

Kishinchand Chellaram College, Mumbai – 20.

FY/SY/TY B. Sc. (I.T.) Semester _____

PRACTICAL 1A-1B

GEMIN KHATRI

KCTYBSCIT12

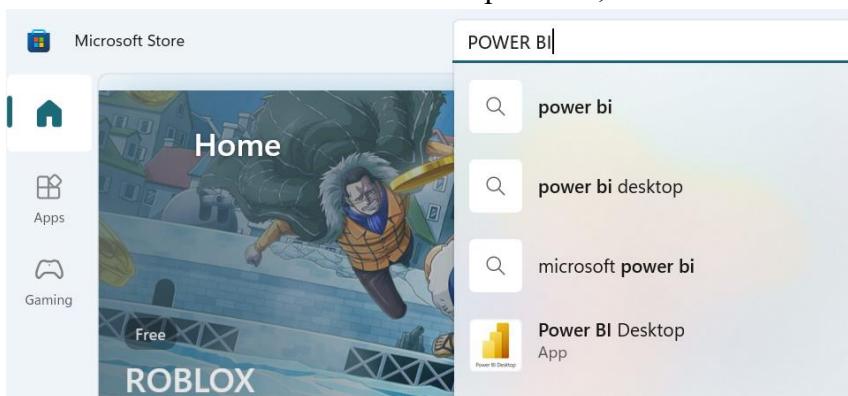
DMBI

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Practical 1A – Installation of Power BI Desktop

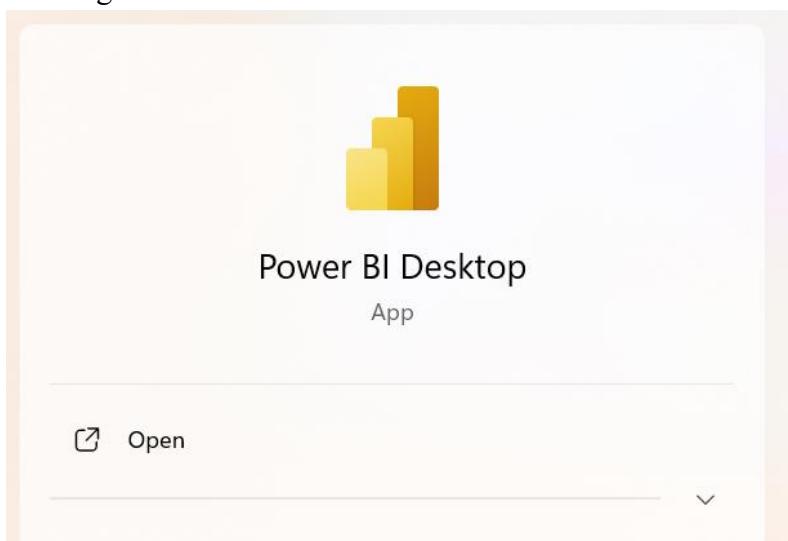
- 1) Go to Microsoft Store and search for power bi, click on Power BI Desktop.



- 2) Click on Get button.



- 3) The installation will start. Click on Open once the installation is complete and start working.



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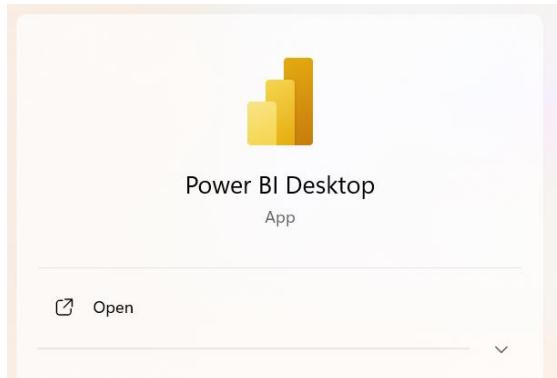
Practical 1B – Import the legacy data from different sources such as Excel, SQL Server and OData Field and load into the target system

Now working with Excel:

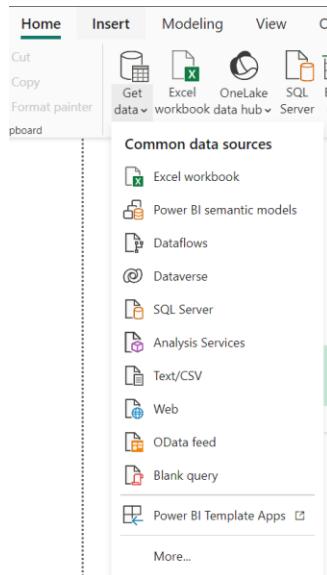
- 1) Firstly make an excel sheet with your data

emp_id	emp_name	Salary	Address	Contact no
11	gemin	100000	Mumbai	333
12	khatri	800000	Mumbai	222
13	rushda	400000	Mumbai	112
14	srajan	200000	Mumbai	221
15	musty	600000	Mumbai	114

- 2) Open Microsoft Power BI



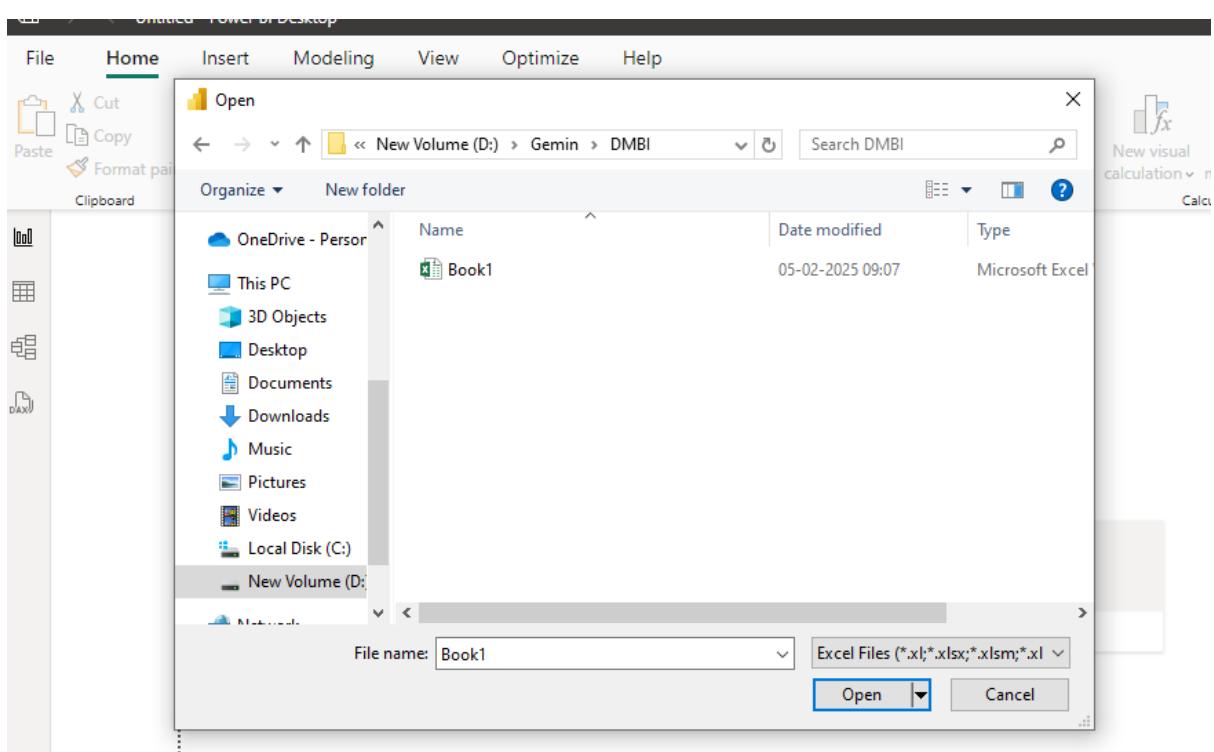
- 3) Select Excel Workbook under the Get Data option. Click on Connect.



- 4) Browse your file and select it.

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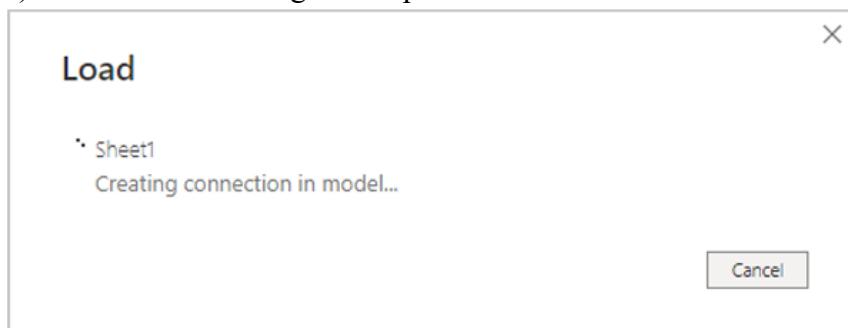


- 5) Select the sheet and click on Load once the table is displayed.

Navigator

emp_id	emp_name	Salary	Address	Contact no
11	gemin	100000	Mumbai	333
12	khatri	800000	Mumbai	222
13	rushda	400000	Mumbai	112
14	srajan	200000	Mumbai	221
15	musty	600000	Mumbai	114

- 6) Wait for the loading to complete.



- 7) The data will be shown on the screen once the loading is complete.

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The screenshot shows the 'Table tools' ribbon selected in Power BI Desktop. A table named 'Sheet1' is displayed with columns: emp_id, emp_name, Salary, Address, and Contact no. The data rows are:

emp_id	emp_name	Salary	Address	Contact no
11	gemin	100000	Mumbai	333
12	khatri	800000	Mumbai	222
13	rushda	400000	Mumbai	112
14	srajan	200000	Mumbai	221
15	musty	600000	Mumbai	114

- 8) Click on the Charts icon to display the graphical representation of the data.

The screenshot shows a bar chart in Power BI Desktop. The chart is titled 'Sum of contact no by course, student_id, name and place'. The Y-axis is labeled 'Sum of contactno' and ranges from 0 to 100m. The X-axis categories are 'mumbai', 'pune', 'goa', and 'hyderabad'. The chart displays the following approximate data:

place	Sum of contactno
mumbai	~80m
pune	~80m
goa	~100m
hyderabad	~100m

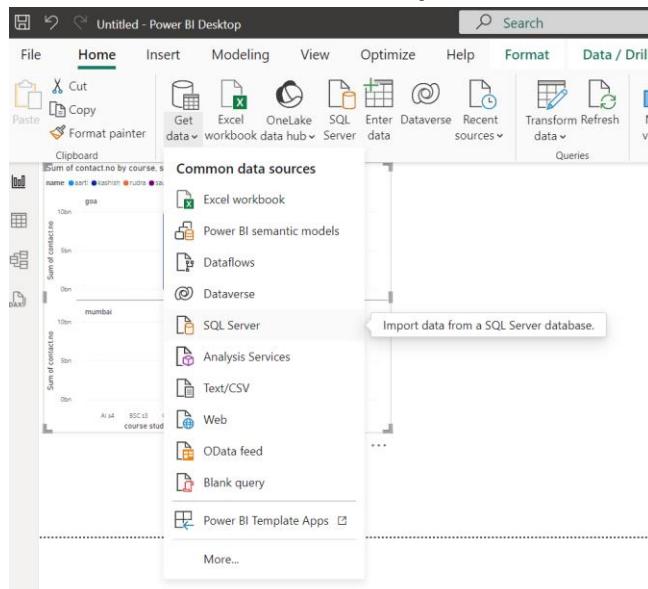
The Power BI interface shows the 'Home' tab selected. The 'Visualizations' pane on the right lists various chart types like bar, line, and map charts. The 'Data' pane shows fields like contact.no, course, name, place, and student_id.

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Now working with SQL SERVER:

Click on Get Data and select SQL Server Database.



Copy the server name from Microsoft SQL Server Management Studio and paste it where the server is asked for connection between the two apps. Select Import and click on OK.

SQL Server database

Server ⓘ
DESKTOP-GU04UK2

Database (optional)

Data Connectivity mode ⓘ
 Import
 DirectQuery

Advanced options

OK Cancel

Select the table you wish to go ahead with and load it.

WORKER_ID	FIRST_NAME	LAST_NAME	SALARIES	JOINING_DATE	ID
1	Monika	Arora	100000	20-02-2014 09:00:00	Ad
2	Neharika	Verma	80000	11-02-2014 09:00:00	Ad
3	Vohal	Singhal	200000	20-02-2014 09:00:00	HR
4	Amritpal	Singh	500000	20-02-2014 09:00:00	Ad
5	Week	Bhati	500000	11-02-2014 09:00:00	Ad
6	Vipul	Dewan	200000	11-02-2014 09:00:00	Ad
7	Satish	Kumar	75000	20-02-2014 09:00:00	Co
8	Gaurika	Chauhan	90000	11-02-2014 09:00:00	Ad

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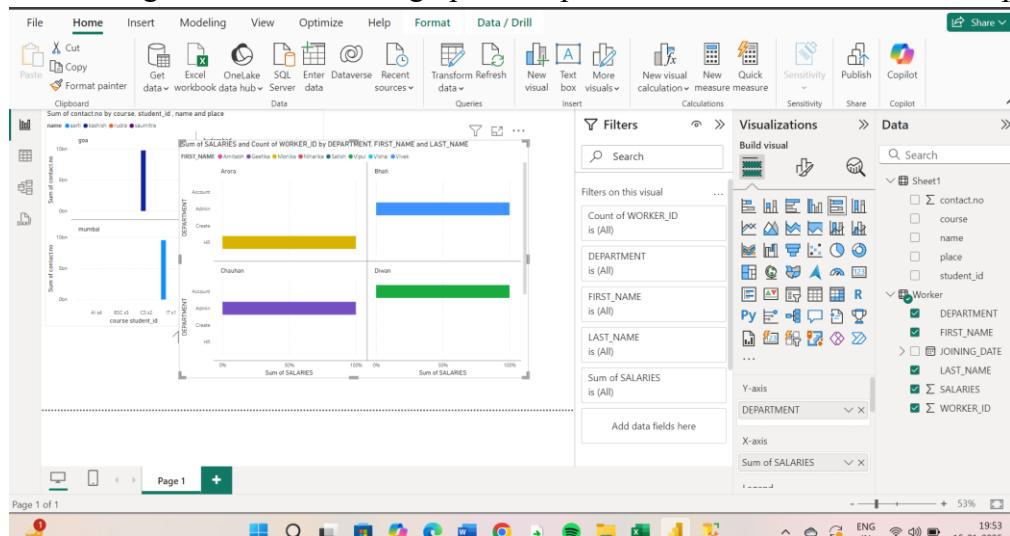
Once the data is loaded the following dialogue box will be displayed.

The data will be displayed on the screen.

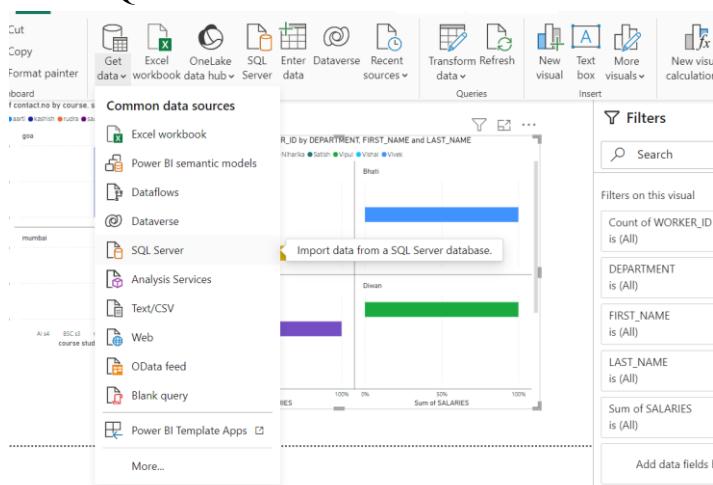
A screenshot of the Power BI Data View interface. At the top, there are tabs for Structure, Calendars, Relationships, Calculations, and a DAX editor. Below these, a table titled 'WORKER_ID' is displayed with columns: FIRST_NAME, LAST_NAME, SALARIES, JOINING_DATE, and DEPARTMENT. The data shows eight workers with their names, salaries, joining dates, and departments. The table has a light gray background with white borders between rows and columns.

WORKER_ID	FIRST_NAME	LAST_NAME	SALARIES	JOINING_DATE	DEPARTMENT
1	Monika	Arora	100000	20-02-2014 09:00:00	HR
2	Niharika	Verma	80000	11-06-2014 09:00:00	Admin
3	Vishal	Singhal	300000	20-02-2014 09:00:00	HR
4	Amitabh	Singh	500000	20-02-2014 09:00:00	Admin
5	Vivek	Bhati	500000	11-06-2014 09:00:00	Admin
6	Vipul	Diwan	200000	11-06-2014 09:00:00	Account
7	Satish	Kumar	75000	20-01-2014 09:00:00	Create
8	Geetika	Chauhan	9000	11-04-2014 09:00:00	Admin

On clicking the charts icon the graphical representation of the data will be displayed.



Select SQL Server Database under Get Data and connect.

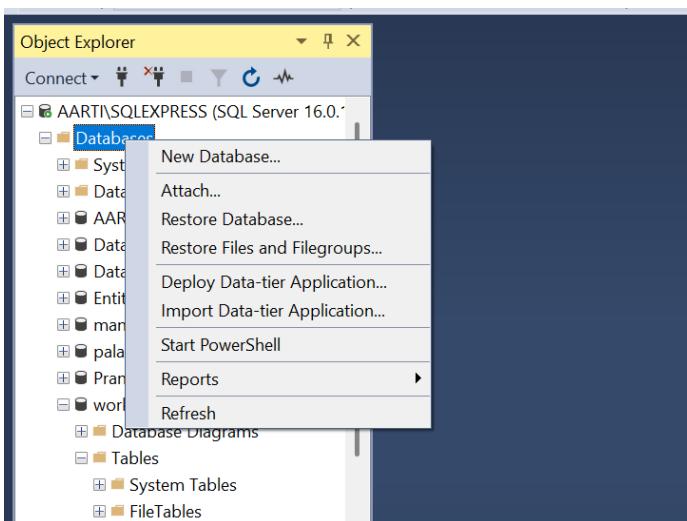


Enter the server name and the file name with .bak extension. Click on Import and OK.

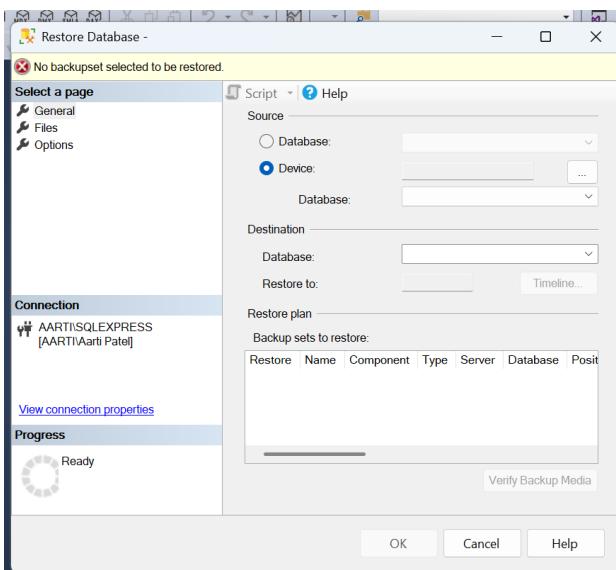
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Open Microsoft SQL Server Management Studio. Right click on Databases and click on Restore Database...

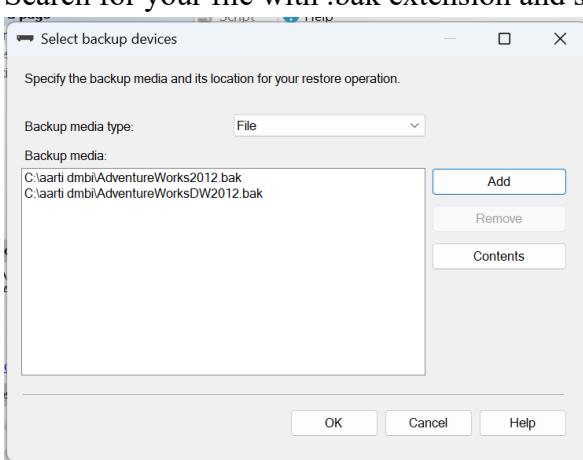


Select Device and click on the button next to it for additional steps.



Click on Add.

Search for your file with .bak extension and select it.

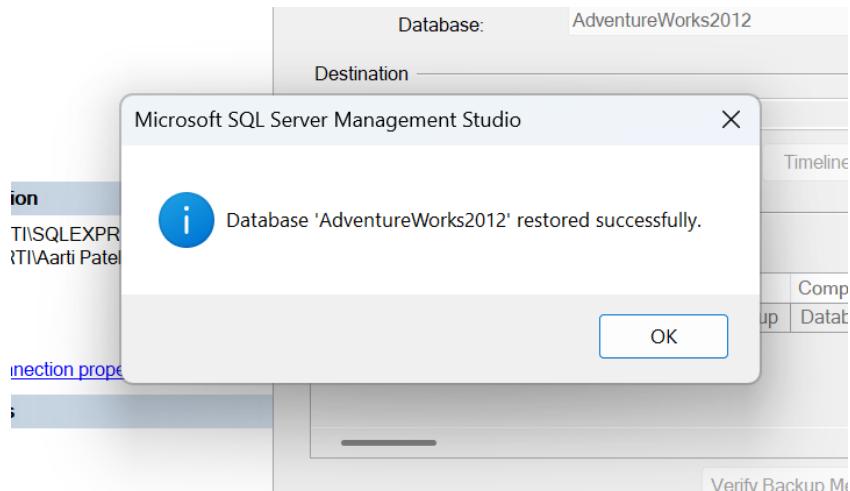


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Click on Add.

Search for another file and add it as well.



Navigate the file:

A screenshot of the Power BI Data view. It shows a table titled "Sales Currency" with 105 rows. The columns are "CurrencyCode", "Name", and "ModifiedDate". The table lists various currencies like Emirati Dirham, Afghani, Lek, Armenian Dram, etc. To the right, there's a "Data" pane showing the schema for "Sales Currency" and "Worker" tables.

Load the data

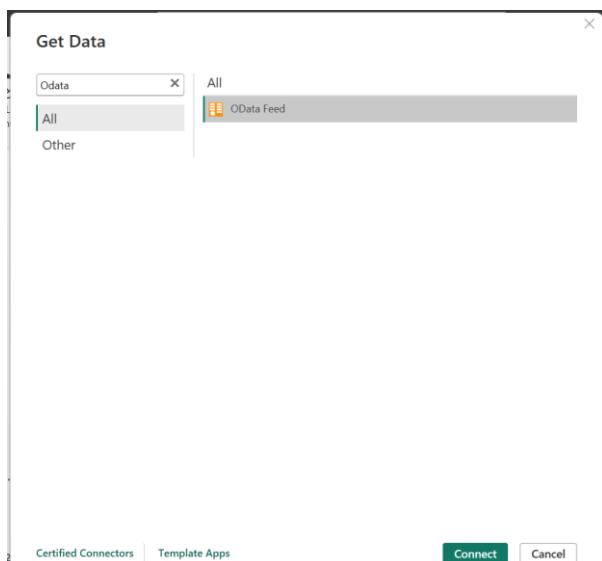
A screenshot of Power BI desktop. On the left, there's a visual (a bar chart) and a data grid for "Sales Currency". The ribbon at the top has "Home" selected. The right side shows the "Filters" pane with various filters applied to "CurrencyCode", "ModifiedDate", "Year", "Quarter", and "Month". The bottom status bar shows the date "15-01-2025" and time "2012".

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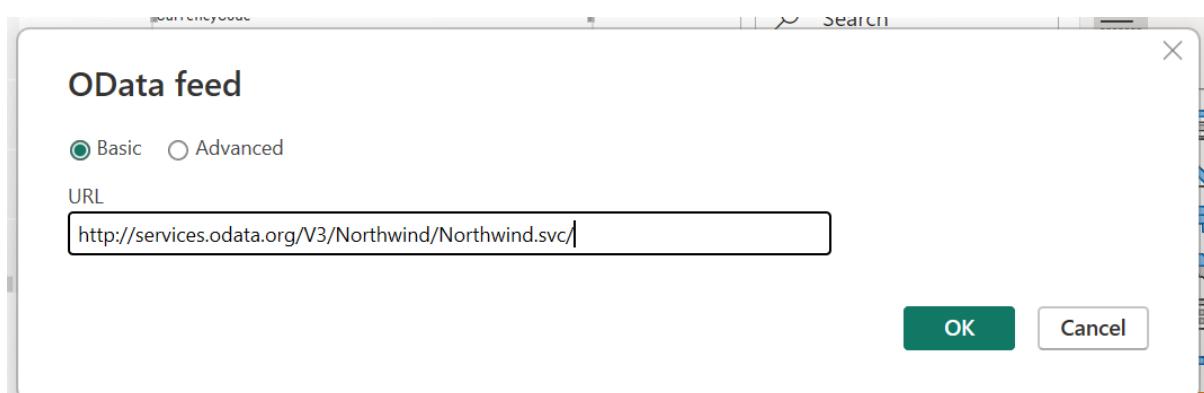
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Now working with OData

Get Data – O Data Feed

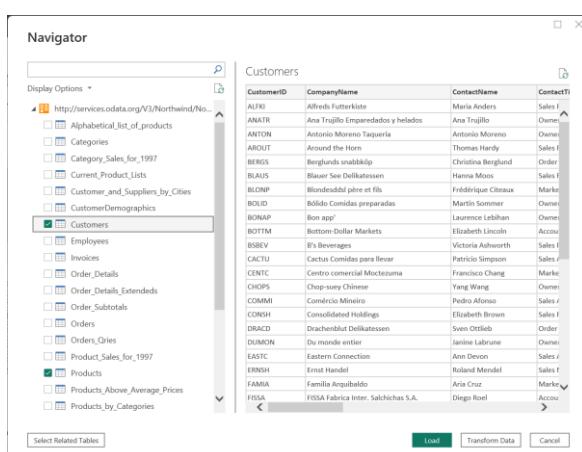


Paste the URL.



Select the services level to apply the settings to and connect.

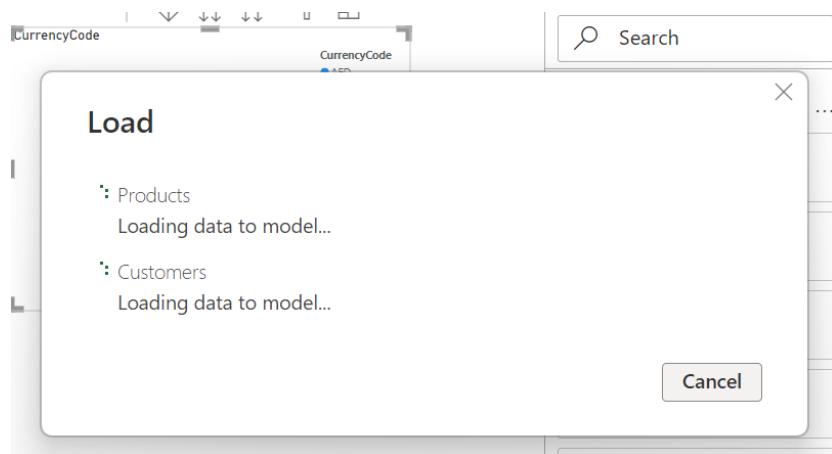
Select two tables that are Customers and Products table and load them.



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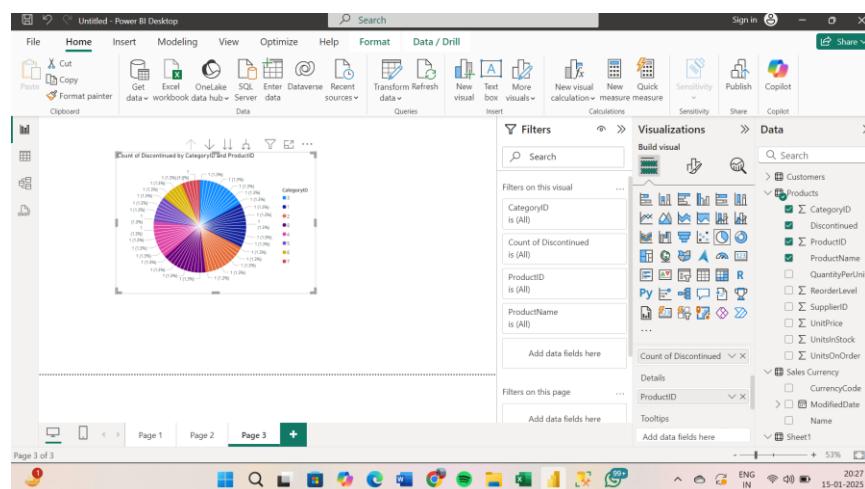
Load the data



Select the Products table.

ProductID	ProductName	SupplierID	CategoryID	QuantityPerUnit	UnitPrice	UnitsInStock	UnitsOnOrder	ReorderLevel	Discontinued
1	Chai	1	1	10 boxes x 20 bags	18	39	0	10	
2	Chang	1	1	24 - 12 oz bottles	19	17	40	25	
3	Aniseed Syrup	1	2	12 - 550 ml bottles	10	13	70	25	
4	Chef Anton's Gumbo Mix	2	2	48 - 6 oz jars	22	53	0	25	
5	Chef Anton's Gumbo Mix	2	2	36 boxes	21.35	0	0	0	
6	Grandma's Boysenberry Spread	3	2	12 - 8 oz jars	25	120	0	10	
7	Uncle Bob's Organic Dried Pears	3	7	12 - 1 lb pkgs.	30	15	0	10	
8	Northwoods Cranberry Sauce	3	2	12 - 12 oz jars	40	6	0	0	
9	Mishi Kobe Niku	4	6	18 - 500 g pkgs.	97	29	0	0	
10	Ikan	4	8	12 - 200 ml jars	31	31	0	0	
11	Queso Cabrones	5	4	1 kg pkgs.	21	22	30	30	
12	Queso Manchego La Pastor	5	4	10 - 500 g pkgs.	38	86	0	0	
13	Korbu	6	8	2 kg box	6	24	0	5	
14	Tofu	6	7	40 - 100 g pkgs.	23.25	35	0	0	
15	Geren Shouyu	6	2	24 - 250 ml bottles	15.5	39	0	5	
16	Pavlova	7	3	32 - 500 g boxes	17.45	29	0	10	
17	Alice Mutton	7	6	20 - 1 kg tins	39	0	0	0	
18	Carnarvon Tigers	7	8	16 kg pkg.	62.5	42	0	0	
19	Teatime Chocolate Biscuits	8	3	10 boxes x 12 pieces	9.2	25	0	5	
20	Sir Rodney's Marmalade	8	3	30 gift boxes	81	40	0	0	

Click on the charts icon and select the type of graph to be displayed.



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PRACTICAL 2A-3B

GEMIN KHATRI

KCTYBSCIT12

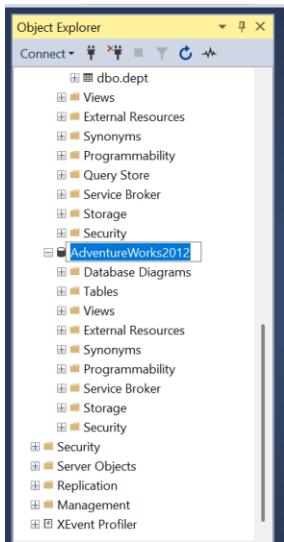
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Practical 2A - Perform the ETL process to construct the database in SQL Server.

Add the AdventureWorks file in SQL Server Management Database.

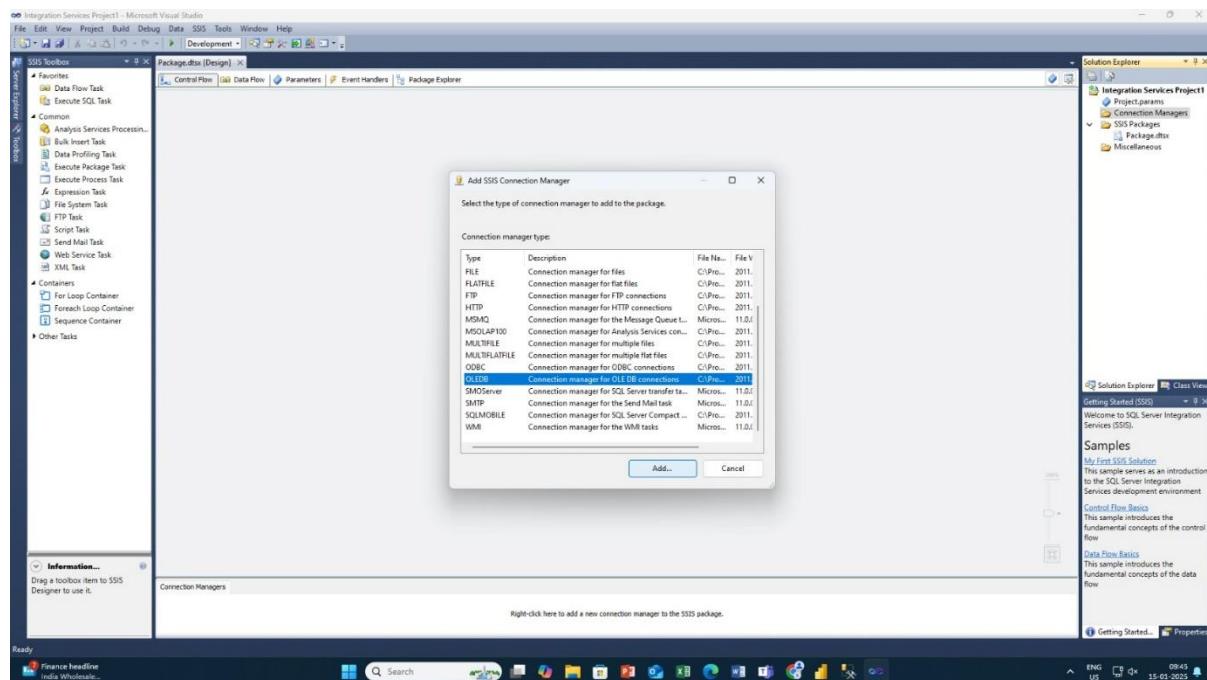


Open SQL Server Data Tools. Go to File then New and then Project

Select Integration Services and select Integration Services Project, rename it as ETL Process.

In the Solution Explorer right click on Connection Managers under ETL Process the file name and select the New Connection Manager.

Add OLEDB as the Connection Manager.



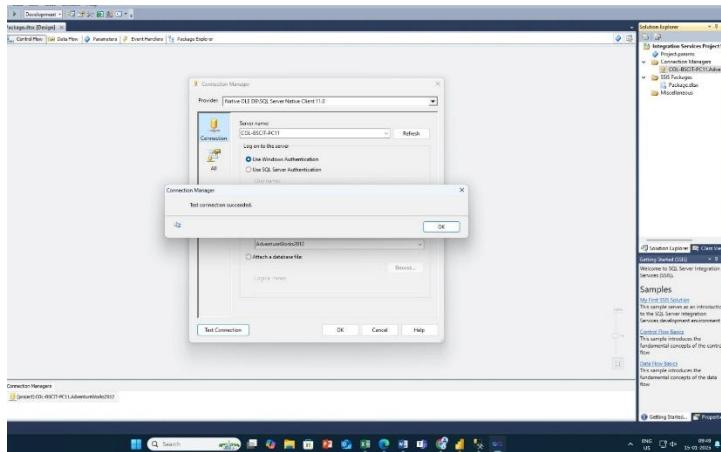
After adding the Connection Manager the following dialogue box will open. Click on New.

Enter the Server Name and select the database that is AdventureWorks file.

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Test the connection, it should succeed.



Click on OK.

The following will be displayed on the main screen in the Control Flow view.

In the Data Flow task, the following will be displayed.

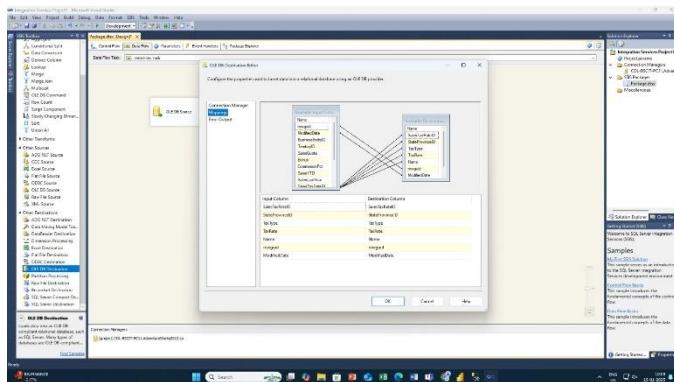
Under Other Sources in the SSIS Toolbox drag and drop OLE DB Source to the screen.

Right click on OLE DB Source. Under Connection Manager enter the OLE DB Connection Manager and the name of the tables by clicking on New.

Select Preview to see the query results.

Click on OK.

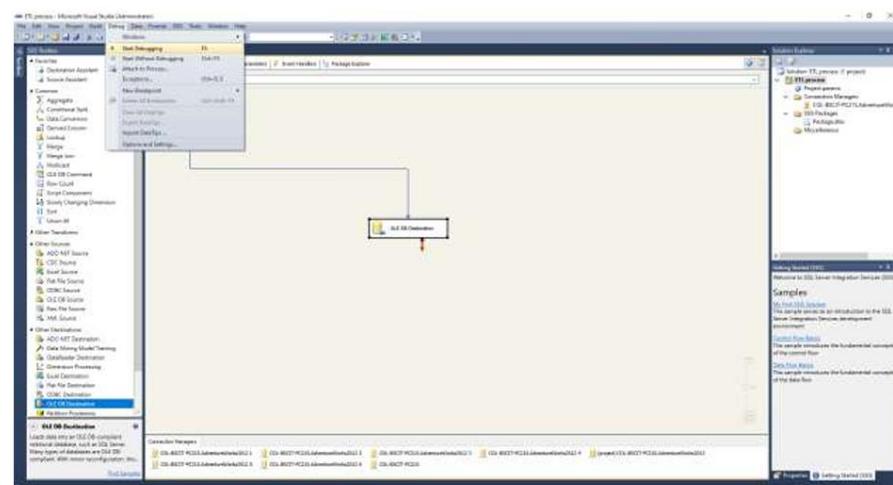
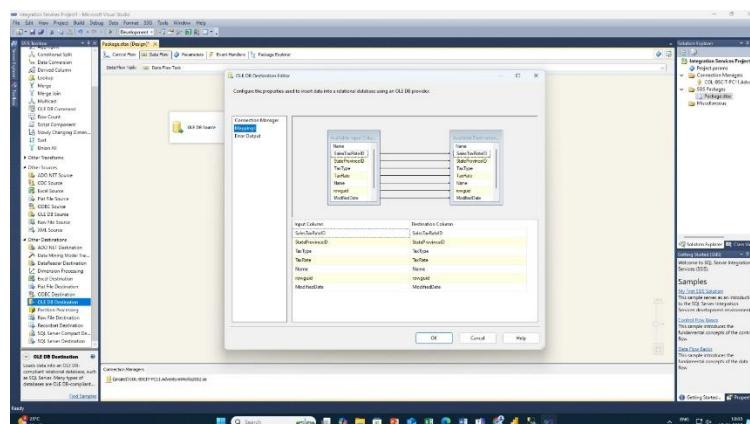
Under Other Destinations, drag and drop OLE DB Destination to the Data Flow screen.



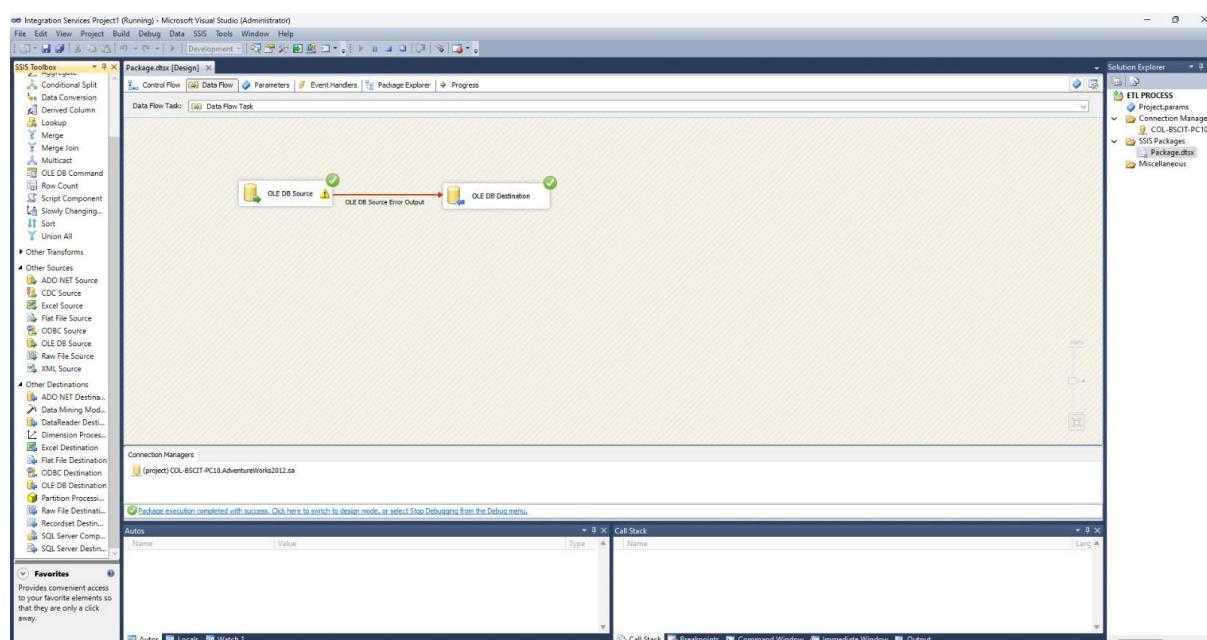
In OLE DB Destination Editor check the Mappings.

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Start the debugging.



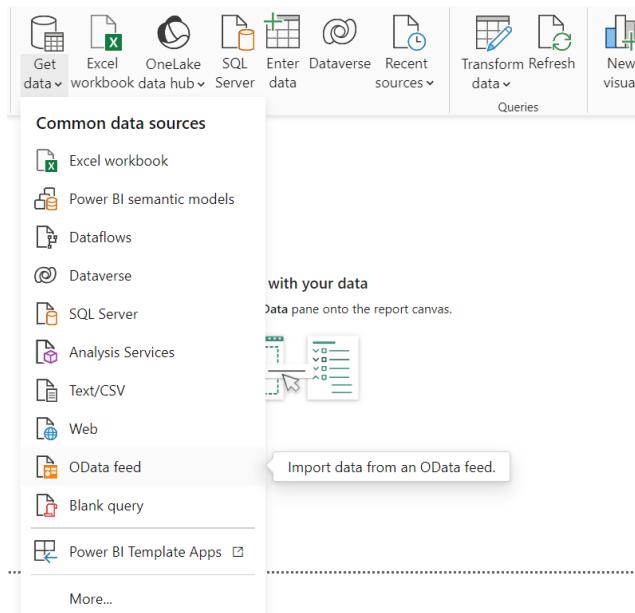
It should be successful.

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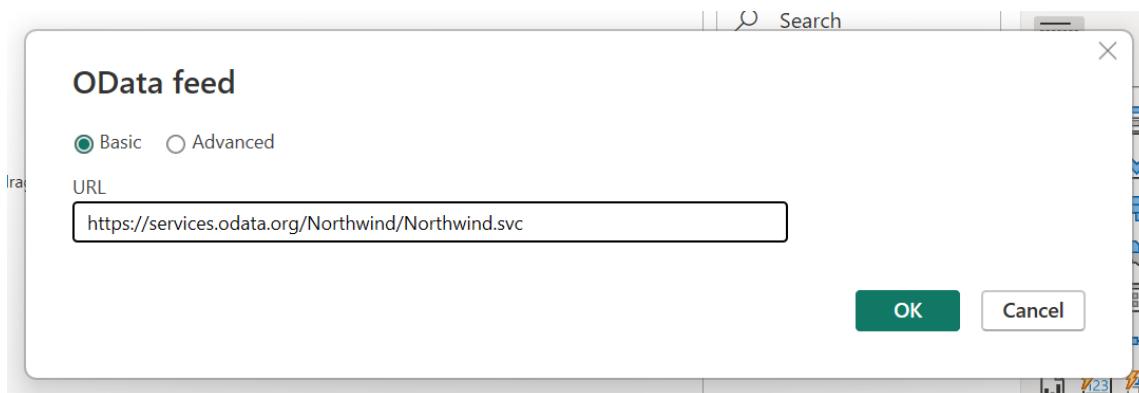
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Practical 2B – Perform the ETL process in Power BI

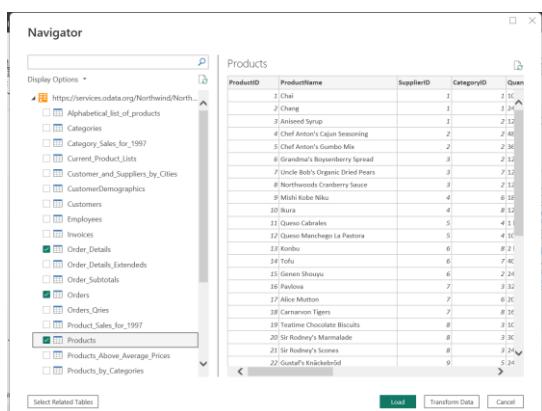
Select OData Feed from Get Data and click on Connect.



Enter the URL provided that is <https://services.odata.org/Northwind/Northwind.svc> and click on OK.



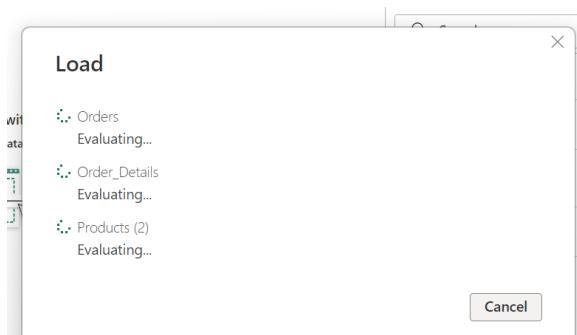
Select the tables – Orders, Order_Details and Products and load them.



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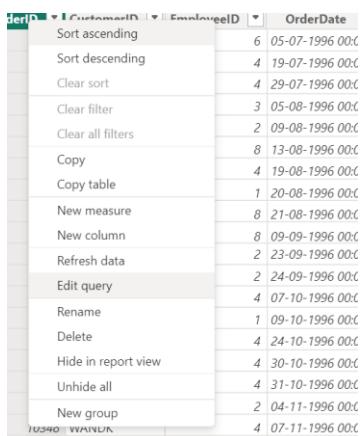
The loading process takes a bit of time.



The data will be displayed of the tables selected once the loading is complete.

A screenshot of Power BI Desktop showing the 'Customers' table in the Data view. The table has columns: CustomerID, CompanyName, ContactName, ContactTitle, Address, City, Region. There are 91 rows of data. The Data view also shows relationships to other tables like 'Order_Details', 'Orders', 'Products', etc.

Right click on any of the column and select Edit Query



A new window will be opened.

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The screenshot shows the Microsoft Power Query Editor interface. The ribbon menu includes File, Home, Transform, Add Column, View, Tools, and Help. On the left, the 'Queries [8]' pane lists 'Sheet1', 'Worker', 'Sales Currency', 'Products', 'Customers', 'Orders' (which is selected), 'Order_Details', and 'Products (2)'. The main area displays a table with columns: OrderID, CustomerID, EmployeeID, and OrderDate. The table has 15 rows of data. To the right, the 'Query Settings' pane is open, showing the 'PROPERTIES' section with 'Name: Orders' and 'All Properties', and the 'APPLIED STEPS' section which contains a single step named 'Navigation'. The status bar at the bottom indicates 'Column promotion based on 1000 rows'.

Click on Custom Column.

A screenshot of the Microsoft Power BI ribbon. The 'File', 'Home', and 'Transform' tabs are visible at the top. The 'Transform' tab is currently selected. Below the ribbon, there is a toolbar with several icons: a lightning bolt over a grid, a sun over a grid, a blue bar with a yellow arrow, and a blue bar with a green arrow. A yellow box highlights the first icon (lightning bolt). Below the toolbar, the text 'column From Examples ▾' is displayed, followed by 'Custom Column', 'Invoke C...', 'Function...', and 'Generate'.

Name the column name as LineTotal and enter the formula by inserting the columns as the variables and then click on OK.

The screenshot shows the 'Custom Column' dialog box. At the top, it says 'Custom Column'. Below that, the instruction 'Add a column that is computed from the other columns.' is displayed. A text input field labeled 'New column name' contains the text 'LineTotal'. Underneath, the 'Custom column formula' field contains the formula '= [UnitPrice]*[Quantity]'. To the right, a 'Available columns' pane lists several columns: ProductID, UnitPrice, Quantity, Discount, Order, and Product. Below the formula field, there is a link 'Learn about Power Query formulas'. At the bottom, a note says '✓ No syntax errors have been detected.' There are 'OK' and 'Cancel' buttons at the very bottom.

The LineTotal column will be added.

Query Settings

Properties

Name: Order_Details

All Properties

Applied Steps

Source: Navigation > Added Custom

	Order	Product	LineTotal
1	Record	Record	168
2	Record	Record	98
3	Record	Record	174
4	Record	Record	167.4
5	Record	Record	1696
6	Record	Record	77
7	0.15000000000000002 Record	Record	1484
8	0.15000000000000002 Record	Record	252
9	0.0500000001 Record	Record	100.8
10	0.0500000001 Record	Record	234
11	Record	Record	336
12	0.0500000001 Record	Record	2592
13	0.0500000001 Record	Record	50
14	Record	Record	1088
15			

alarm profiling based on top 1000 rows

PREVIEW DOWNLOADED AT 15:38

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Select the Orders table and under Table tools select Manage Relationships.

The screenshot shows the Microsoft Power BI Data Editor interface. The 'Table tools' ribbon is active, specifically the 'Relationships' tab. A message at the top of the editor states 'There are pending changes in your queries that haven't been applied.' The main area displays the 'Orders' table with various columns like OrderID, CustomerID, EmployeeID, OrderDate, RequiredDate, ShippedDate, ShipVia, Freight, ShipName, and ShipAddress. To the right of the table, the 'Data' pane is open, showing columns from the 'Customers' table such as CustomerID, Address, City, CompanyName, ContactName, ContactTitle, Country, Fax, Phone, PostalCode, Region, and more. The 'Relationships' section in the ribbon is also visible.

The columns will come pre-selected.

The screenshot shows the 'Manage relationships' dialog in Microsoft Power BI Data Editor. It lists two relationships: 'Order_Details (OrderID)' to 'Orders (OrderID)' and 'Order_Details (ProductID)' to 'Products (2) (ProductID)', both of which are marked as 'Active'. The 'Edit' button is visible above the list.

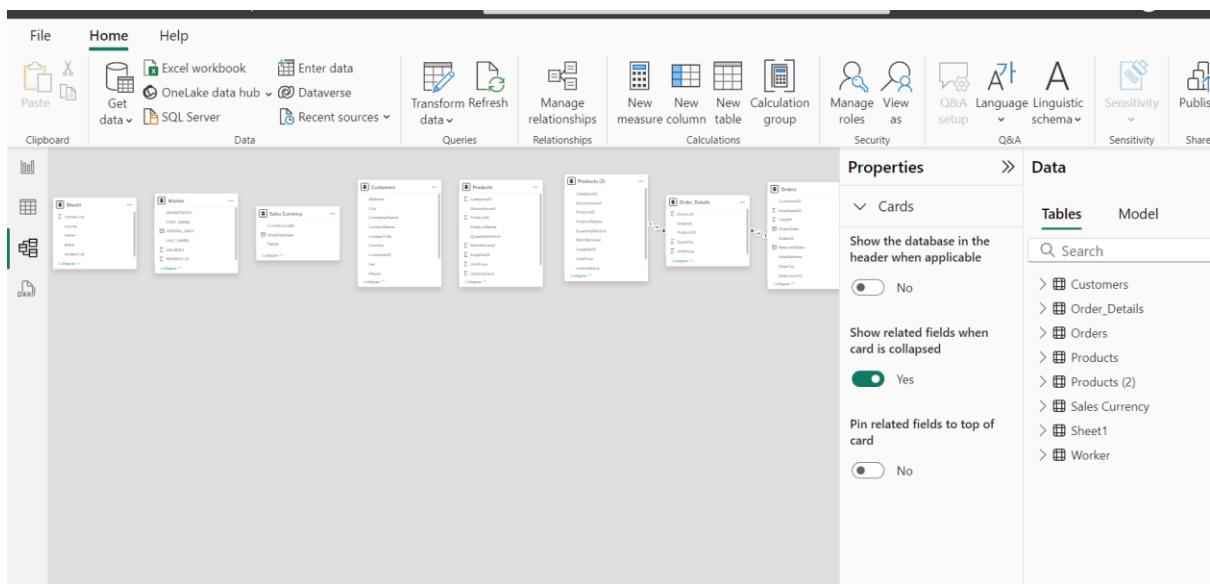
Edit the details according to the requirement.

The screenshot shows the 'Edit relationship' dialog in Microsoft Power BI Data Editor. In the 'From table' section, 'Order_Details' is selected. In the 'To table' section, 'Orders' is selected. The 'Cardinality' dropdown shows 'Many to one (*:1)'. At the bottom, there are 'Save' and 'Cancel' buttons.

Click on the relationships icon.

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PRACTICAL 3A-3B

GEMIN KHATRI

KCTYBSCIT12

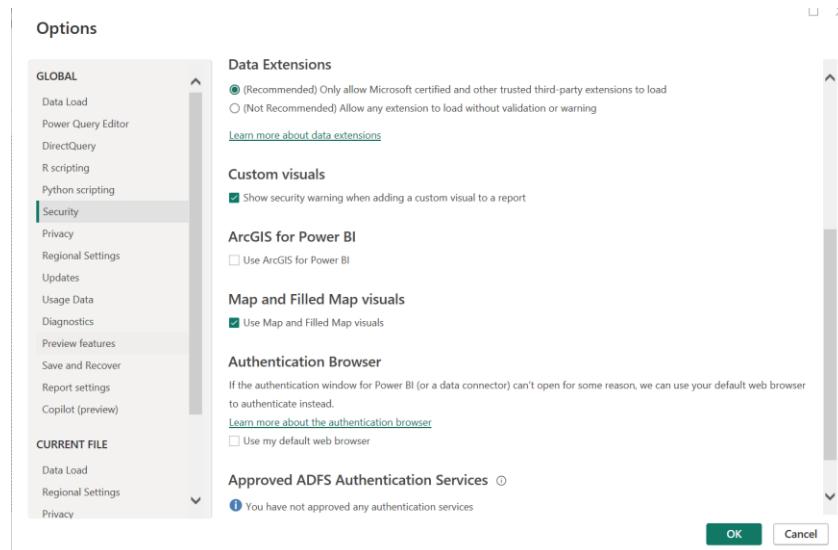
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Practical 3A – Perform data visualization in Power BI and create the data staging area for the selected database

In Power BI click on File then go to Options and Settings click on Options and check Map and Filled Map Visuals. Click on OK.



Open a table. Right click on any column and select Edit query.

The screenshot shows the Power BI Query Editor interface. It displays a table with four rows of student data: s1, aarti, 9537285372, mumbai, IT; s2, kashish, 9735286453, goa, CS; s3, saumitra, 9321546243, pune, BSC; and s4, rudra, 9820335476, hyderabad, AI. The top ribbon has tabs for Structure, Table, Relationships, Measure, Measure Column, and Table. Below the table, a message says 'There are pending changes in your queries that haven't been applied.' with 'Apply changes' and 'Discard change' buttons. The left sidebar shows data sources like Worker, Sales Currency, Products, and Customers.

Another window will be opened which look like below.

The screenshot shows the 'Transform Data' window in Power BI. It displays a table with columns student_id, name, contact.no, place, and course. The data is identical to the one in the previous screenshot. The ribbon at the top includes Home, Transform, Add Column, View, Tools, and Help. The left sidebar shows 'Queries [8]' and a list of tables: Sheet1, Worker, Sales Currency, Products, Customers, Orders, Order_Details, and Products (2). The right pane shows 'Query Settings' with 'Name: Sheet1' and 'All Properties'. Under 'APPLIED STEPS', 'Promoted Headers' is listed. The status bar at the bottom indicates '1 row(s) processed'.

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The tables will be now loaded. Select the Customers table.

A screenshot of the Power BI Data view. The table has columns: CustomerID, CompanyName, ContactName, ContactTitle, Address, City, and Region. The 'Region' column shows values like BC, London, and SP. To the right of the table is a context pane with a tree view. The root node is 'Customers', which has children: Address, City, CompanyName, ContactName, ContactTitle, Country, CustomerID, Fax, Phone, PostalCode, Region, and two collapsed nodes: Order_Details and Orders.

CustomerID	CompanyName	ContactName	ContactTitle	Address	City	Region
ALFKI	Alfreds Futterkiste	Maria Anders	Sales Representative	Obere Str. 57	Berlin	
ANATR	Ana Trujillo Emparedados y helados	Ana Trujillo	Owner	Avda. de la Constitución 2222	México D.F.	
ANTON	Antonio Moreno Taquería	Antonio Moreno	Owner	Mataderos 2312	México D.F.	
AROUT	Around the Horn	Thomas Hardy	Sales Representative	120 Hanover Sq.	London	
BERGS	Berglunds snabbköp	Christina Berglund	Order Administrator	Berguvsvägen 8	Luleå	
BLAUS	Blauer See Delikatessen	Hanna Moos	Sales Representative	Forsterstr. 57	Mannheim	
BLONP	Blondesdssl père et fils	Frédérique Citeaux	Marketing Manager	24, place Kléber	Strasbourg	
BOLID	Bólido Comidas preparadas	Martín Sommer	Owner	C/ Araquil, 67	Madrid	
BONAP	Bon app'	Laurence Lebihan	Owner	12, rue des Bouchers	Marseille	
BOTTM	Bottom-Dollar Markets	Elizabeth Lincoln	Accounting Manager	23 Tsawassen Blvd.	Tsawassen	BC
BSBEV	B's Beverages	Victoria Ashworth	Sales Representative	Fauntleroy Circus	London	
CACTU	Cactus Comidas para llevar	Patricia Simpson	Sales Agent	Cerrito 333	Buenos Aires	
CENTC	Centro comercial Moctezuma	Francisco Chang	Marketing Manager	Sierras de Granada 9993	México D.F.	
CHOPS	Chop-suey Chinese	Yang Wang	Owner	Hauptstr. 29	Bern	
COMMI	Comércio Mineiro	Pedro Afonso	Sales Associate	Av. dos Lusiadas, 23	Sao Paulo	SP

Select any column and right click to select Edit Query. New window will open.

A screenshot of the Power BI Query Editor. On the left, there is a table with columns student_id, contact.no, place, and course. The 'student_id' column has a context menu open with options: Copy, Remove, Remove Other Columns, Duplicate Column, Add Column From Examples..., Remove Duplicates, Remove Errors, Change Type, Transform, and Replace Values... The 'place' column is selected.

Remove duplicate entries by right clicking on the column and selecting Remove Duplicates.

A screenshot of the Power BI Data view showing the 'Customers' table. The table has 16 rows. To the right is the Query Settings pane. Under 'APPLIED STEPS', 'Removed Duplicates' is listed. The 'Properties' pane shows the table is named 'Customers'. The 'All Properties' link is visible.

CustomerID	CompanyName	ContactName	ContactTitle	Address
ALFKI	Alfreds Futterkiste	Maria Anders	Sales Representative	Obere Str. 57
ANATR	Ana Trujillo Emparedados y helados	Ana Trujillo	Owner	Avda. de la Cons
ANTON	Antonio Moreno Taquería	Antonio Moreno	Owner	Mataderos 2312
AROUT	Around the Horn	Thomas Hardy	Sales Representative	120 Hanover Sq.
BERGS	Berglunds snabbköp	Christina Berglund	Order Administrator	Berguvsvägen 8
BLAUS	Blauer See Delikatessen	Hanna Moos	Sales Representative	Forsterstr. 57
BLONP	Blondesdssl père et fils	Frédérique Citeaux	Marketing Manager	24, place Kléber
BOLID	Bólido Comidas preparadas	Martín Sommer	Owner	C/ Araquil, 67
BONAP	Bon app'	Laurence Lebihan	Owner	12, rue des Bouc
BOTTM	Bottom-Dollar Markets	Elizabeth Lincoln	Accounting Manager	23 Tsawassen Blv
BSBEV	B's Beverages	Victoria Ashworth	Sales Representative	Fauntleroy Circu
CACTU	Cactus Comidas para llevar	Patricia Simpson	Sales Agent	Cerrito 333
CENTC	Centro comercial Moctezuma	Francisco Chang	Marketing Manager	Sierras de Gran
CHOPS	Chop-suey Chinese	Yang Wang	Owner	Hauptstr. 29
COMMI	Comércio Mineiro	Pedro Afonso	Sales Associate	Av. dos Lusiadas,
CONSH	Consolidated Holdings	Elizabeth Brown	Sales Representative	Berkeley Garden

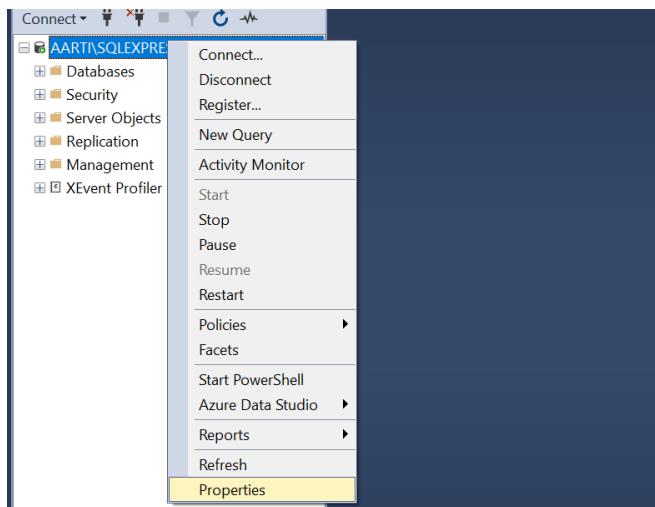
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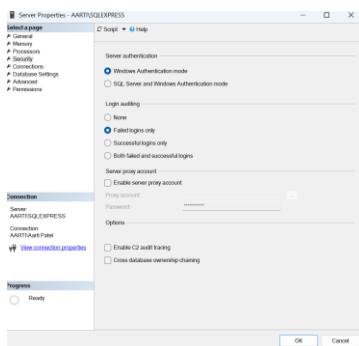
Practical 3B – Create the data staging area for the selected database using Star Schema

Open SQL Server Management Studio. Authentication will be SQL Server Authentication. Login username is and password

In the Object Explorer, right click on the server and click on Properties.



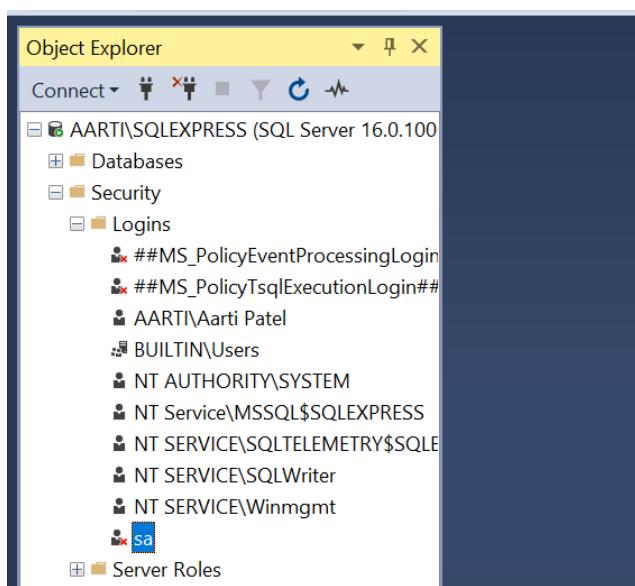
Open Security under Server Properties and check if everything is proper.



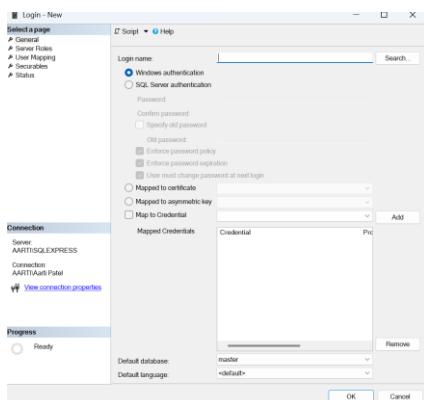
Under Security and then under Logins there is a folder named sa that is the login username, right click on it and select New Login.

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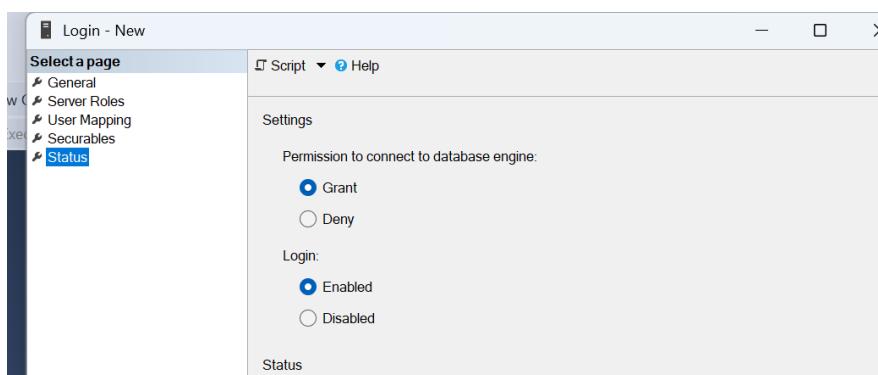
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Check the enforcement of passwords.



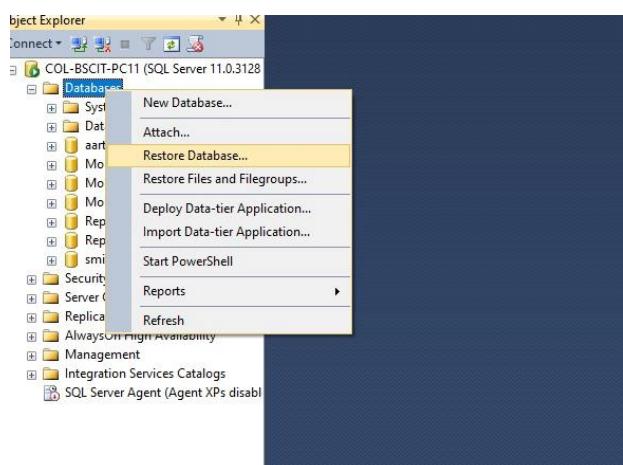
Enable the login in Status.



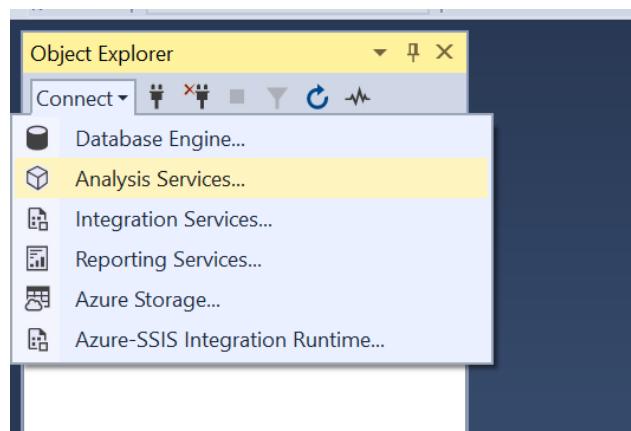
Right click on the server name and click on Restart.

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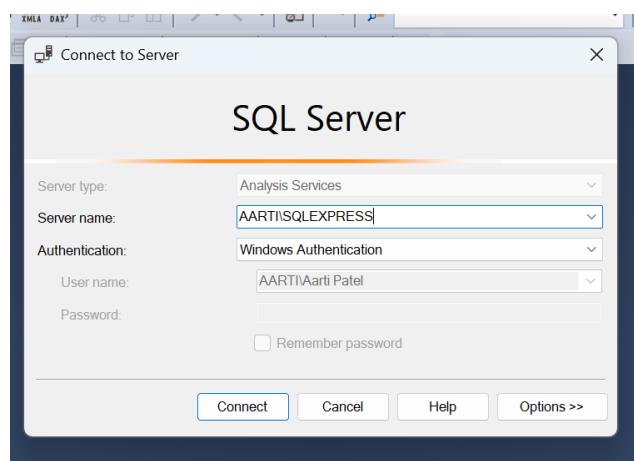
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Click on Connect and select Analysis Services.



Enter the credentials.



The Analysis Server will now be added in the Object Explorer.

In Microsoft SQL Server Management, click on File then Open and then File.

Search for the file Data_Warehouse_SQLScript.zip.

Click on Execute after importing the file. The following screen is displayed.

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Query executed successfully message will be displayed at the bottom of the screen.

The screenshot shows the Microsoft SQL Server Management Studio interface. A query window titled "Data Warehouse SQLScript.sql - COL-BSCIT-PC10.Sales_DW (COL-BSCIT-PC10\Admin (53)) - Microsoft SQL Server Management Studio" is open. The code in the window creates a database named "Sales_DW" and populates it with data from a table named "DimCustomer". The "Properties" pane on the right shows connection details like "Name: COL-BSCIT-PC10", "State: Open", and "SPID: 53". The status bar at the bottom indicates "Query executed successfully." and "730 rows".

```
CREATE DATABASE Sales_DW
GO
Create database Sales_DW
GO
Use Sales_DW
GO
--Create Customer dimension table in Data Warehouse which will hold customer personal details.
Create table DimCustomer
(
    CustomerID int primary key identity,
    CustomerAltID varchar(10) not null,
    CustomerName varchar(50),
    Gender varchar(20)
)
GO
--Fill the Customer dimension with sample Values

```

DateKey	Date	FullDate[UK]	FullDate[USA]	DayOfMonth	DaySuffix	DayName	DayOfWeek[USA]	DayOfWeek[UK]	DayOfWeekInMonth	DayOfWeekInYear	DayOfQuarter	DayOfYear	WeekOfMonth	WeekOfQuarter	WeekOnMonth
1	2013-01-01 00:00:00.000	01/01/2013	01/01/2013	1	1st	Tuesday	3	2	1	1	1	1	1	1	1
2	2013-01-02 00:00:00.000	01/02/2013	01/02/2013	2	2nd	Wednesday	4	3	1	1	1	2	1	1	1
3	2013-01-03 00:00:00.000	01/03/2013	01/03/2013	3	3rd	Thursday	5	4	1	1	1	3	1	1	1
4	2013-01-04 00:00:00.000	01/04/2013	01/04/2013	4	4th	Friday	6	5	1	1	1	4	1	1	1
5	2013-01-05 00:00:00.000	01/05/2013	01/05/2013	5	5th	Saturday	7	6	1	1	1	5	1	1	1
6	2013-01-06 00:00:00.000	01/06/2013	01/06/2013	6	6th	Sunday	1	7	1	1	1	6	2	1	2
7	2013-01-07 00:00:00.000	01/07/2013	01/07/2013	7	7th	Monday	2	1	1	1	1	7	2	1	2
8	2013-01-08 00:00:00.000	01/08/2013	01/08/2013	8	8th	Tuesday	3	2	2	2	2	8	2	2	2
9	2013-01-09 00:00:00.000	01/09/2013	01/09/2013	9	9th	Wednesday	4	3	2	2	2	9	2	2	2
10	2013-01-10 00:00:00.000	01/10/2013	01/10/2013	10	10th	Thursday	5	4	2	2	2	10	2	2	2
11	2013-01-11 00:00:00.000	01/11/2013	01/11/2013	11	11th	Friday	6	5	2	2	2	11	2	2	2
12	2013-01-12 00:00:00.000	01/12/2013	01/12/2013	12	12th	Saturday	7	6	2	2	2	12	2	2	2
13	2013-01-13 00:00:00.000	01/13/2013	01/13/2013	13	13th	Sunday	1	7	2	2	2	13	3	2	3

Right click on Databases and click on Refresh.

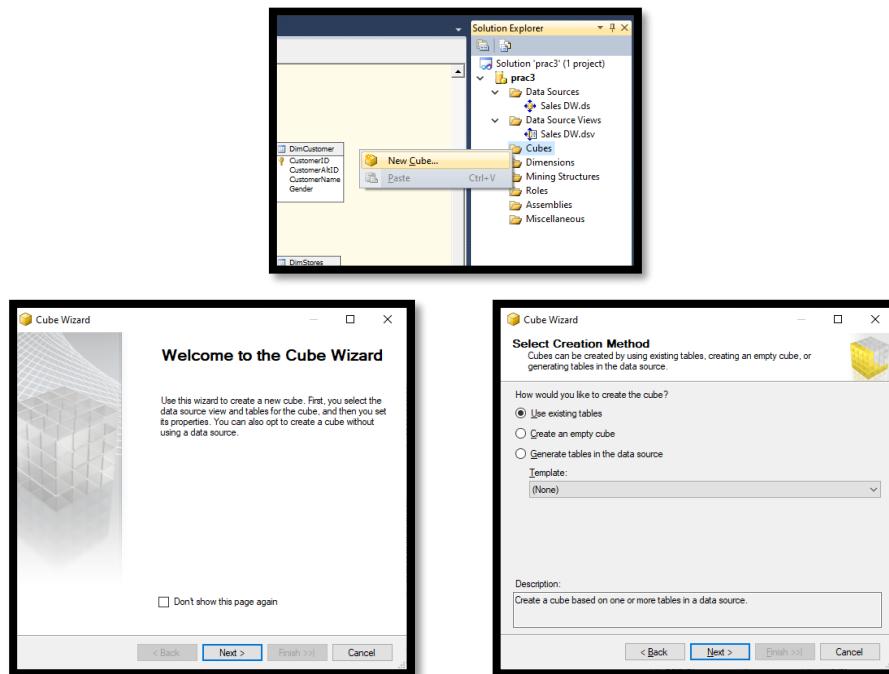
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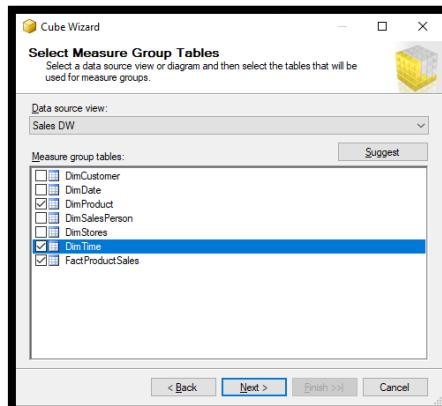
Practical 4A - Create the cube with corresponding dimension and fact table based on OLAP

Continue from the previous practical i.e. 3B.

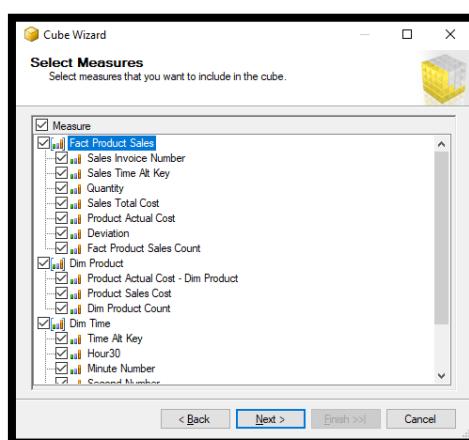
In Solution Explorer select Cube which opens a dialogue box.



Select the tables – FactProductSales, DimProduct, DimTime and click on Next.



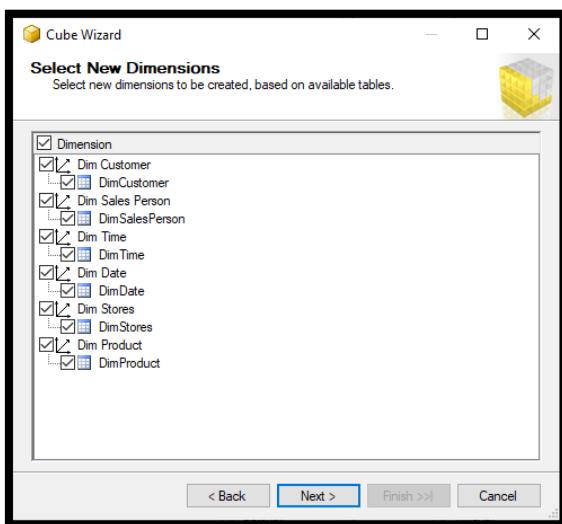
Select all the measures to include in the cube and click on Next.



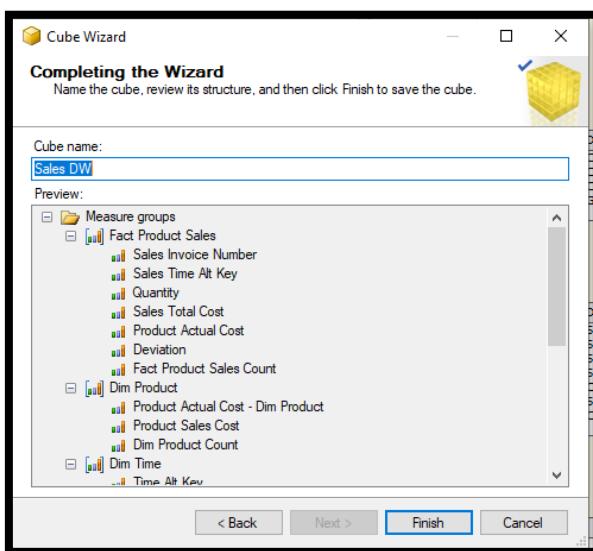
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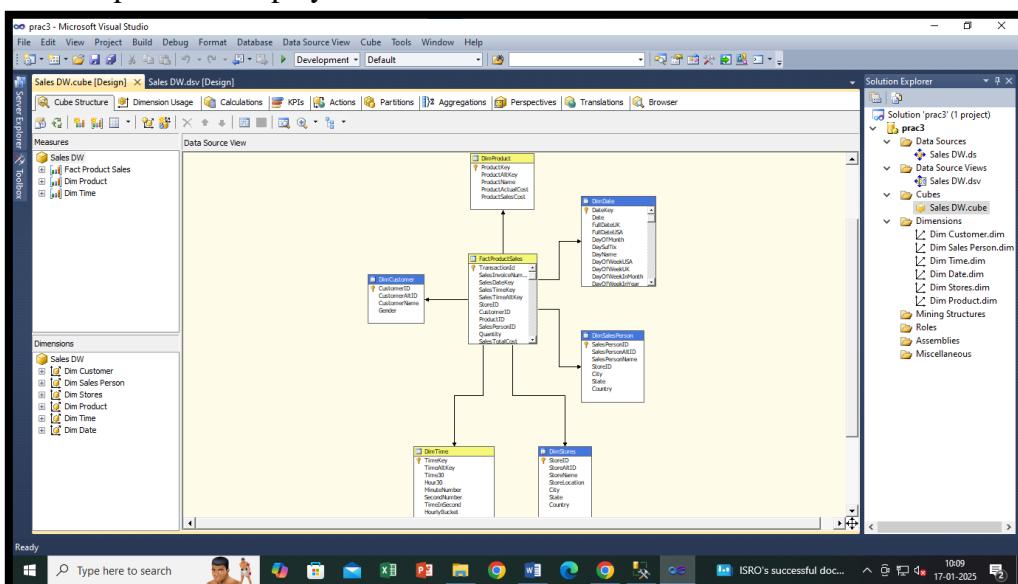
Select all the new dimensions and click on Next.



Name the cube as Sales DW and click on Finish.



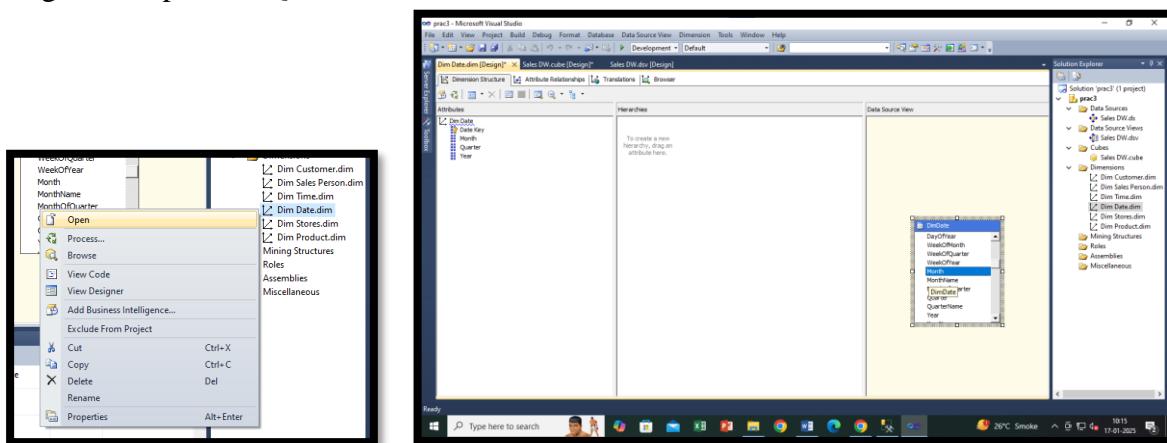
The relationship will be displayed on the screen.



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Drag and drop Year, Quarter and Month to the Attributes



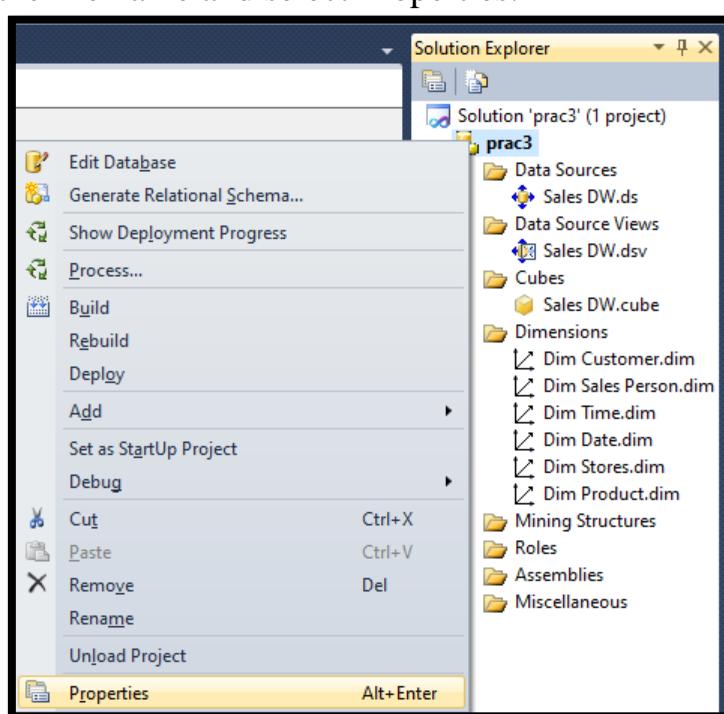
Drag and drop the attributes into the same Hierarchy.



Save the progress and click on OK.



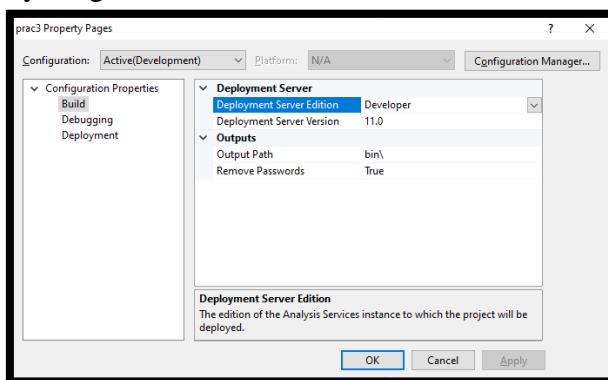
Right click on the file name and select Properties.



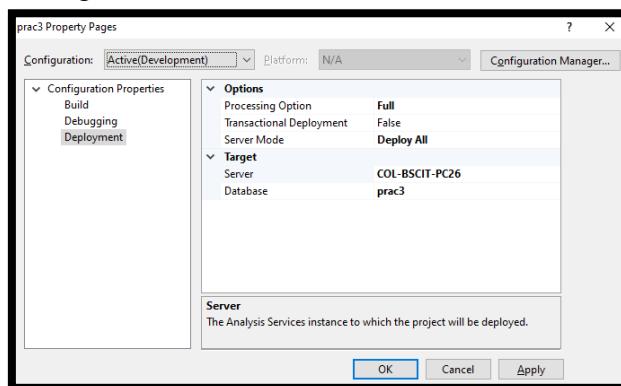
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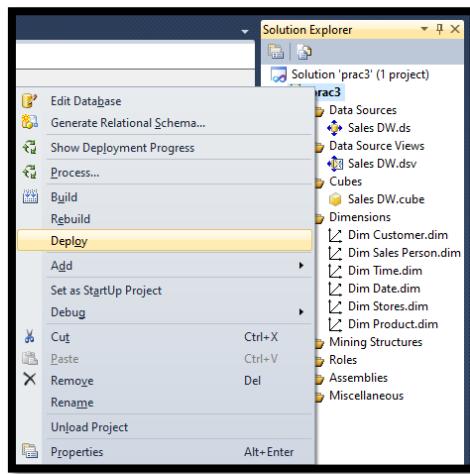
In Build make sure everything is correct.



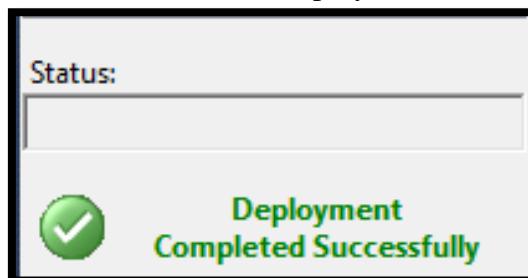
In Deployment, make Processing Option as Full instead of Default. Server Mode as Deploy all instead of Deploy Changes Only. Server as the server name used till now instead of localhost. Apply these changes.



Right click on the file name and click on Deploy to deploy the project.



At the bottom of the screen it is shown that the deployment is successful.



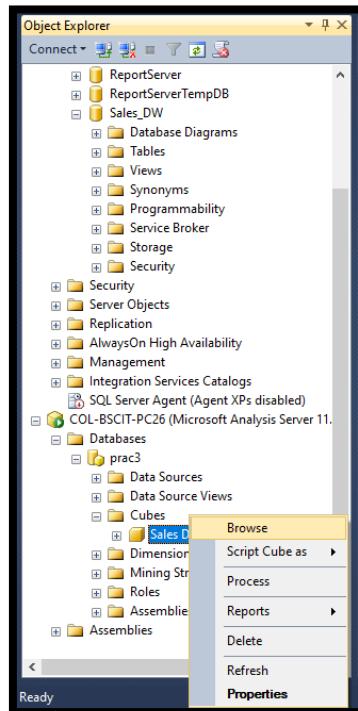
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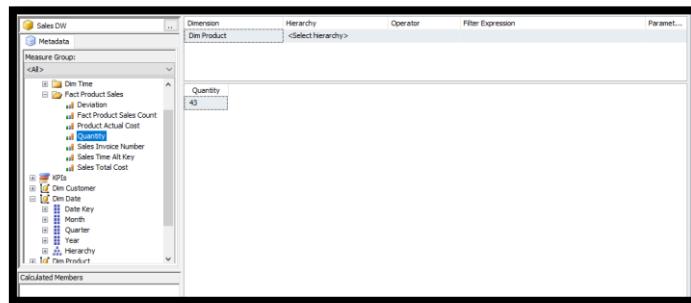
Practical 4B – Perform Multi-Dimensional Expressions (MDX) queries for OLAP database

Continue from the previous practical i.e. 4A.

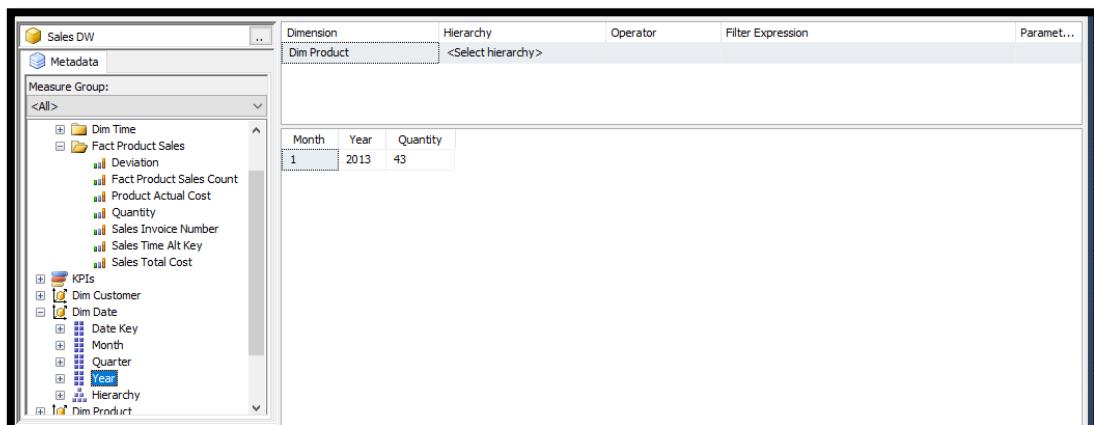
To verify, in SQL Server Management right click on the file name in Object Explorer and click on Browse.



Drag and drop quantity. On selecting Quantity under Fact Product Sales the value shown will be 43



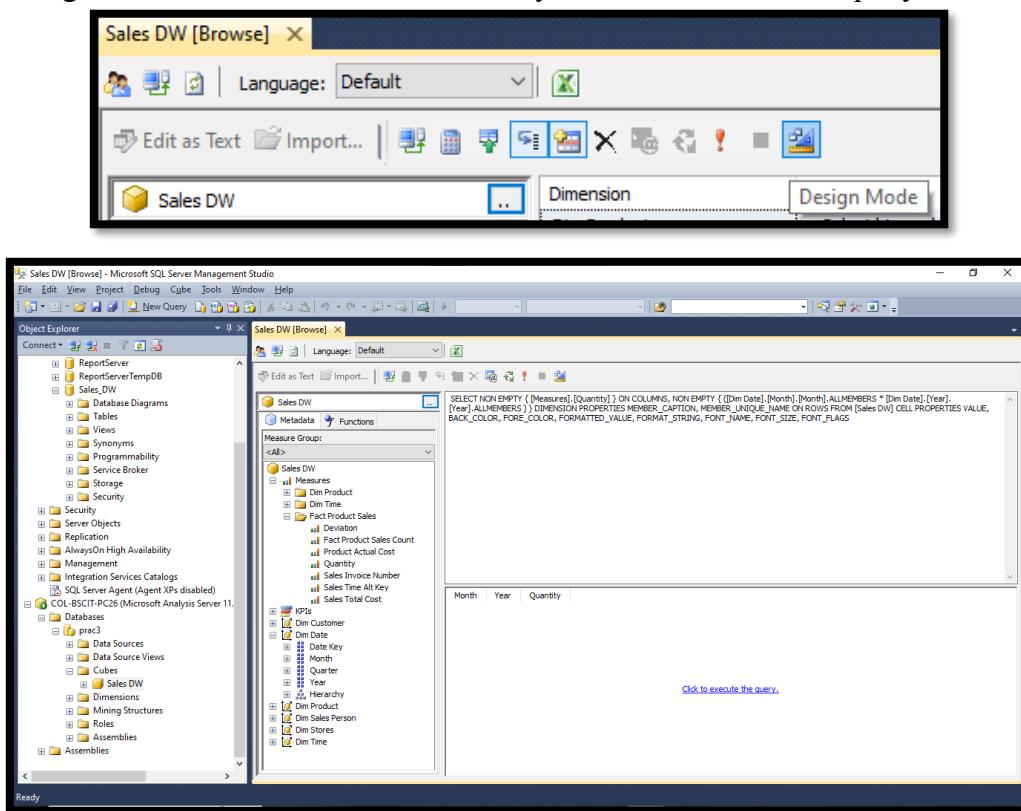
Select Month and Year as well from Dim Date.



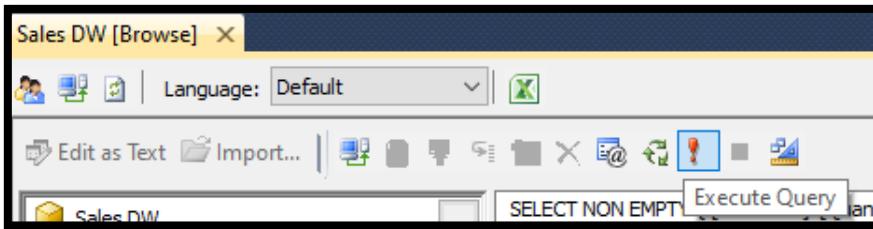
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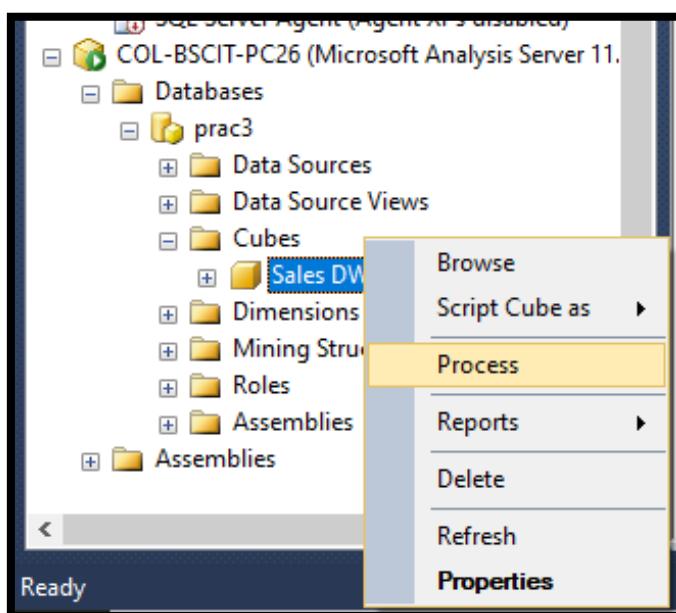
Go in Design Mode and click on the line that says 'Click to execute the query.'



Click on the error symbol.



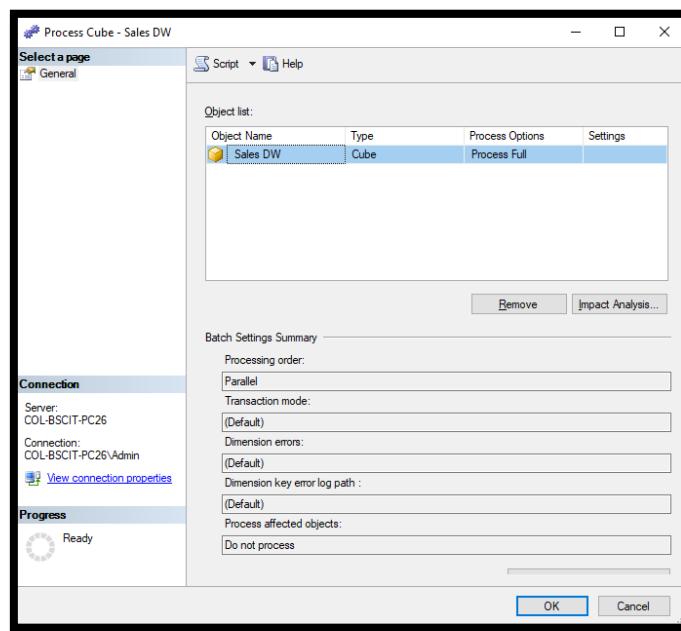
Right click on the file name and select Process.



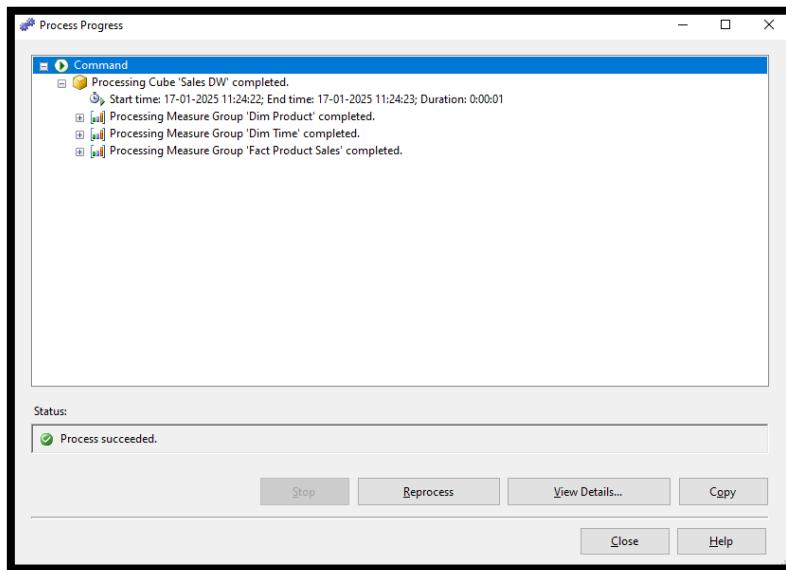
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Select the file and click on Run.



Process succeeded is the status.

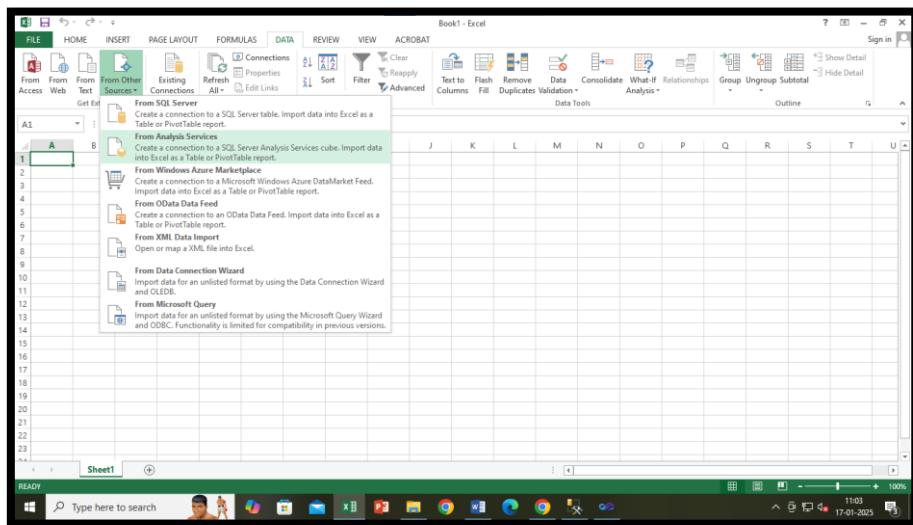


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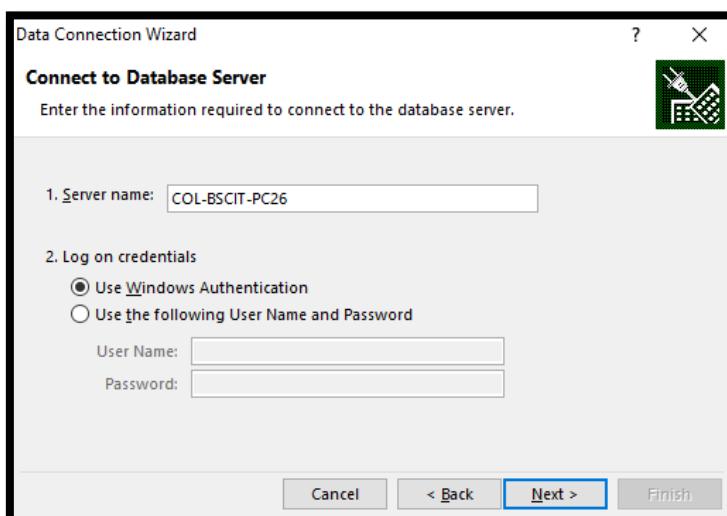
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Practical 5A – Import the data warehouse in Microsoft Excel and create Pivot Table to perform Data Analytics

Open Microsoft Excel, go to Data, in From Other Sources select From Analysis Services.



Enter your Server name and click on Next.



Select any table and then click on next and then finish.

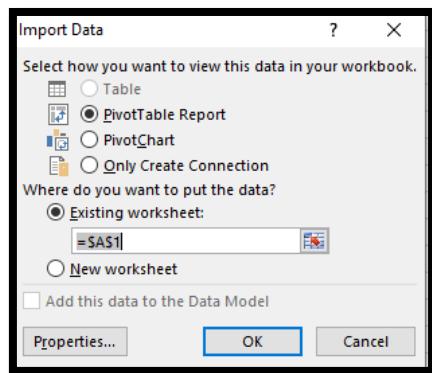
The 'Select Database and Table' screen shows the following table selection:

Name	Description	Modified	Created	Type
Sales DW		1/17/2025 11:01:56 AM		CUBE

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Select PivotTable Report and then click on OK.



Insert a Pivot Table and select the row labels for the pivot table

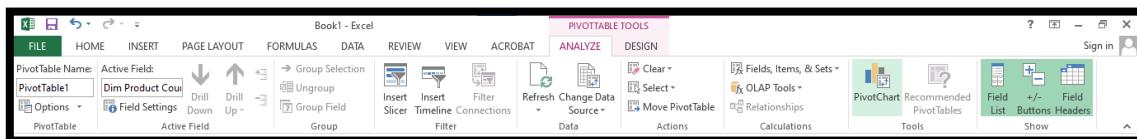
A screenshot of Microsoft Excel showing a PivotTable being created. The PivotTable Fields pane on the right shows fields like 'Sales Invoice Number', 'Sales Time Alt Key', 'Sales Total Cost', 'Dim Customer', 'Customer ID', 'Dim Date', and 'Hierarchy'. The PivotTable itself displays data with columns for 'Dim Product Count', 'Product Actual Cost - Dim Product', 'Product Sales Cost', 'Day Time Bucket Group Key', 'Dim Time Count', 'Hour30', 'Minute Number', and 'Second1'. The data includes rows for years 2013, 2014, and Unknown, with various product counts and sales figures. The ribbon at the top shows the 'PIVOTTABLE TOOLS' tab is active.

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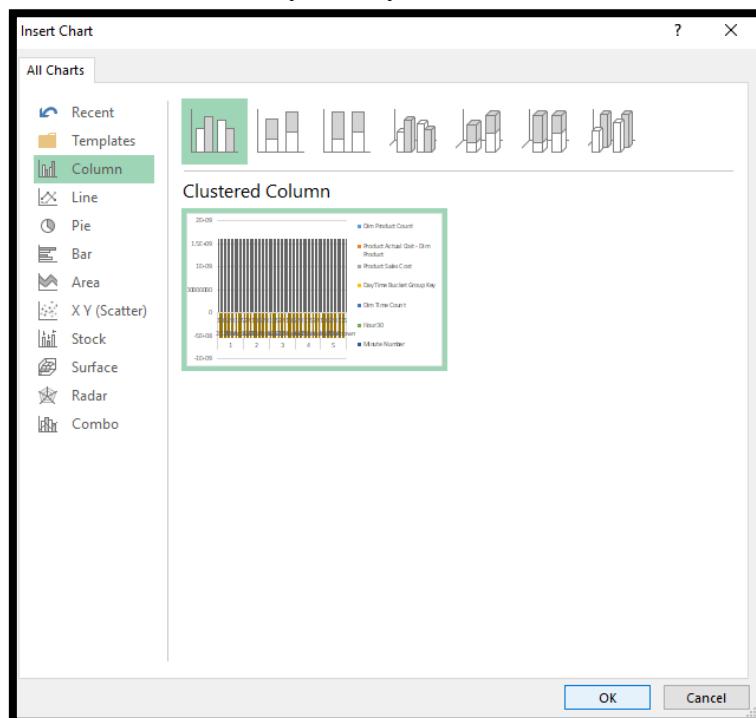
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Practical 5B – Import the cube in Microsoft Excel and create the Pivot Chart to perform Data Modelling

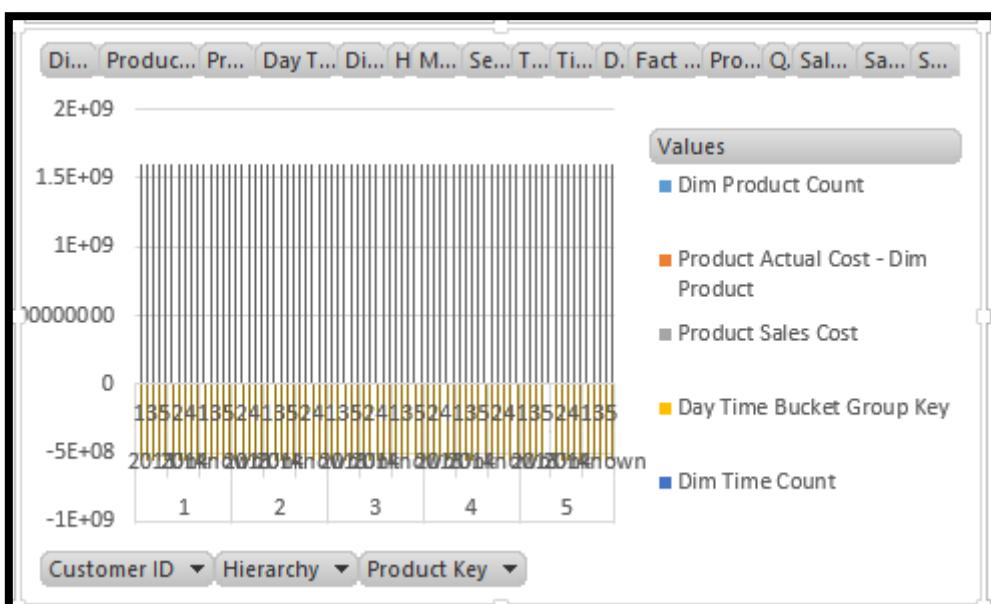
Open Microsoft Excel containing a Pivot Table and then go to analyze option.



Select a clustered columnar chart or any other you want and then click OK.



The clustered column chart is shown.



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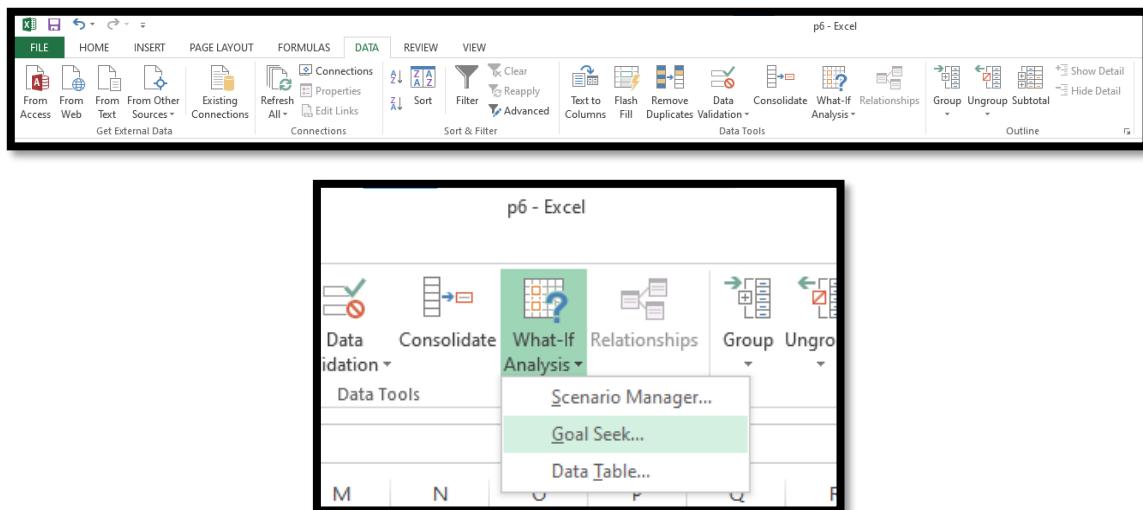
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Practical 6 – Perform the What-If Analysis for Data Visualization

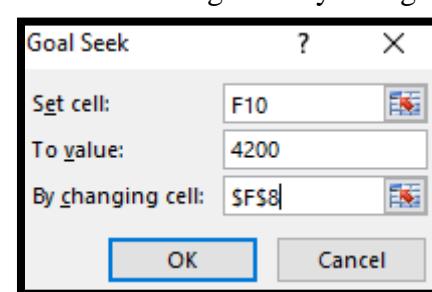
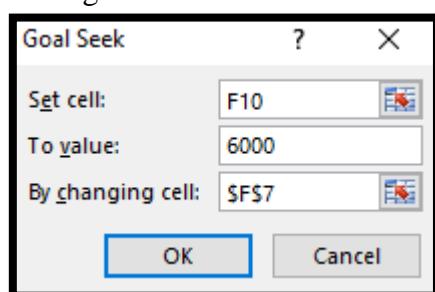
Open Microsoft Excel. Create a table.

A	B	C	D	E	F
1					
2					
3					
4					
5					
6				Product	Rice
7				Qty/kg	60
8				Price	70
9				Total	4200
10					
11					

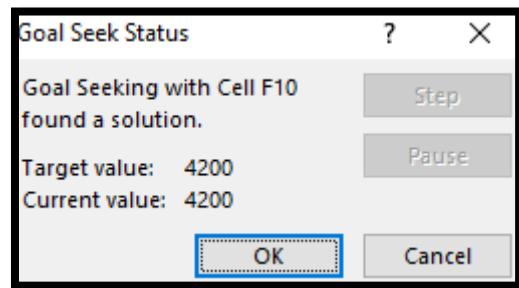
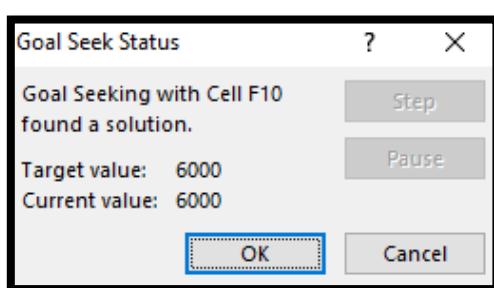
In Data tab, select Goal Seek under What-If Analysis.



Enter the Set Cell value to where the changed value will be displayed. Enter the value that should be changed in To Value and the cell which should be changed in By changing cell.



Click on OK in Goal Seek Status.



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Output:

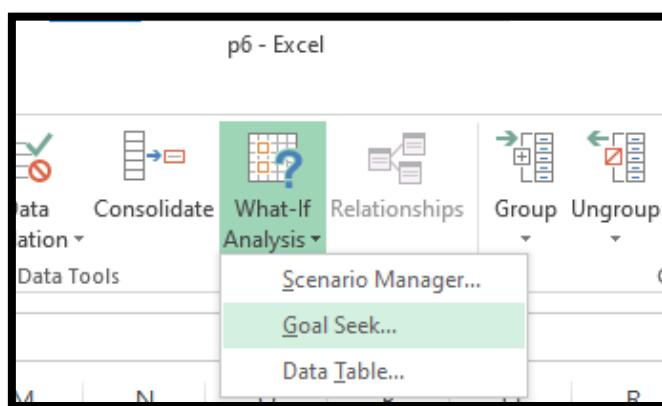
A screenshot of Microsoft Excel showing a data table in cells J6 to J10. The table has four rows: Product (Rice), Qty/kg (85.71429), Price (49), and Total (4200). The 'DATA' tab is selected in the ribbon.

Product	Rice
Qty/kg	85.71429
Price	49
Total	4200

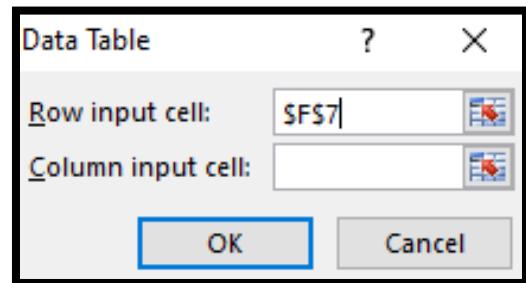
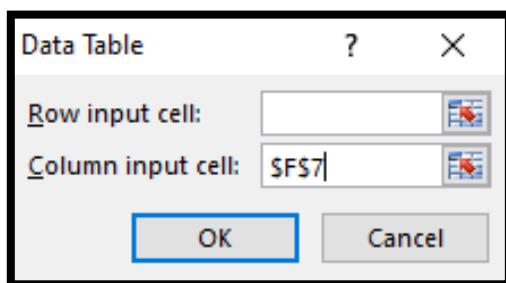
Select Data Table under What-If Analysis.

A screenshot of Microsoft Excel showing a data table in cells J6 to J10. The table includes columns for Product (Rice), Qty/kg (85.71429), Price (49), and Total (4200). A dropdown menu is open over the 'What-If Analysis' button in the 'DATA' tab of the ribbon. The 'Data Table...' option is highlighted.

Product	Rice
Qty/kg	85.71429
Price	49
Total	4200



Enter the input cells and click on OK.



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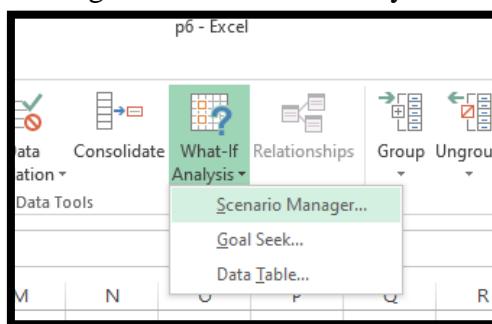
The result will be displayed.

Product	Rice	Qty				
Qty/kg	85.71429	4200	3920	4410	4900	5390
Price	49	80	90	100	110	120
Total	4200	90	4410	4900	5390	5880
		120	130	140	150	
		4200	5880	6370	6860	7350

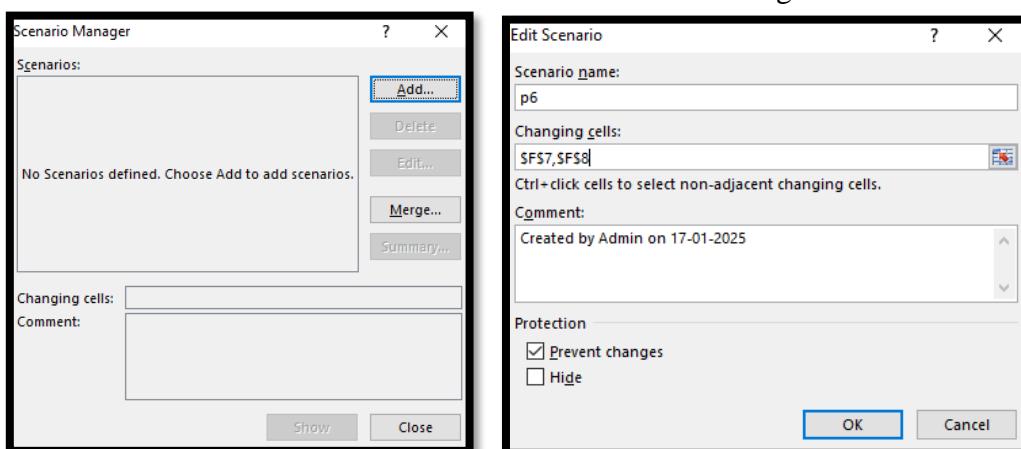
Both Row and column result in a single table

Product	Rice	Qty				
Qty/kg	85.71429	4200	3920	4410	4900	5390
Price	49	80	90	100	110	120
Total	4200	90	4410	4900	5390	5880
		120	130	140	150	
		4200	5880	6370	6860	7350
		80	9600	10400	11200	12000
		90	10800	11700	12600	13500
		100	12000	13000	14000	15000
		110	13200	14300	15400	16500
		120	14400	15600	16800	18000

In Data tab, select Scenario Manager under What-If Analysis.



Click on add and then enter scenario name and the cells to be changes as shown below



Scenario Manager

Scenarios:

No Scenarios defined. Choose Add to add scenarios.

Changing cells:

Comment:

Add... Delete Edit... Merge... Summary... Show Close

Edit Scenario

Scenario name:

p6

Changing cells:

\$F\$7,\$F\$8

Ctrl+click cells to select non-adjacent changing cells.

Comment:

Created by Admin on 17-01-2025

Protection

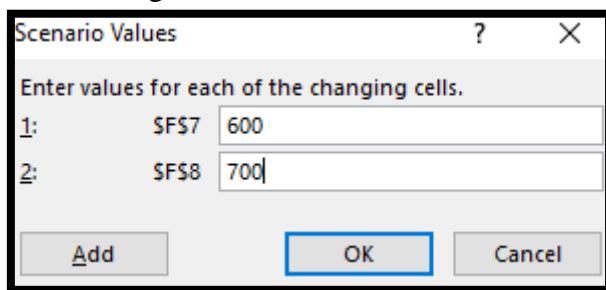
Prevent changes
 Hide

OK Cancel

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Enter the values you want to change for each column.



Now click on the added scenario and then click on the show button.

The dialog box is titled "Scenario Manager". It shows a list of scenarios with "p6" selected. Below the list are buttons for Add..., Delete, Edit..., Merge..., and Summary...
Changing cells: \$F\$7,\$F\$8
Comment: Created by Admin on 17-01-2025

On the right, there is a summary table with columns for Product (Rice) and Qty (420000, 80, 90, 100, 110, 120) and rows for Price (600, 700). A green box highlights the cell for Price = 80.

Product	Rice
Qty/kg	600
Price	700
Total	420000

Qty	420000	120	130	140	150
420000	0	0	0	0	0
80	9600	10400	11200	12000	12800
90	10800	11700	12600	13500	14400
100	12000	13000	14000	15000	16000
110	13200	14300	15400	16500	17600
120	14400	15600	16800	18000	19200

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Practical 7 – Data Analysis using Time Series Analysis

#Consider the annual rainfall details at a place starting from January 2012. #We create an R time series object for a period of 12 months and plot it.

```
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)
```

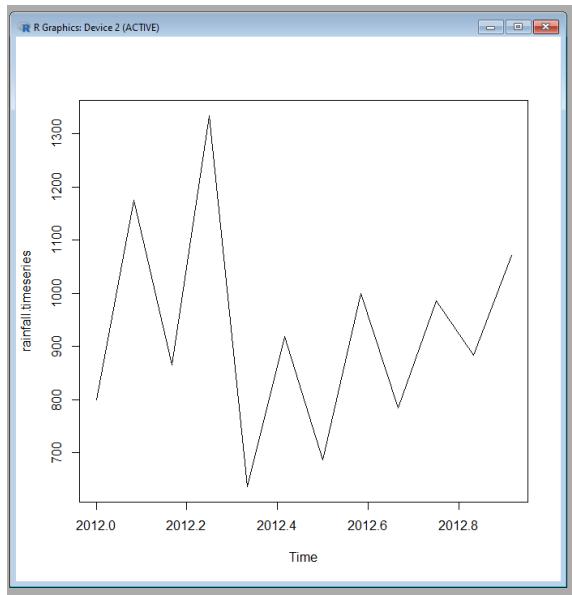
```
# Give the chart file a name.
```

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

```
# Plot a graph of the time  
series.
```

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

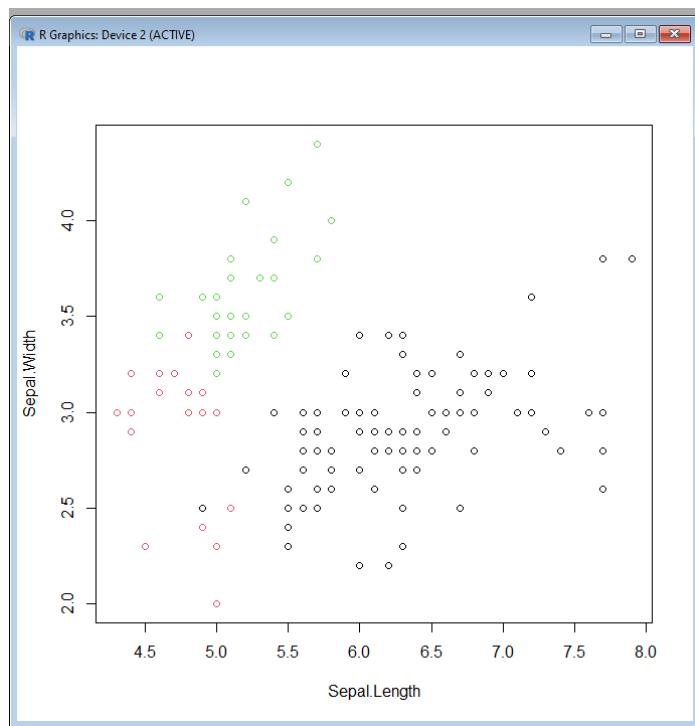
```
# Save the file. dev.off()
```



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Practical 8: Perform the Data Clustering using Clustering Algorithm(Clustering : k-means Algorithm)\



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Practical no 9

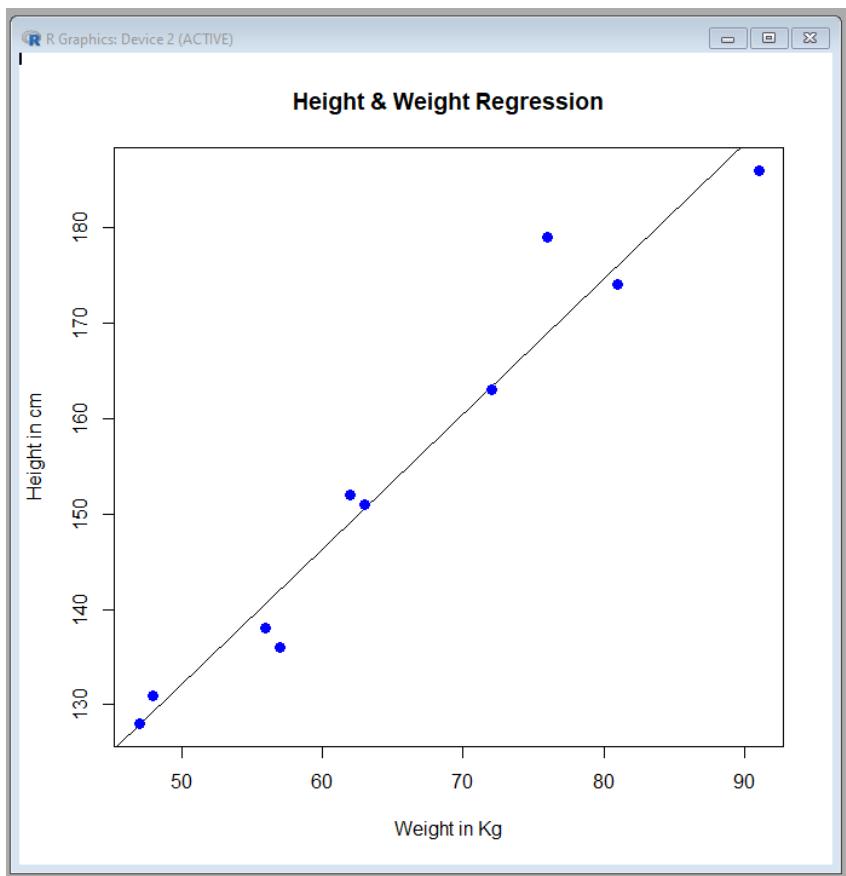
D:\AARTI6.R - R Editor

```
x <- c(151, 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 =
# Save the file.
dev.off()
```



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Practical no 10:

R Untitled - R Editor

```
library(party)
print(head(readingSkills))
```

R Console

```
The following objects are masked from 'package:base':
  as.Date, as.Date.numeric

Loading required package: sandwich
> print(head(readingSkills))
+ library(party)
Error: unexpected symbol in:
"print(head(readingSkills)
library"
> print(head(readingSkills))
+ library(party)
Error: unexpected symbol in:
"print(head(readingSkills)
library"
> print(head(readingSkills))
nativeSpeaker age shoeSize      score
1       yes    5 24.83189 32.29385
2       yes    6 25.95238 36.63105
3      no     11 30.42170 49.60593
4       yes    7 28.66450 40.28456
5       yes   11 31.88207 55.46085
6       yes   10 30.07843 52.83124
> |
```

