Practical No 1

Aim : Creation of Dimensions and Fact tables.

Solution :

Open Application -> Microsoft SQL Server 2008 R2 -> SQL Server Management Studio

1. **Select Connect Tab -> Database Engine -> Select Server Name(local)**

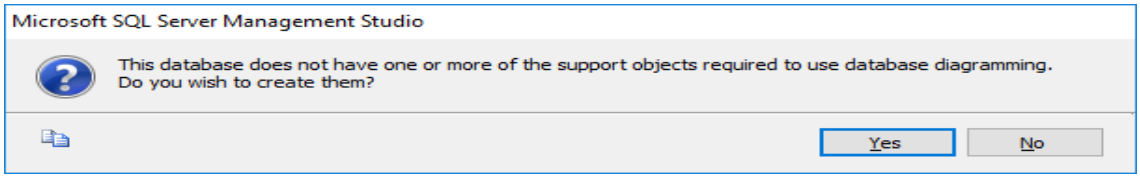
2. **Right Click the Database -> New Database**

3. **Types "SalesProduct" as the database name, click on OK to close the dialog box and to create the databse.**

Create a Database Diagrams

Expand the "SalesProduct" database folder.

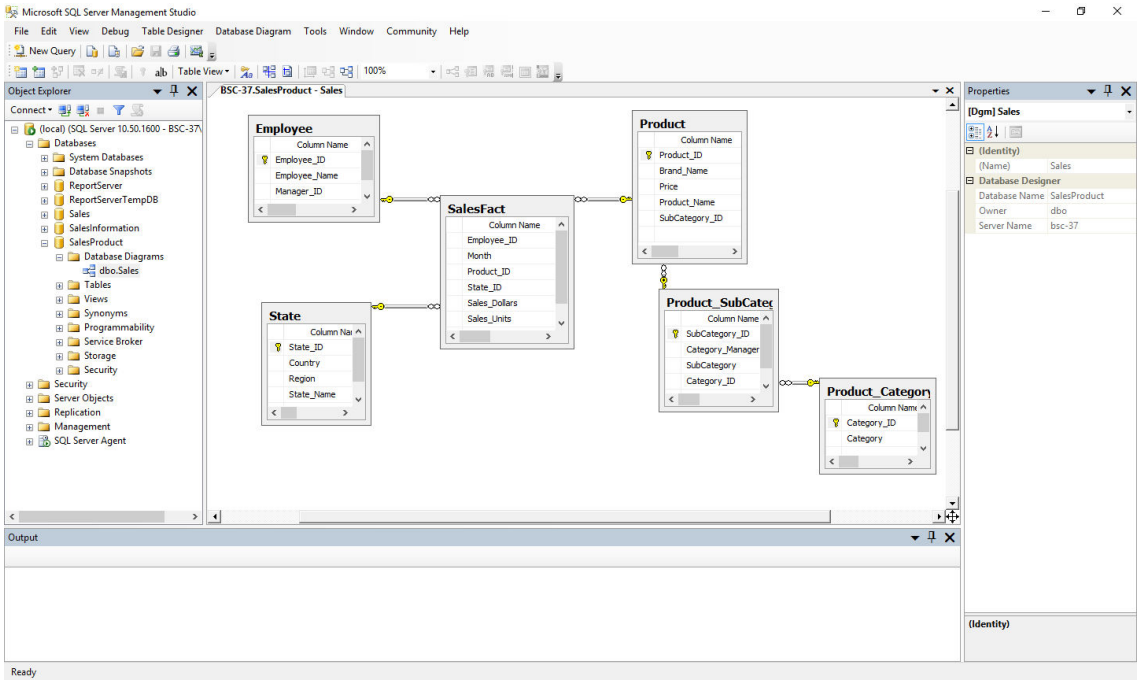
1. **Click on Database Diagrams to expand it**



   On click of it, above Dialog box appears, click on Yes to close it.

2. **Right Click on Database Diagrams -> New Database Diagrams**

3. **Create fact and Dimension Tables. (Right click on surface, choose New Table to add tables on Database Diagrams.)**



4. **Establish relationship between fact and dimension tables.**
5. **Save Database Diagrams with name as "Sales". (After saving Database Diagrams fact and dimension tables are automatically placed in Table tab.)**

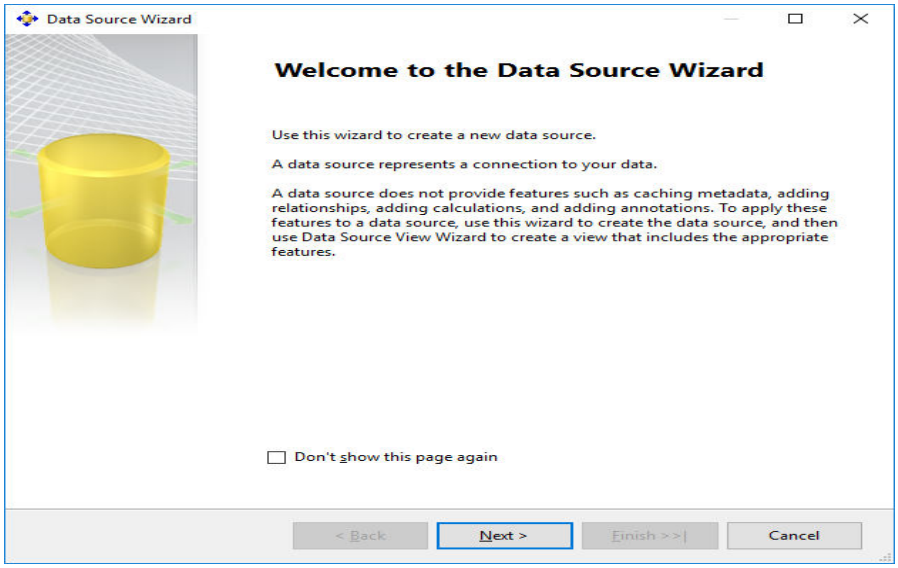
Practical No 2

Aim : Create Data Source using SSAS(SQL Server Analysis Services.)

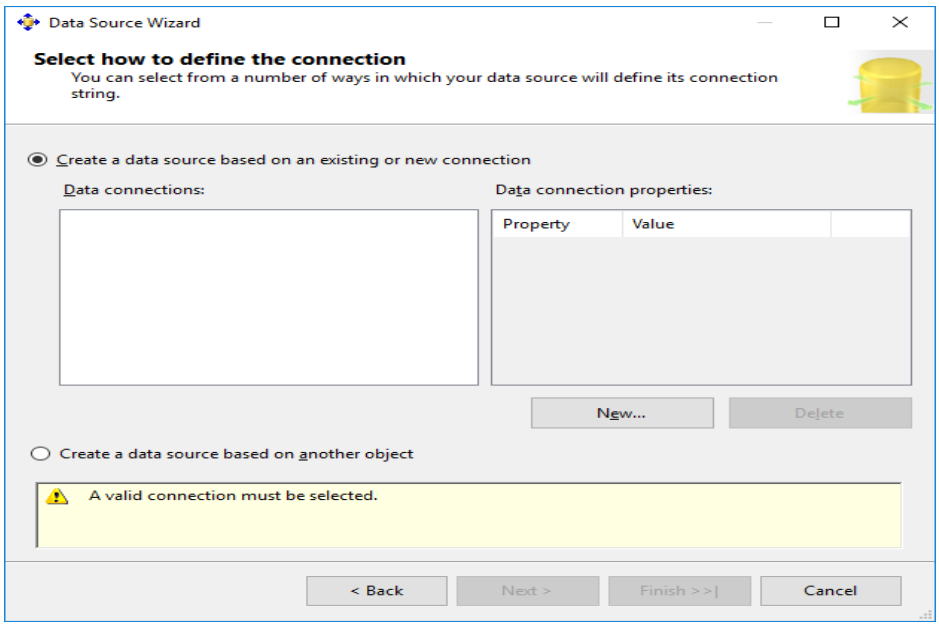
Solution :

Open Application -> Microsoft SQL Server 2008 R2 -> SQL Server Business Intelligence Development Studio

1. **Select File -> New Project -> Choose Analysis Service Project -> Name it as "SalesProduct_BIPrj" and click on OK.**
2. **Right Click on Data Sources -> New Data Source**

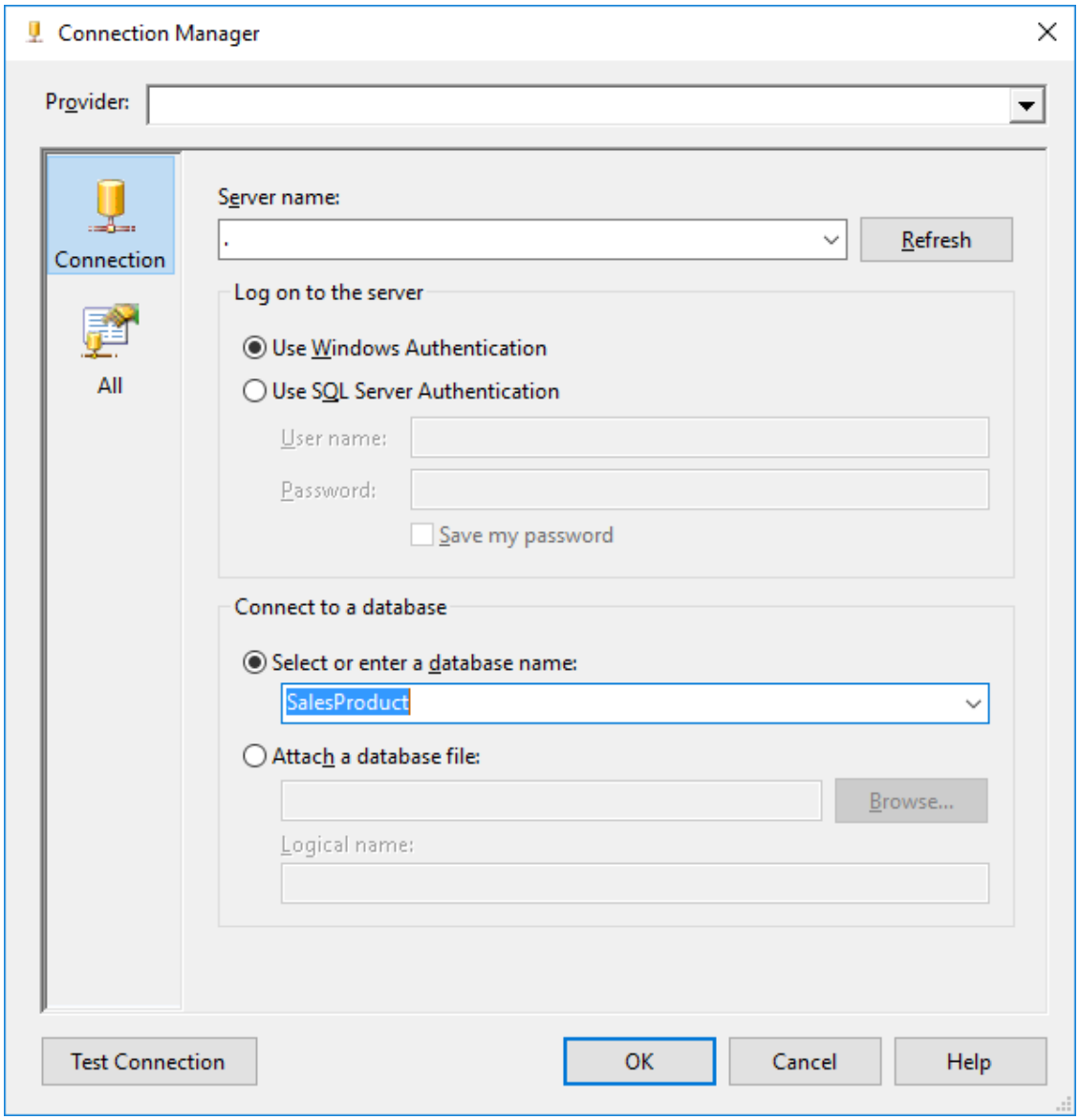


Click on Next.

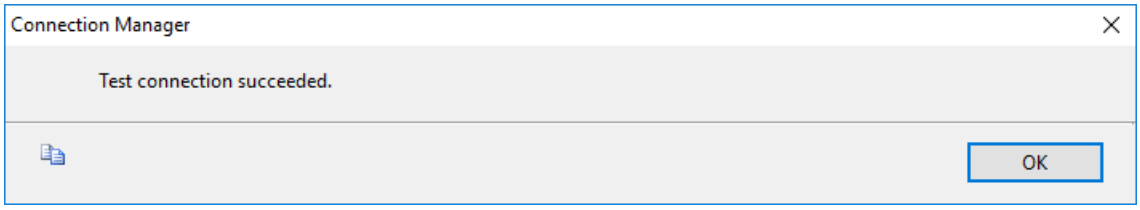


Click on New.

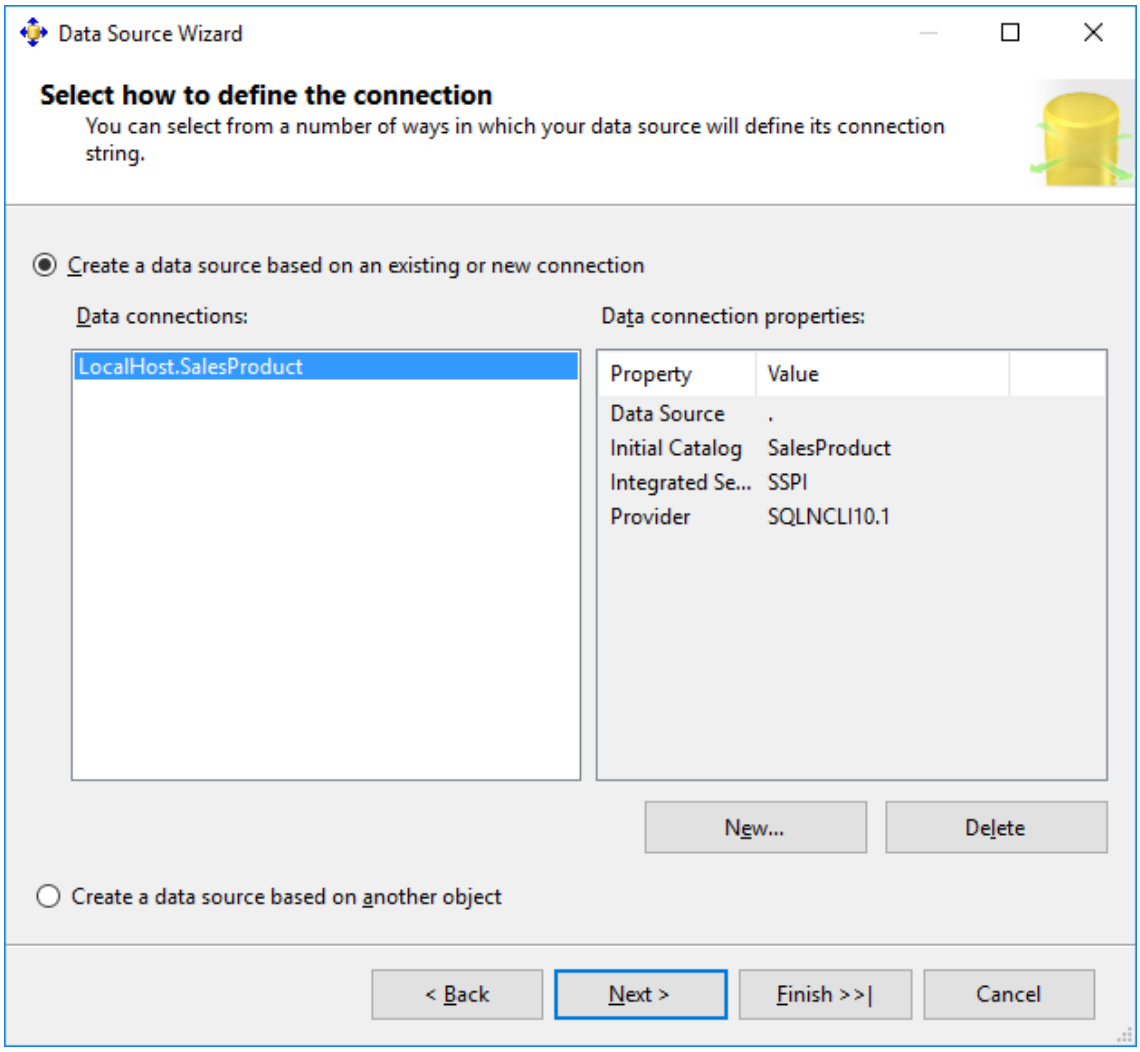
3. **Choose Provider as “Microsoft OLEDB Provider for SQL Server” , Server Name as “.”, Select database name as “SalesProduct”.(Created in SQL Server Management studio).**



4. **Click on Test Connection.**

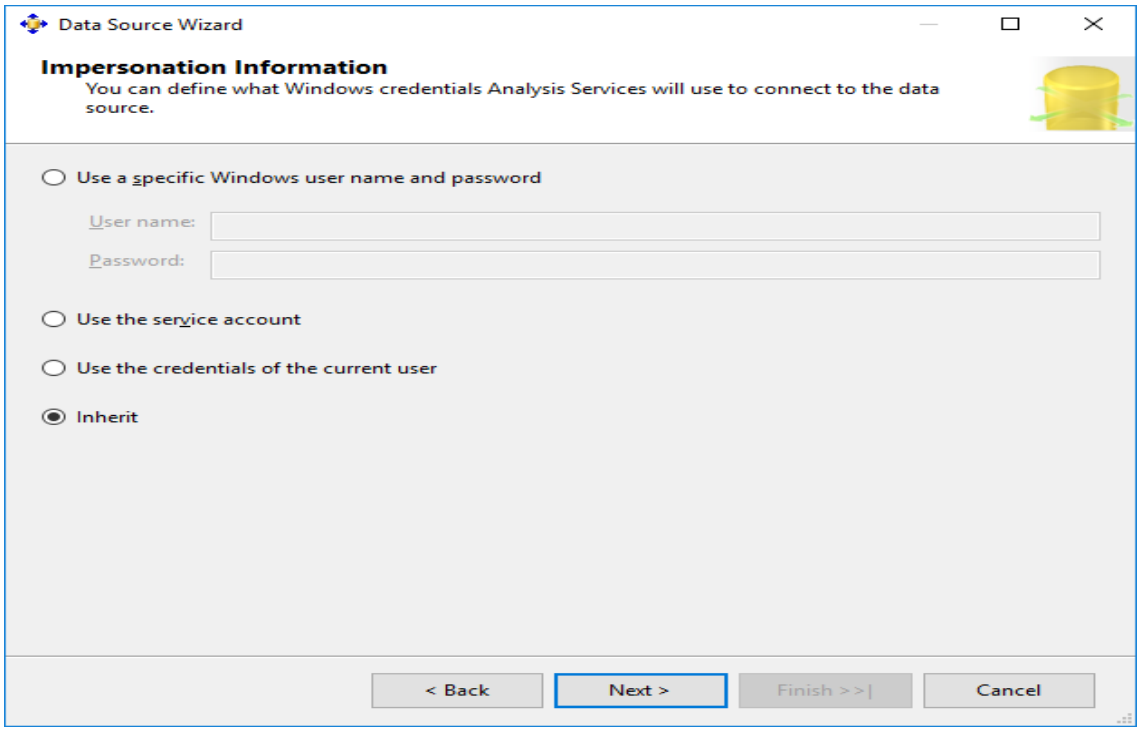


Click on OK.



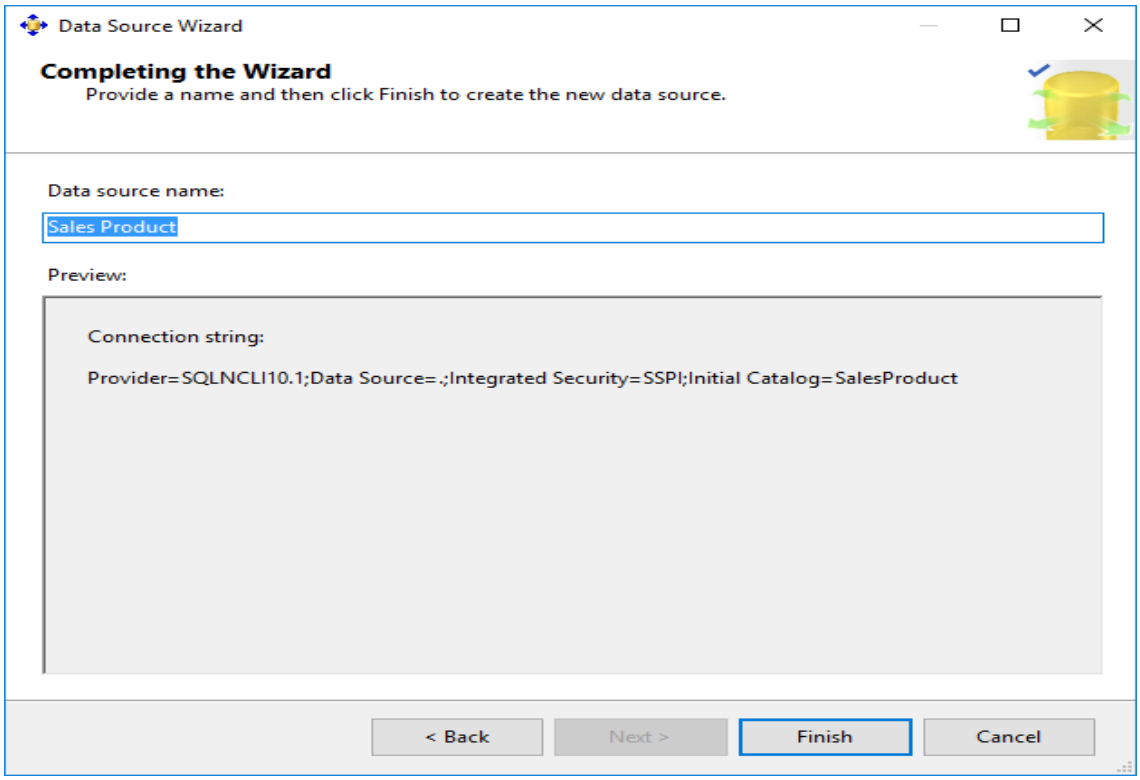
Click on Next

5. **Choose “Inherit” option.**

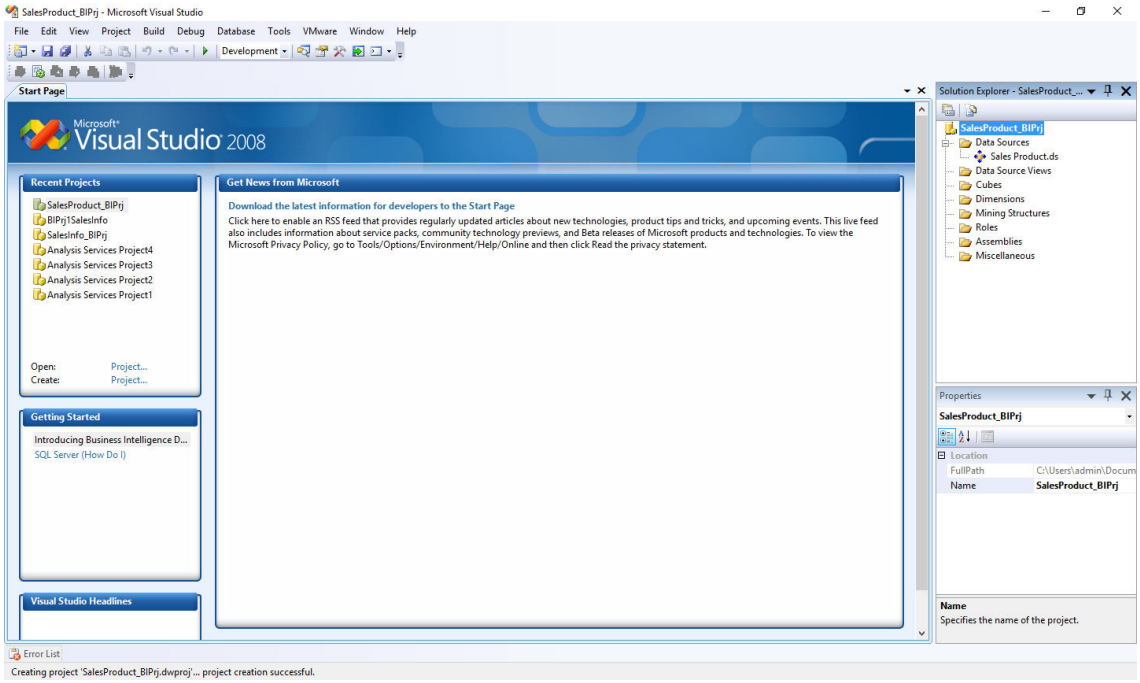


Click on Next.

6. **Click on Finish.**



Name Data Source as “Sales Product”.

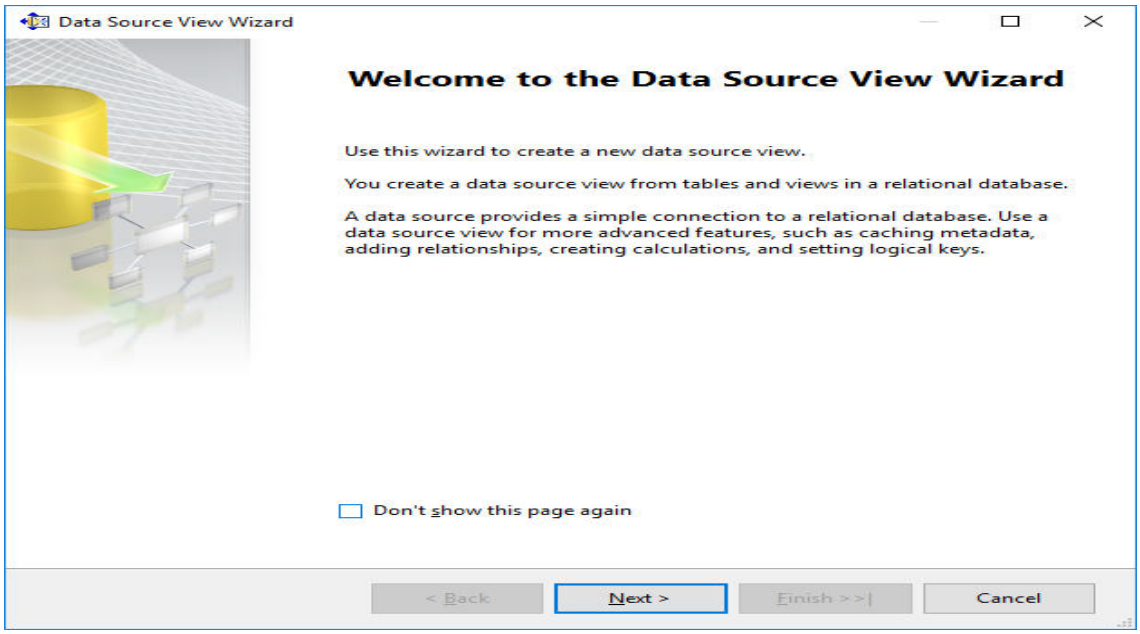

SalesProduct_BIPrj - Microsoft Visual Studio
File Edit View Project Build Debug Database Tools VMware Window Help
Development
Start Page
Microsoft Visual Studio 2008
Recent Projects
SalesProduct_BIPrj
BIPrj1SalesInfo
SalesInfo_BIPrj
Analysis Services Project4
Analysis Services Project3
Analysis Services Project2
Analysis Services Project1
Open: Project...
Create: Project...
Getting Started
Introducing Business Intelligence D...
SQL Server (How Do I)
Visual Studio Headlines
Get News from Microsoft
Download the latest information for developers to the Start Page
Click here to enable an RSS feed that provides regularly updated articles about new technologies, product tips and tricks, and upcoming events. This live feed also includes information about service packs, community technology previews, and Beta releases of Microsoft products and technologies. To view the Microsoft Privacy Policy, go to Tools/Options/Environment/Help/Online and then click Read the privacy statement.
Solution Explorer - SalesProduct_...
SalesProduct_BIPrj
Data Sources
Sales Product.ds
Data Source Views
Cubes
Dimensions
Mining Structures
Roles
Assemblies
Miscellaneous
Properties
SalesProduct_BIPrj
Location
FullPath C:\Users\admin\Docum
Name SalesProduct_BIPrj
Name
Specifies the name of the project.
Error List
Creating project 'SalesProduct_BIPrj.dwproj'... project creation successful.

Practical No 3

Aim : Create Data Source View using SSAS(SQL Server Analysis Services.)

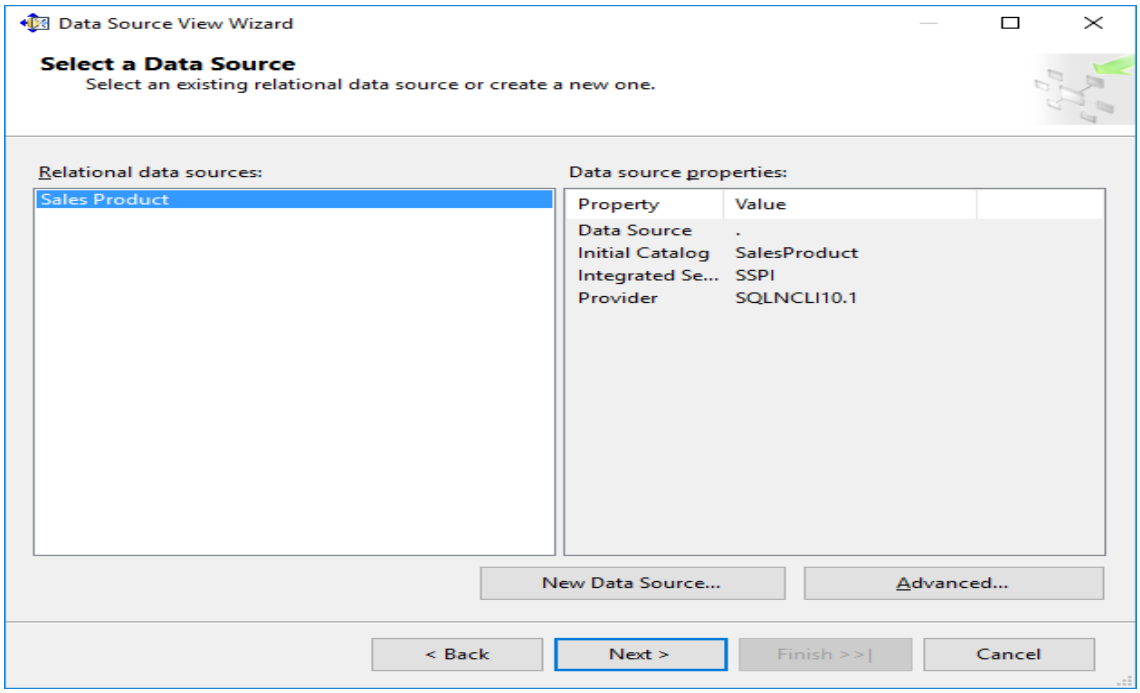
Solution :

1. **Right click on Data Source View -> New Data Source View**

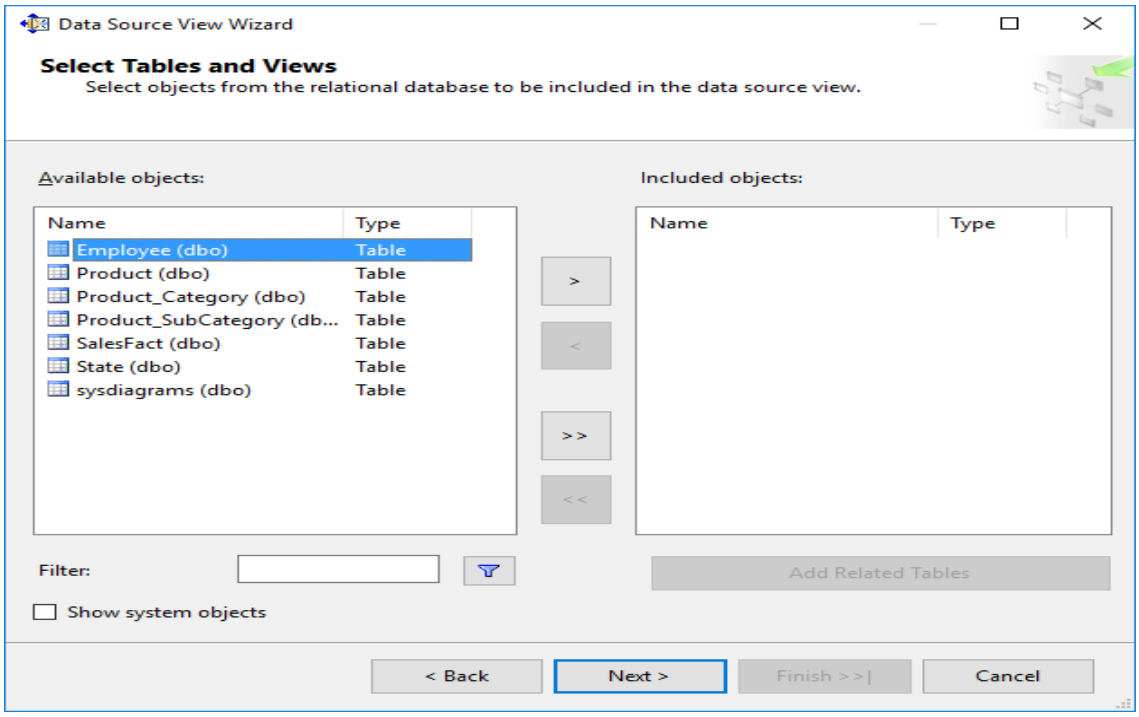


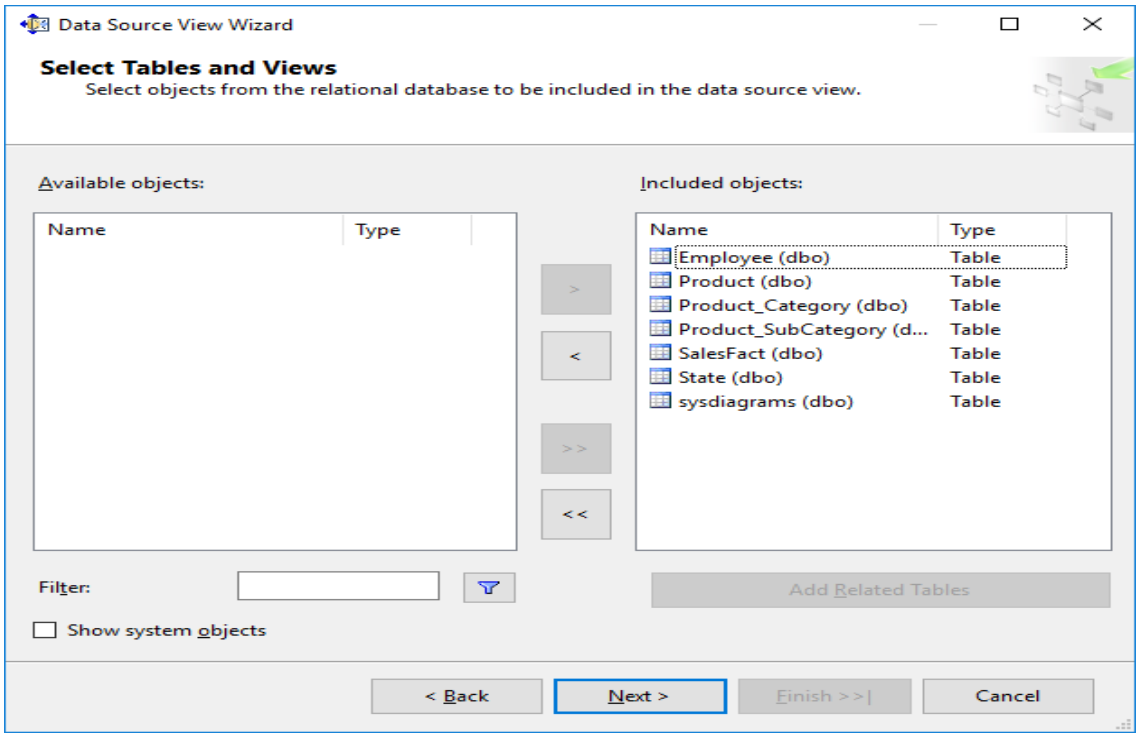
Click on Next.

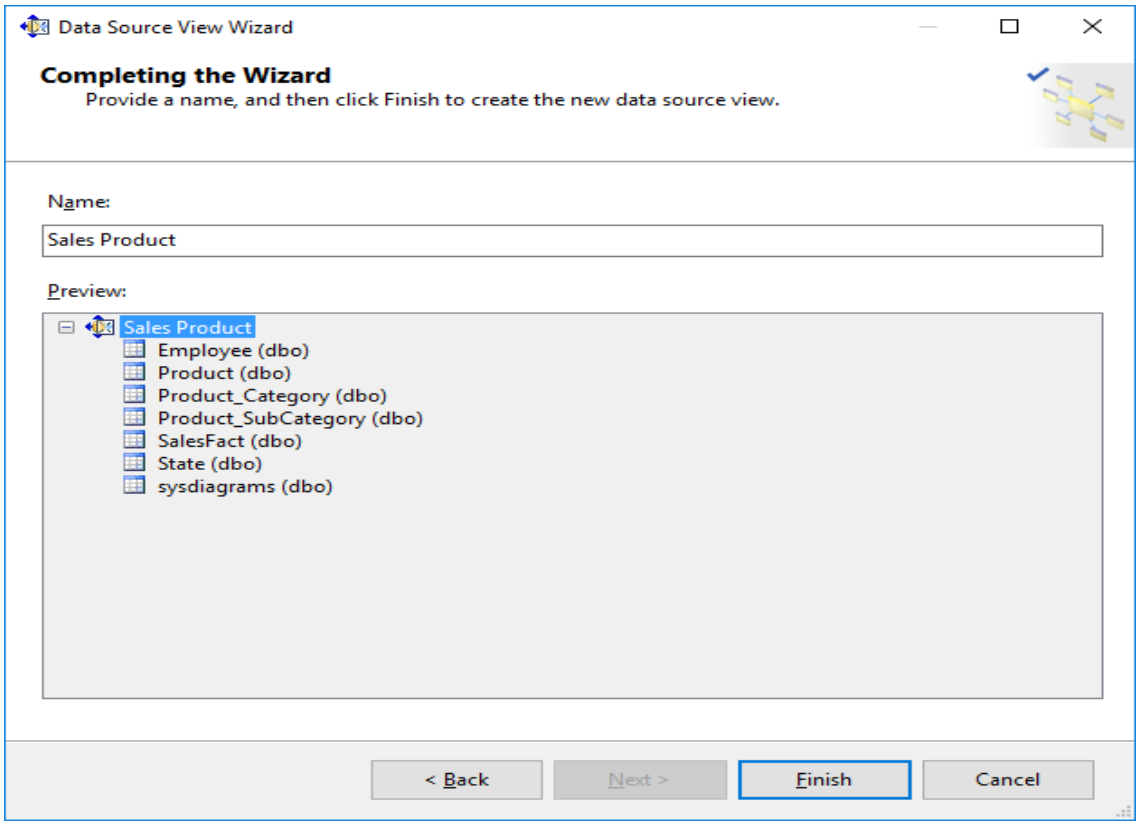
2. **Click on Next.**



3. Select Tables and Views.

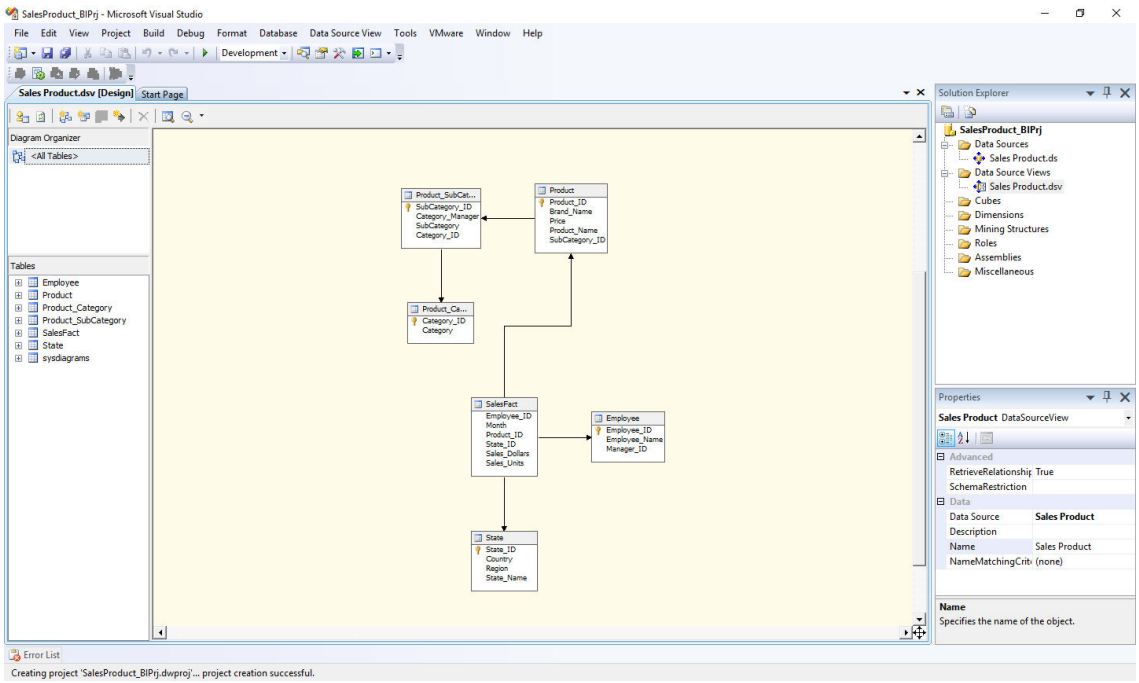






Click on Finish.

4. **Finally, we will get the Data Source View like :**

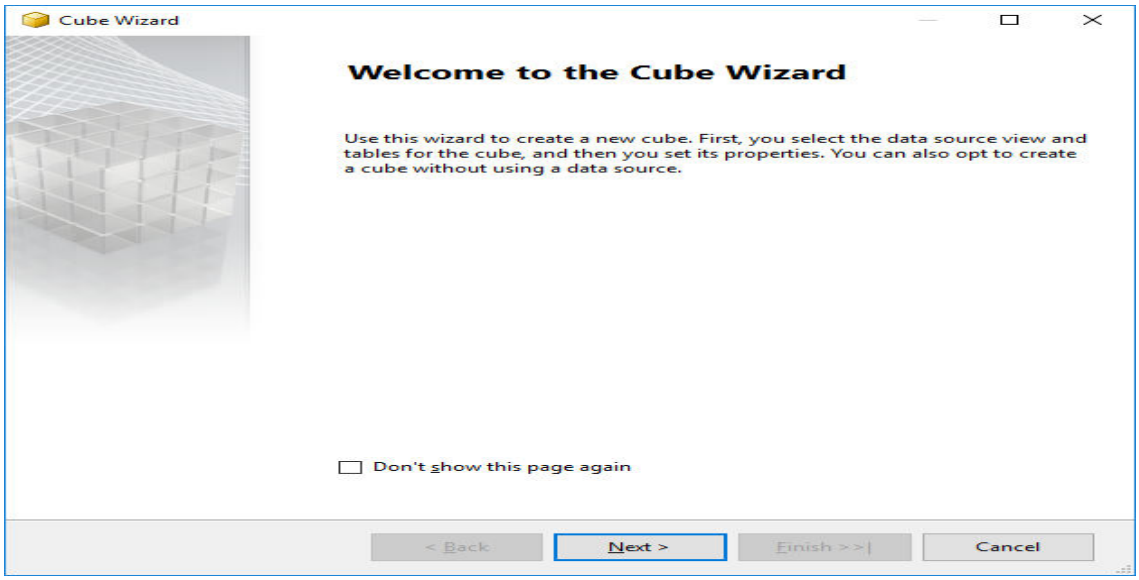


Practical No 4

Aim : Create cube using SSAS(SQL Server Analysis Services.) and process the cube.

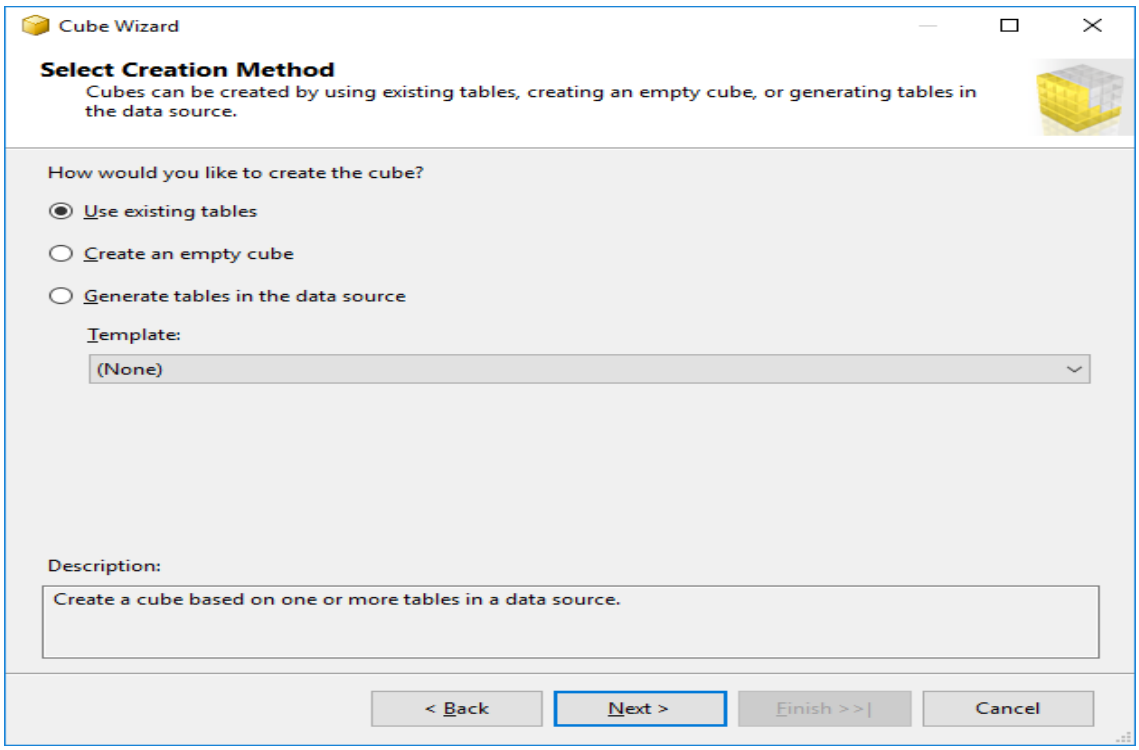
Solution :

1. **Right click on Cubes -> New Cube.**

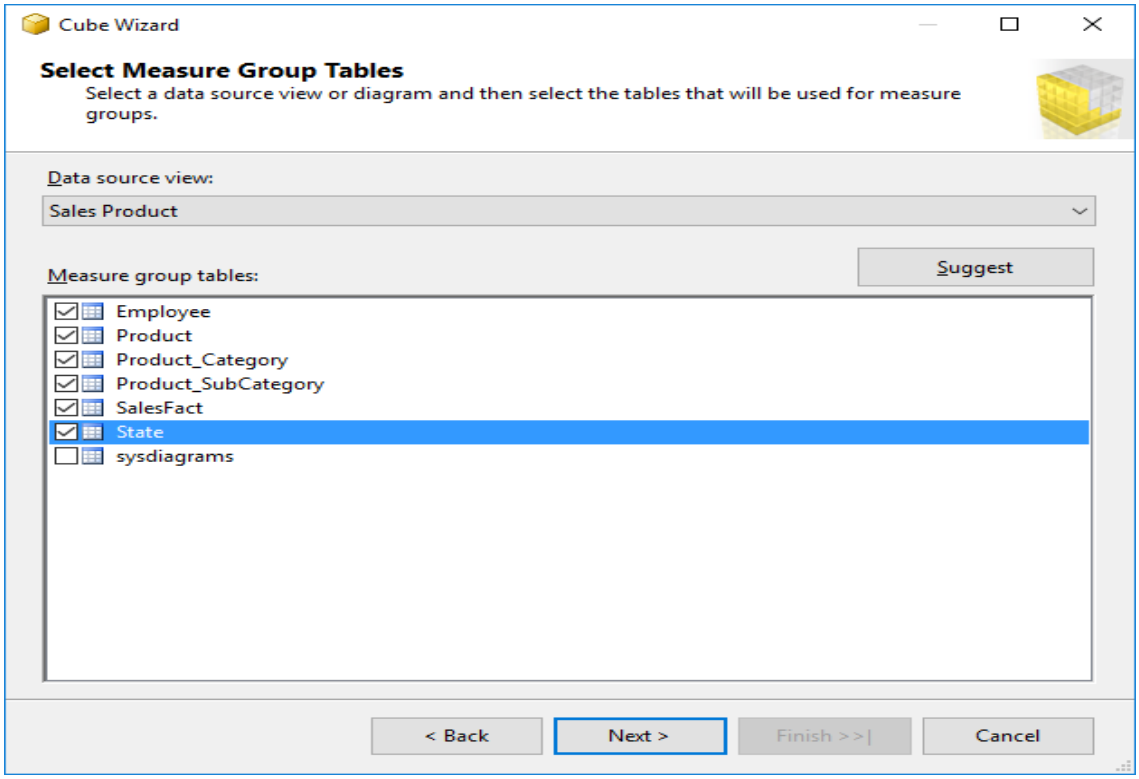


Click on Next.

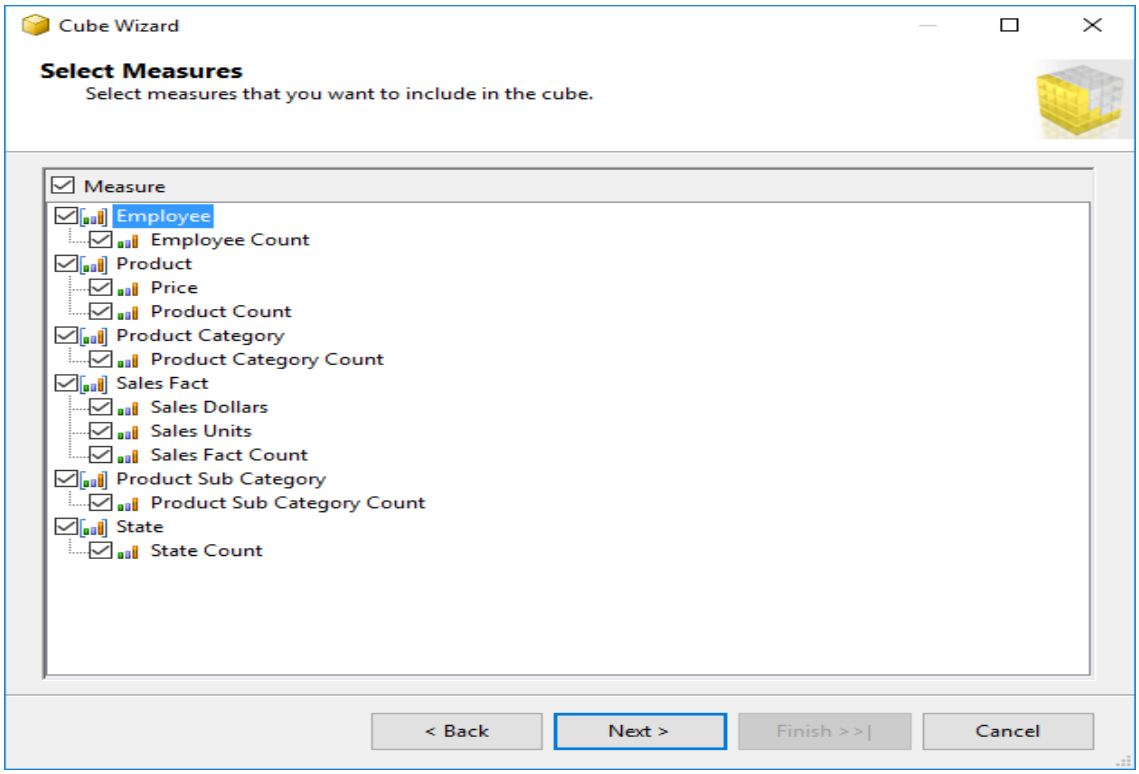
2. **Select First option "Use existing tables". Click on Next.**



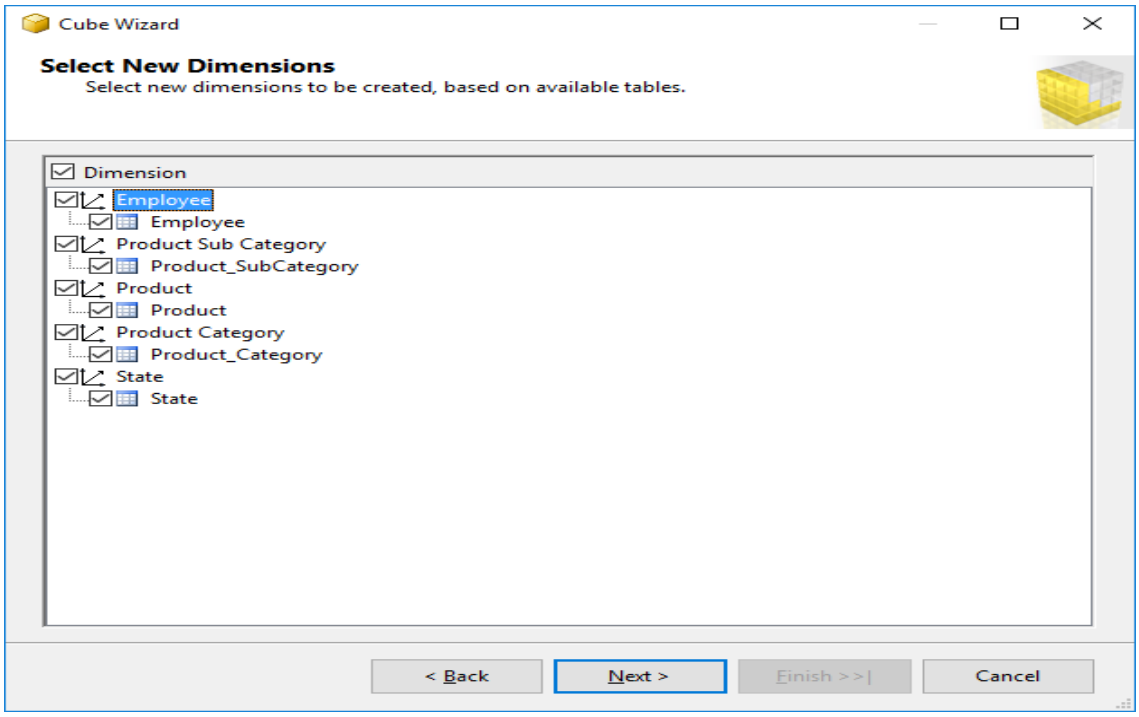
3. **Select <u>Data Source View</u> as "Sales Product" and Select all the tables.**



Click on Next.

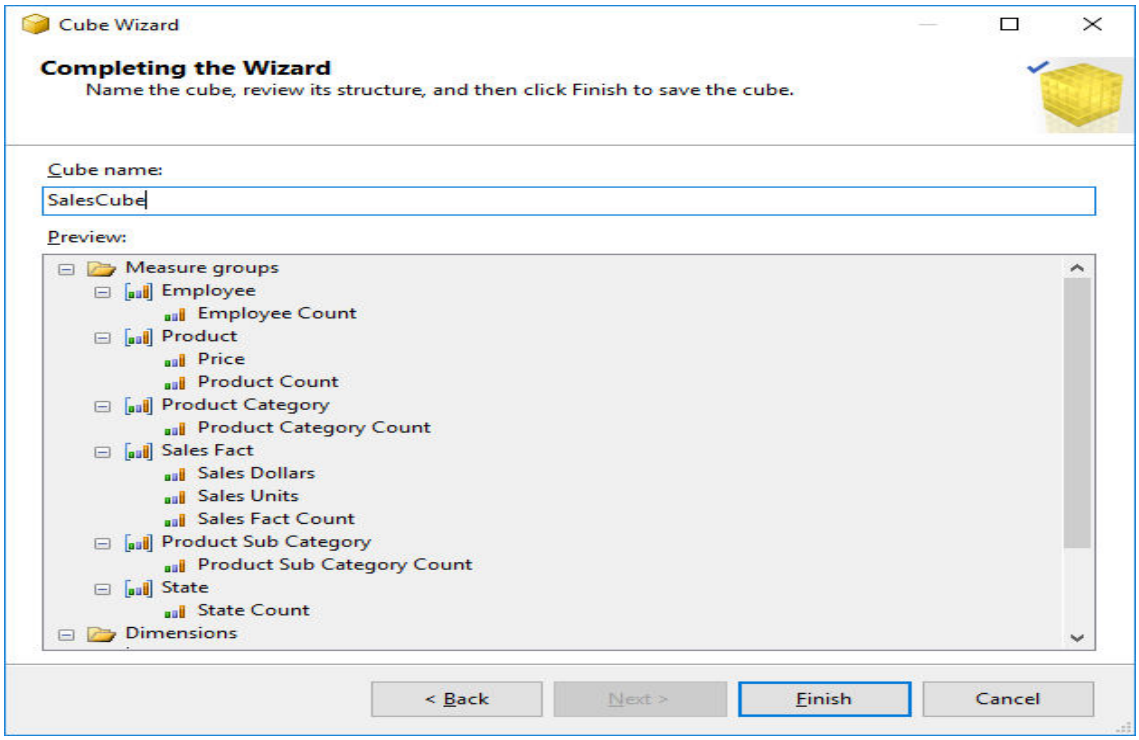


Click on Next.



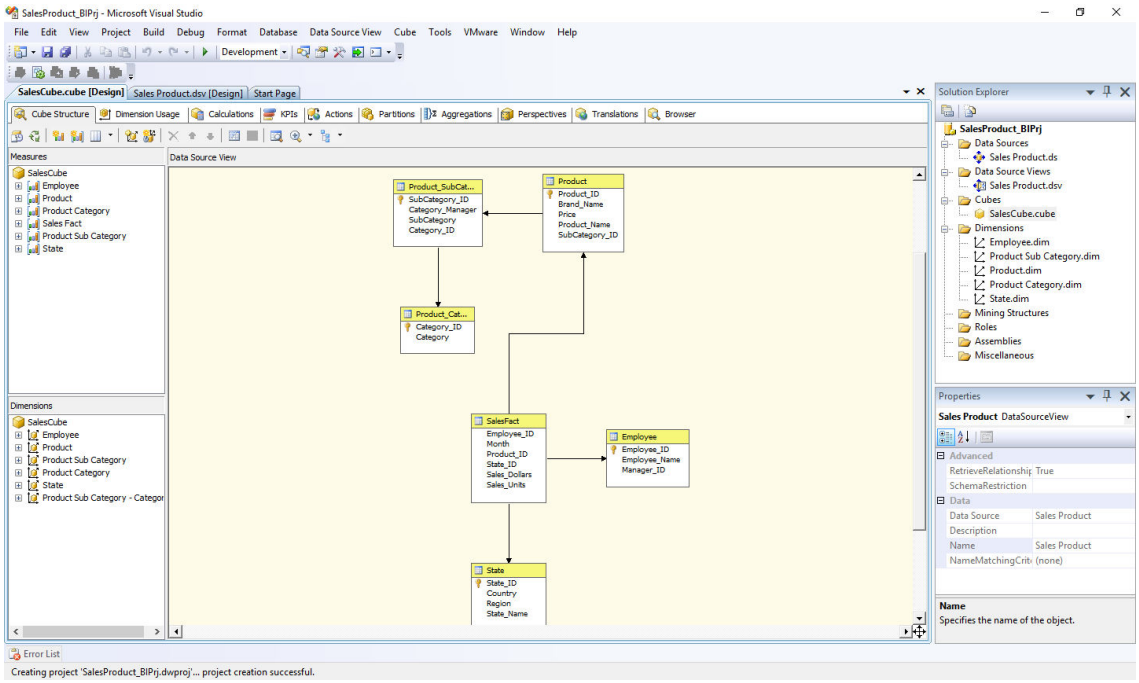
Click on Next.

4. **Name Cube as "SalesCube".**

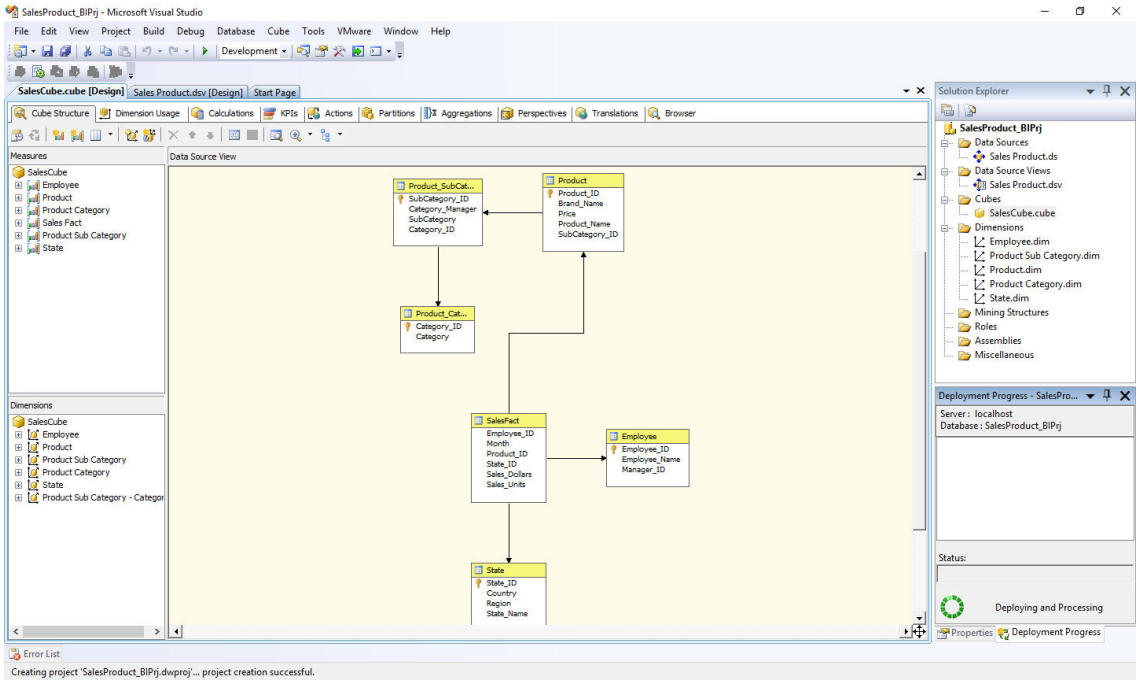


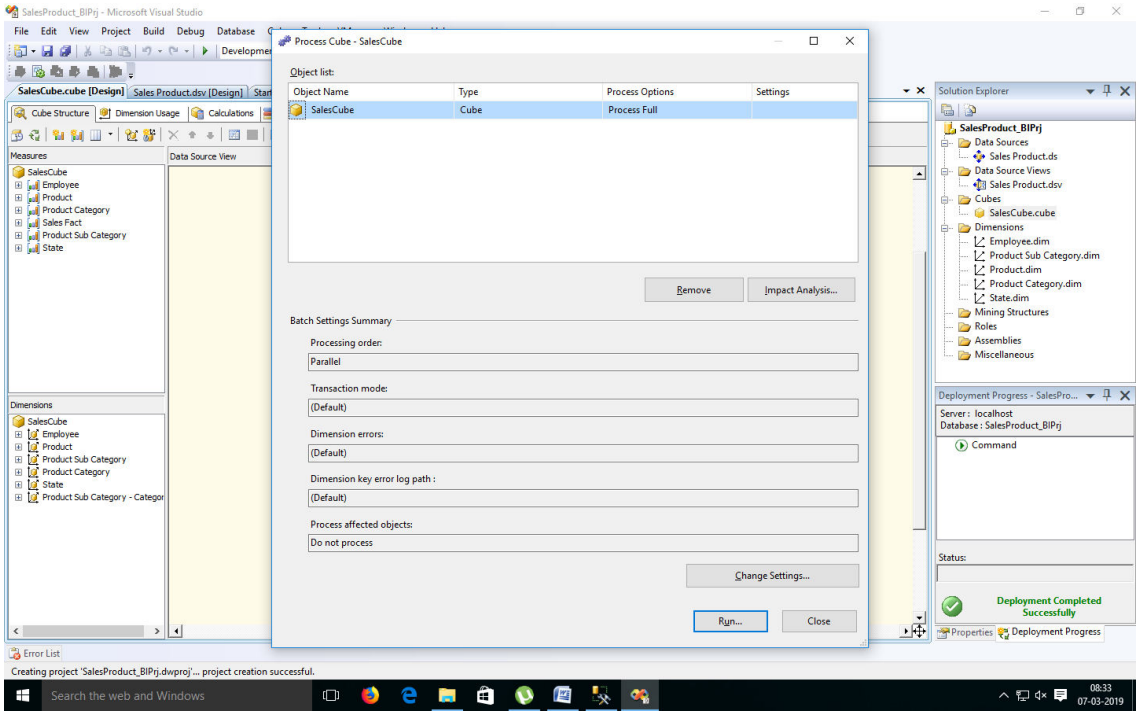
Click on Finish.

5. **Finally, we will get the Cube View as well Dimensions View like :**

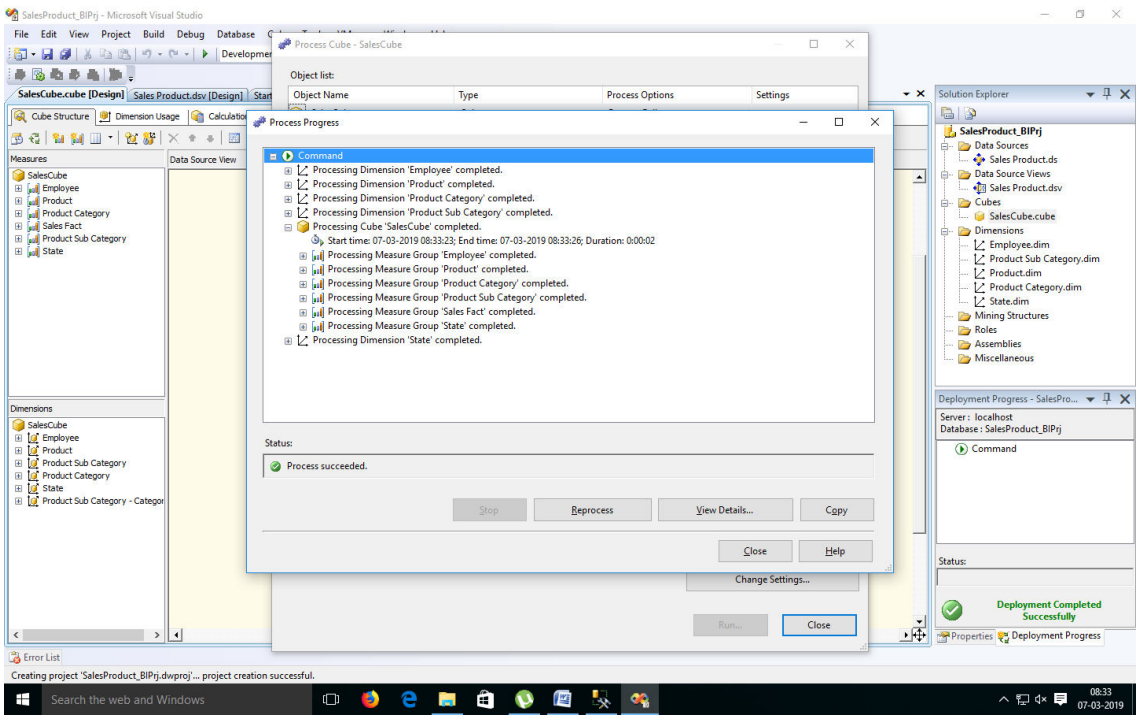


6. **Finally, Process cube by Right click on SalesCube -> Process .**





7. Click on Run.

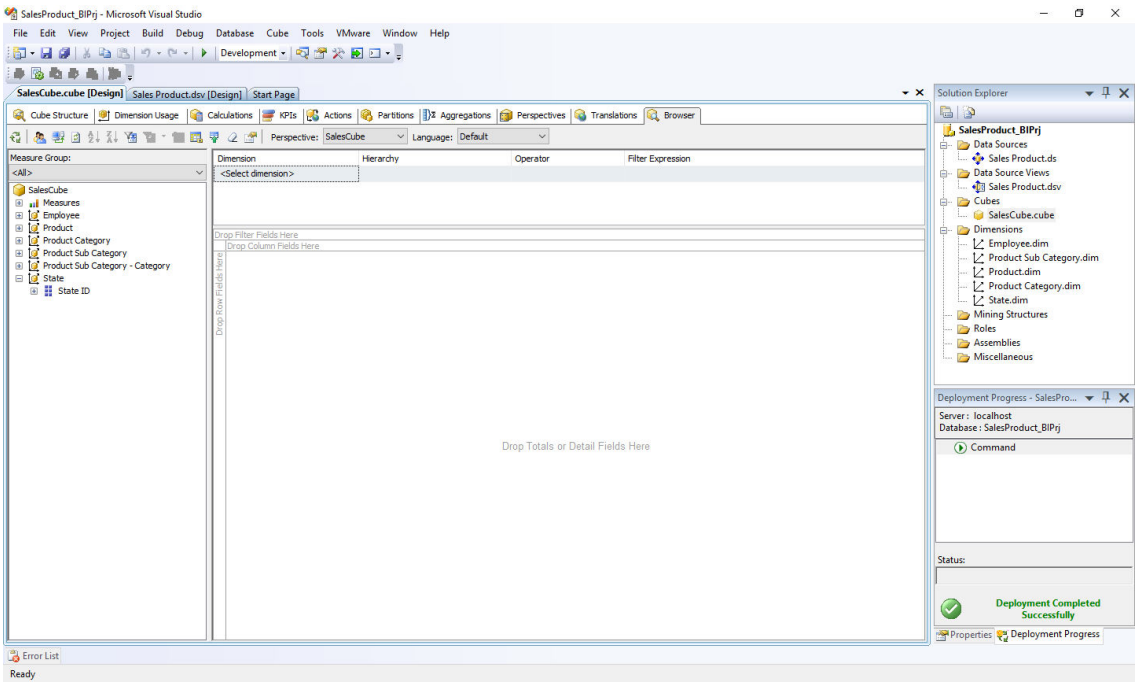


Practical No 5

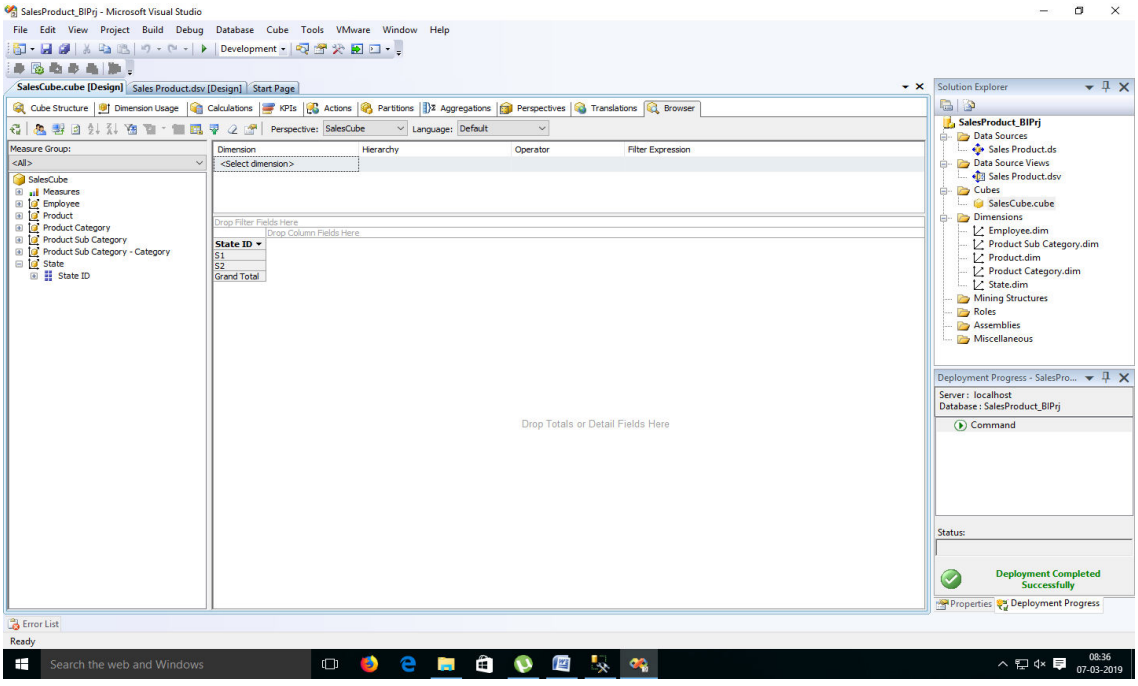
Aim : View cube data in multidimensional Format.

Solution :

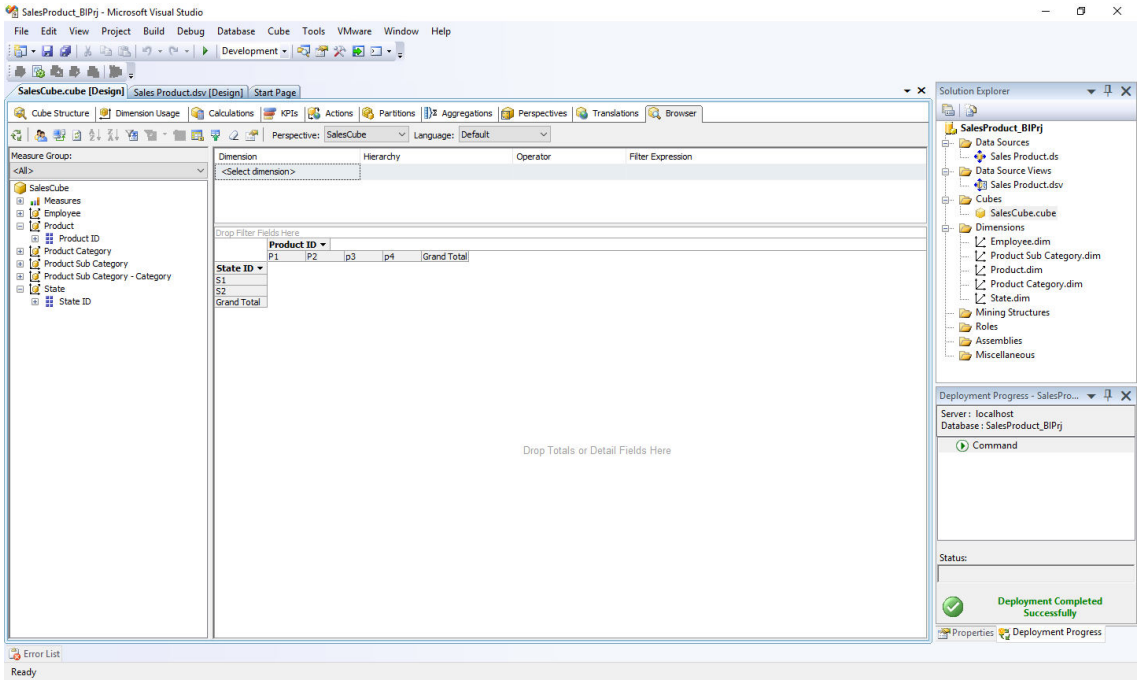
1. **Double Click on “SalesCube”. Go to the “Browser” Tab.**



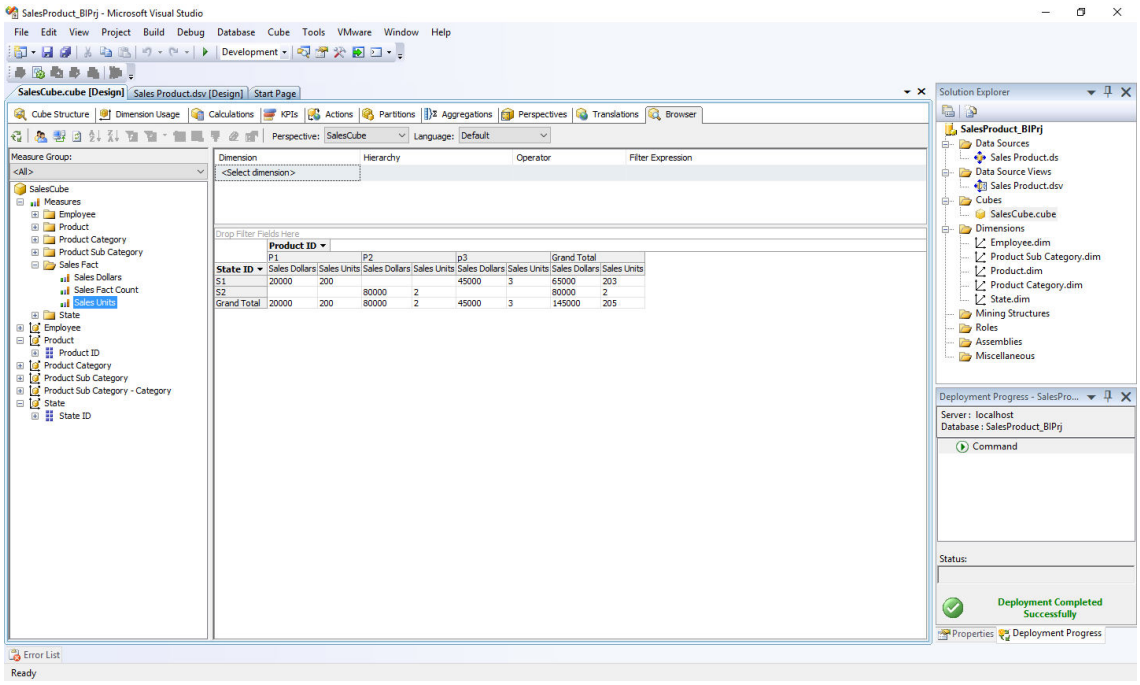
2. **Go to the “State Dimension”. Right Click on ‘State_ID’ -> Add to Row Area.**



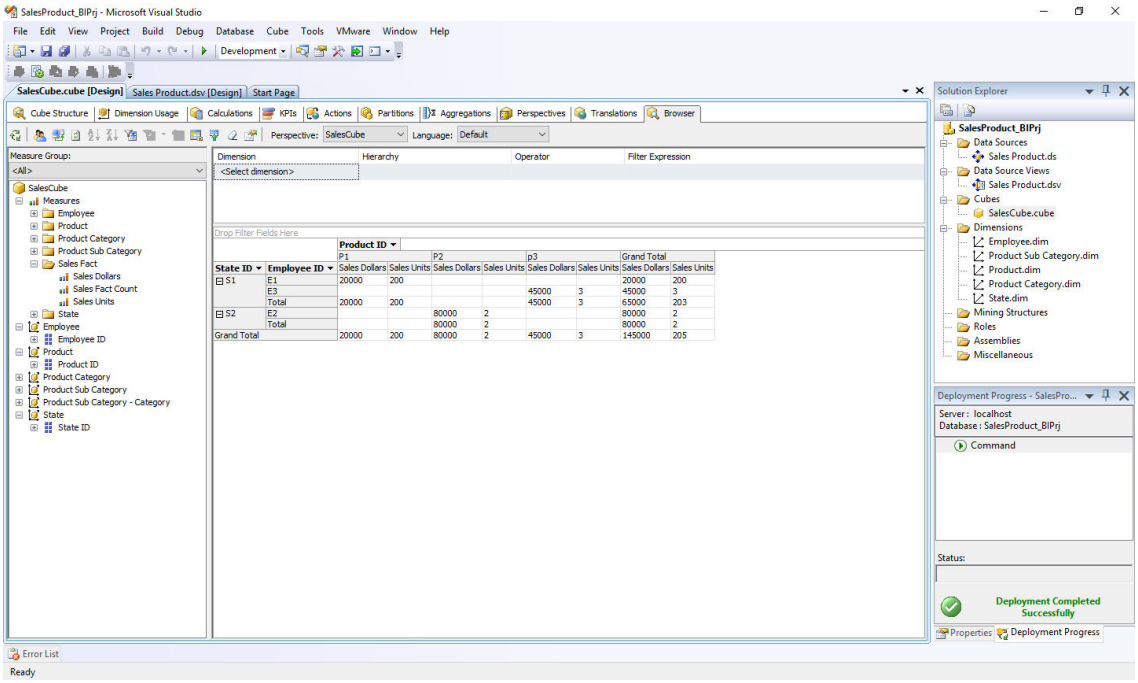
3. **Go to the “Product Dimension”. Right Click on ‘Product_ID’ -> Add to Column Area.**



4. **Go to ‘Measures’. Select ‘SalesFact’ -> Right Click on “Sales Dollars” as well “Sales Units” -> Add to Data area.**



5. **Go to the “Employee Dimension”. Right Click on ‘Employee_ID’ -> Add to Row Area.**

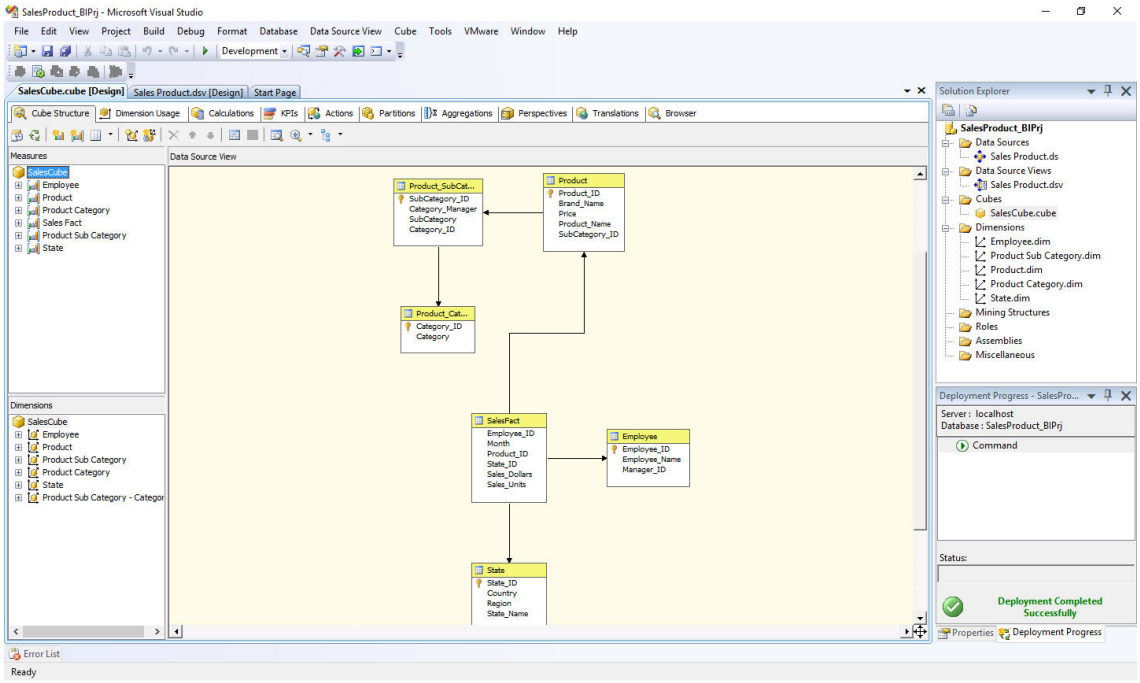

SalesProduct_BIPrj - Microsoft Visual Studio
File Edit View Project Build Debug Database Cube Tools VMware Window Help
Development
SalesCube.cube [Design]
Sales Product.dsv [Design]
Start Page
Cube Structure
Dimension Usage
Calculations
KPIs
Actions
Partitions
Aggregations
Perspectives
Translations
Browser
Perspective: SalesCube
Language: Default
Measure Group:
<All>
SalesCube
Measures
Employee
Product
Product Category
Product Sub Category
Sales Fact
Sales Dollars
Sales Fact Count
Sales Units
State
Employee
Employee ID
Product
Product ID
Product Category
Product Sub Category
Product Sub Category - Category
State
State ID
Dimension
Hierarchy
Operator
Filter Expression
<Select dimension>
Drop Filter Fields Here
Product ID
P1
P2
p3
Grand Total
State ID
Employee ID
Sales Dollars
Sales Units
S1
E1
20000
200
20000
200
E3
45000
3
45000
3
Total
20000
200
45000
3
65000
203
S2
E2
80000
2
80000
2
Total
80000
2
80000
2
Grand Total
20000
200
80000
2
45000
3
145000
205
Solution Explorer
SalesProduct_BIPrj
Data Sources
Sales Product.ds
Data Source Views
Sales Product.dsv
Cubes
SalesCube.cube
Dimensions
Employee.dim
Product Sub Category.dim
Product.dim
Product Category.dim
State.dim
Mining Structures
Roles
Assemblies
Miscellaneous
Deployment Progress - SalesPro...
Server: localhost
Database: SalesProduct_BIPrj
Command
Status:
Deployment Completed Successfully
Properties
Deployment Progress
Error List
Ready

Practical No 6

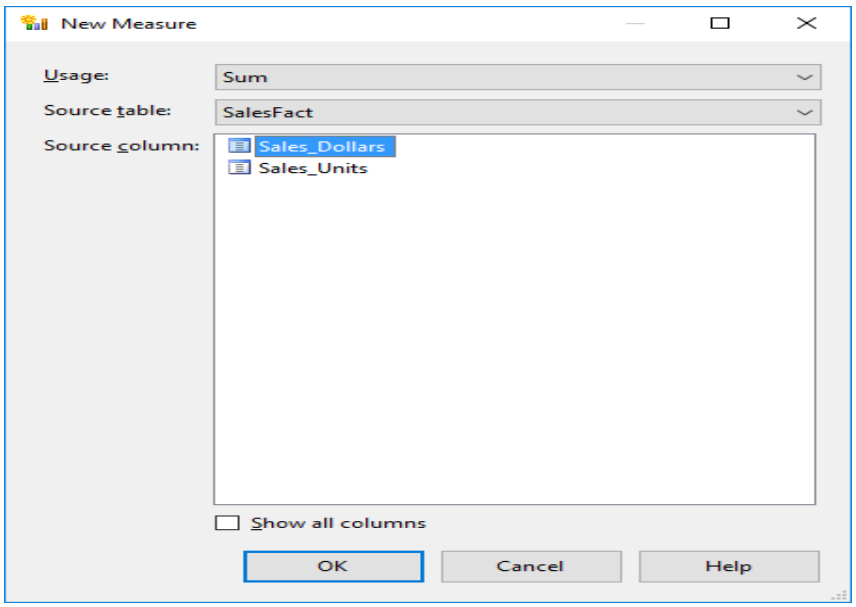
Aim : Working with measures in the cube.

Solution :

1. **Double click on 'SalesCube'. Go to cube structure.**

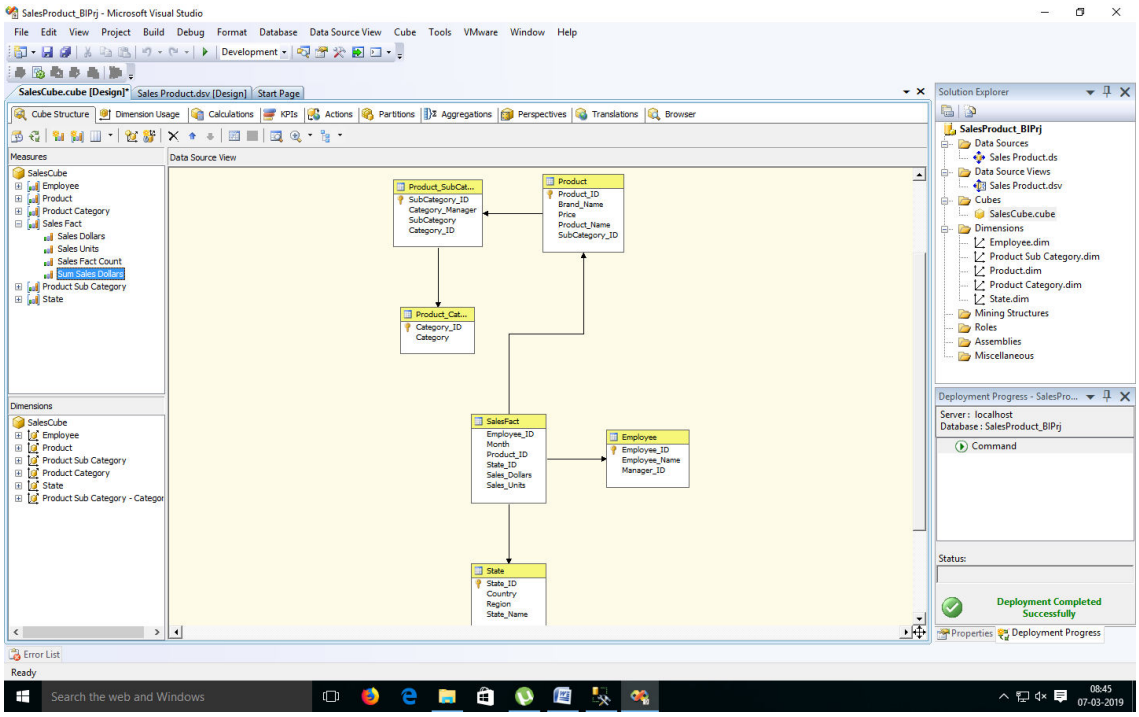


2. **Right click on SalesCube -> New Measure.**
   Select Usage = "Sum" , Source table = "SalesFact" and Source Column = "Sales_Dollars".

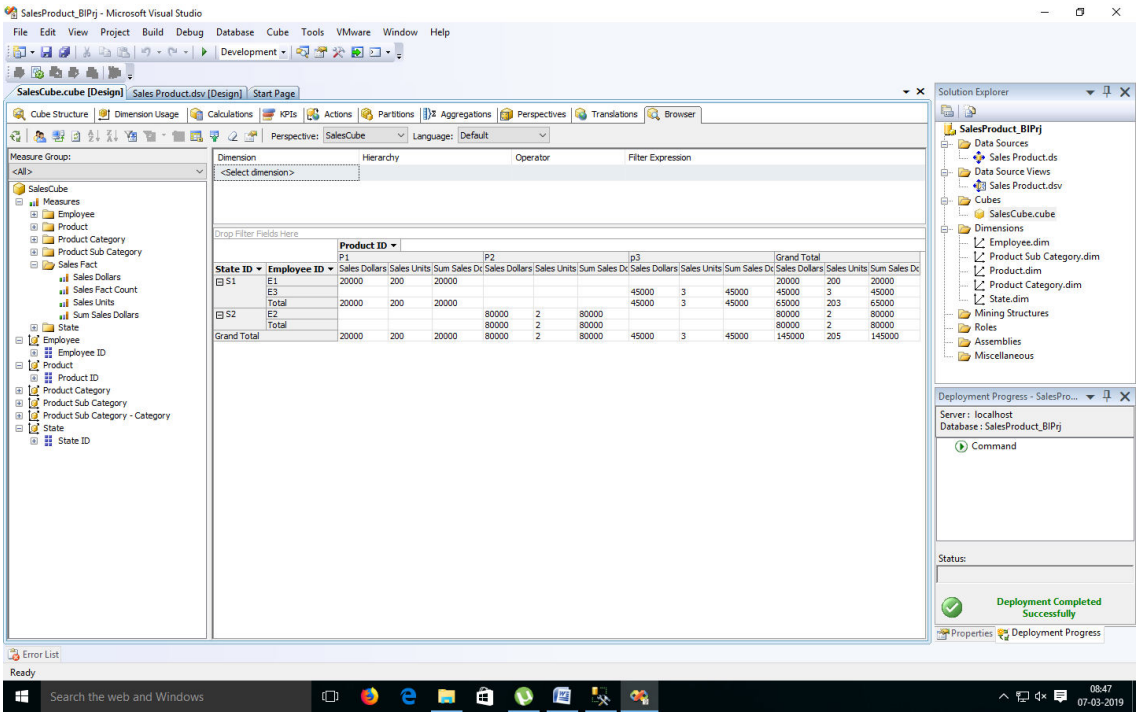


   Click on OK.

3. **Rename Measure as “Sum Sales Dollars”.**



4. **Process Cube and Go to Browser and Reconnect it. Right Click on “Sum Sales Dollars” -> Add to Data Area.**

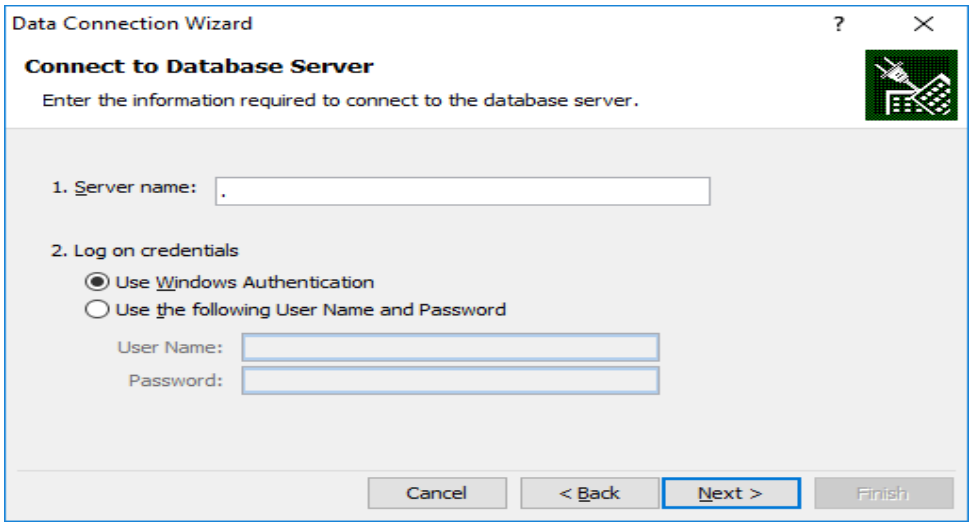


Practical No 7

Aim : Creating an Excel Pivot Table and Pivot Chart by using the OLAP cube data.

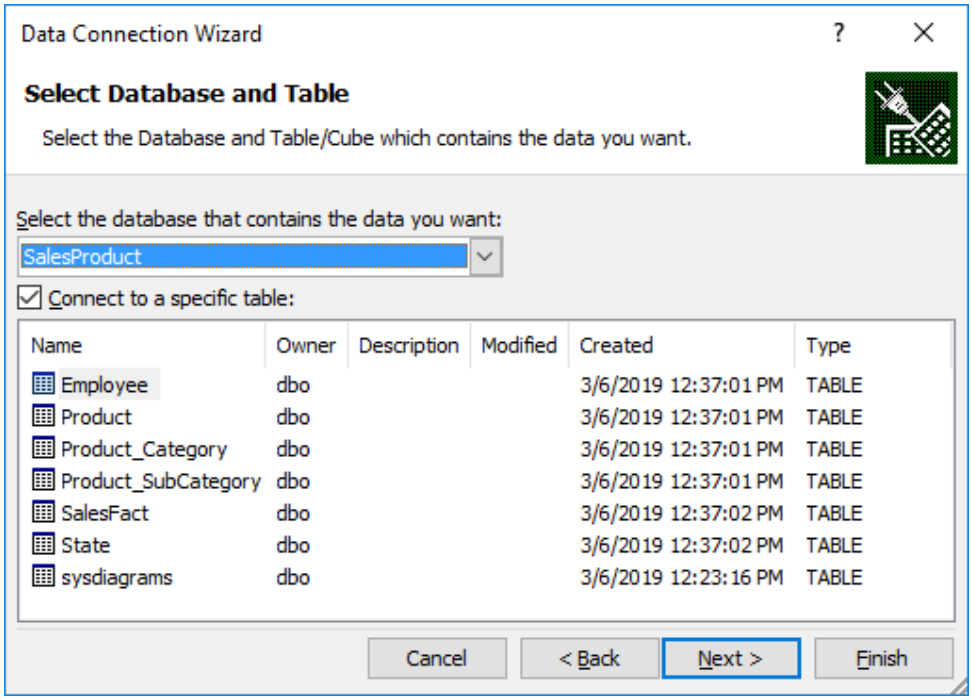
Solution :

1. **Open MS-Excel. Click on Data Menu.**
2. **Go to From Other Sources.**
   - **2.1. From SQL Server -> Type Server name as “.”**

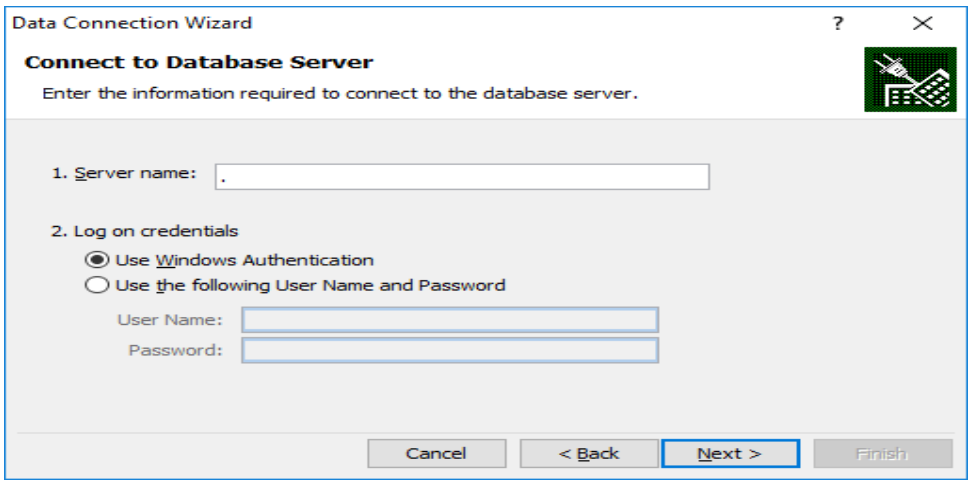


Click on Next.

Choose SQL Database -> “SalesProduct”

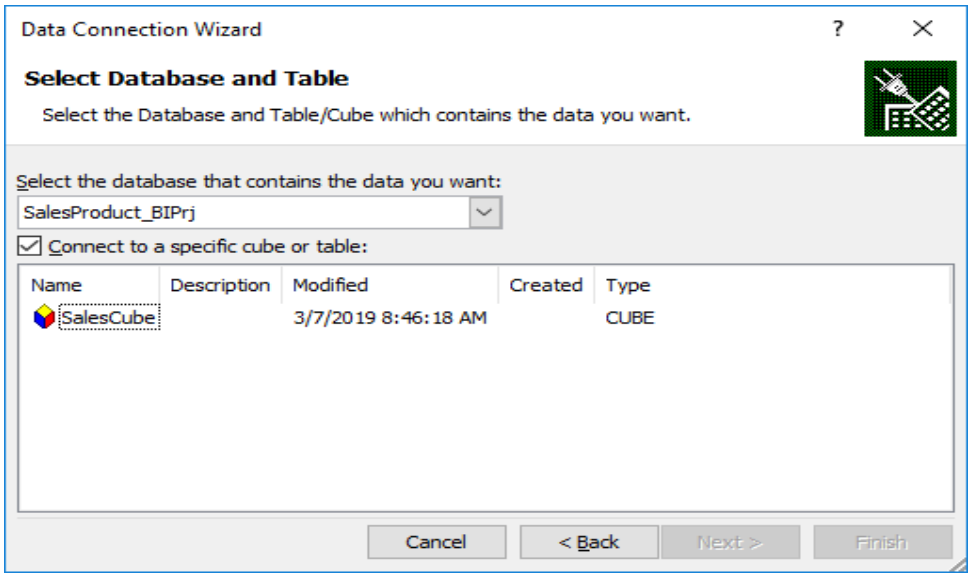


2.2. From Analysis Services -> Type Server name as “.”

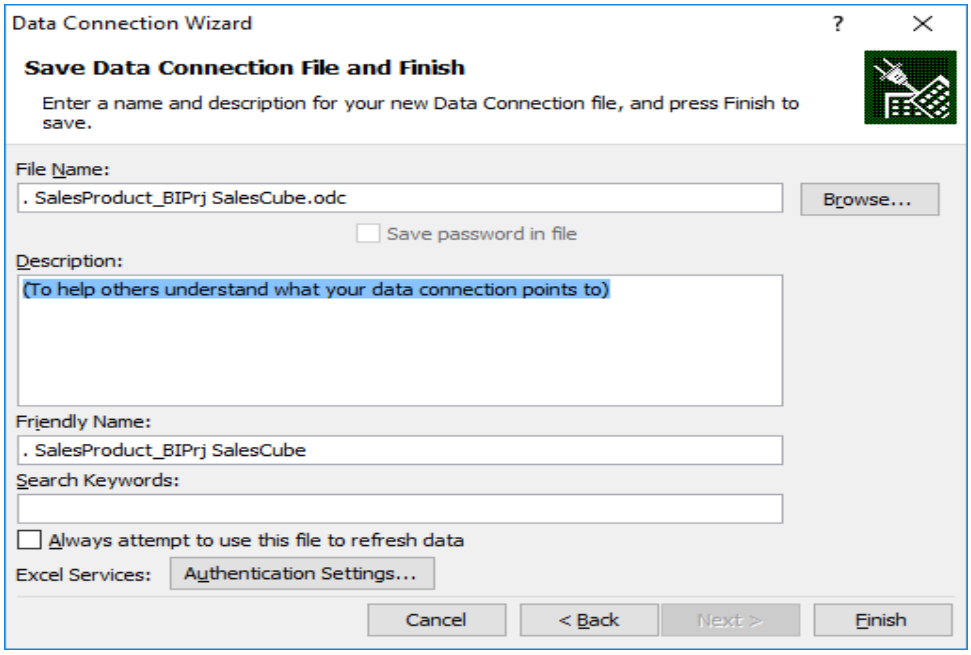


Click on Next.

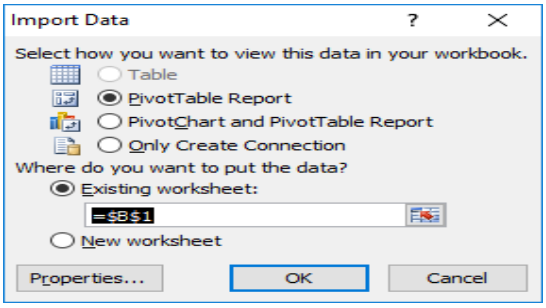
Choose Analysis Database as “SalesProduct_BIPrj”. Click on Next.



Click on OK.

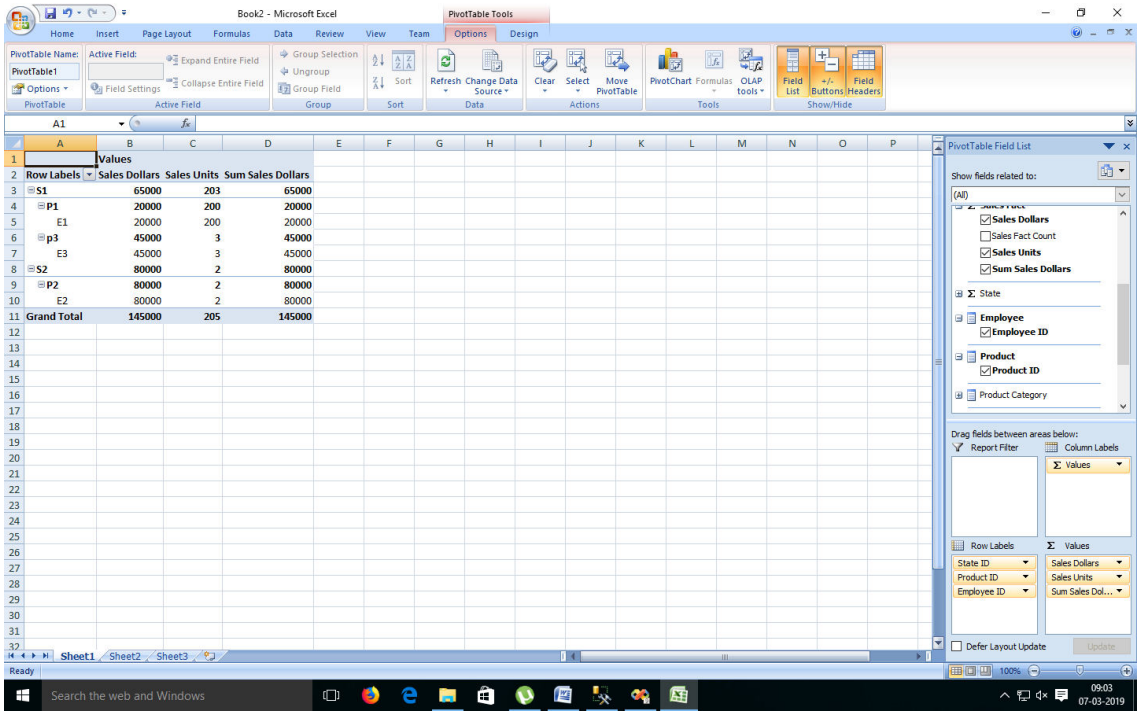


Click on Finish.

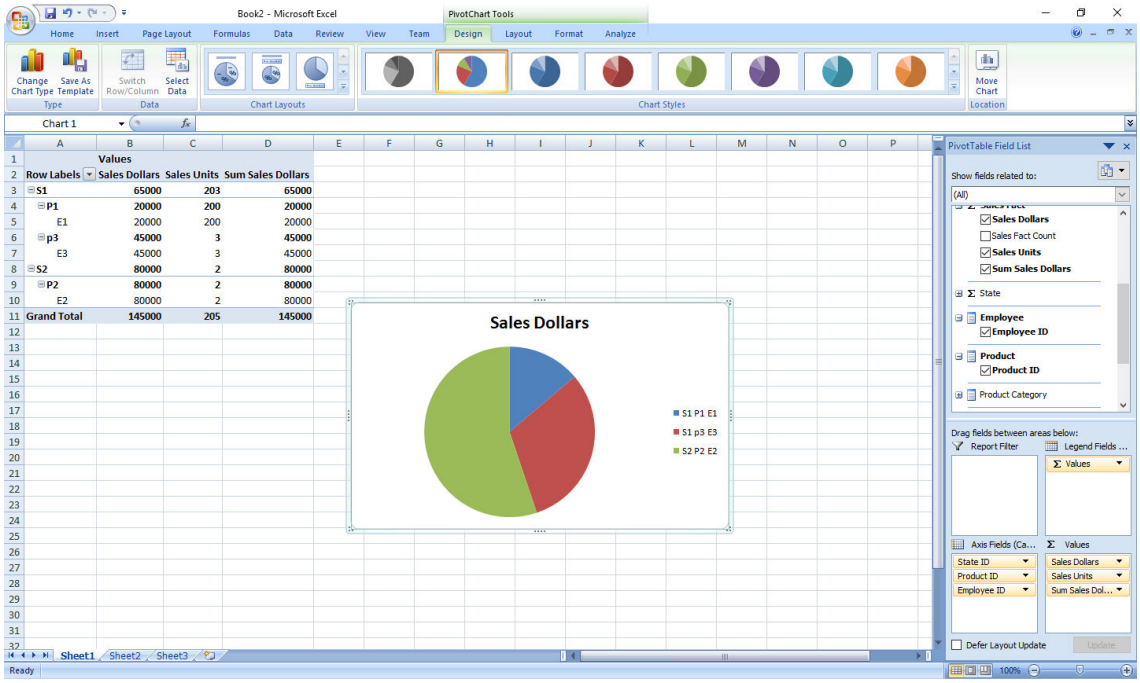


Click on OK.

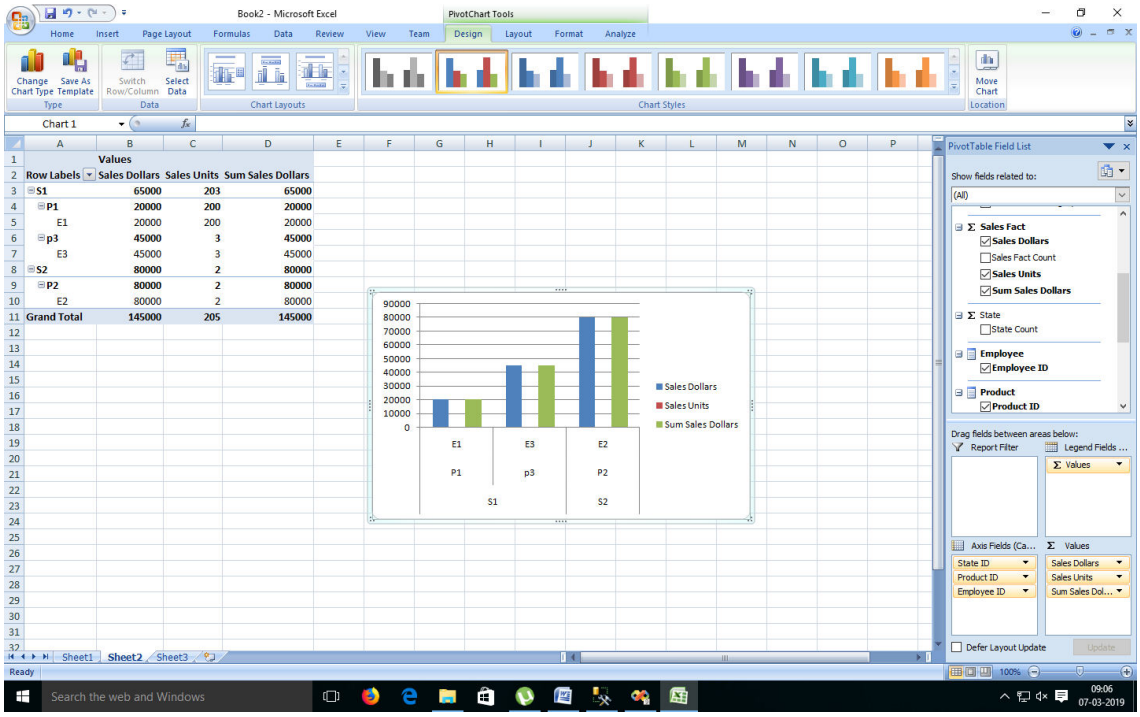
3. **Select State_ID, Product_ID,Employee_ID and Measures as Sales_Dollars, Sales_Units and Sum Sales Dollars.**



4. Select Result Area. Go to Insert Menu. Select Pie Chart option.



5. **Select Result Area. Go to Insert Menu. Select Column option.**



Practical No 8

Aim : Firing Queries on Tables.

Solution :

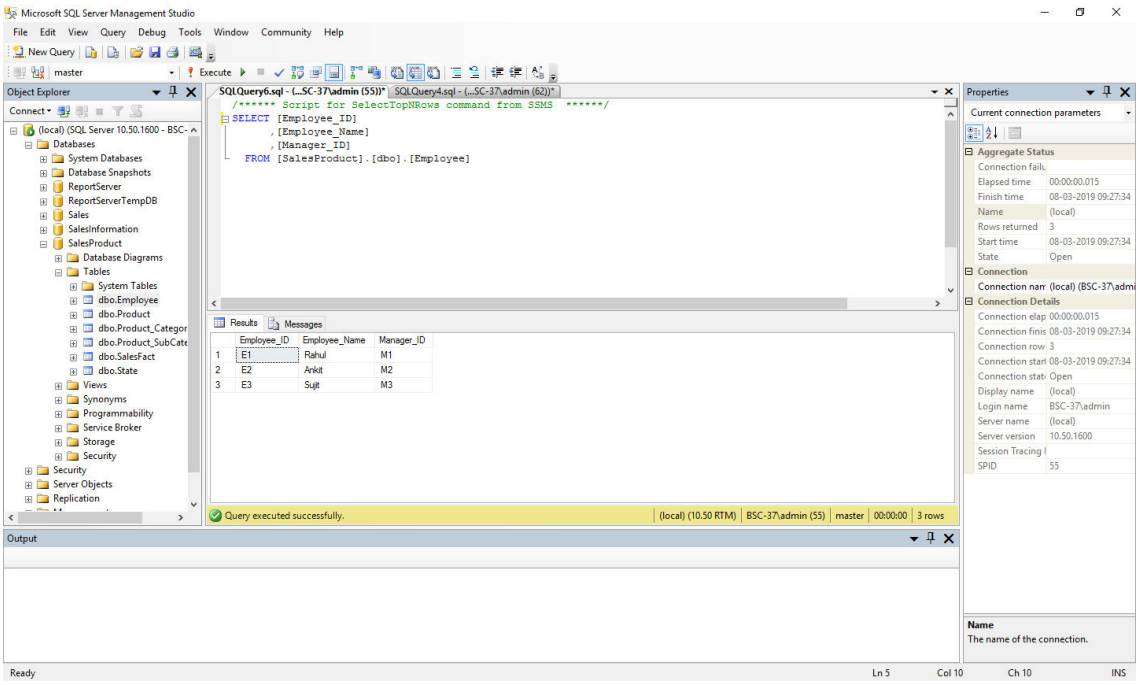
Open Application -> Microsoft SQL Server 2008 R2 -> SQL Server Management Studio

1. **Select Connect Tab -> Database Engine -> Select Server Name(local)**

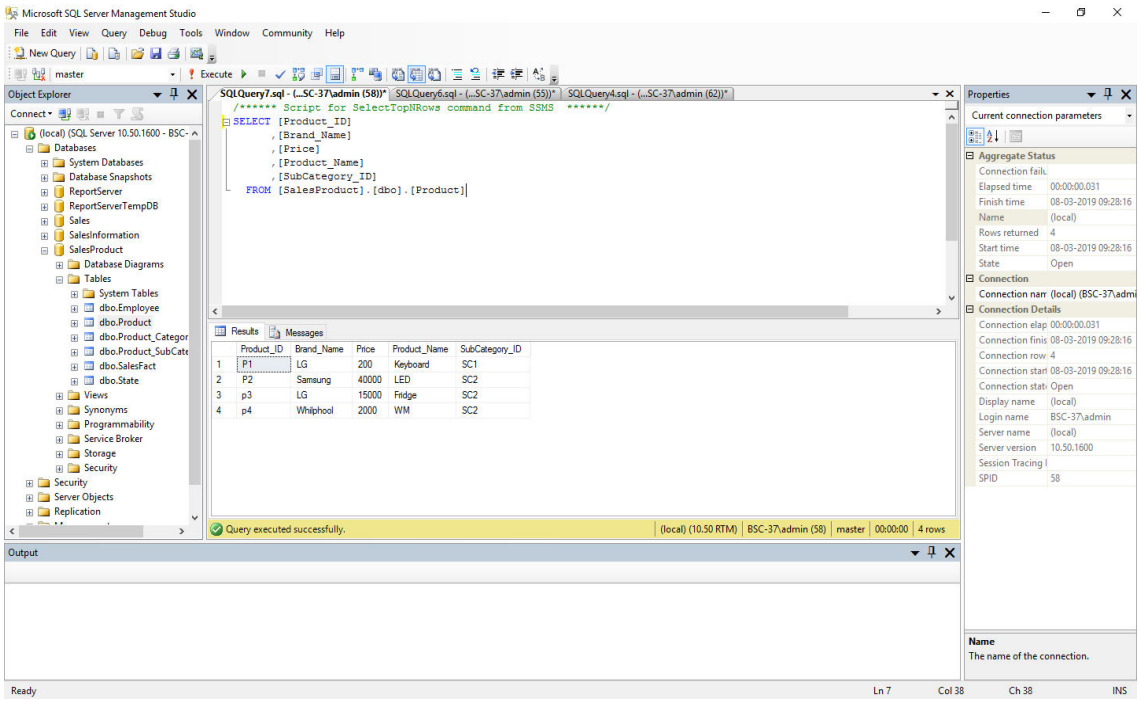
2. **Expand 'Database' -> Expand 'SalesProduct' -> Expand Tables.**

3. **Fire following queries :**

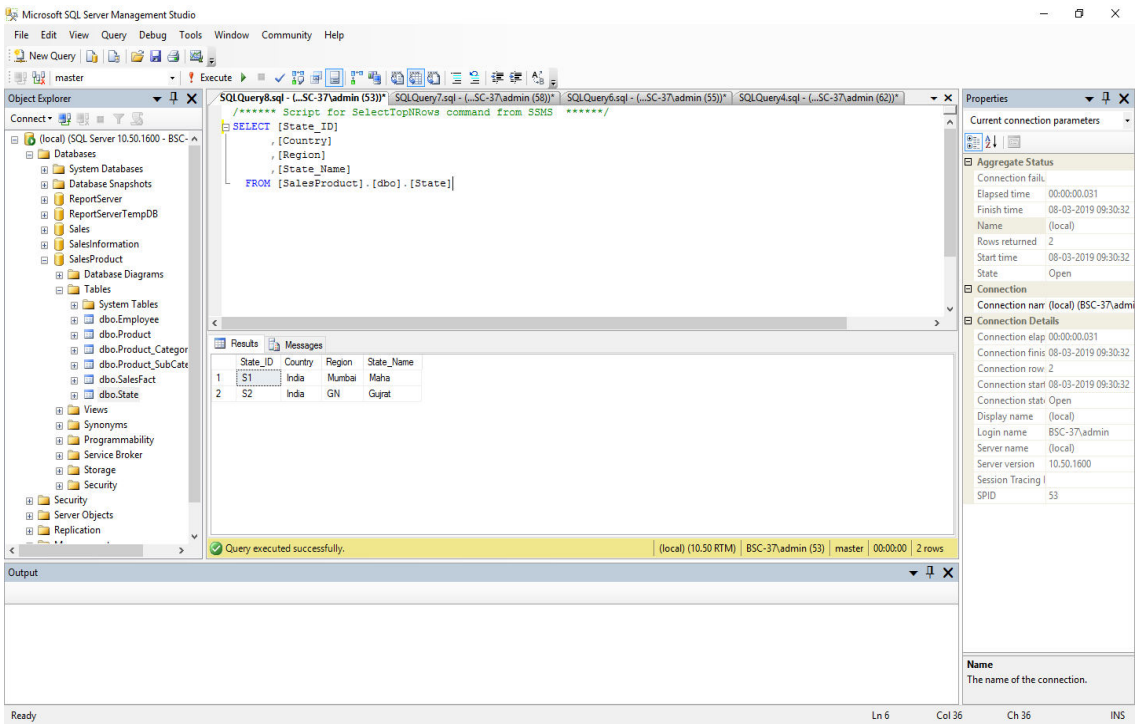
   3.1.
```
SELECT [Employee_ID],[Employee_Name] ,[Manager_ID]
FROM [SalesProduct].[dbo].[Employee]
```



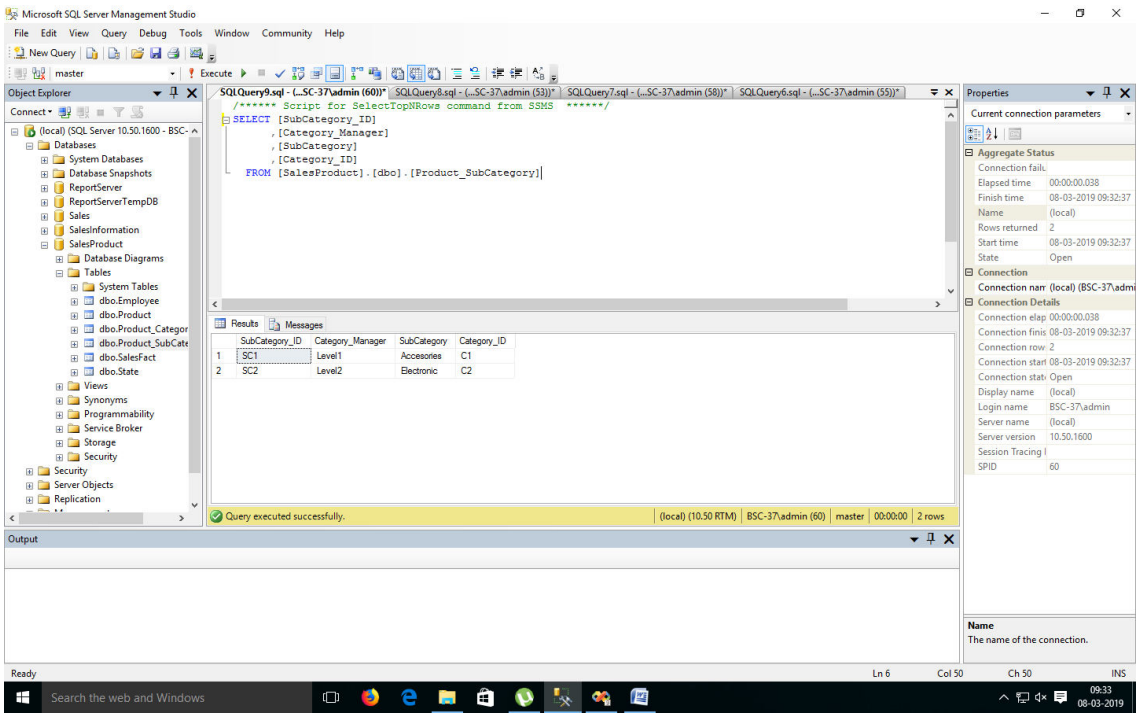
3.2
```
SELECT [Product_ID],[Brand_Name],[Price],[Product_Name]
    ,[SubCategory_ID]  FROM [SalesProduct].[dbo].[Product]
```



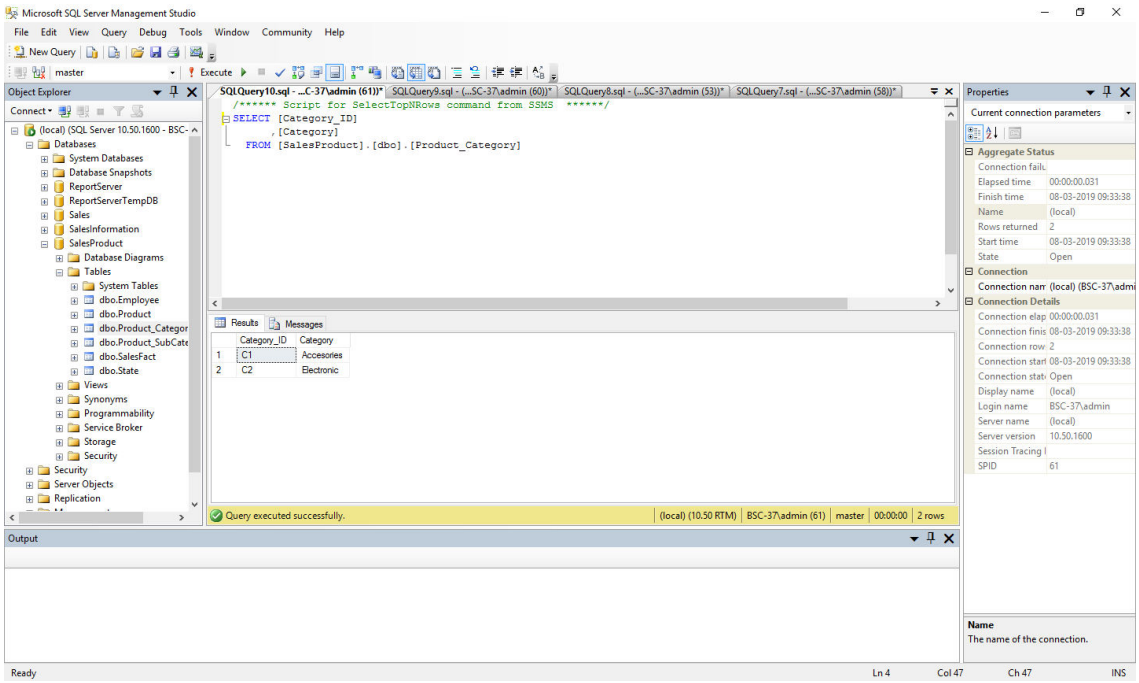
3.3.
```
SELECT [State_ID],[Country],[Region],[State_Name]
    FROM [SalesProduct].[dbo].[State]
```



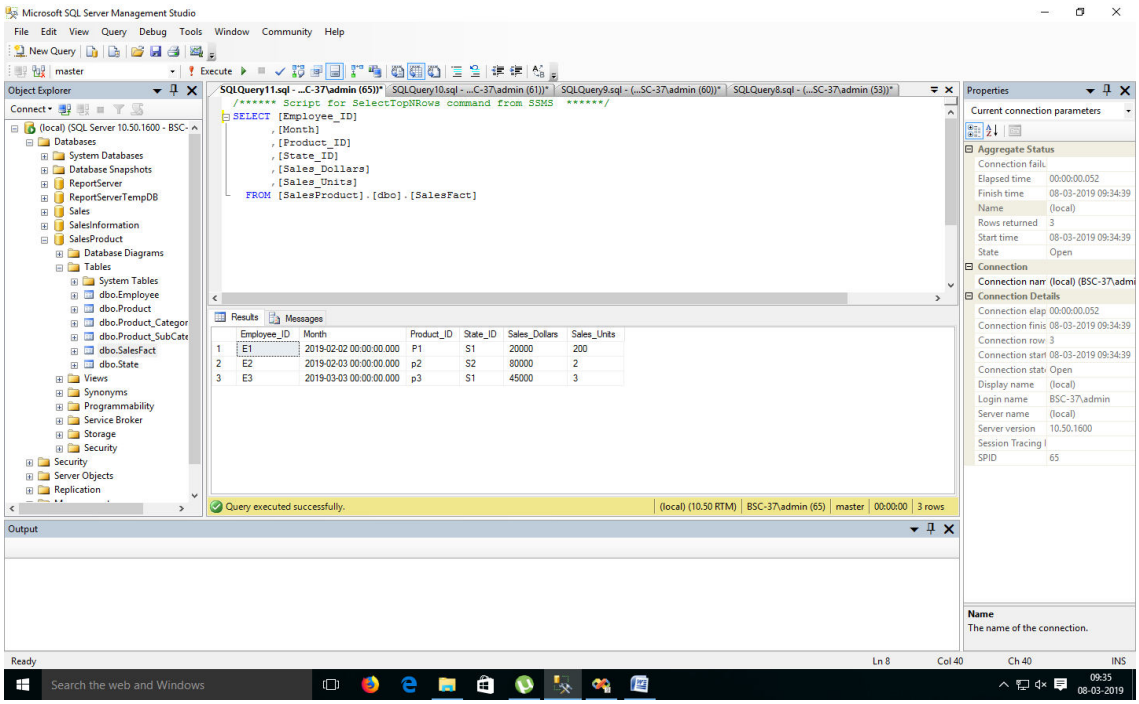
3.4.
```
SELECT [SubCategory_ID],[Category_Manager],[SubCategory],[Category_ID]
  FROM [SalesProduct].[dbo].[Product_SubCategory]
```



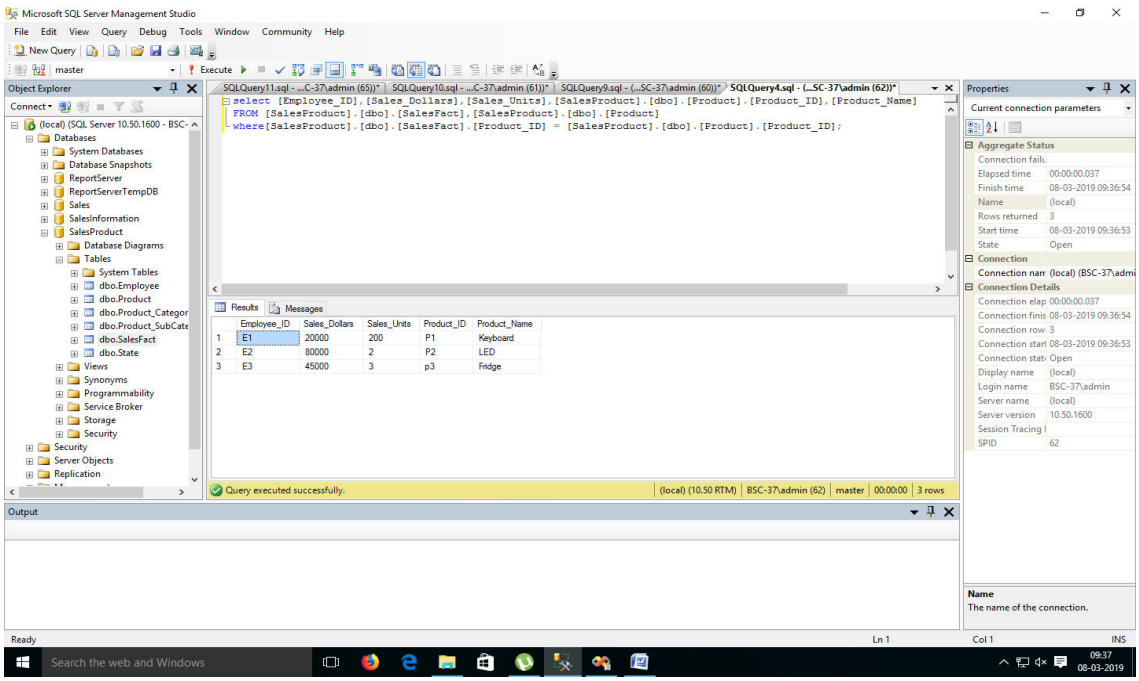
3.5.
```
SELECT [Category_ID],[Category]
  FROM [SalesProduct].[dbo].[Product_Category]
```



3.6.
```
SELECT [Employee_ID],[Month],[Product_ID],[State_ID],[Sales_Dollars]
      ,[Sales_Units]  FROM [SalesProduct].[dbo].[SalesFact]
```

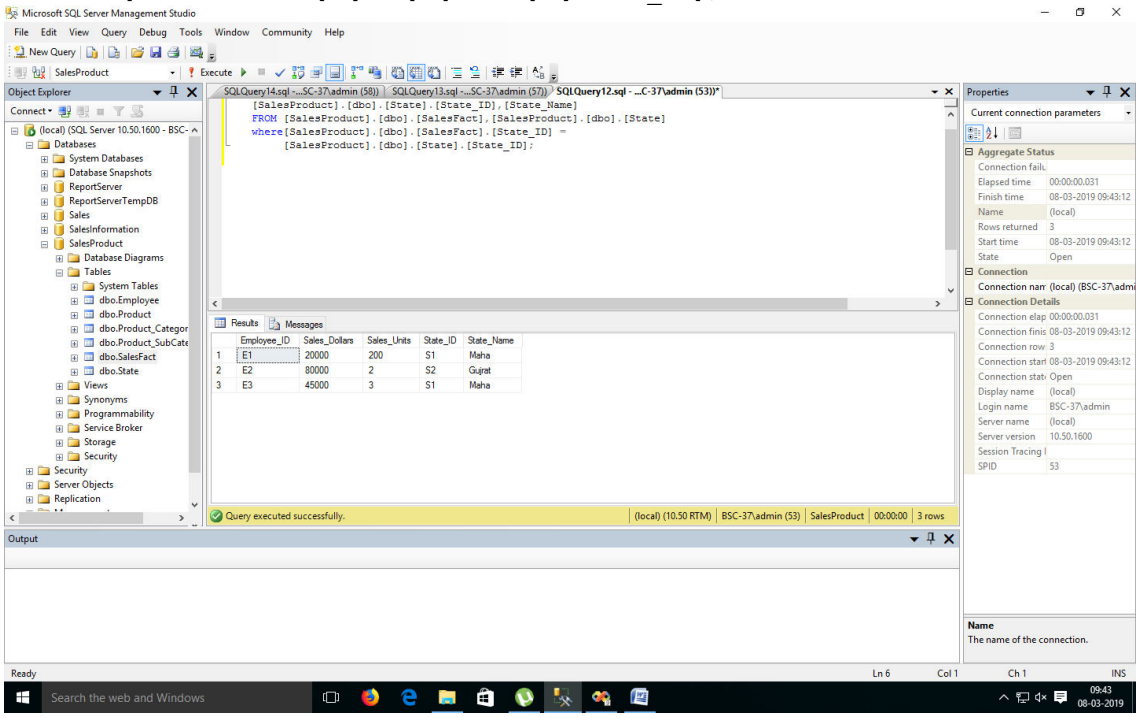


3.7.
```
select [Employee_ID],[Sales_Dollars],[Sales_Units],
[SalesProduct].[dbo].[Product].[Product_ID],[Product_Name]
FROM [SalesProduct].[dbo].[SalesFact],[SalesProduct].[dbo].[Product]
where[SalesProduct].[dbo].[SalesFact].[Product_ID] =
      [SalesProduct].[dbo].[Product].[Product_ID];
```



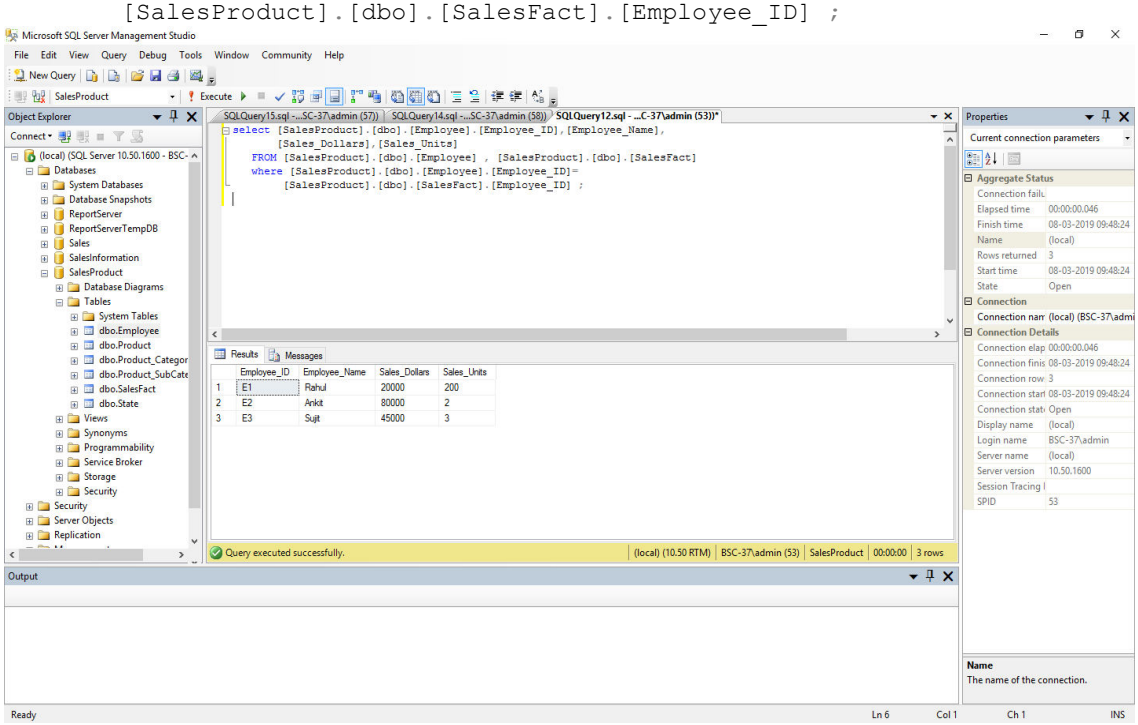
3.8.

```
select [Employee_ID],[Sales_Dollars],[Sales_Units],
[SalesProduct].[dbo].[State].[State_ID],[State_Name]
FROM [SalesProduct].[dbo].[SalesFact],[SalesProduct].[dbo].[State]
where[SalesProduct].[dbo].[SalesFact].[State_ID] =
      [SalesProduct].[dbo].[State].[State_ID];
```



3.9.

```
select [SalesProduct].[dbo].[Employee].[Employee_ID],[Employee_Name],
       [Sales_Dollars],[Sales_Units]
FROM [SalesProduct].[dbo].[Employee] , [SalesProduct].[dbo].[SalesFact]
where [SalesProduct].[dbo].[Employee].[Employee_ID]=
      [SalesProduct].[dbo].[SalesFact].[Employee_ID] ;
```

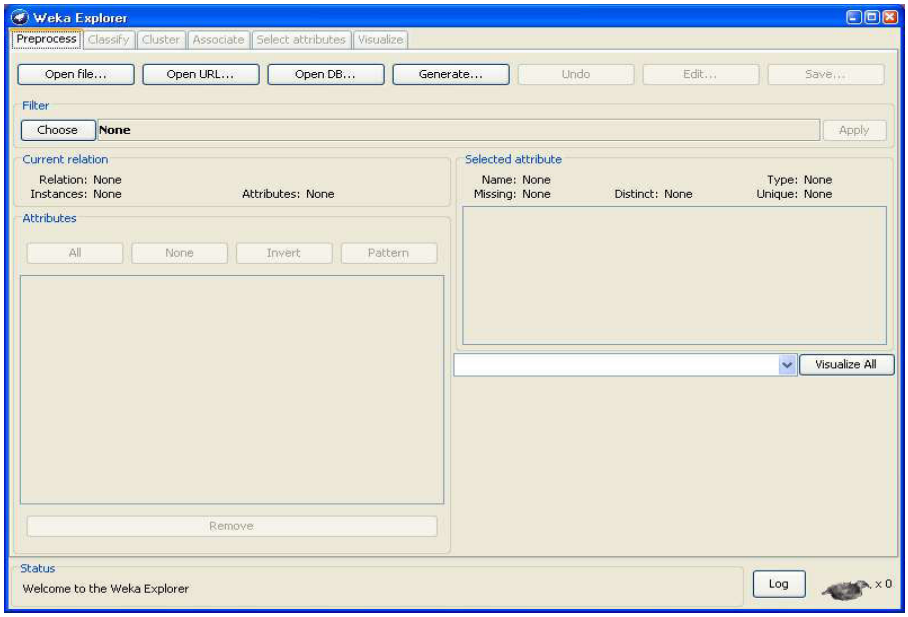


Practical No - 9

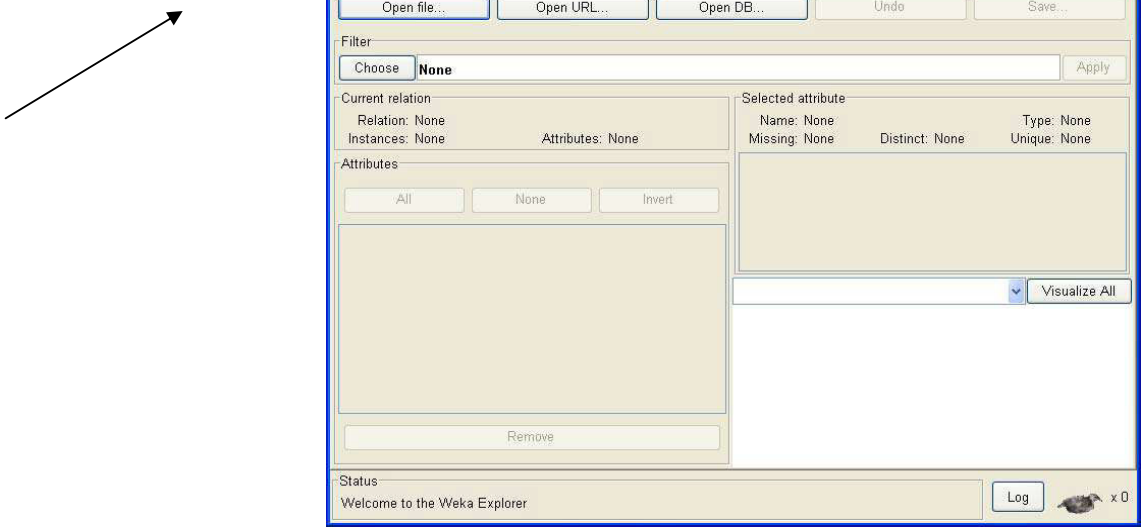
Aim : Data PreProcessing

Solution :

Only the first tab, 'Preprocess', is active at the moment because there is no dataset open.

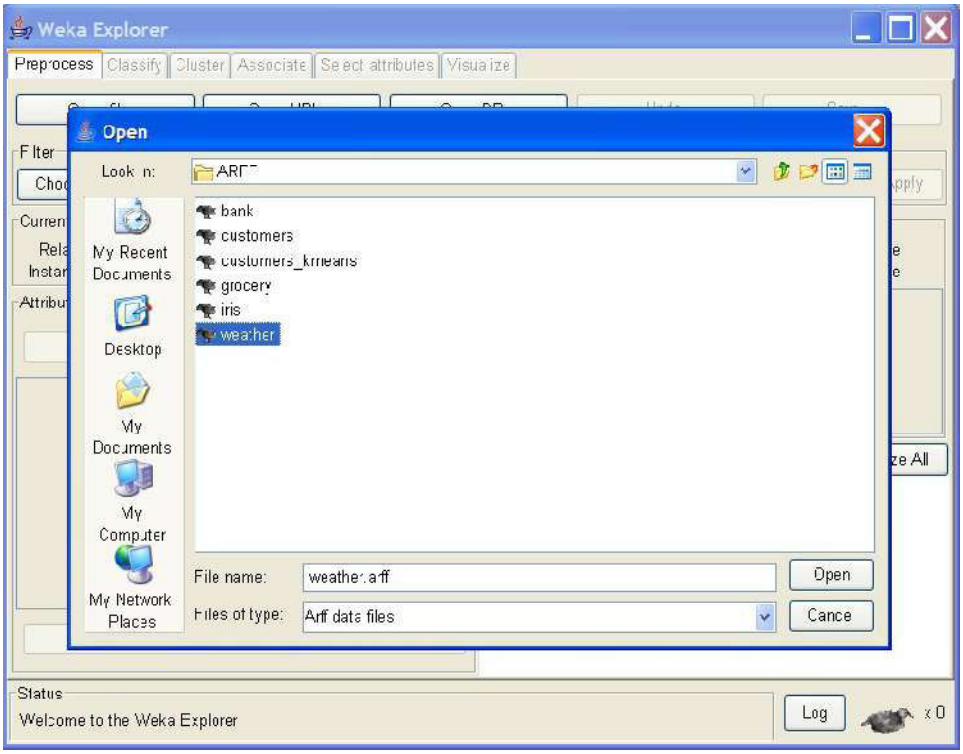


<u>Opening file from a local file system</u>
Click on 'Open file…' button



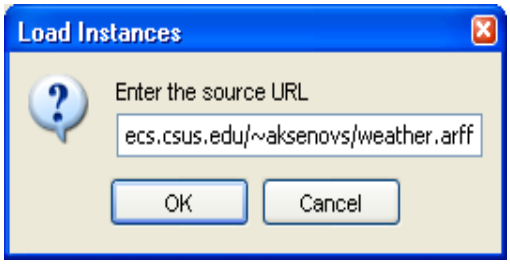
It brings up a dialog box allowing you to browse for the data file on the local file system, choose

"weather.arff" file.

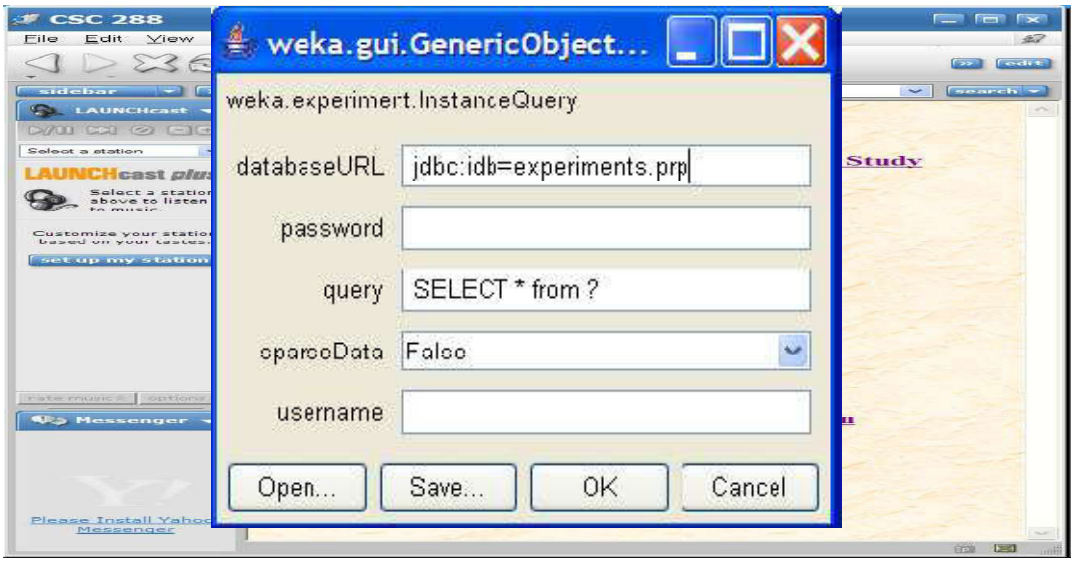


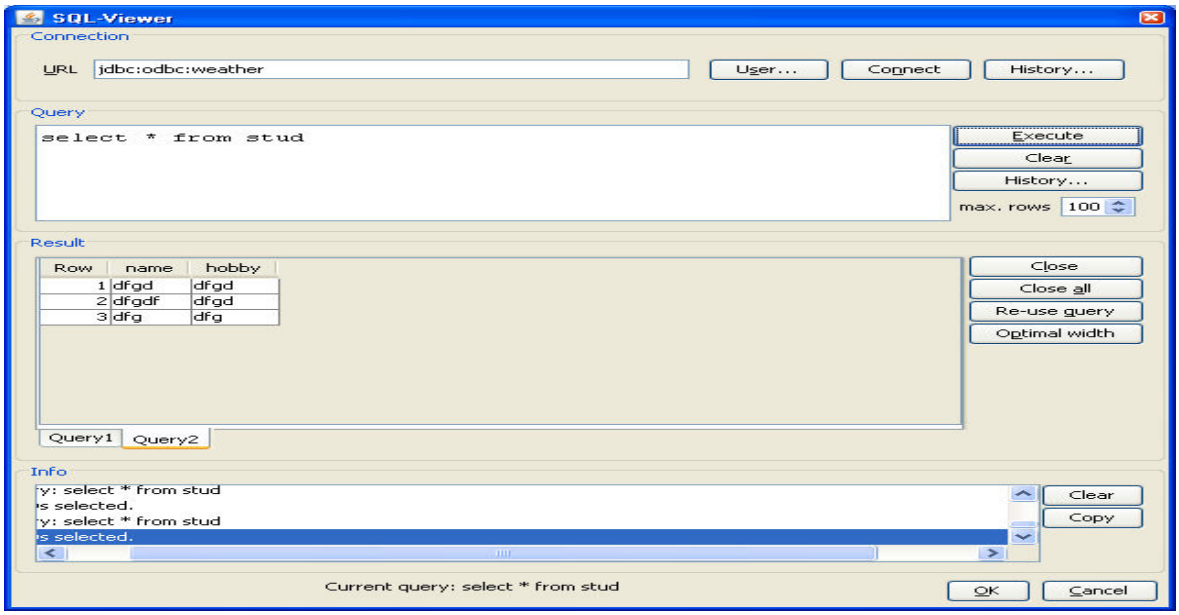
Opening file from a web site

A file can be opened from a website. Suppose, that "weather.arff" is on the followingwebsite:



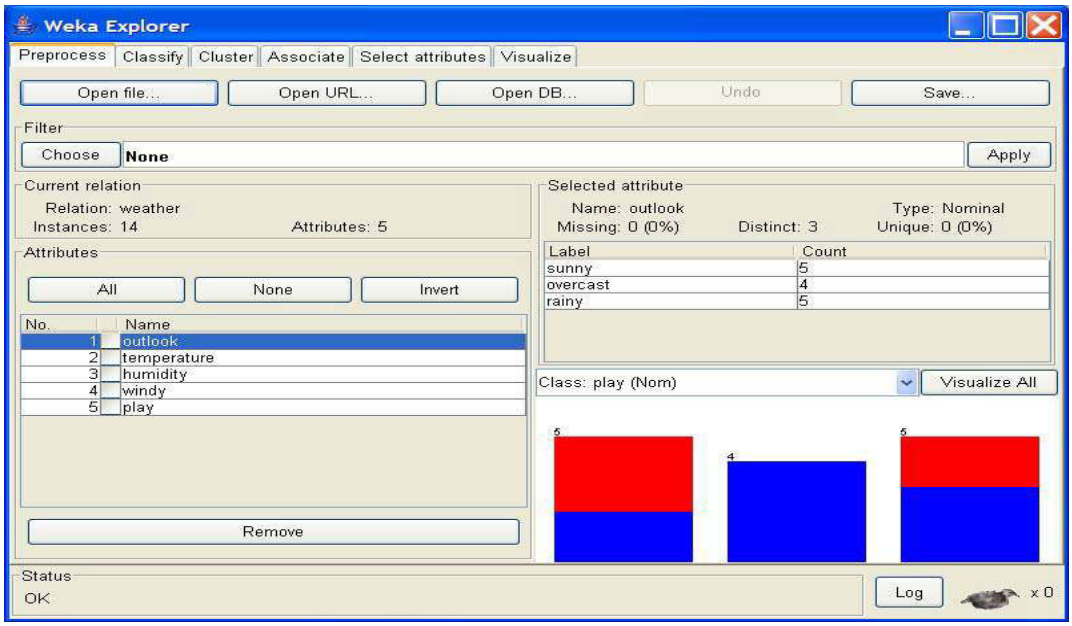
Reading data from a database:



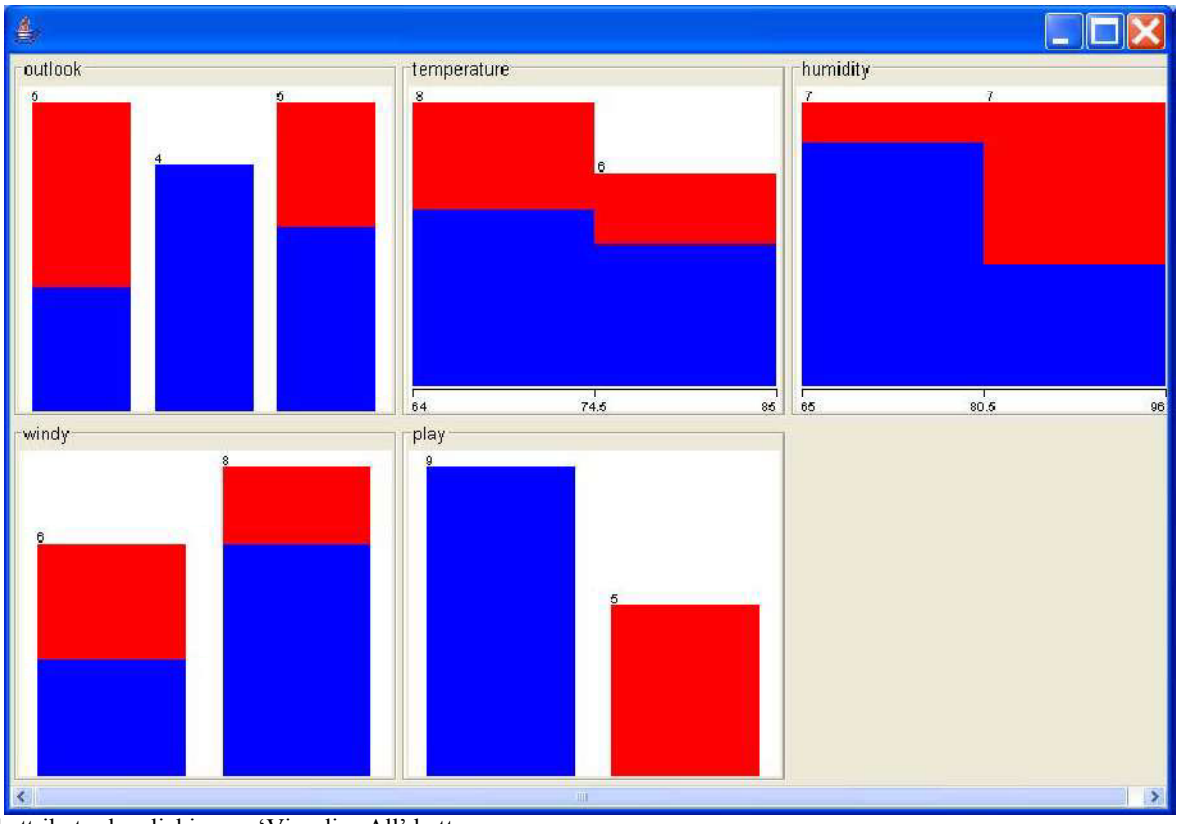


Loading data

The most common and easiest way of loading data into WEKA is from ARFF file, using Open File button.



Visualize Attributes:



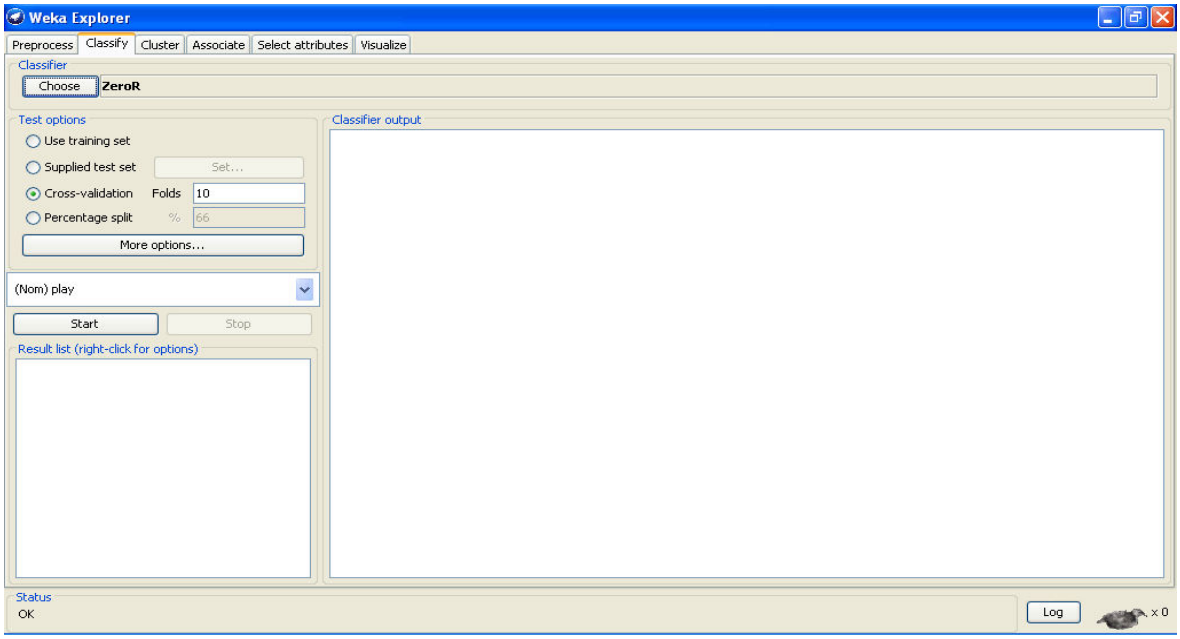
visualize all attributes by clicking on ‘Visualize All’ button.,

Practical No - 10

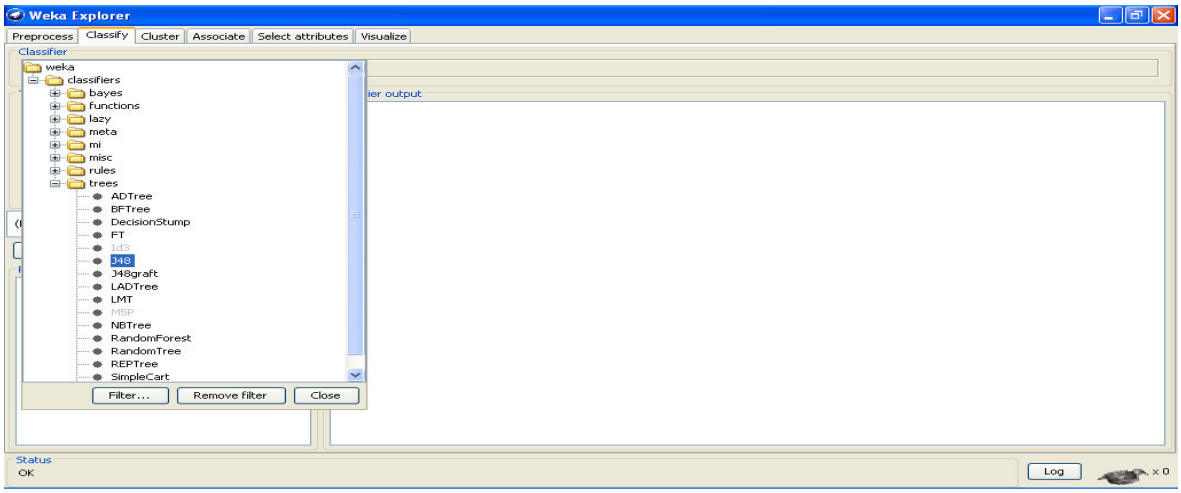
Aim : Classification problems.

Solution :

Once you have your data set loaded, all the tabs are available to you. Click on the ‘Classify’ tab.



Click on ‘Choose’ button in the ‘Classifier’ box just below the tabs and select C4.5 classifier WEKA □ Classifiers □ Trees □ J48.



Check ‘Percentage split’ radio-button and keep it as default 66%. Click on ‘More options…’ button.

<u>make sure that the Following options are checked :</u>

1. Output model.

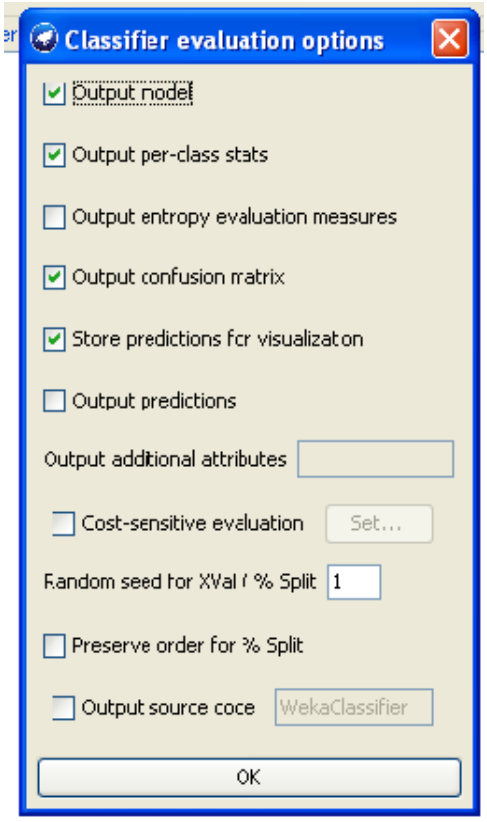
2. Output per-class stats.

3. Output confusion matrix

4. Store predictions for visualization.

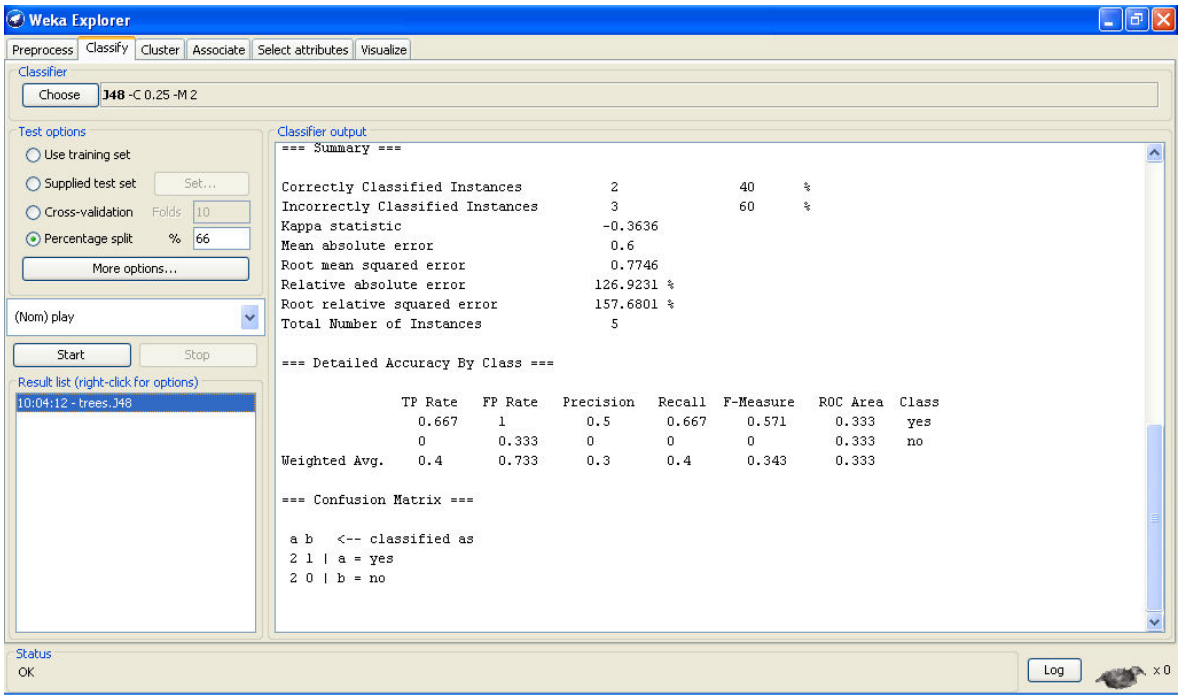
5. Set ‘Random seed for Xval / % Split’ to 1.

.



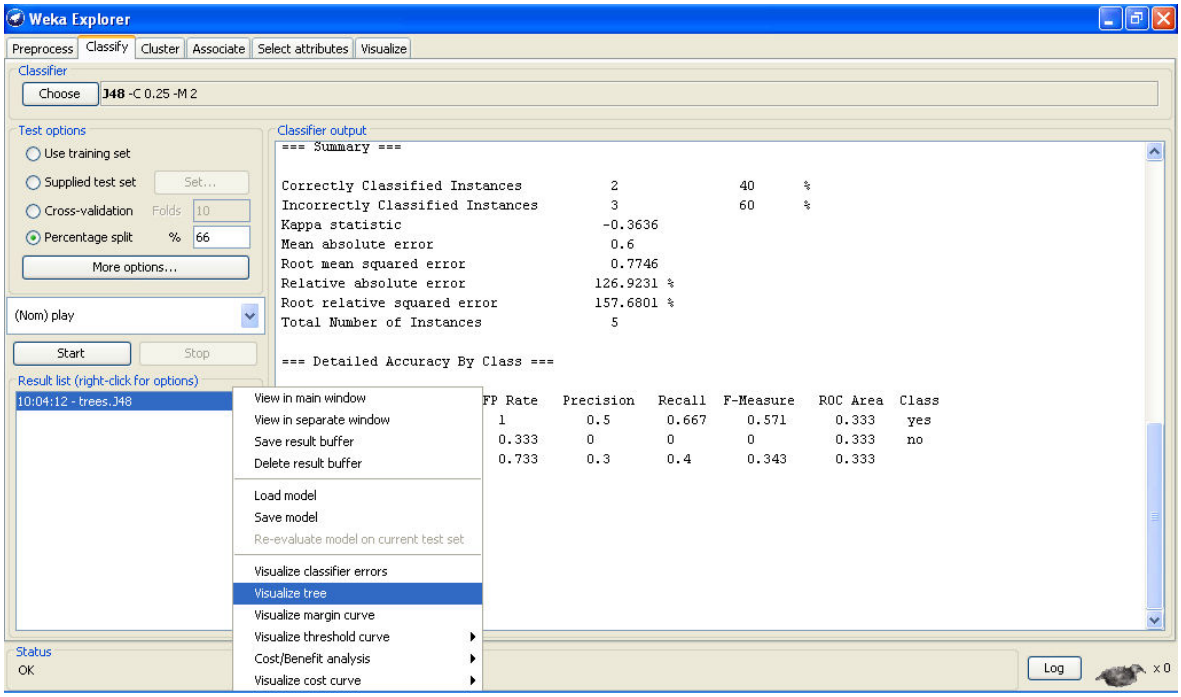
Once the options have been specified, you can run the classification algorithm. Click on

‘Start’ button

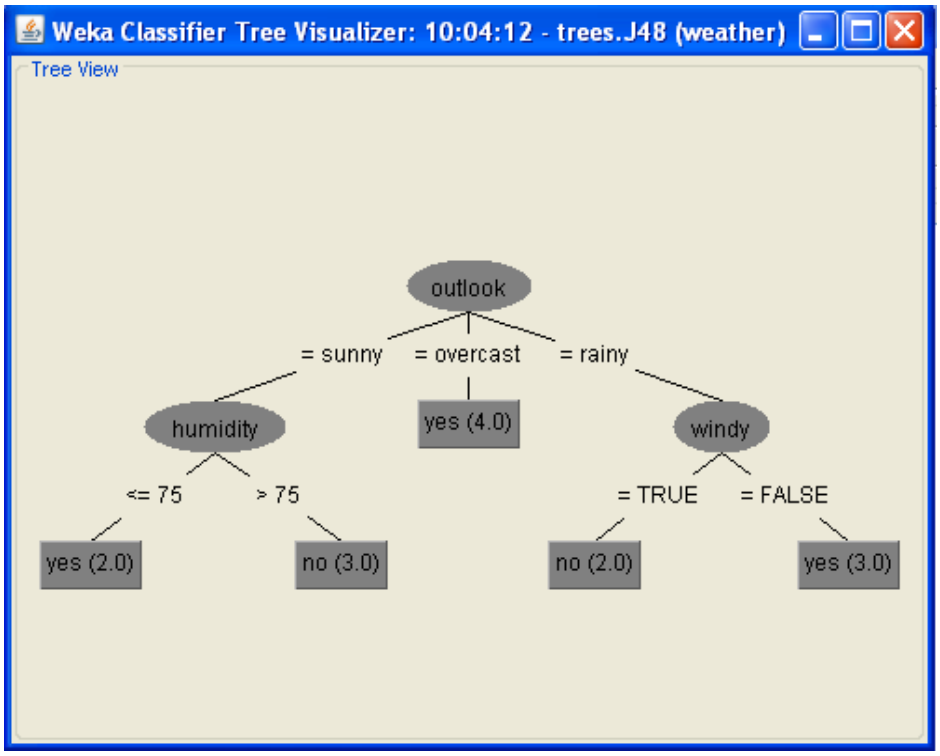


To see a graphical representation of the classification tree. Right-click on the

entry in ‘Result list’ for which you would like to visualize a tree.

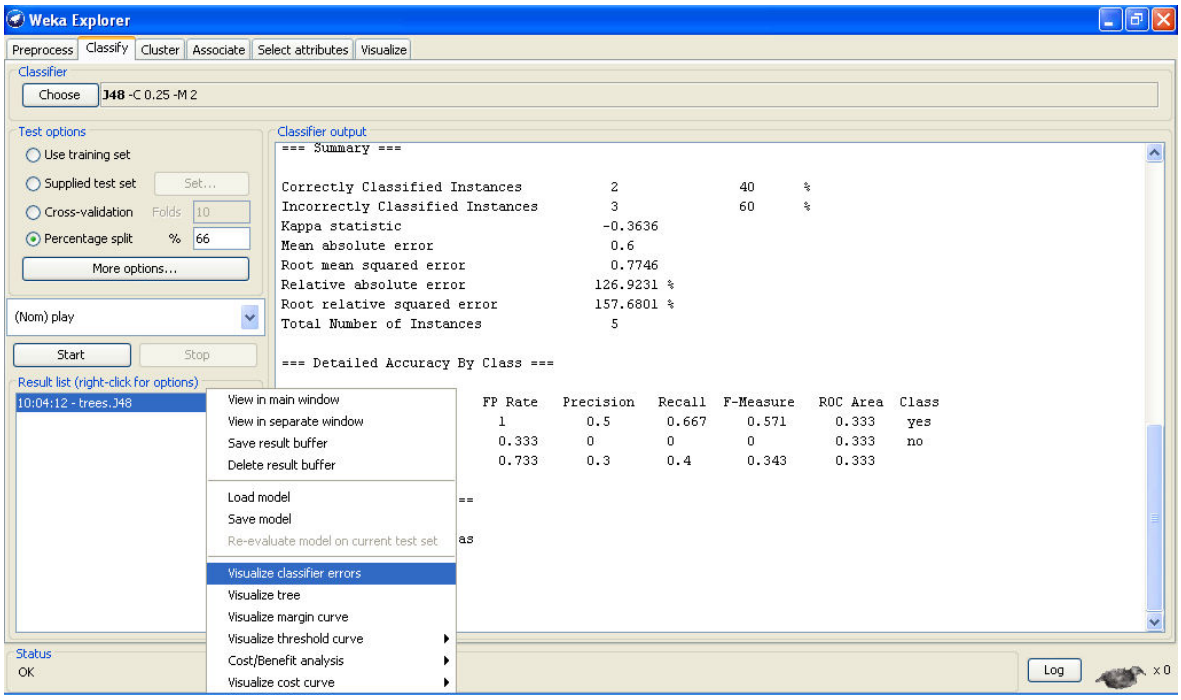


Select the item ‘Visualize tree’; a new window comes up to the screen displaying the tree.

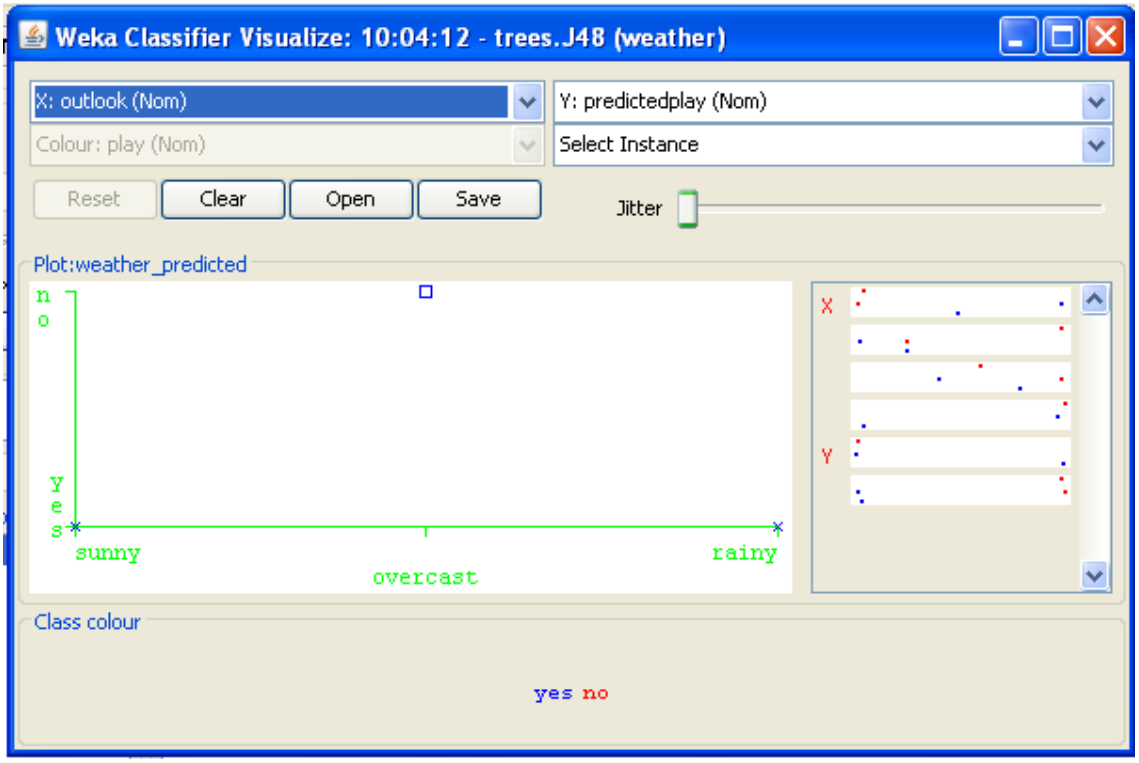


To visualize classification errors. Right-click on the entry in 'Result list' again

and select 'Visualize classifier errors' from the menu:



Visualize' window displaying graph appears on the screen.

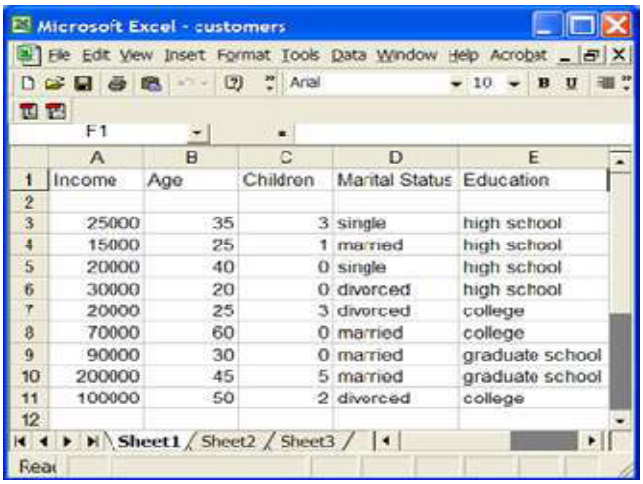

Weka Classifier Visualize: 10:04:12 - trees.J48 (weather)
X: outlook (Nom)
Y: predictedplay (Nom)
Colour: play (Nom)
Select Instance
Reset
Clear
Open
Save
Jitter
Plot:weather_predicted
n
o
y
e
s
sunny
overcast
rainy
X
Y
Class colour
yes no

Practical N0 - 11

Aim : Clustering Analysis.

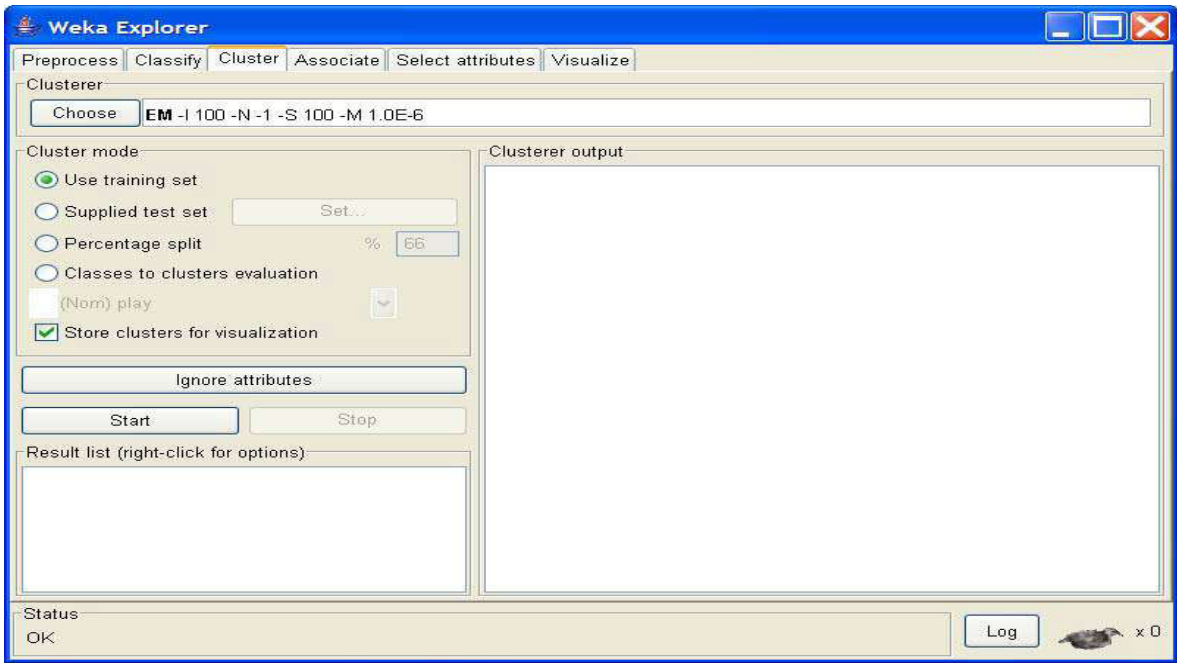
Solution :

we will use customer data [6] that is contained in "customers.arff" file and analyze it with k-means clustering scheme.

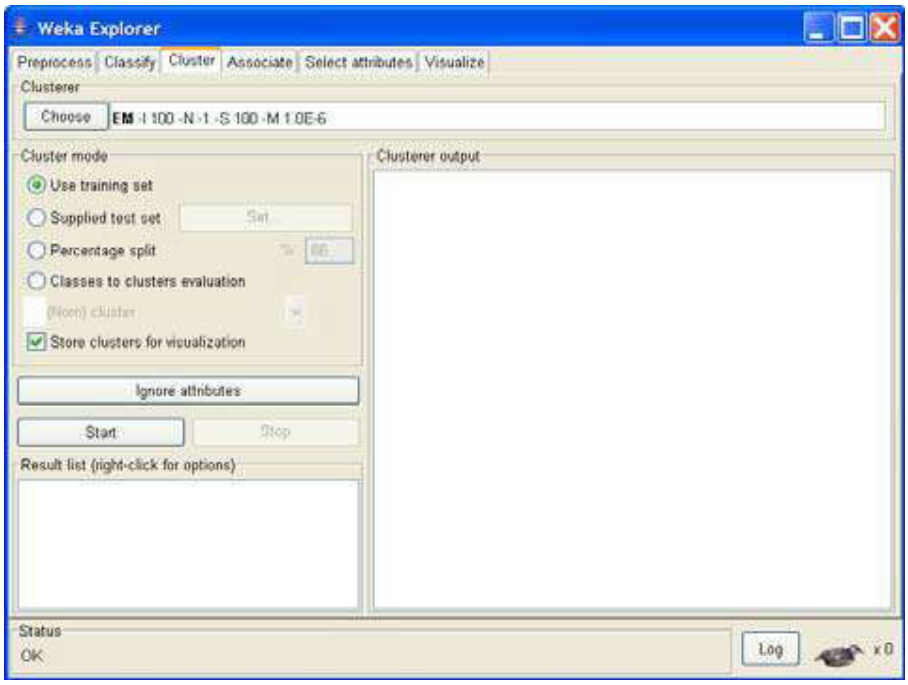


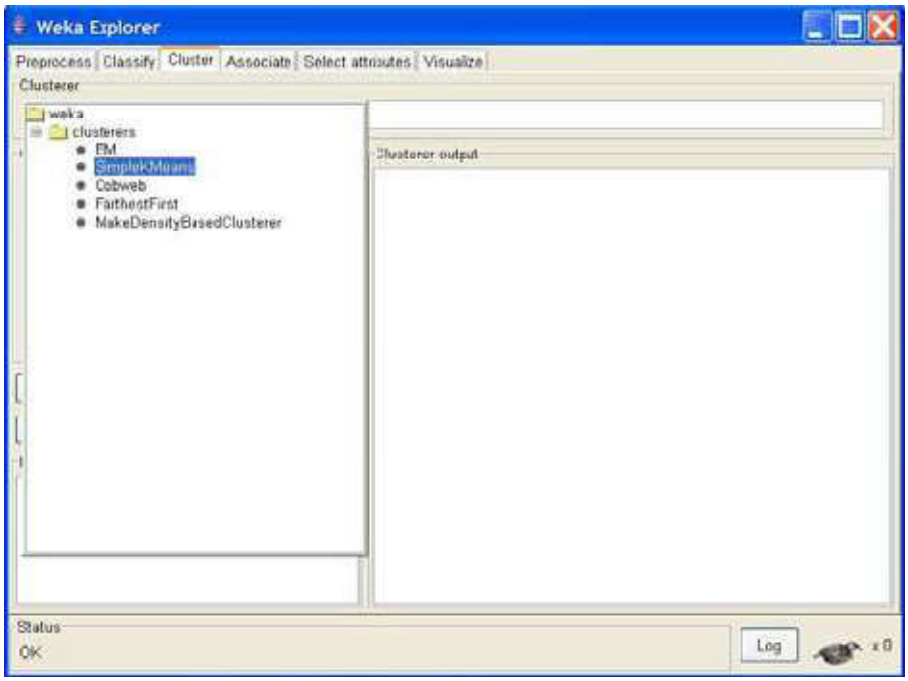
	A	B	C	D	E
1	Income	Age	Children	Marital Status	Education
2					
3	25000	35	3	single	high school
4	15000	25	1	married	high school
5	20000	40	0	single	high school
6	30000	20	0	divorced	high school
7	20000	25	3	divorced	college
8	70000	60	0	married	college
9	90000	30	0	married	graduate school
10	200000	45	5	married	graduate school
11	100000	50	2	divorced	college
12					

In 'Preprocess' window click on 'Open file…' button and select "customers.arff" file. Click 'Cluster' tab at the top of WEKA Explorer window.

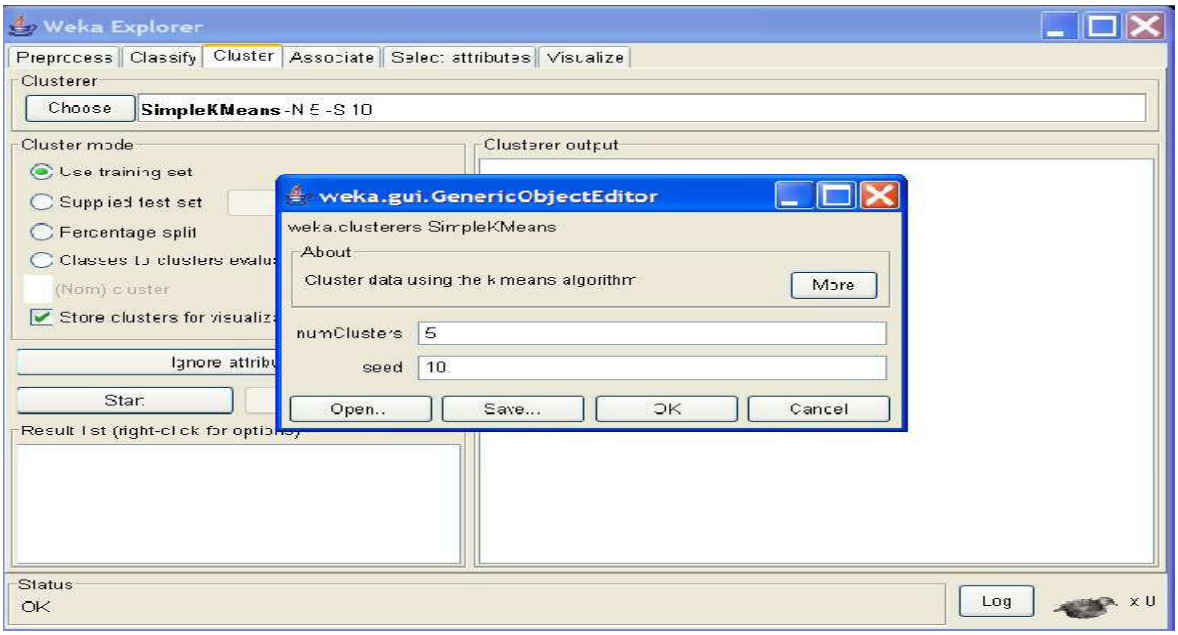


In the 'Clusterer' box click on 'Choose' button. In pull-down menu select WEKA Clusterers, and select the cluster scheme 'SimpleKMeans'. Some implementations of K-means only allow numerical values for attributes.

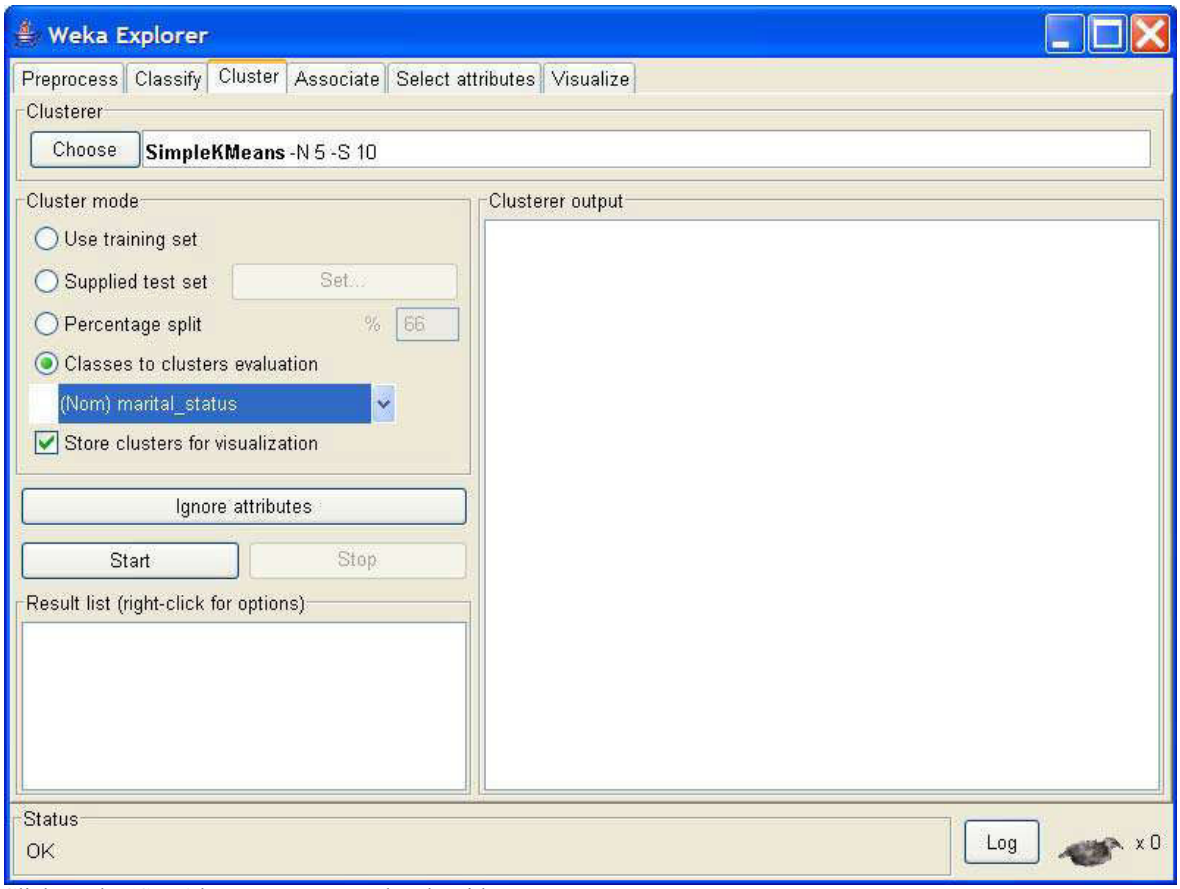




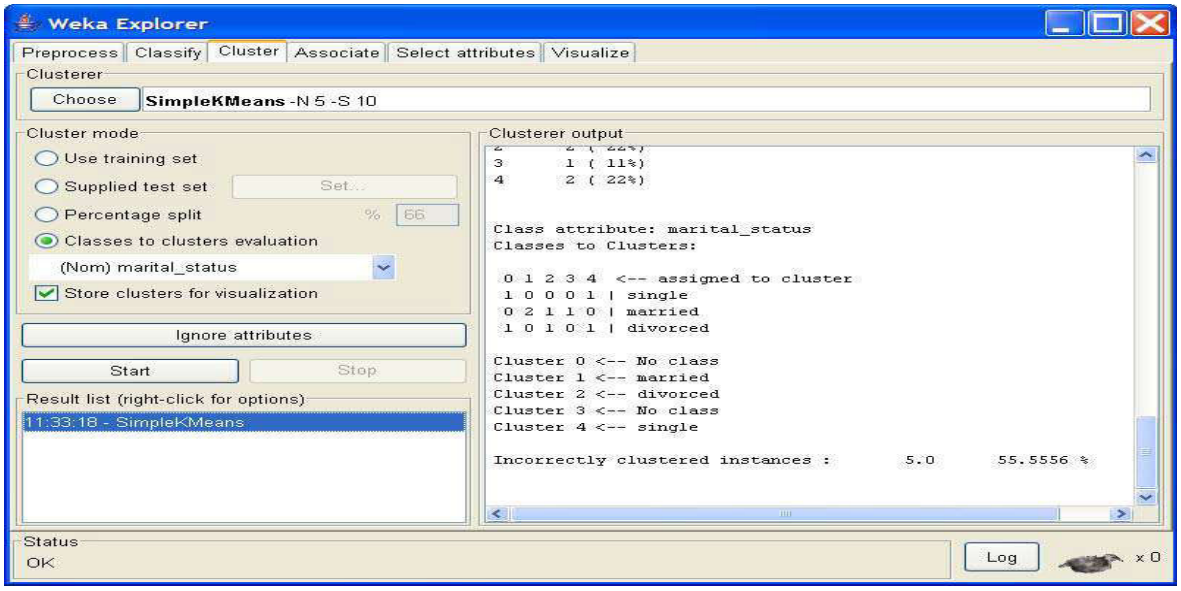
right-click on the algorithm “weak.gui.GenericObjectEditor” comes up to the screen. Set the value in “numClusters” box to 5(instead of default 2) because you have five clusters in your .arff file.



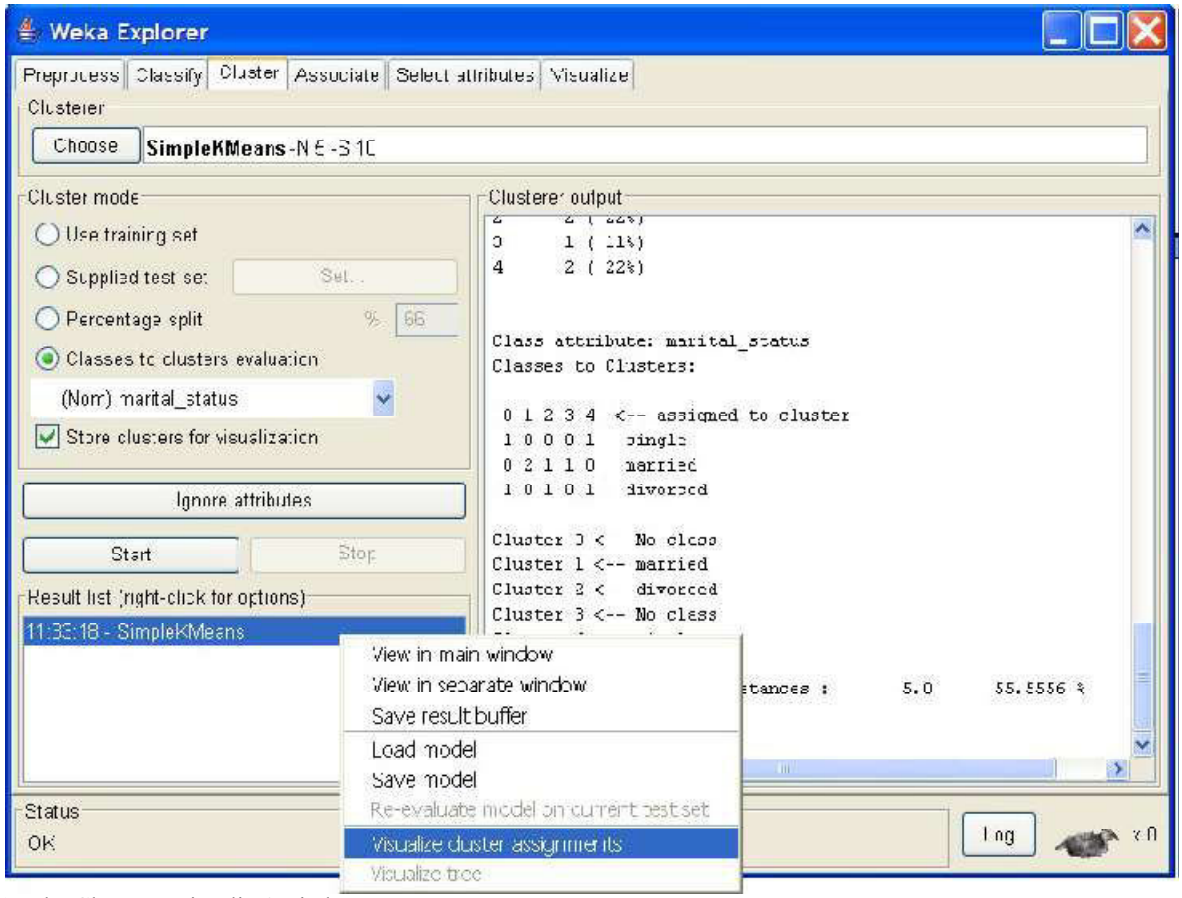
Click on 'Classes to cluster evaluation' radio-button in 'Cluster mode' box and select 'marital_status' in the pull-down box below.



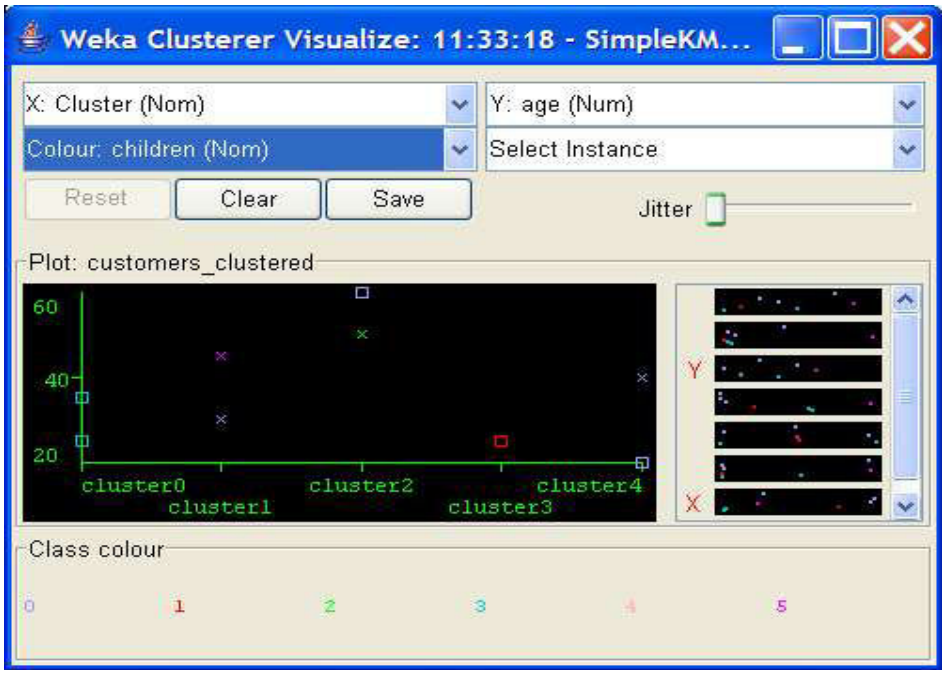
Click on the 'Start' button to execute the algorithm.



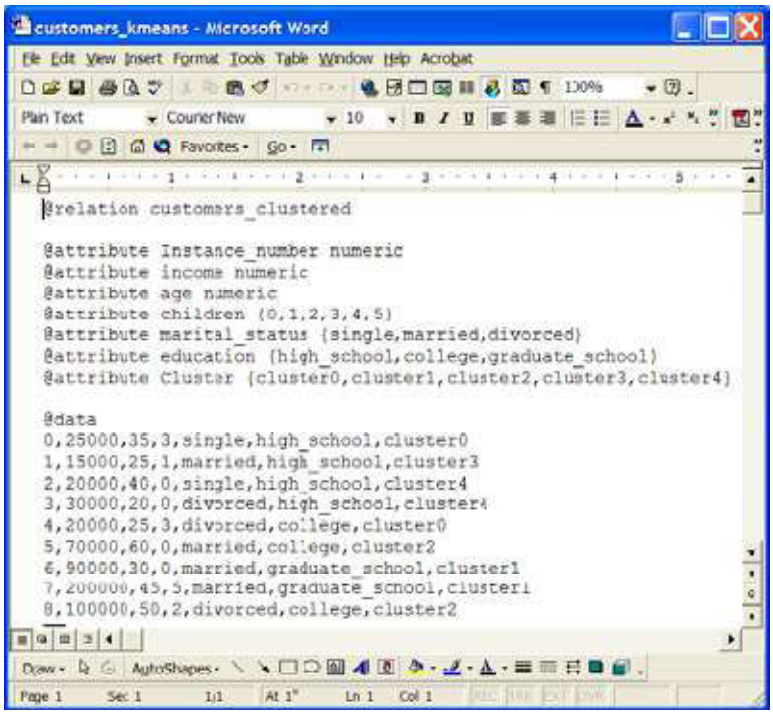
Right-click on the entry in the 'Result list' and select 'Visualize cluster assignments' in the pull-down window.



'Weka Clusterer Visualize' window.



there is a new attribute appeared in the file – 'cluster' that was added by WEKA. This attribute represents the custering done by WEKA.

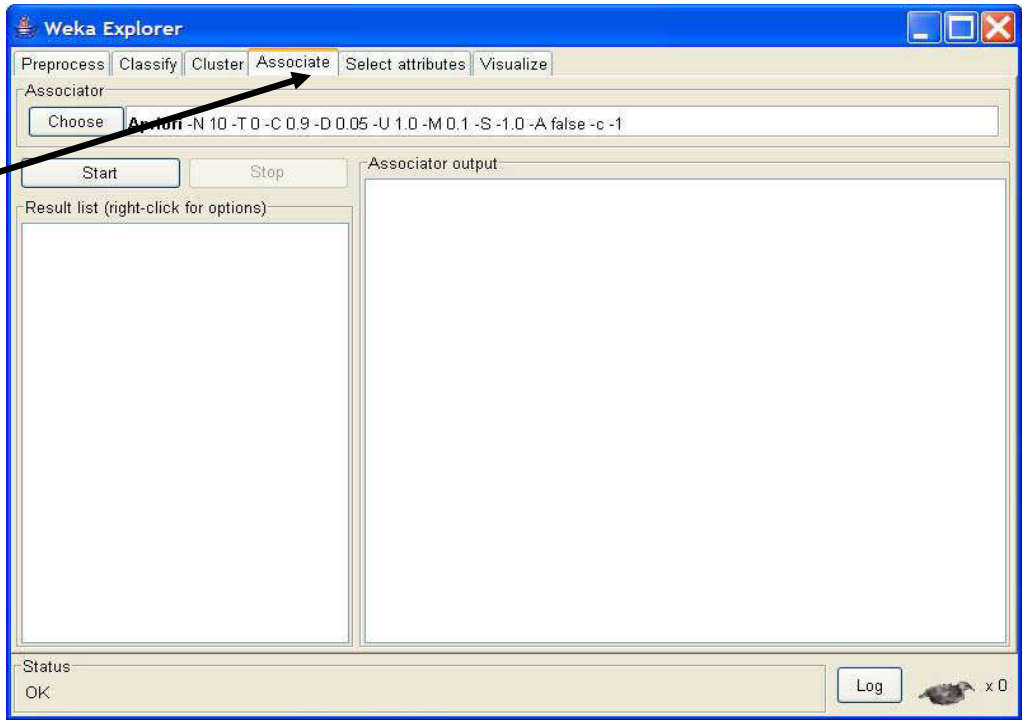


Practical No-12

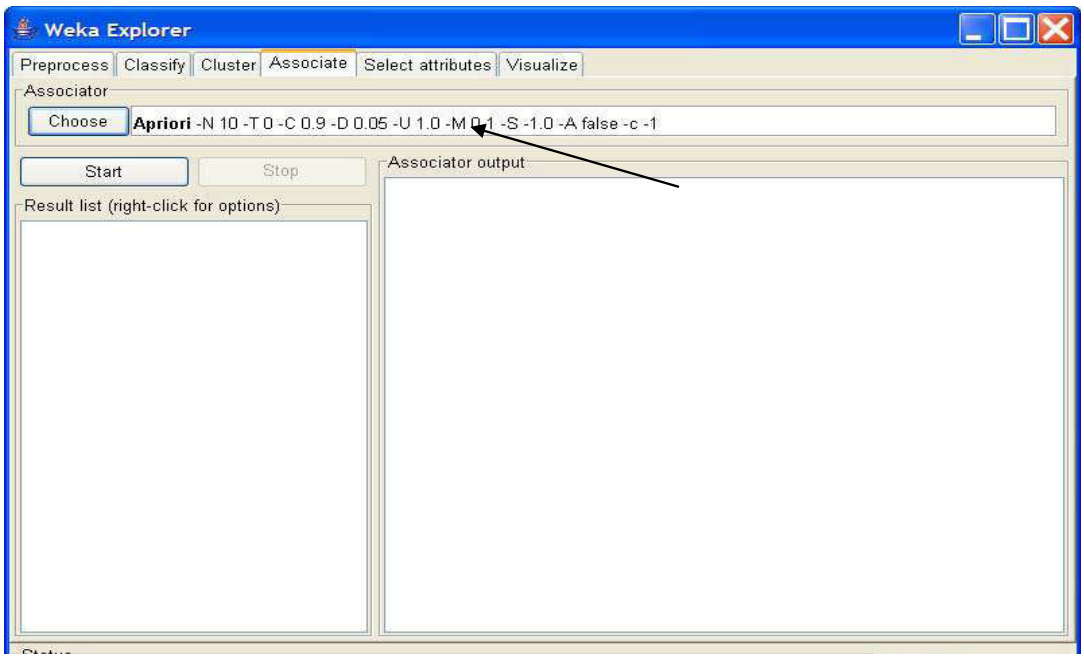
Aim : Association Rule Mining.

Solution :

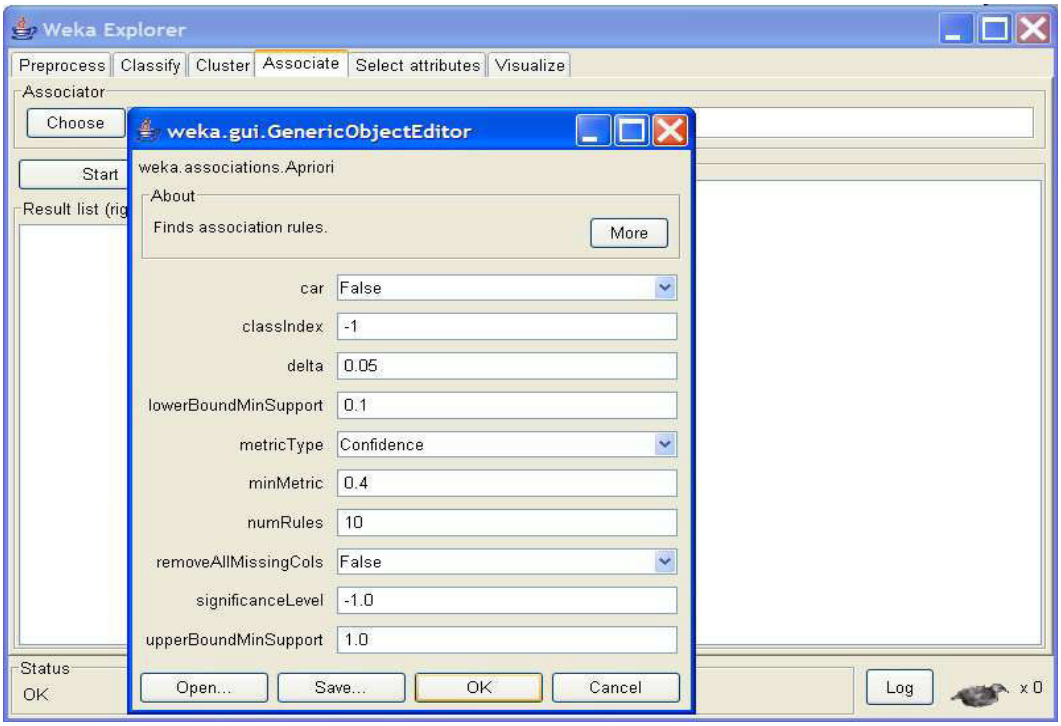
Choosing Association Scheme
Click 'Associate' tab at the top of 'WEKA Explorer' window. It brings up interface for the Apriori algorithm.



Setting Test Options
Check the text field in the 'Associator' box at the top of the window



Right-click on the ‘Associator’ box, ‘GenericObjectEditor’ appears on your screen



Click on the ‘Start’ button to execute the algorithm