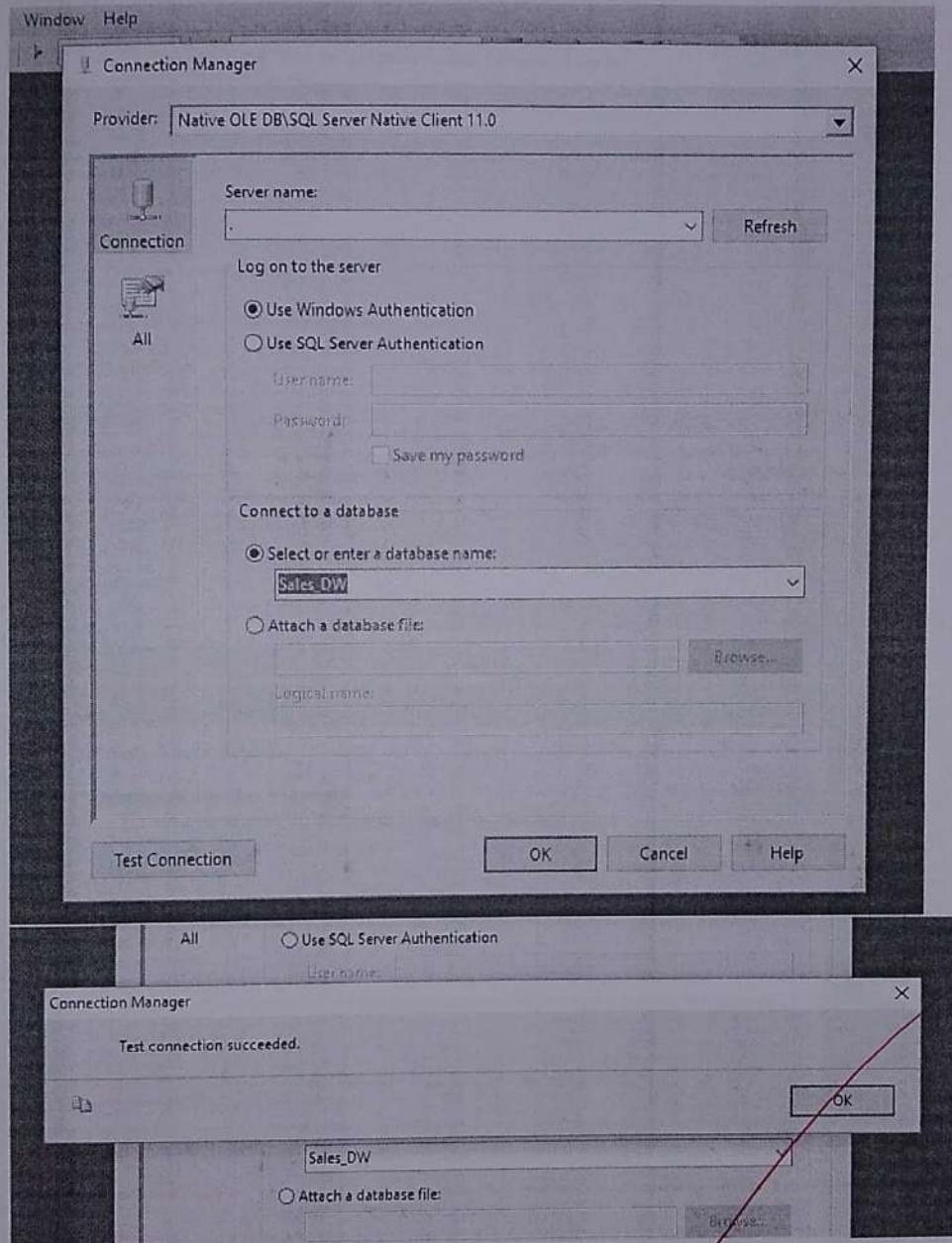
Step 1 :- Open SSMS

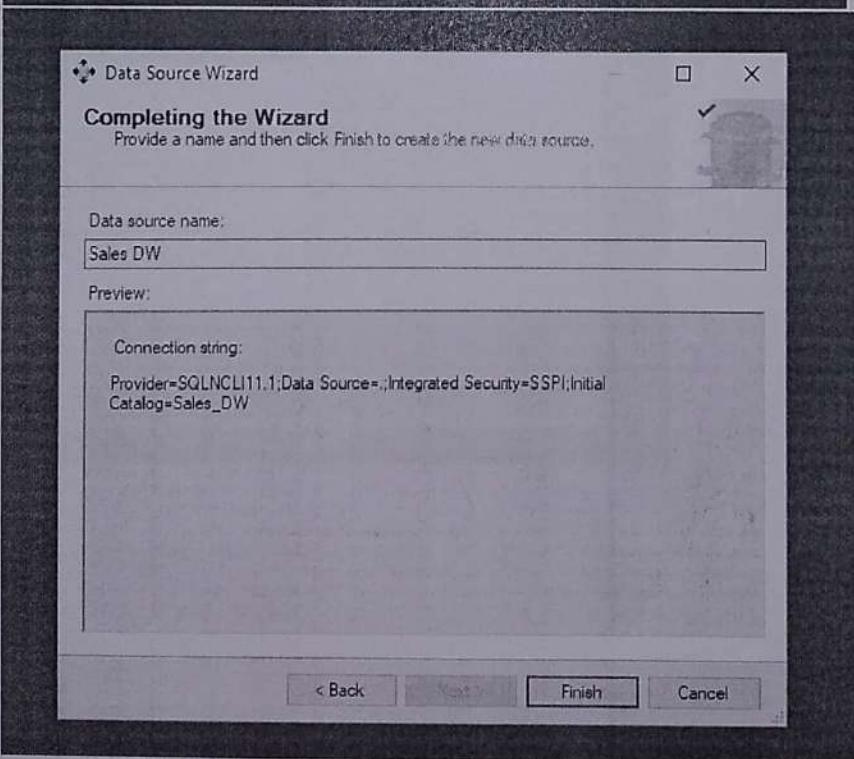
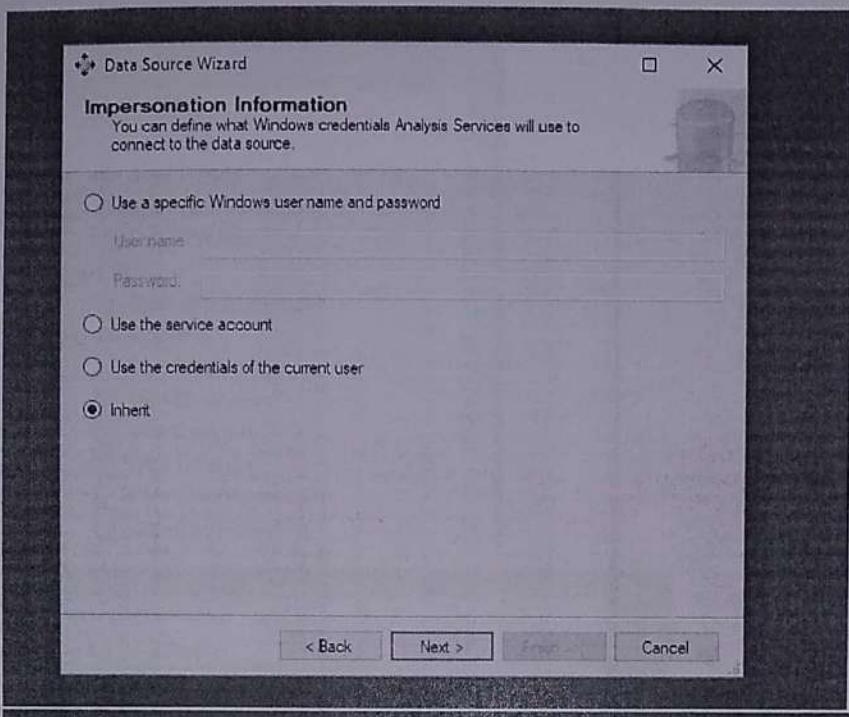
Step 2 :- Change the server type to analysis services.

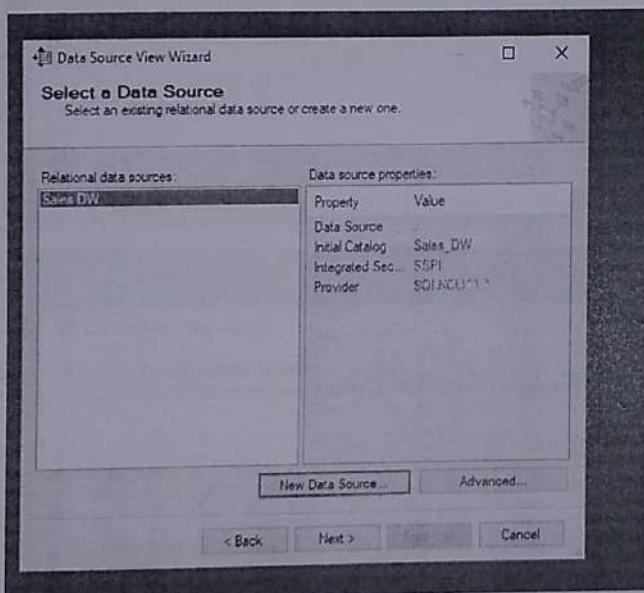
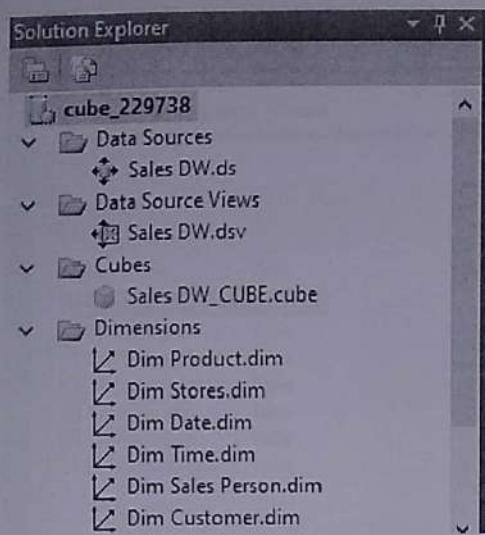
Step 3 :- Click on new query

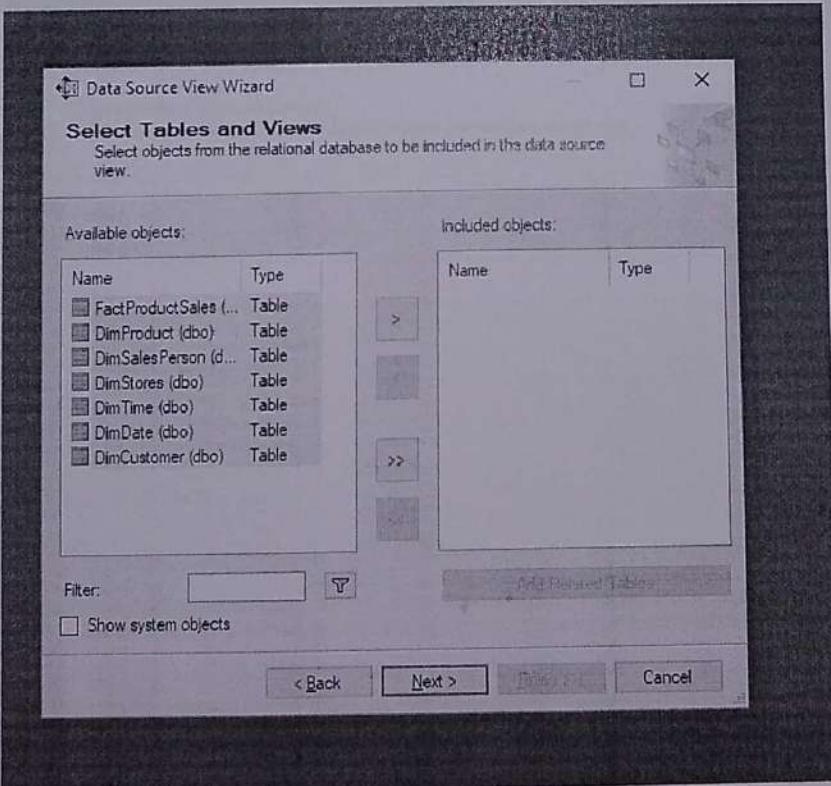
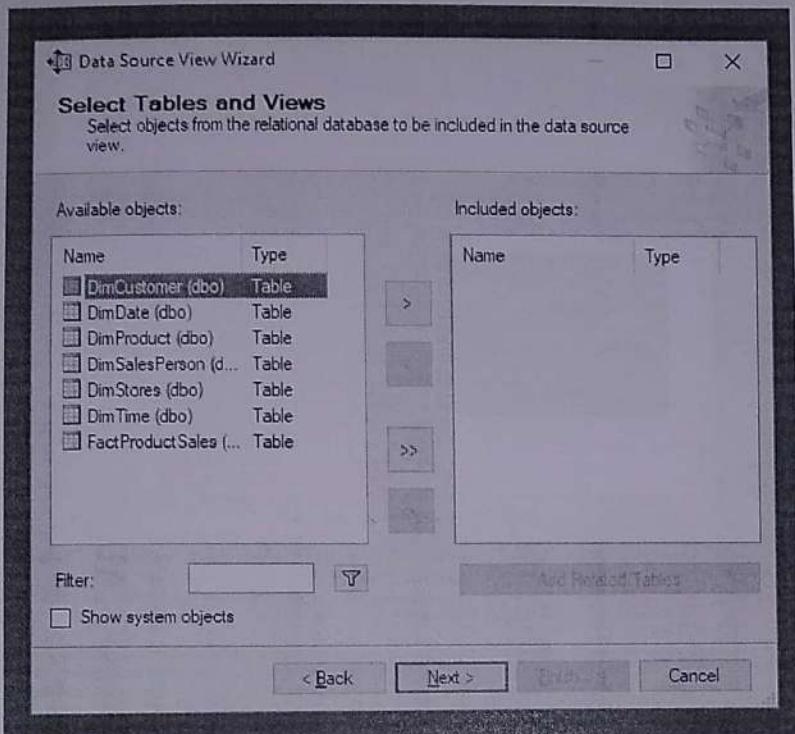
Step 4 :- Type the query.

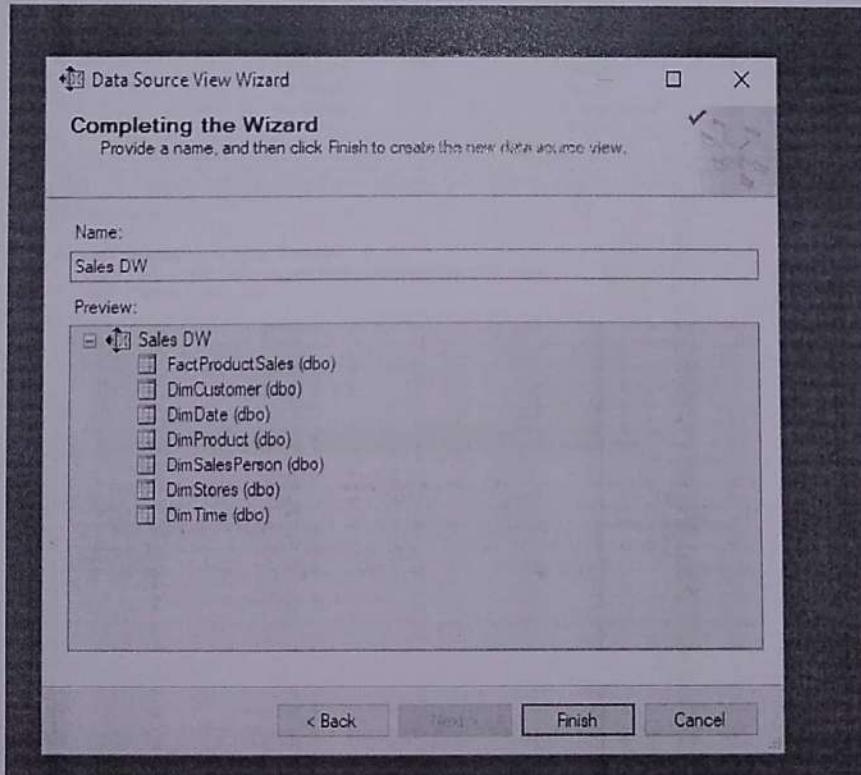
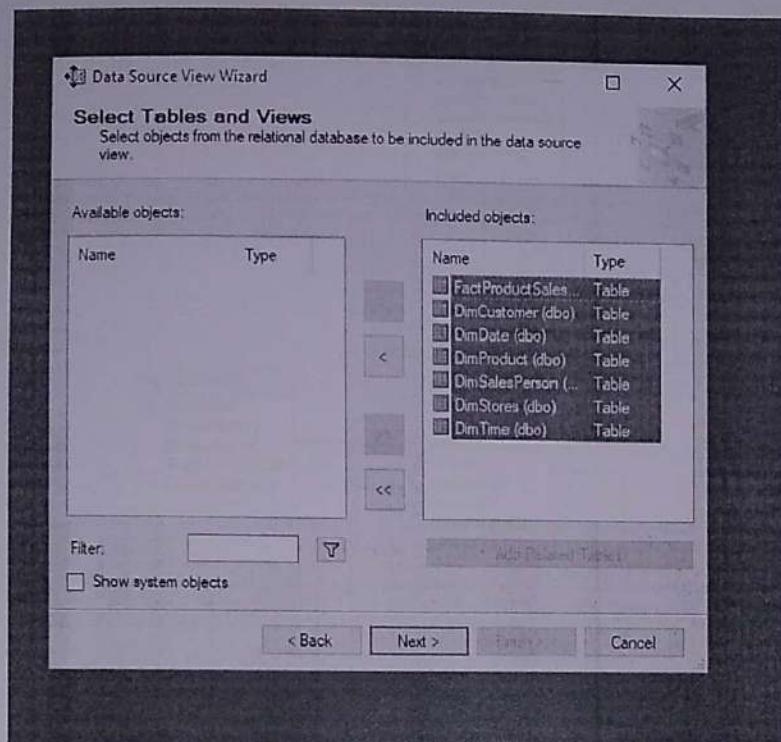
Cube Practical

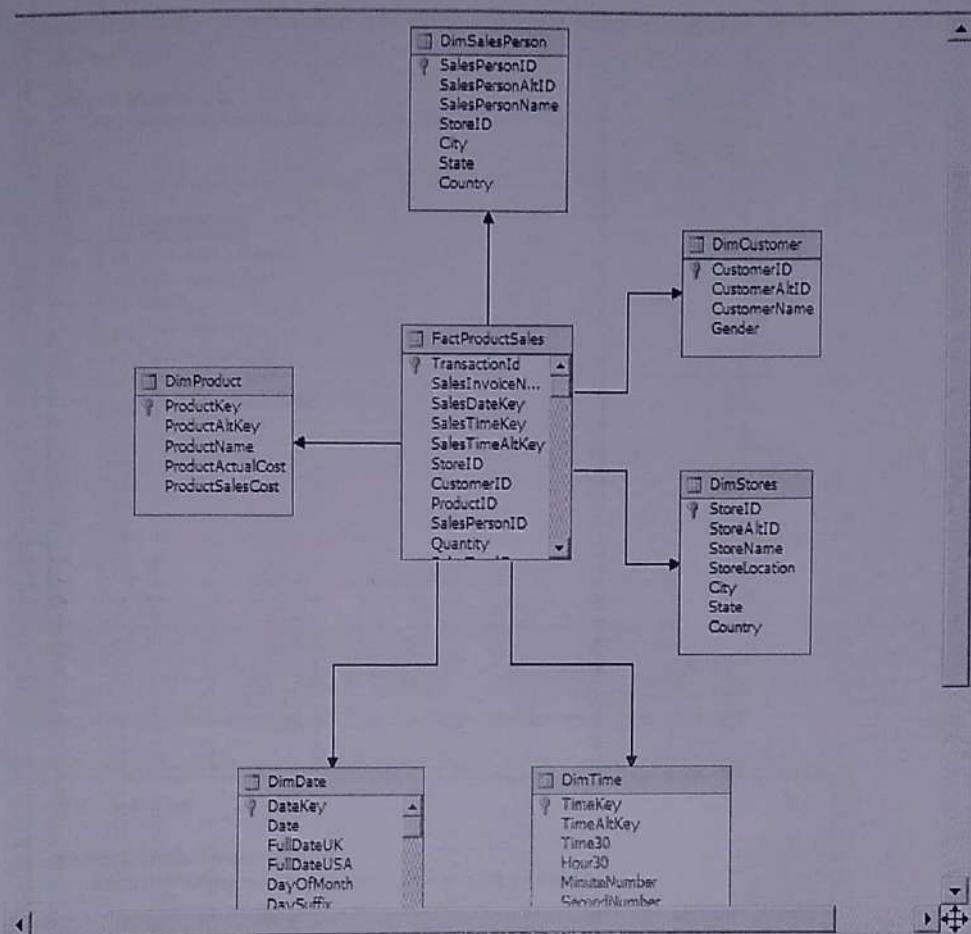


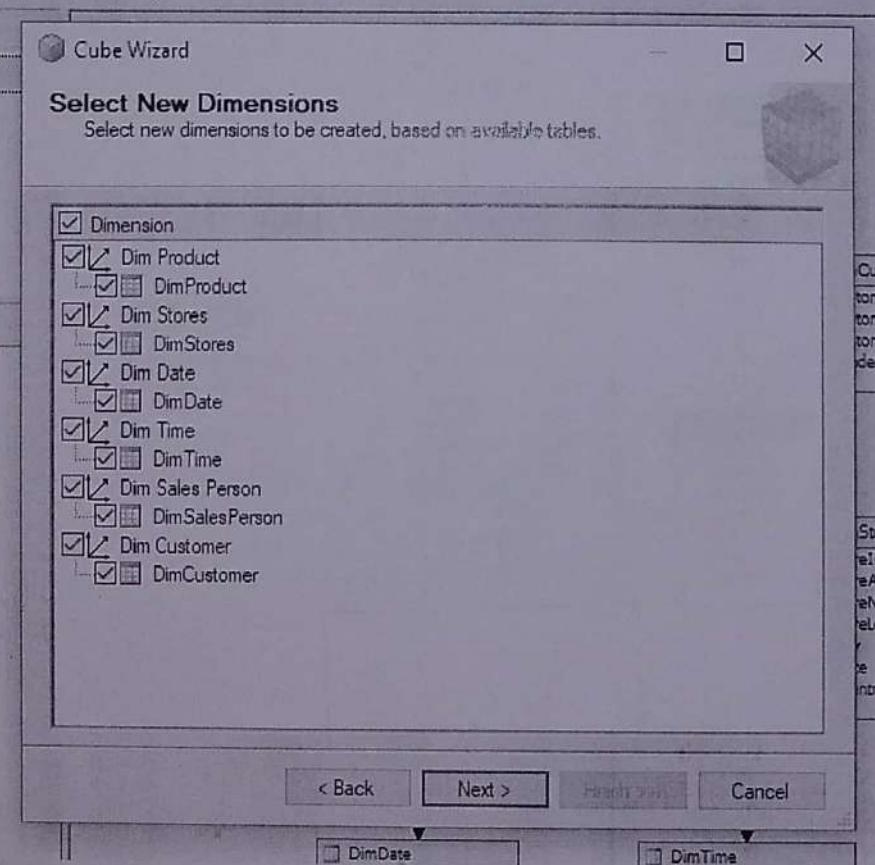
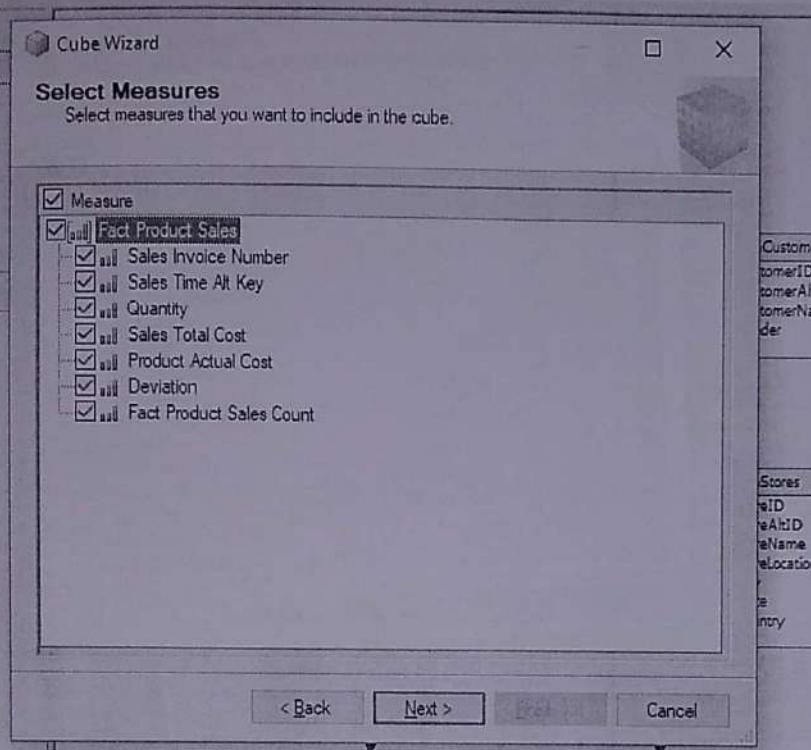


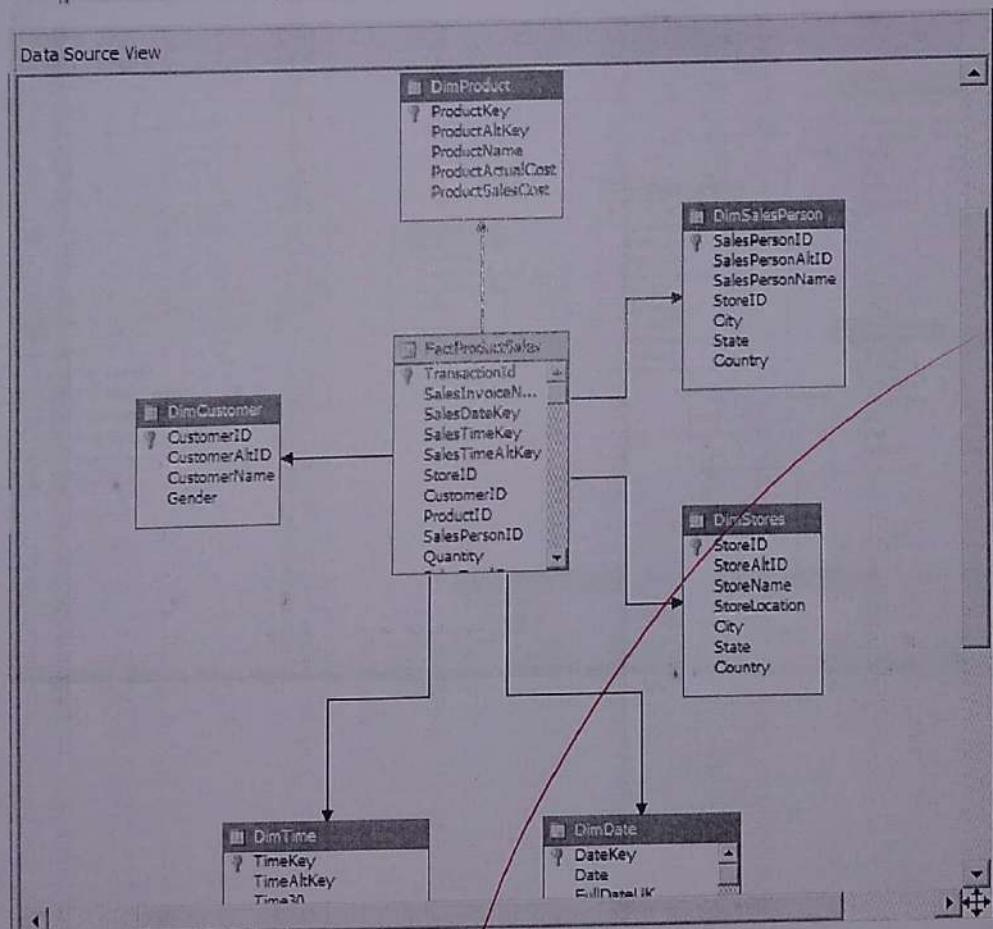
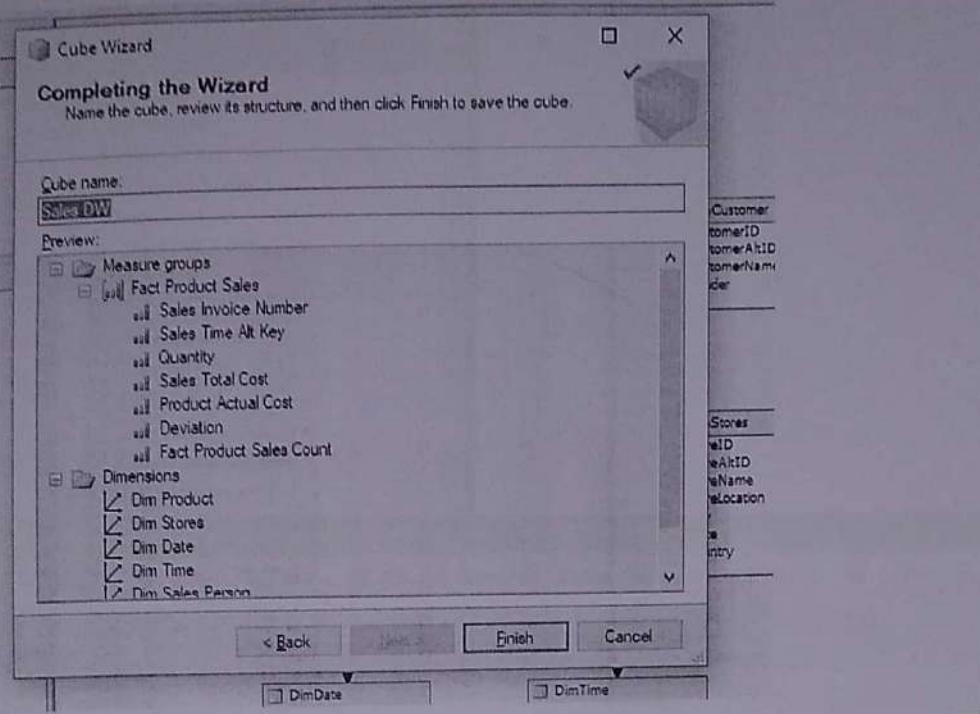


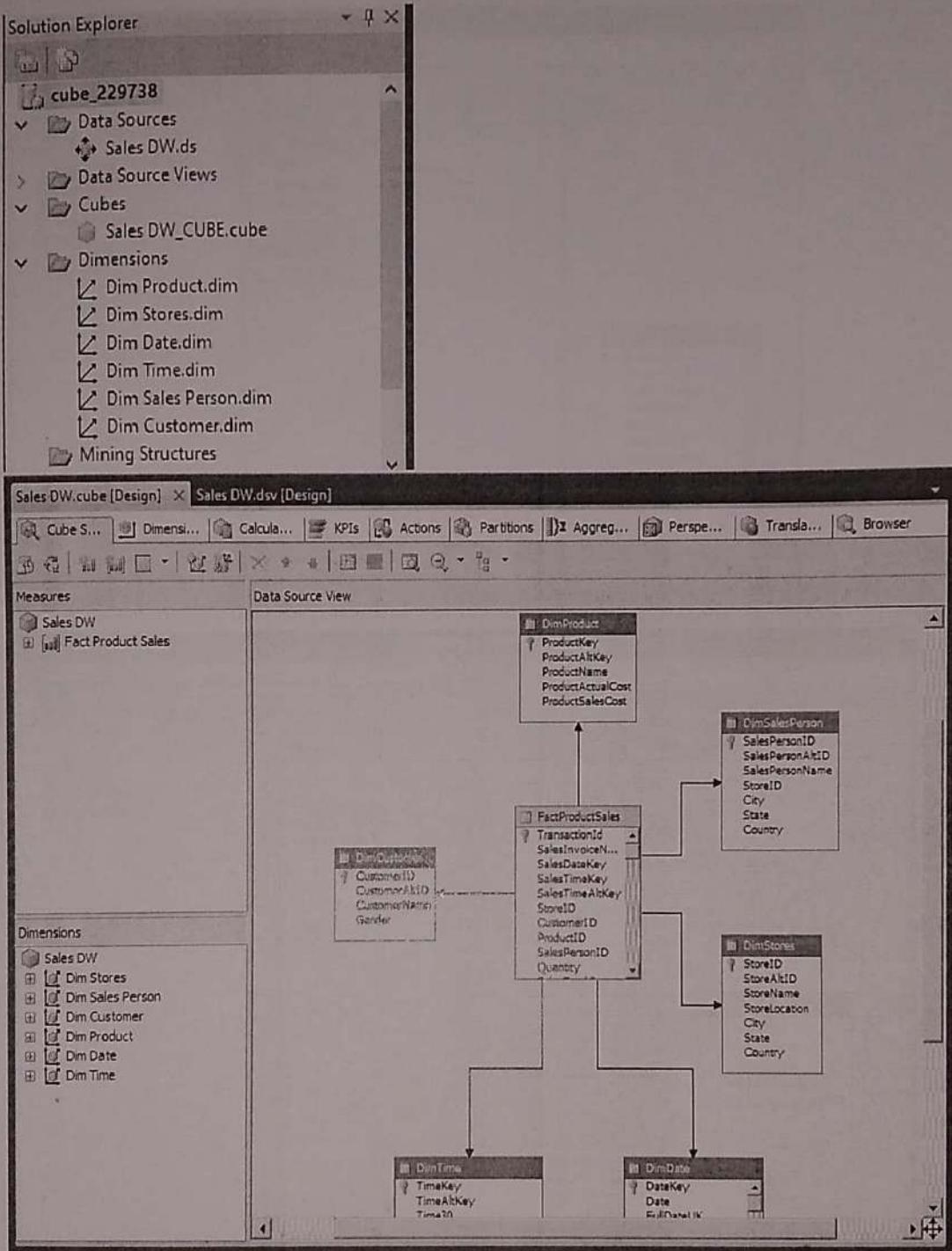












Dim Date.dim [Design]* Dim Customer.dim [Design]* Dim Product.dim [Design]* Sales DW.cube [Design]*

Dimension Structure Attribute Relationships Translations Browser

Attributes

Hierarchies

To create a new hierarchy, drag an attribute here.

Data Source View

DimDate

- DayOfYear
- WeekOfMonth
- WeekOfQuarter
- WeekOfYear
- Month
- MonthName
- MonthOfQuarter
- Quarter
- QuarterName
- Year

Dim Date.dim [Design]* Dim Customer.dim [Design]* Dim Product.dim [Design]* Sales DW.cube [Design]*

Dimension Structure Attribute Relationships Translations Browser

Attributes

Hierarchies

To create a new hierarchy, drag an attribute here.

Data Source View

DimProduct

- ProductKey
- ProductAltKey
- ProductName
- ProductActualCost
- ProductSalesCost

Dim Date.dim [Design]* Dim Customer.dim [Design]* Dim Product.dim [Design]* Sales DW.cube [Design]*

Dimension Structure Attribute Relationships Translations Browser

Attributes Hierarchies Data Source View

Dim Customer
Customer ID
Customer Name

To create a new hierarchy, drag an attribute here.

DimCustomer
CustomerID
CustomerAltID
CustomerName
Gender

Dim Sales Person.dim [Design]* Dim Date.dim [Design]* Dim Customer.dim [Design]* Dim Product.dim [Design]*

Dimension Structure Attribute Relationships Translations Browser

Attributes Hierarchies Data Source View

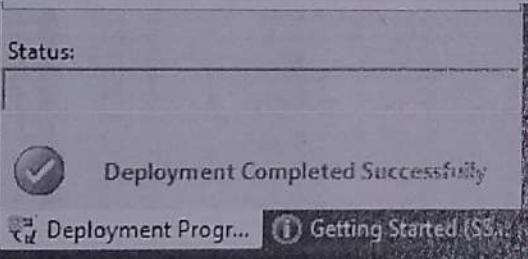
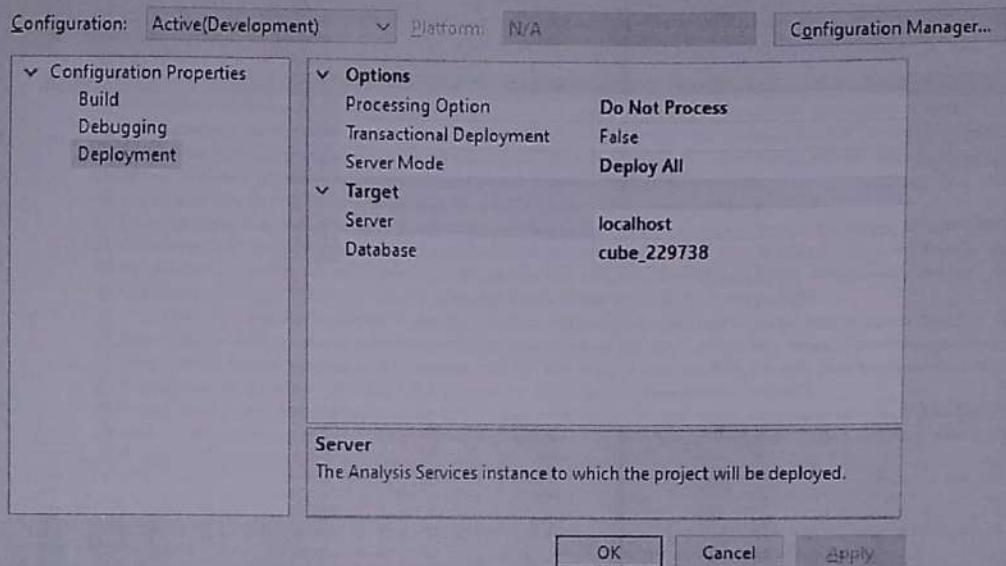
Dim Sales Person
City
Country
Sales Person ID
Sales Person Name
State

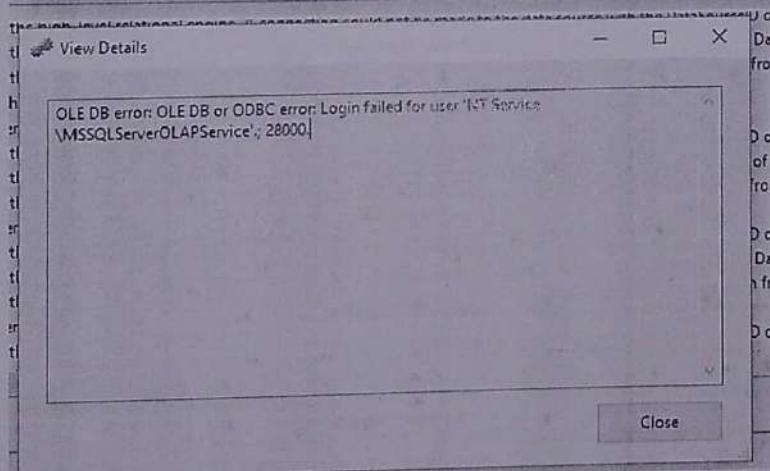
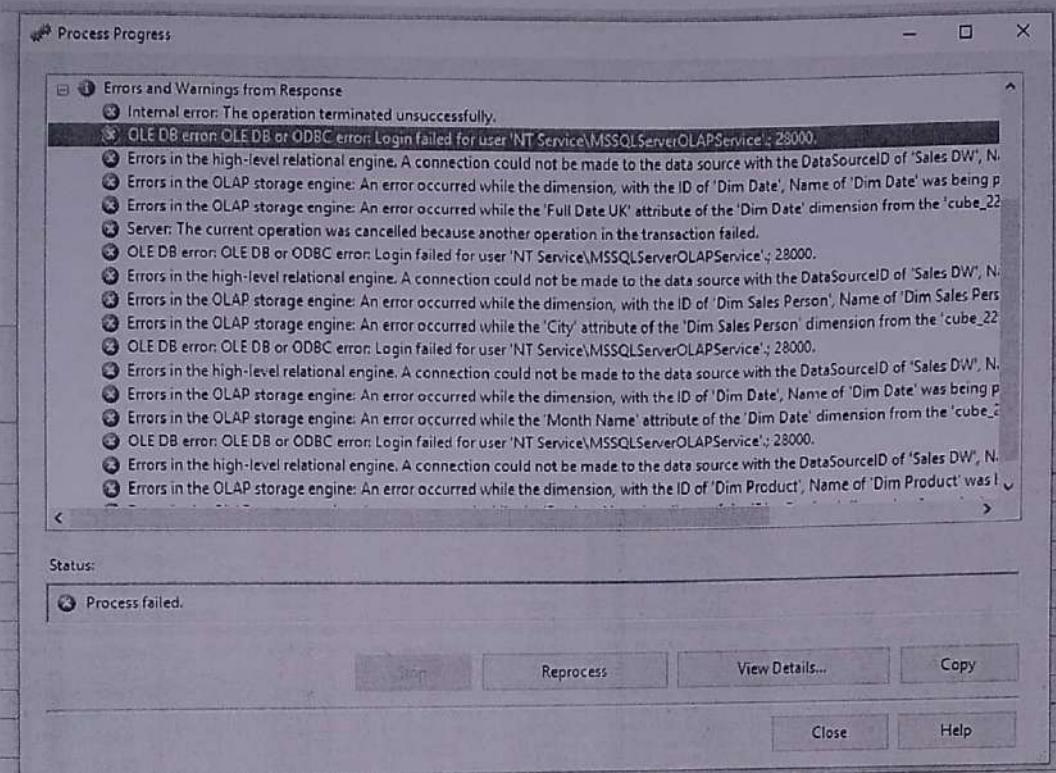
Hierarchy
• City
.. State
• Country
<new level>

To create a new hierarchy, drag an attribute here.

DimSalesPerson
SalesPersonID
SalesPersonAltID
SalesPersonName
StoreID
City
State
Country

cube_229738 Property Pages





Object Explorer

Connect ▾

- . (SQL Server 11.0.3128 - DESKTOP-D9DQURU\Admin)
 - Databases
 - System Databases
 - Database Snapshots
 - AdventureWorks2012
 - ReportServer
 - ReportServerTempDB
 - Sales_DW
- Security
 - New ▾
 - Login... ▾
 - Reports ▾
 - Server Role...
 - Credential...
 - Audit...
 - Server Audit Specification...
- Server Objects
- Replication
- AlwaysOn High Availability
- Management

SQLQuery1.sql - (5, 20130:

(6, 20130:
(6, 20130:
(7, 20130:
(7, 20130:
--3-jan--
--SalesI
(8, 20130:
(8, 20130:
(9, 20130:
(9, 20130:

DateKey
4 20130104
5 20130105

Login - New

Select a page

General Server Roles User Mapping Securables Status

Script Help

Login name: NT Service\MSSQLServerOLAPService Search...

Windows authentication
 SQL Server authentication

Password:

Confirm password:

Specify old password

Old password:

Enforce password policy

Enforce password expiration

User must change password at next login

Mapped to certificate

Mapped to asymmetric key

Map to Credential

Mapped Credentials

Credential	Provider

Add

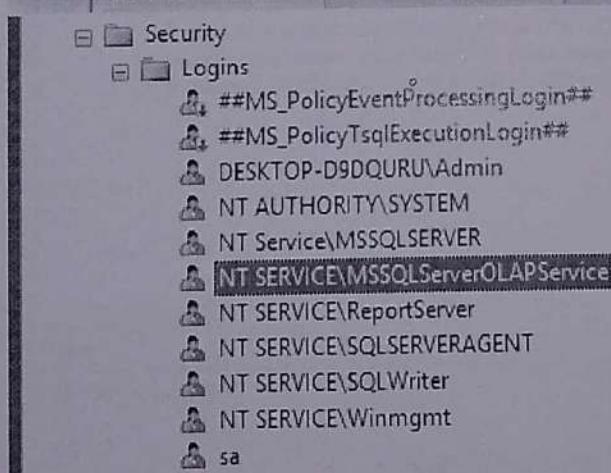
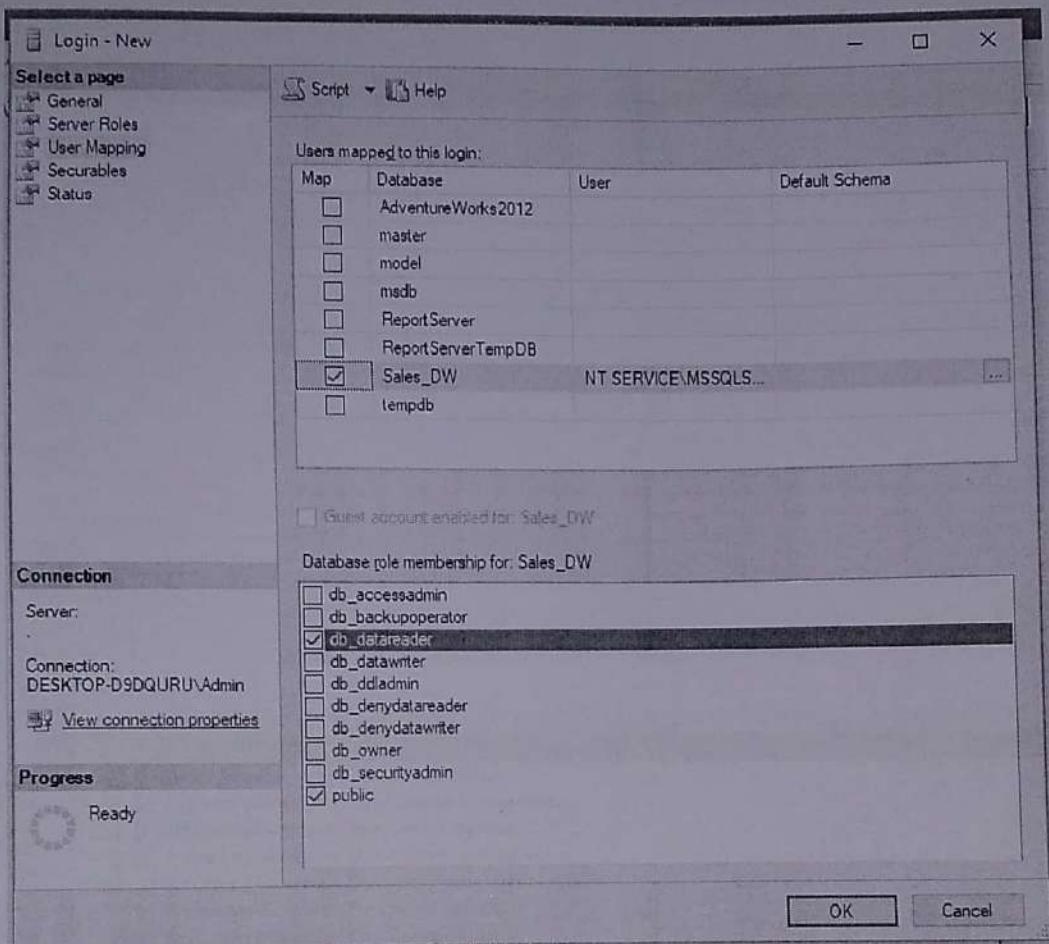
Progress

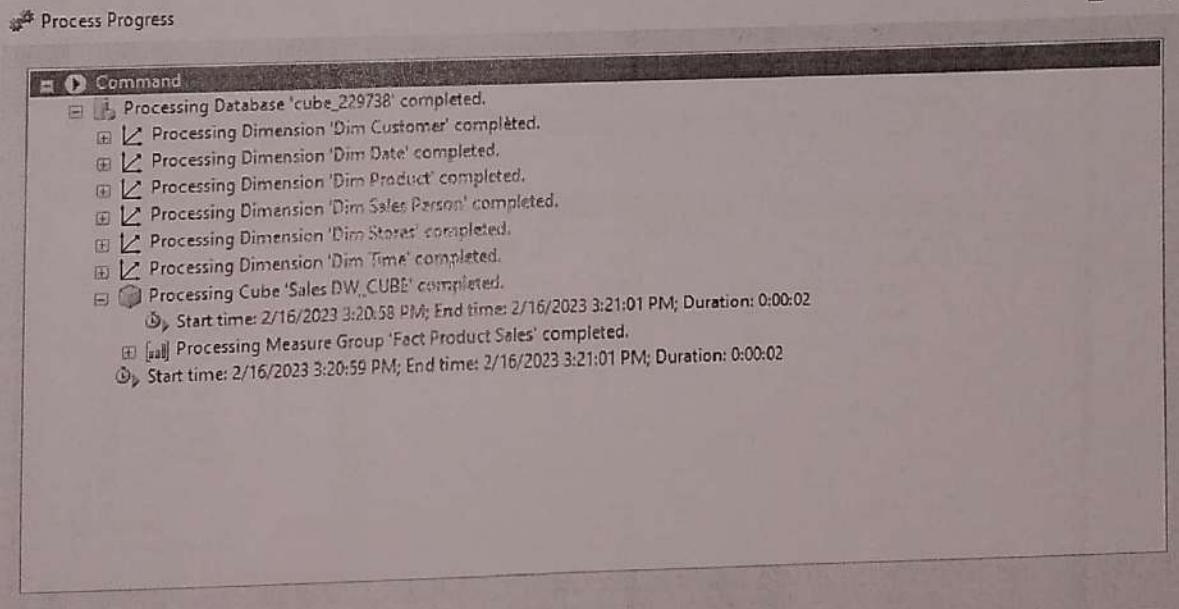
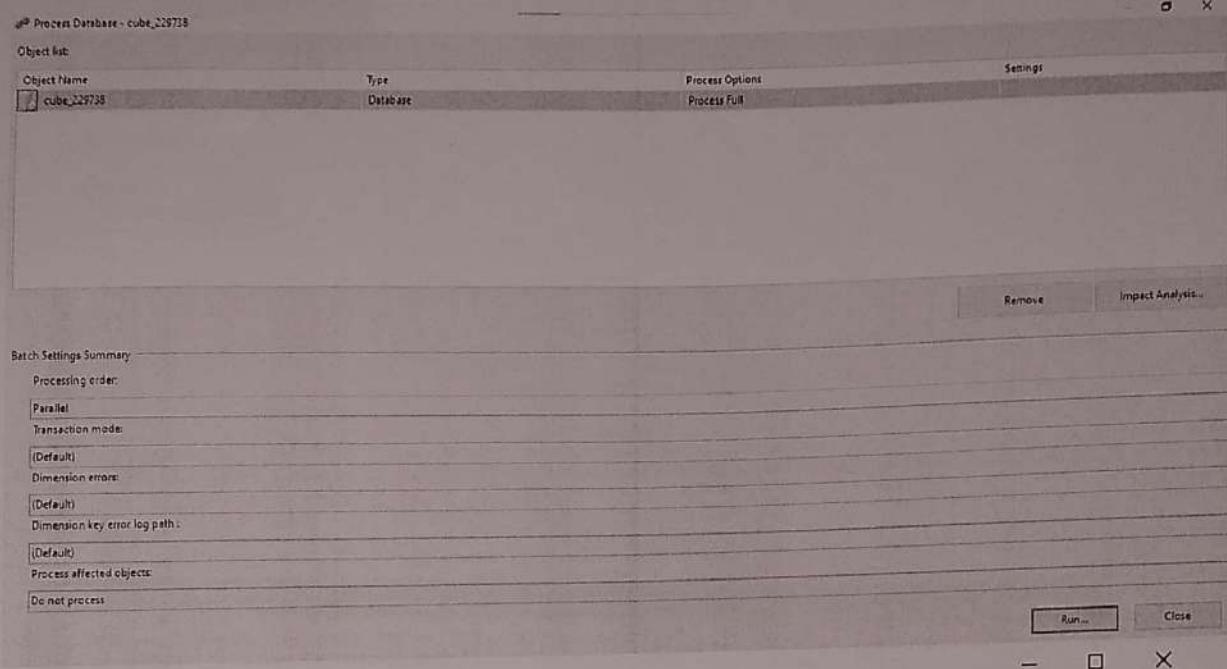
Ready

Default database: Sales_DW

Default language: <default>

OK Cancel





Status:

Process succeeded.

Sales DW.cube [Design] Dim Sales Person.dim [Design] Dim Date.dim [Design] Dim Customer.dim [Design]

Cube S... Dimensions Calculations KPIs Actions Partitions Aggregations Perspectives Translations Browser

Language: Default

Edit as Text Import...

Sales DW

Metadata

Measure Group:
Fact Product Sales

Sales Time Alt Key
Sales Total Cost

KPIs

Dim Customer

Customer ID
Customer Name

Dim Date

Date Key
Full Date UK
Month Name
Quarter Name
Week Of Month
Year
Hierarchy

Dim Product

Dim Sales Person

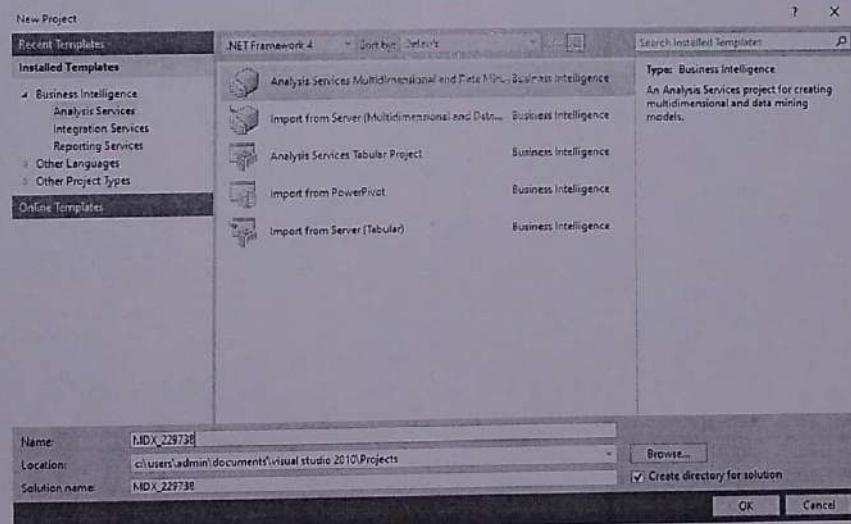
Calculated Members

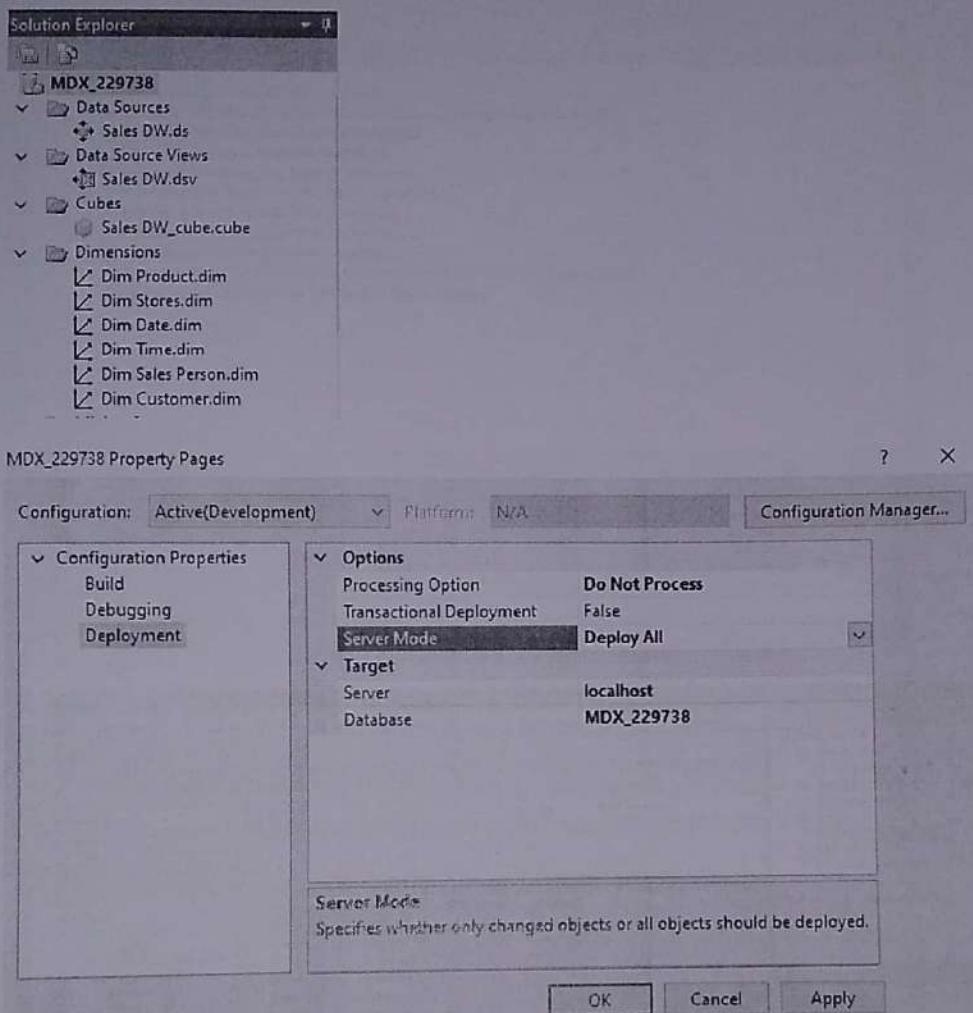
Dimension Hierarchy Operator Filter Expression

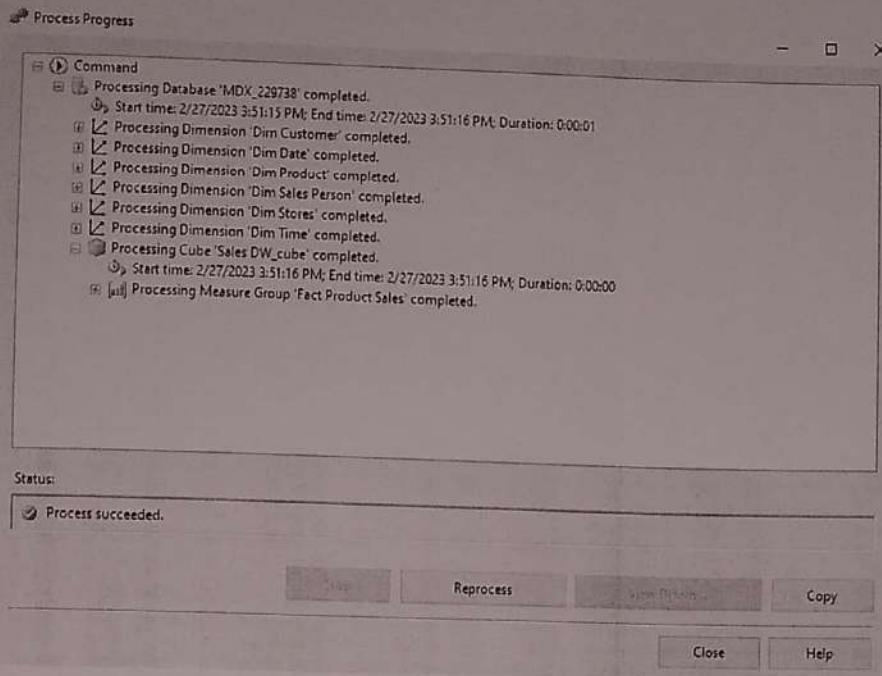
<Select dimension>

Customer Name	Country	Sales Person Name	City	State	Month Name	Customer ID
Bill Gates	India	Ashish	Ah...	Guj	January	2
Henry Ford	India	Ashish	Ah...	Guj	January	1
Henry Ford	India	Srinivas	Ah...	Guj	January	1
Muskan Shaikh	India	Ketan	Ah...	Guj	January	3

MDX Query



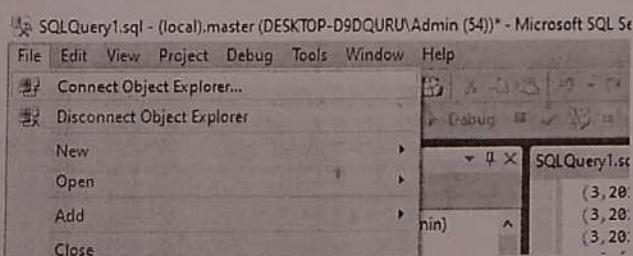


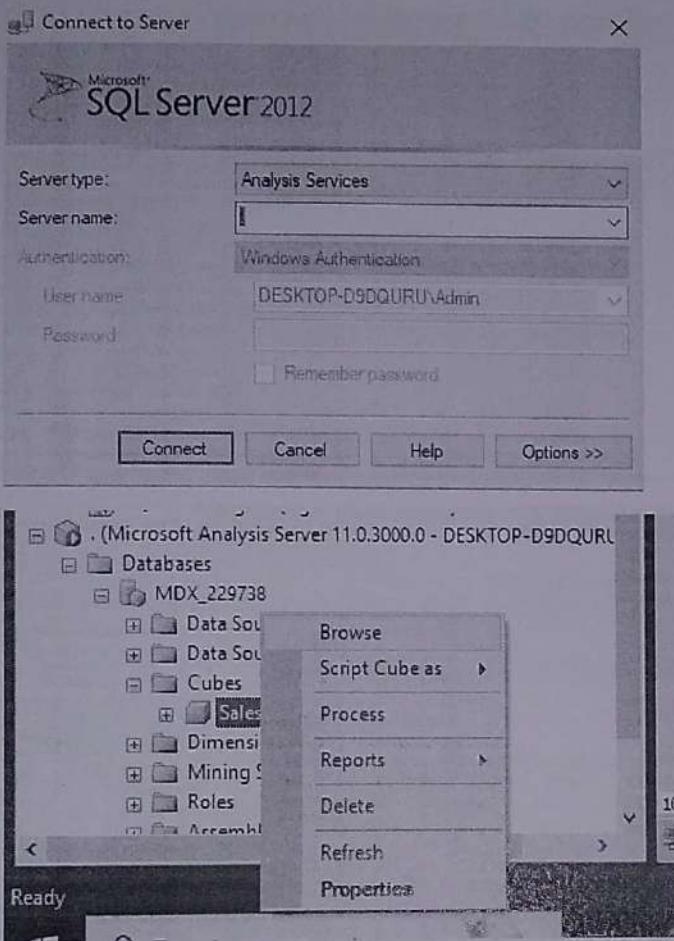


The screenshot shows the Analysis Studio interface with the 'Sales DW_cube.cube [Design]' tab selected. The Solution Explorer on the right shows the database structure, including dimensions like Dim Product, Dim Store, Dim Date, Dim Sales Person, and Dim Customer, along with the Sales DW_cube cube.

Customer Name	Product Name	Shrs Perce(%)	Div-yield
Bill Gates	Nirma Soap	1	22
Bill Gates	Rice Grains Bag	1	1.5
Bill Gates	SunFlower Oil...	1	1
Henry Ford	Anal Watin...	2	4
Henry Ford	Nirma Soap	1	3
Henry Ford	Nirma Soap	3	9
Henry Ford	Rice Grains Bag	1	1
Henry Ford	Rice Grains Bag	3	1
Henry Ford	SunFlower Oil...	1	4.5
Henry Ford	SunFlower Oil...	3	1.5
Henry Ford	Wheat Flour ...	1	4
Mukesh Ambani	Anal Watin...	2	8
Mukesh Ambani	Nirma Soap	2	12
Mukesh Ambani	Rice Grains Bag	2	4
Mukesh Ambani	SunFlower Oil...	2	1.5
Mukesh Ambani	Wheat Flour ...	2	2

MDX Query





Sales DW_cube [Browse] × SQLQuery1.sql - (...9DQURU\Admin (54))

Edit as Text Import... |

Language: Default

Sales DW_cube

Metadata Functions

Measure Group: <All>

Fact Product Sale

- Deviation
- Fact Product
- Product Actual
- Quantity
- Sales Invoice
- Sales Time Al
- Sales Total C

KPIs

Dim Customer

Customer ID

```
SELECT NON EMPTY { [Measures].[Deviation] } ON COLUMNS, NON EMPTY { ([Dim Sales Person].[City].[City].ALLMEMBERS * [Dim Customer].[Customer Name].[Customer Name].ALLMEMBERS * [Dim Sales Person].[Country].[Country].ALLMEMBERS * [Dim Stores].[Store ID].[Store ID].ALLMEMBERS ) } ON ROWS
DIMENSION PROPERTIES MEMBER_CAPTION, MEMBER_UNIQUE_NAME ON ROWS
FROM [Sales DW_cube] CELL PROPERTIES VALUE, BACK_COLOR, FORE_COLOR, FORMATTED_VALUE, FORMAT_STRING, FONT_NAME, FONT_SIZE, FONT_FLAGS
```

Sales DW_cube [Browse] × SQLQuery1.sql - (...9DQURU\Admin (54))

Edit as Text Import... |

Language: Default

Sales DW_cube

Metadata

Measure Group: <All>

Fact Product Sale

- Deviation
- Fact Product
- Product Actual
- Quantity
- Sales Invoice
- Sales Time Al
- Sales Total C

KPIs

Dim Customer

- Customer ID
- Customer Name

Dim Date

Dim Product

Dim Sales Person

- City
- Country

Dimension Hierarchy Operator Filter Expression Parameter

<Select dimension>

City	Customer Name	Country	Store ID	Deviation
Ah...	Bill Gates	India	1	17.5
Ah...	Henry Ford	India	1	14.5
Ah...	Henry Ford	India	2	12.5
Ah...	Muskan Shaikh	India	1	27.5

MDX Query :-

1) Display total quantity sales dw?

The screenshot shows the Analysis Services MDX Editor interface. At the top, there's a navigation bar with tabs like 'Dimension' and 'Hierarchy'. Below it is a tree view of the cube structure under 'Sales DW_cube229738'. In the main pane, there's a table with one row labeled 'Quantity' containing the value '43'. At the bottom, the MDX query is displayed:

```
SELECT NON EMPTY { [Measures].[Quantity] } ON COLUMNS FROM [Sales DW_cube229738] CELL_PROPERTIES VALUE, FORE_COLOR, FORMATTED_VALUE, FORMAT_STRING, FONT_NAME, FONT_SIZE, FONT_FLAGS
```

2) Display total sales invoice number from sales dw?

Sales DW_cube229738 [Browse] X

Language: Default

Edit as Text Import... Dimension Hierarchy Operator Filter Expression Param...

Sales DW_cube229738

Metadata

Measure Group: <All>

Sales DW_cube229738

Measures

- Fact Product Sales
 - Deviation
 - Fact Product Sales Count
 - Product Actual Cost
 - Quantity
 - Sales Invoice Number
 - Sales Time Alt Key
 - Sales Total Cost
- KPIs
- Dim Customer
- Dim Date
- Dim Product
- Dim Sales Person
 - City
 - Country
 - Sales Person ID

Dimension Hierarchy <Select dimension>

Sales Person ID	Sales Invoice Number
1	59
2	44
3	36

Sales DW_cube229738 [Browse] X

Language: Default

Edit as Text Import... Dimension Hierarchy Operator Filter Expression Param...

Sales DW_cube229738

Metadata Functions

Measure Group: <All>

Sales DW_cube229738

Measures

- Fact Product Sales
 - Deviation
 - Fact Product Sales Count
 - Product Actual Cost
 - Quantity
 - Sales Invoice Number
 - Sales Time Alt Key
 - Sales Total Cost
- KPIs
- Dim Customer
- Dim Date
- Dim Product
- Dim Sales Person
 - City
 - Country
 - Sales Person ID
 - Sales Person Name
 - State

SELECT NON EMPTY { [Measures].[Sales Invoice Number] } ON COLUMNS, NON EMPTY { ([Dim Sales Person].[Sales Person ID].ALLMEMBERS) } DIMENSION PROPERTIES MEMBER_CAPTION, MEMBER_UNIQUE_NAME ON ROWS FROM [Sales DW_cube229738] CELL PROPERTIES VALUE, BACK_COLOR, FORE_COLOR, FORMATTED_VALUE, FORMAT_STRING, FONT_NAME, FONT_SIZE, FONT_FLAGS

Sales Person ID	Sales Invoice Number
-----------------	----------------------

Click to execute the query.

3) Write a sql query to find all the product sold by sales person whoes id is 3.

Sales DW_cube229738 [Browse] X

Language: Default

Edit as Text Import... Dimension Hierarchy Operator Filter Expression Param...

Sales DW_cube229738

Metadata

Measure Group: <All>

- Sales DW_cube229738
 - Measures
 - Fact Product Sales
 - Deviation
 - Fact Product Sales Count
 - Product Actual Cost
 - Quantity
 - Sales Invoice Number
 - Sales Time Alt Key
 - Sales Total Cost
 - KPIs
 - Dim Customer
 - Dim Date
 - Dim Product
 - Product Key
 - Product Name
 - Dim Sales Person
 - City
 - Country
 - Sales Person ID
 - Sales Person Name

Calculated Members

Sales DW_cube229738 [Browse] X

Language: Default

Edit as Text Import... Dimension Hierarchy Operator Filter Expression Param...

Sales DW_cube229738

Metadata Functions

Measure Group: <All>

- Sales DW_cube229738
 - Measures
 - Fact Product Sales
 - Deviation
 - Fact Product Sales Count
 - Product Actual Cost
 - Quantity
 - Sales Invoice Number
 - Sales Time Alt Key
 - Sales Total Cost
 - KPIs
 - Dim Customer
 - Dim Date
 - Dim Product
 - Product Key
 - Product Name
 - Dim Sales Person
 - City
 - Country
 - Sales Person ID
 - Sales Person Name

SELECT NON EMPTY { [Measures].[Quantity] } ON COLUMNS, NON EMPTY { ([Dim Sales Person].[Sales Person ID].[Sales Person ID],ALLMEMBERS * [Dim Product].[Product Name].[Product Name].ALLMEMBERS) } DIMENSION PROPERTIES MEMBER_CAPTION, MEMBER_UNIQUE_NAME ON ROWS FROM (SELECT ({[Dim Sales Person].[Sales Person ID],&[3]}) ON COLUMNS FROM [Sales DW_cube229738]) CELL PROPERTIES VALUE, BACK_COLOR, FORE_COLOR, FORMATTED_VALUE, FORMAT_STRING, FONT_NAME, FONT_SIZE, FONT_FLAGS

Sales Person ID	Product Name	Quantity
3	Arial Washin...	1
3	Nirma Soap	3
3	Rice Grains 1kg	1
3	SunFlower O...	1

Click to execute the query.

Sr.No	Date	Topic	Sign
05	12/01/23	Practical No 5	RS

A) Import the datawarehouse data in Microsoft Excel and create the Pivot table and Pivot chart.

Step 1 :- Open Excel file.

Step 2 :- Click on the Data Tab after that click on other sources from data connection wizard → Select Microsoft SQL Server → Next → Put 'server name as '.' → Next → Select the database that contains the data i.e Sales-DW → Enable both connect to a specific field and enable selection of multiple table. → Select all the option shown below. → Next → finish

Step 3 :- In the Import data tab → Select table → OK.

Step 4 :- On the right side of the Excel file there is PivotTable fields in that you can select the column name which you want to display these.

B) Import the cube in Microsoft Excel and create the Pivot table and Pivot chart to perform data analysis.

Step 1 :- Open Excel file.

Step 2 :- Click on the Data Tab → click on other sources from data connections wizard → select Microsoft SQL Server → Next → put Server name as '...' → Next → select the database that contains the data i.e sales-dw → Enable both connect to a specific field and enable selection of multiple table → Select all the option shown below → Next → finish

Step 3 :- In the Import data tab → Select Pivot Chart → OK.

Step 4 :- On the Right side of the Excel file there is Pivotchart fields in that you can select the column name which you want to display there.

Pivot table

Data Connection Wizard

?

X



Welcome to the Data Connection Wizard

This wizard will help you connect to a remote data source.

What kind of data source do you want to connect to?

Microsoft SQL Server

Microsoft SQL Server Analysis Services

Windows Azure Marketplace

Data Feed

ODBC DSN

Microsoft Data Access - OLE DB Provider for Oracle

Other/Advanced

Cancel

Next >

Finish

Data Connection Wizard

Connect to Database Server

Enter the information required to connect to the database server.



1. Server name:

2. Log on credentials

Use Windows Authentication

Use the following User Name and Password

User Name:

Password:

Cancel

< Back

Next >

Finish

Data Connection Wizard

Select Database and Table

Select the Database and Table/Cube which contains the data you want.



Select the database that contains the data you want:

Sales_DW

Connect to a specific table:

Enable selection of multiple tables

<input type="checkbox"/>	Name	Owner	Description	Modified	Created	Type
<input type="checkbox"/>	DimCustomer	dbo		2/14/2023 5:39:49 PM	2/14/2023 5:39:49 PM	TABLE
<input type="checkbox"/>	DimDate	dbo		2/14/2023 5:40:04 PM	2/14/2023 5:39:49 PM	TABLE
<input type="checkbox"/>	DimProduct	dbo		2/14/2023 5:39:49 PM	2/14/2023 5:39:49 PM	TABLE
<input type="checkbox"/>	DimSalesPerson	dbo		2/14/2023 5:39:49 PM	2/14/2023 5:39:49 PM	TABLE
<input type="checkbox"/>	DimStores	dbo		2/14/2023 5:39:49 PM	2/14/2023 5:39:49 PM	TABLE
<input type="checkbox"/>	DimTime	dbo		2/14/2023 5:39:49 PM	2/14/2023 5:39:49 PM	TABLE
<input type="checkbox"/>	FactProductSales	dbo		2/14/2023 5:40:05 PM	2/14/2023 5:40:05 PM	TABLE

Import relationships between selected tables

Selected Related Tables

Cancel

< Back

Next >

Finish

Data Connection Wizard

Save Data Connection File and Finish

Enter a name and description for your new Data Connection file, and press Finish to save.



File Name:

. Sales_DW DimCustomer.odc

Browse...

Save password in file

Description:

(To help others understand what your data connection points to)

Friendly Name:

Sales_DW DimCustomer

Search Keywords:

 Always attempt to use this file to refresh data

Excel Services: Authentication Settings...

Cancel

< Back

Next >

Finish

Import Data

?

X

Select how you want to view this data in your workbook.

- Table
- PivotTable Report
- PivotChart
- Only Create Connection

Where do you want to put the data?

- Existing worksheet:

=SAS1

- New worksheet

 Add this data to the Data Model

Properties...

OK

Cancel

A	B	C	D	E	F	G	H	I	J	K	L	M
1 Row Labels	Sum of CustomerID	Sum of DateKey										
2 =IMI-001		1	14699037876									
3 @01/01/2013		1	20130101									
4 @1		1	20130101									
5 @First		1	20130101									
6 Henry Ford		1	20130101									
7 @01/01/2014		1	20140101									
8 @1		1	20140101									
9 @First		1	20140101									
10 Henry Ford		1	20140101									
11 @01/02/2013		1	20130102									
12 @1		1	20130102									
13 @First		1	20130102									
14 Henry Ford		1	20130102									
15 @01/02/2014		1	20140102									
16 @1		1	20140102									
17 @First		1	20140102									
18 Henry Ford		1	20140102									
19 @01/03/2013		1	20130103									
20 @1		1	20130103									
21 @First		1	20130103									
22 Henry Ford		1	20130103									
23 @01/03/2014		1	20140103									

PivotTable Fields

ACTIVE: ALL

Choose fields to add to report:

Relationships between tables may be needed:

Drag fields between areas below:

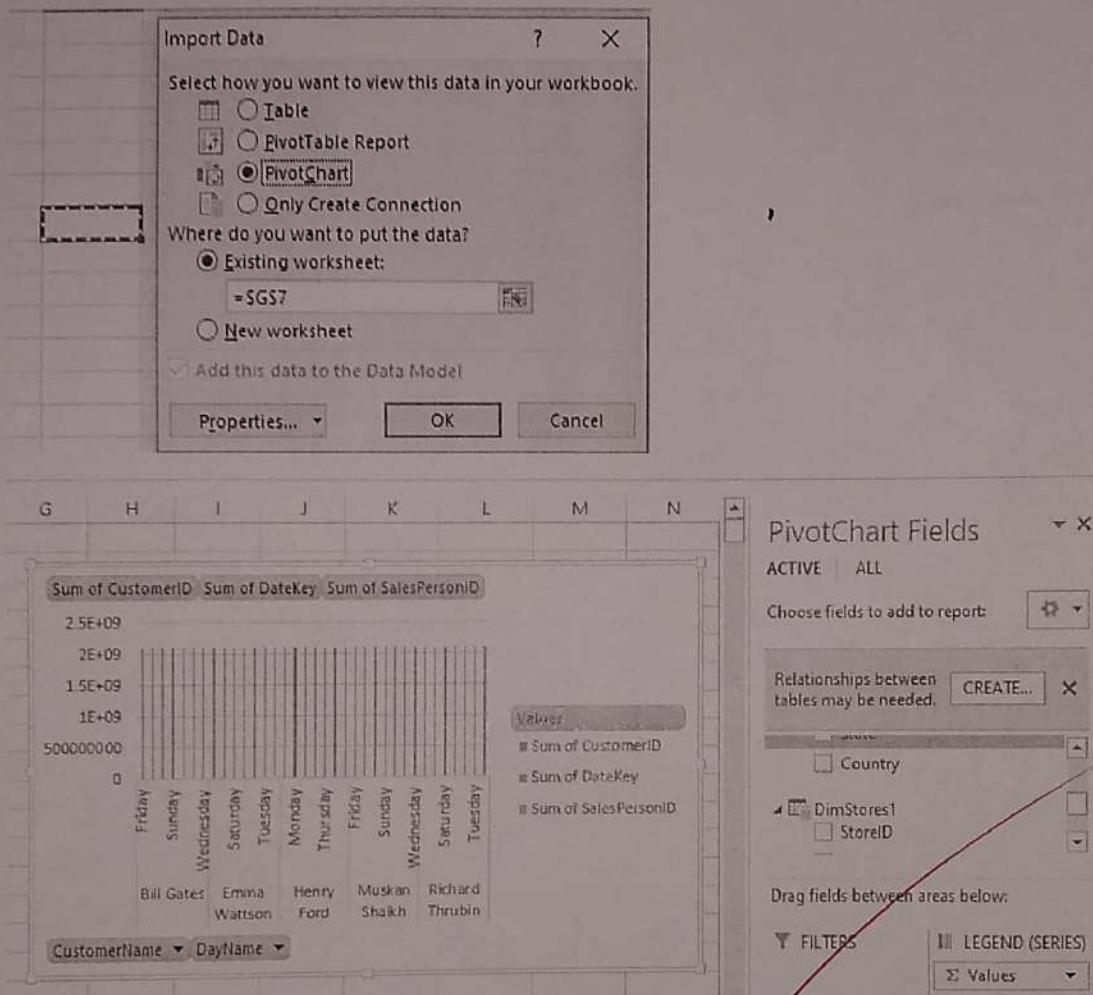
ROWS: Customer, FullDateDim

COLUMNS: Values

VALUES: Sum of CustomerID, Sum of DateKey

Defer Layout Update

Select the cell and do the same process....



Sr.no	Date	Topic	Sign
06	02/02/23	Apply the what-if Analysis for data visualization. Design and generate necessary reports based on the database data.	NR

• Goal Seek in What-If Analysis :-

Now, we know the Scenario Manager's advantage. What-if-Analysis Goal Seek can tell you what you must do to achieve the target.

Andrew is a class 10th student. His target is to achieve an average score of 85 in the final exam. He has already completed 5 exams and left with only 1 exam. Therefore, in the completed 5 exams.

	A	B
1	Subject 1	80
2	Subject 2	85
3	Subject 3	82
4	Subject 4	86
5	Subject 5	99
6	Subject 6	78
7	Subject 7	72
8	Average	
9		

To calculate the current average, apply the average formula in the B7 cell.

SUM	*	:	X	✓	fx	=AVERAGE(B1:B6)	
A			B		C	P	
1	Subject 1		80				
2	Subject 2		85				
3	Subject 3		82				
4	Subject 4		86				
5	Subject 5		99				

6	Subject 6	78
7	Subject 7	72
8	Average	=AVERAGE(B1:B7)
9		

The current average is 83.14

Andrew's GOAL is 85. His current average is 83.14.

He is short by 2.86 with one exam

Now, the question is how much he has to score in the final exam to eventually get an overall average of 85. It can be found by the What-If Analysis GOAL SEEK tool.

- Step 1 :- Go to DATA > What-If Analysis > Goal Seek.

- Step 2 :- It will show you below the dialog box.

- Step 3 :- Here, we need to set the cell first.

"Set cell" is nothing but which cell we need for the final result - i.e our overall average cell (B7), Next is "To value" : Again, Andrew's overall average GOAL is nothing but for what value we need to set the cell (85).

The next and final step is changing which cell you want to see the impact on. So, we need to change cell, B6, the cell for the final subject's score.

- Step 4 :- Click on "OK". Excel will take a few seconds to complete the process, but it eventually shows the result like the one below.

Now, we have our results here. To get an overall average of 85, Andrew has to score 99 in the final exam.

- Excel What-if Analysis Scenario Manager:

The Scenario Manager in What-if Analysis Excel is used to consume the original data and the mathematical formulas implemented on the data to create another scenario that inherits similarities from the previous table and generates a new table.

For better learning, let us consider that you are running an IT company and you have employees from three different bands, namely:

- Brand A
- Brand B
- Brand C

Employees of different bands have different compensations, Basic Pay and HRAs. The brute force method of excel would recommend creating three different tables with similar data and input the values. This time-consuming process can be eliminated by using Scenario manager.

Let us execute an example. The following image depicts of Band C Employees. Cells B8, B16 and B18 include a mathematical formula that calculates the summation of the other cells above them and states them as "Compensation from Company", "Maintenance Bill per Employee", and "Total Expense to Company", respectively.

Now, let us use this table and the Scenario manager from Excel What-if Analysis to recreate the same table for B and B and B and A employees.

Go to the Data option from the toolbox and select the Excel what-if Analysis option from the Forecast Ribbon, as shown below.

A dialog box appears on the screen with empty scenarios. To add a scenario, select and add option as shown below. Then, a new dialog box will appear on the screen with cell addresses. Type name for the scenario and press OK. Here, we have chosen B and C as the name for the scenario.

The next screen will show a small dialog box with all the values ready for B and C, as shown below. Similarly, you can add two more scenarios: B and B and B and A in this example. You can select the add option, and you will have a new dialog box with editable data options. Now, update the values for B and B and select OK as shown below.

And the last step is to create a scenario for B and A. To update values, follow the same procedure as before click on add and edit the values in the new dialog box and press OK.

Now that you have added all the values, you have three different scenario, namely B and A.

If you click the scenario manager summary it will show the data in the tabulated format in a new window.

What-if practical

Book3 - Excel (Proc)

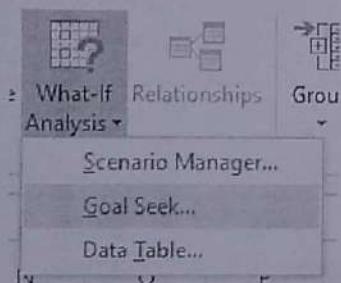
FILE HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW

Cut Copy Format Painter

Font Alignment

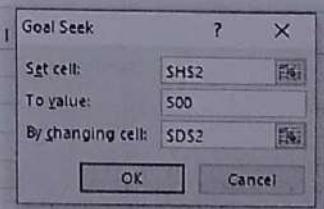
G13

A	B	C	D	E	F	G	H	I
1	Name	SIC	SQA	BI	ITSM	PGIS	AMP	TOTAL
2	Anand	97	44	56	78	99	77	451
3								
4								
5								
6								
7								
8	UNITS	27	ITEMS	LAPTOP				
9	UNIT PRICE	1233	PRICE	20000				
10	TOTAL	33291	DOWNPAY	2000				
11			PERIOD	12				
12			EMI	4000				
13								
14								
15								
16								



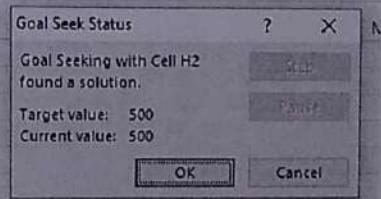
D2

A	B		C	D	E	F	G	H
1	Name	SIC	SQA	BI	ITSM	PGIS	AMP	TOTAL
2	Anand	97	93	45	78	99	77	489
3								
4								
5								
6								

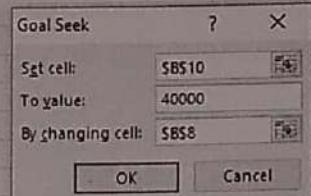


B11

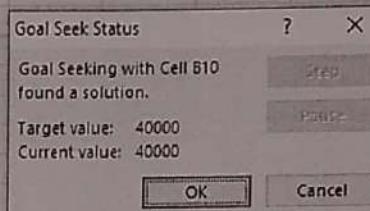
A	B		C	D	E	F	G	H
1	Name	SIC	SQA	BI	ITSM	PGIS	AMP	TOTAL
2	Anand	97	93	56	78	99	77	500
3								
4								
5								
6								



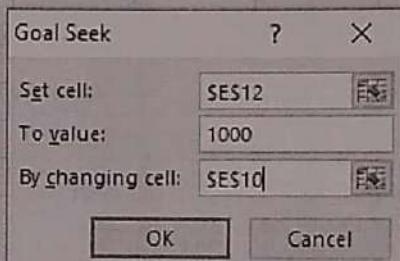
7				
8	UNITS	27	ITEMS	LAPTOP
9	UNIT PRICE	1233	PRICE	20000
10	TOTAL	33291	DOWNPAY	2000
11			PERIOD	12
12			EMI	4000
13				
14				



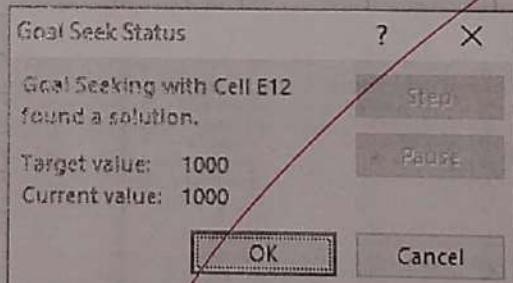
6				
7				
8	UNITS	32.4412	ITEMS	LAPTOP
9	UNIT PRICE	1233	PRICE	20000
10	TOTAL	40000	DOWNPAY	2000
11			PERIOD	12
12			EMI	4000
13				
14				



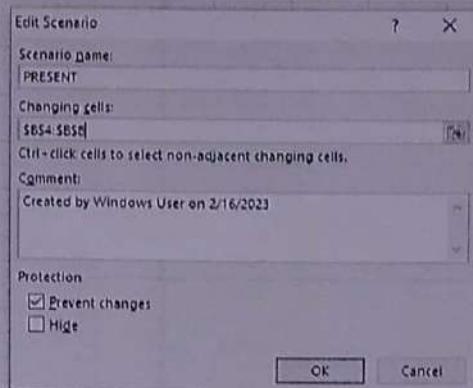
ITEMS	LAPTOP
PRICE	20000
DOWNPAY	2000
PERIOD	12
EMI	1500



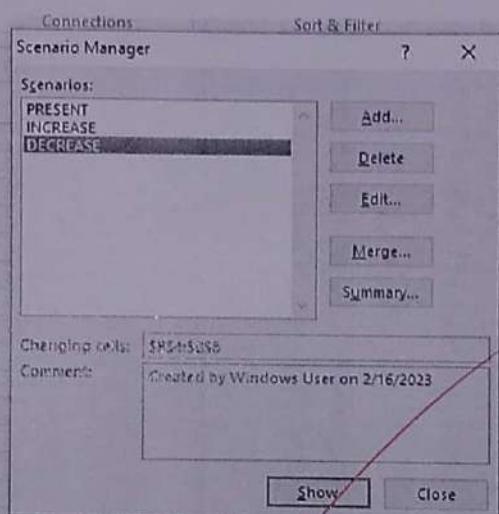
ITEMS	LAPTOP
PRICE	20000
DOWNPAY	8000
PERIOD	12
EMI	1000



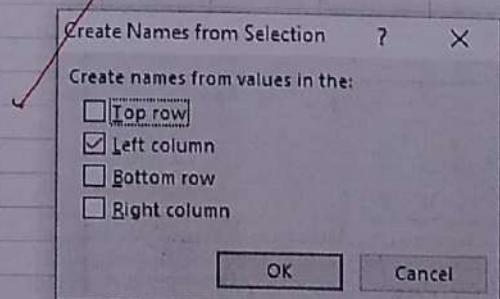
2		
3	PRODUCT	COST
4	PEN	12
5	PENCIL	10
6	SCALE	15
7	BOOK	20
8	NOTEBOOK	23
9	TOTAL	80
10		
11		
12		
13		
14		
15		
16		



Get External Data		
B10		
A	B	C
1		
2		
3	PRODUCT	COST
4	PEN	12
5	PENCIL	10
6	SCALE	15
7	BOOK	20
8	NOTEBOOK	23
9	TOTAL	80
10		
11		
12		
13		
14		
15		
16		



2		
3	PRODUCT	COST
4	PEN	12
5	PENCIL	10
6	SCALE	15
7	BOOK	20
8	NOTEBOOK	23
9	TOTAL	80
10		
11		



Scenario Summary

	Current Values:	PRESENT	INCREASE	DECREASE
Changing Cells:				
PEN	12	12	2	2
PENCIL	10	10	3	5
SCALE	15	15	5	4
BOOK	20	20	6	7
NOTEBOOK	23	23	5	2
Result Cells:				
\$839	80	80	21	20

Notes: Current values column represents values of changing cells at time Scenario Summary Report was created. Changing cells for each scenario are highlighted in gray.

Sr.no	Date	Topic	Sign
07	14/02/23	Perform the data classification using classification algorithm	

consider the annual details at a place starting from January 2012 - we create an R time series object for a period of 12 months and plot it.

get the data points in form of a vector.

```
rainfall = c(799, 1174.8, 865.1, 1334.6, 635.4, 918.5, 685.5,
           998.6, 784.2, 985, 882.8, 1071)
```

convert it to a time series object.

```
rainfall.timeseries = ts(rainfall, start = c(2012, 1), frequency=12)
```

print the timeseries data

```
print(rainfall, timeseries)
```

Give the chart file a name.

```
jpeg(file = "rainfall.jpeg")
```

plot a graph of the time series

```
plot(rainfall.timeseries)
```

save the file

```
dev.off()
```

RStudio

File Edit Code View Plots Session Build Debug Profile Tools Help

Console Terminal Jobs

```

1 rainfall<-c(799,1174,8,865,1,1134,635,4,918,5,885,5,998,6,784,2,985,882,8,10)
2 rainfall.timeseries<-ts(rainfall,start=c(2012,1),frequency=12)
3 print(rainfall.timeseries)
4 jpeg(file="rainfall.jpeg")
5 plot(rainfall.timeseries)
6 dev.off()

```

Source

Environment History Connections Tutorial

Values

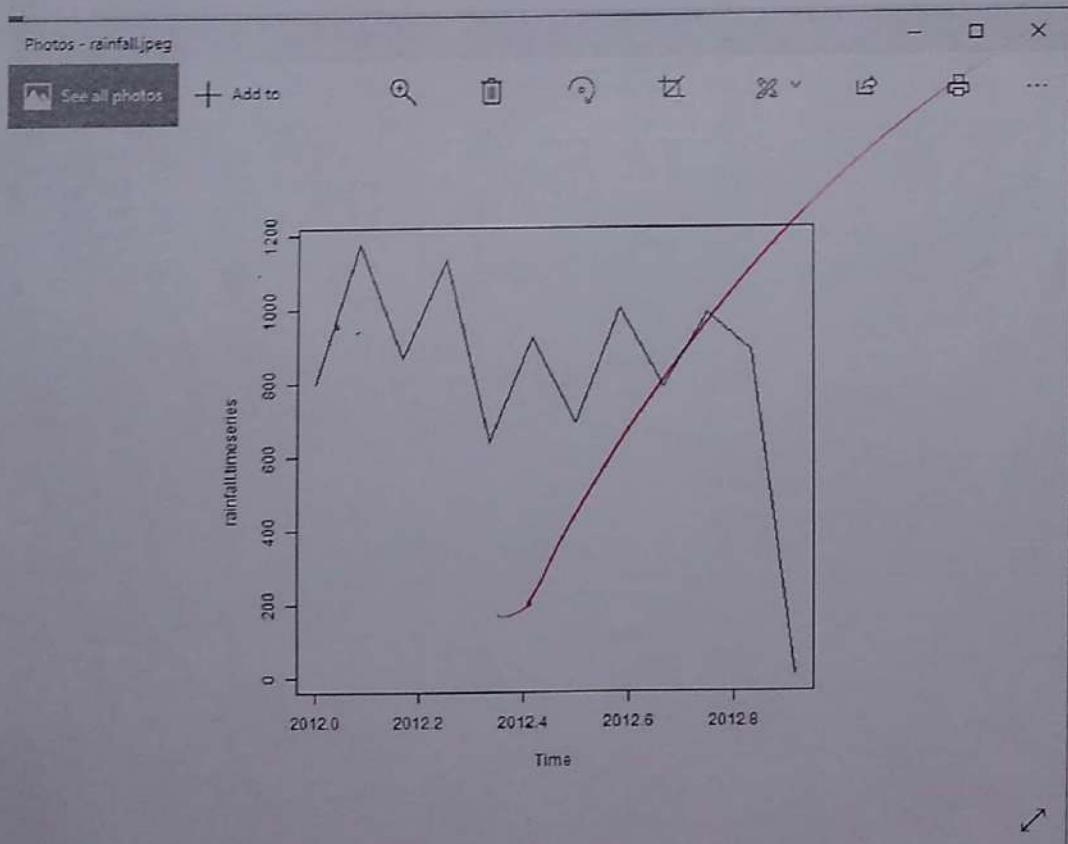
- alpha 0.05
- k 15L
- mu0 15.4
- n 148
- p0 0.5
- pbar 0.574324324324324
- rainfall num [1:12] 799 1175 865 1134 6...
- rainfall.ct time-Series [1:12] from 2012 t...

Files Plots Packages Help Viewer

newFolder O Delete + Rename More

Home A Name Size Modified

- desktop.mn 402 B Feb 21, 2013
- History Report.Resources
- History Report.html 14 KB Feb 27, 2013
- LinearRpng 45 KB Mar 13, 2013
- My Music
- My Pictures
- My Videos
- new_Resources
- new.html 24 KB Feb 27, 2013
- new.html 555 KB Feb 27, 2013
- rainfalljpeg 17.1 KB Mar 12, 2013
- test.R 193 B Mar 3, 2013
- U Path
- Virtual Machines



Sr.no	Date	Topic	Sign
08	09/03/23	Perform the Data clustering using Clustering Algorithm.	✓

- Clustering :

Clustering is the task of dividing the population or data points into a number of groups such that data points in the same groups are more similar to other data points. Let's understand this with an example.

Suppose, you are the head of a rental store and wish to understand preferences of your customers to scale up your business.

It is possible for you to look at details of each customer and devise a unique business strategy for each one of them?

Definitely not. But what you can do is to cluster all of your customers into say 10 groups based on their purchasing habits and use a separate strategy for customers in each of those 10 groups. And this is what we call clustering.

- K means clustering :

It is an unsupervised learning algorithm, which groups the unlabeled dataset into different clusters. Here K defines the number of predefined clusters that need to be created in the process, as if $K=2$, there will be two clusters, and for $K=3$, there will be three clusters and so on.

- What is iris?

The iris dataset is a built-in dataset in R that contains measurements of different attributes (in centimeters) for 50 flowers from 3 different species. i.e. Setosa, versicolor, virginica.

* Code :-

```
# Removing the species from data to cluster
newiris = iris
print(newiris)
newiris$Species = NULL
# apply the k-means functions to newiris and store
# the result in kmeans.results
kc = kmeans(newiris, 3)
print(kc)
# compare the cluster level
table(iris$species ~ kc$cluster)
# plot the cluster and their centers
plot(newiris[c("Sepal.Length", "Sepal.Width")])
# plot the cluster center
points(kc$centers[, c("Sepal.Length", "Sepal.Width")], col=1:3,
       pch=8, cex=2)
```

RStudio

File Edit Code View Plots Session Build Debug Profile Tools Help

Untitled

```

1 newiris Iris
2 print(newiris)
3 newiris$Species<-NULL
4 kmeans(newiris,3)
5 table(newiris$Species,kscluster)
6 plot(newiris[,c("Sepal.Length","Sepal.Width")])
7 points(kclcenters[,c("Sepal.Length","Sepal.Width")],col=1:3,pch=8,cex=2)

```

Script 2

Console Terminal Jobs

```

135   6.1    2.6    5.6    1.4  virginica
136   7.7    3.0    6.1    2.3  virginica
137   6.3    3.4    5.6    2.4  virginica
138   6.4    3.1    5.5    2.0  virginica
139   6.0    3.0    4.8    1.8  virginica
140   6.9    3.1    5.4    2.1  virginica
141   6.7    3.1    5.6    2.4  virginica
142   6.9    3.1    5.1    2.3  virginica
143   5.6    2.7    5.1    2.3  virginica
144   6.8    3.2    5.9    2.3  virginica
145   6.7    3.3    5.7    2.3  virginica
146   6.7    3.0    5.5    2.3  virginica
147   6.3    2.5    5.0    2.9  virginica
148   6.5    3.0    5.2    2.0  virginica
149   6.2    3.4    5.1    2.3  virginica
150   5.9    3.0    5.1    1.8  virginica
> newiris$Species<-NULL
> kmeans(newiris,3)
> table(newiris$Species,kscluster)
> table(extent 0 >
> plot(newiris[,c("Sepal.Length","Sepal.Width")])
> points(kclcenters[,c("Sepal.Length","Sepal.Width")],col=1:3,pch=8,cex=2)

```

Environment History Connections Tutorial

Global Environment

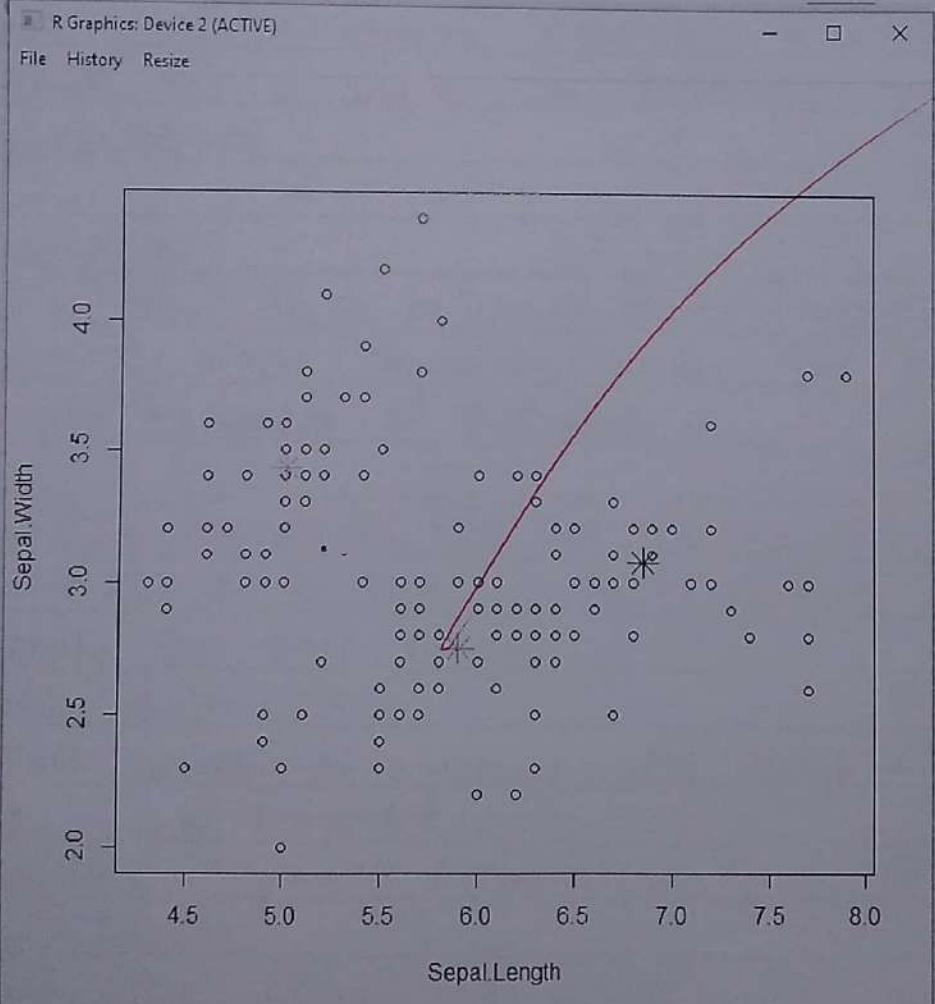
- centers 3 obs. of 2 variables
- df 620 obs. of 4 variables
- grade_input 620 obs. of 4 variables
- k 3
- km List of 9
- kmdata int [1:620, 1:3] 99 99 98 95 ...
- kmdata_orig int [1:620, 1:4] 1 2 3 4 5 6 ...
- newiris 150 obs. of 4 variables

Files Plot Packages Help Viewer

New Folder Delete Rename More

home

- ighlogidoc 23 KB Mar 8, 2013
- ADate 7.7 KB Mar 8, 2013
- History 11.5 KB Mar 14, 2013
- Custom Office Templates
- desktop.ini 402 B Feb 22, 2013
- History Report_Resources
- History Report.html 24 KB Feb 27, 2013
- LinearRipng 4.5 KB Mar 13, 2013
- My Music
- My Pictures
- My Videos
- new_Resources
- new.html 24 KB Feb 27, 2013
- ri.html 155 KB Feb 27, 2013



Sr.no	Date	Topic	Sign
09	20/12/22	Perform the Linear regression on the given data warehouse data.	✓

Regression

In statistical modeling, regression analysis is a set of statistical processes for estimating the relationship between a dependent variable and one or more independent variables.

Linear Regression

In Linear Regression these two variables are related through an equation, where exponent (power) of both these variables is 1

$y = ax + b$ is an equation for linear regression where y is the response variable, x is the predictor variable and a and b are constant which are called the coefficients.

lm() Function

In R, the `lm()` or "linear model" function can be used to create a simple regression model. The `lm()` function accepts a number of arguments

```
x <- c(15, 174, 138, 186, 128, 136, 179, 163, 152, 131)
```

```
y <- c(63, 81, 56, 91, 47, 57, 76, 72, 62, 48)
```

Apply the `lm()` function

```
relation <- lm(y ~ x)
```

Find weight of a person with height 170

```
a <- data.frame(x=170)
```

```
result <- predict(relation, a)
```

```
print(result)
```

Give the chart file a name

```
png(file = "linearregression.png")
```

Plot the chart

```
plot(y, x, col = "blue", main = "Height & weight Regression",
      abline(lm(x ~ y)), cex = 1.3, pch = 16, xlab = "weight in kg",
      ylab = "Height in cm")
```

Save the file

```
dev.off()
```

```
Practical9.R
```

```
Source on Save | Run | Source |
```

```
1 x<-c(15,174,138,186,128,136,179,163,152,131)
2 y<-c(63,81,56,91,47,57,76,72,62,48)
3 relation<-lm(y~x)
4 a<-data.frame(x=170)
5 result<-predict(relation,a)
6 print(result)
7 png(file="linerreggression.png")
8 plot(y,x,col="red",main="Height & Weight Regression",abline(lm(x~y)),cex=1.3,
9 pch=16,xlab="weight in kg",ylab="Height in cm")
10 dev.off()
```

```
9:6 [Top Level] R Script
```

```
Console Terminal Jobs
```

```
>/
> x<-c(15,174,138,186,128,136,179,163,152,131)
> y<-c(63,81,56,91,47,57,76,72,62,48)
> relation<-lm(y~x)
> a<-data.frame(x=170)
> result<-predict(relation,a)
> print(result)
1
69.43766
> png(file="linerreggression.png")
> plot(y,x,col="red",main="Height & Weight Regression",abline(lm(x~y)),cex=1.3, pch=16,xlab="weight in kg",
ylab="Height in cm")
> dev.off()
null device
1
~
```

Photos - linerreggression.png

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