Practical No.3

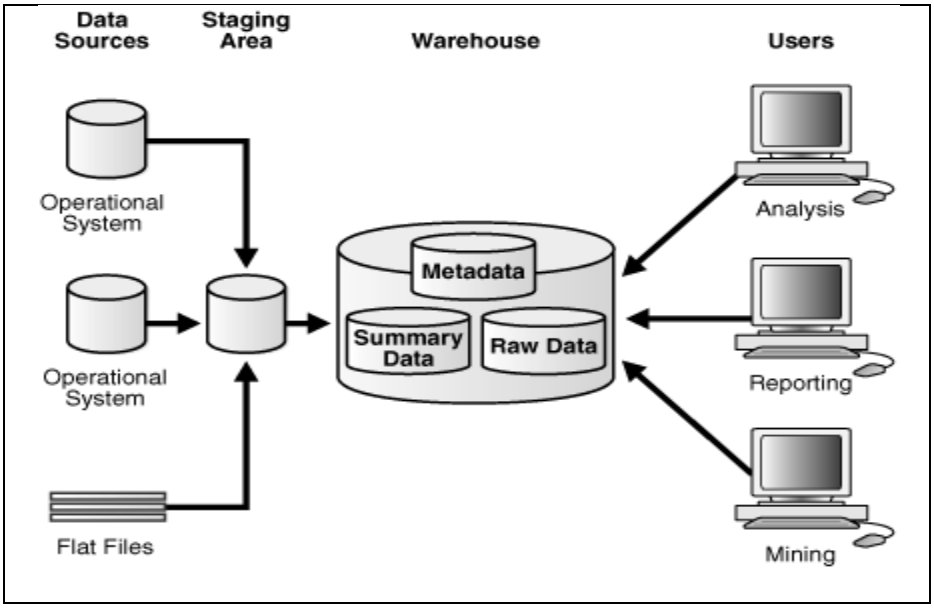
a. Create the Data staging area for the selected database.

b. Create the cube with suitable dimension and fact tables based on ROLAP, MOLAP and HOLAP model.

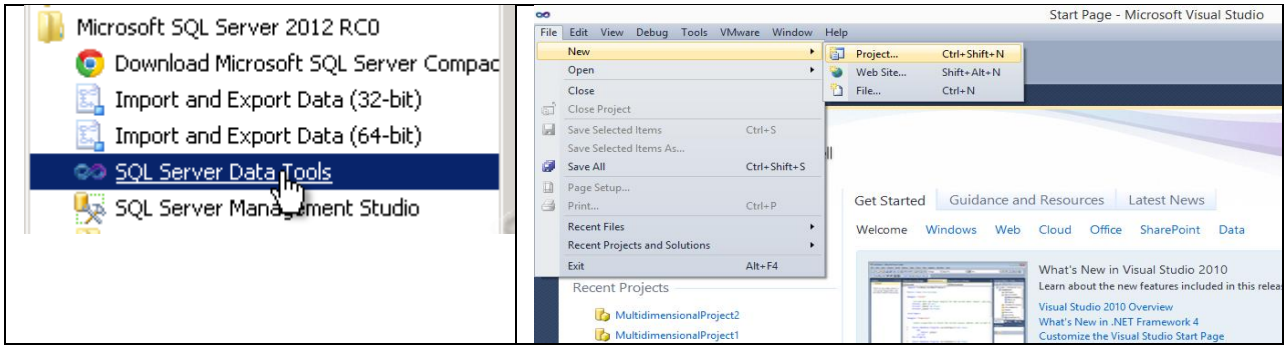
Practical No.3(a). Create the Data staging area for the selected database.

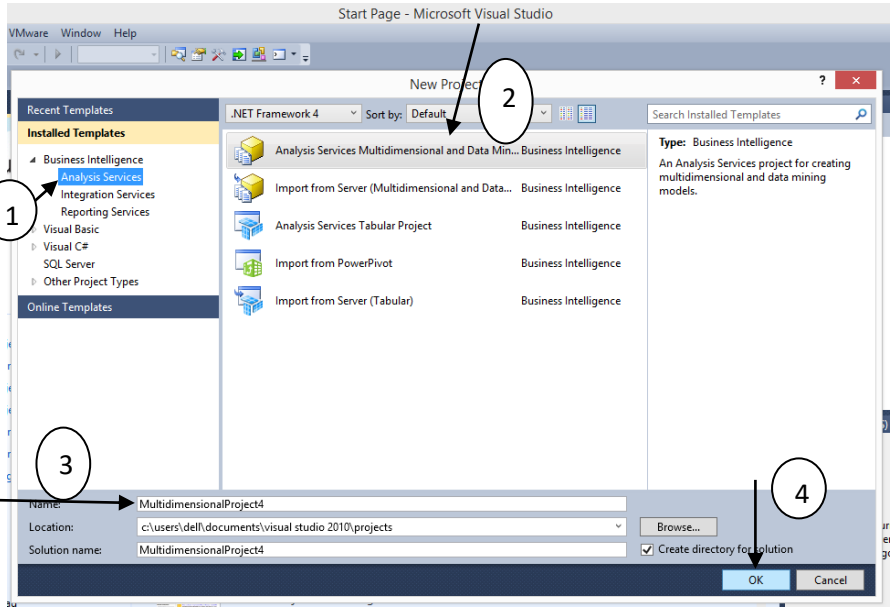
Staging Area:

A staging area, or landing zone, is an intermediate storage area used for data processing during the extract, transform and load (ETL) process. The data staging area sits between the data source(s) and the data target(s), which are often data warehouses, data marts, or other data repositories



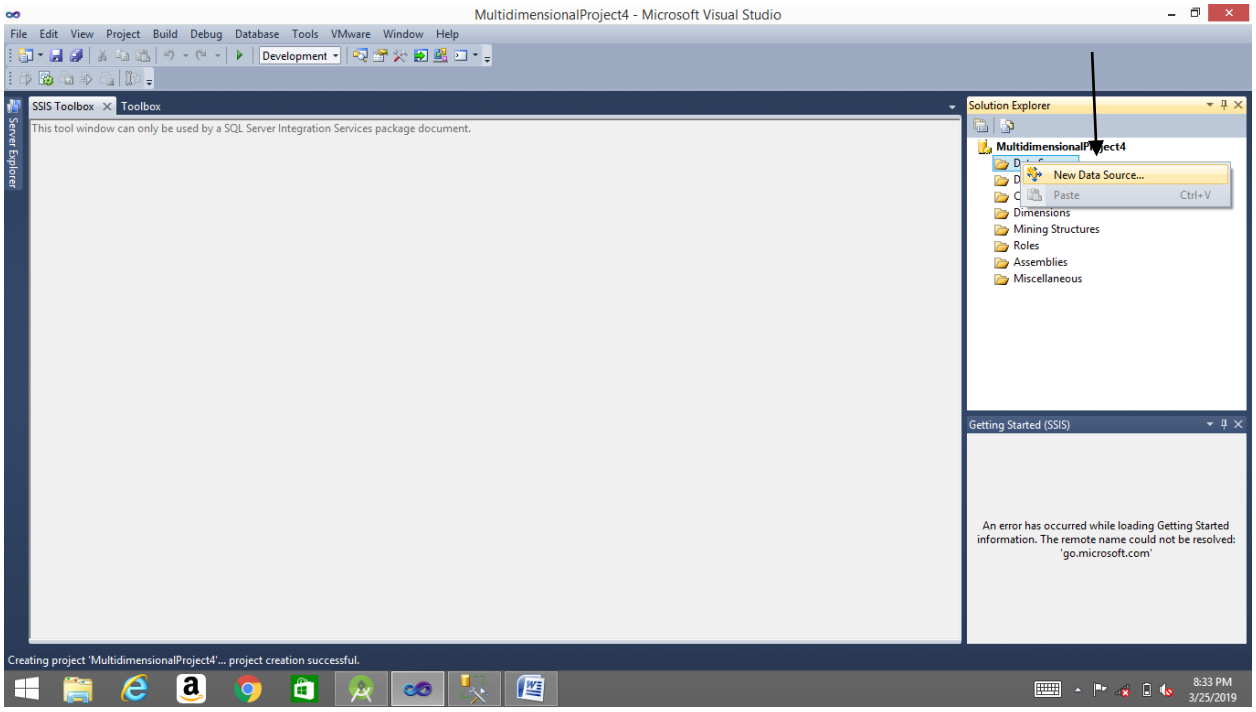
To create a staging area, we have to use SSDT tool and create a new project as

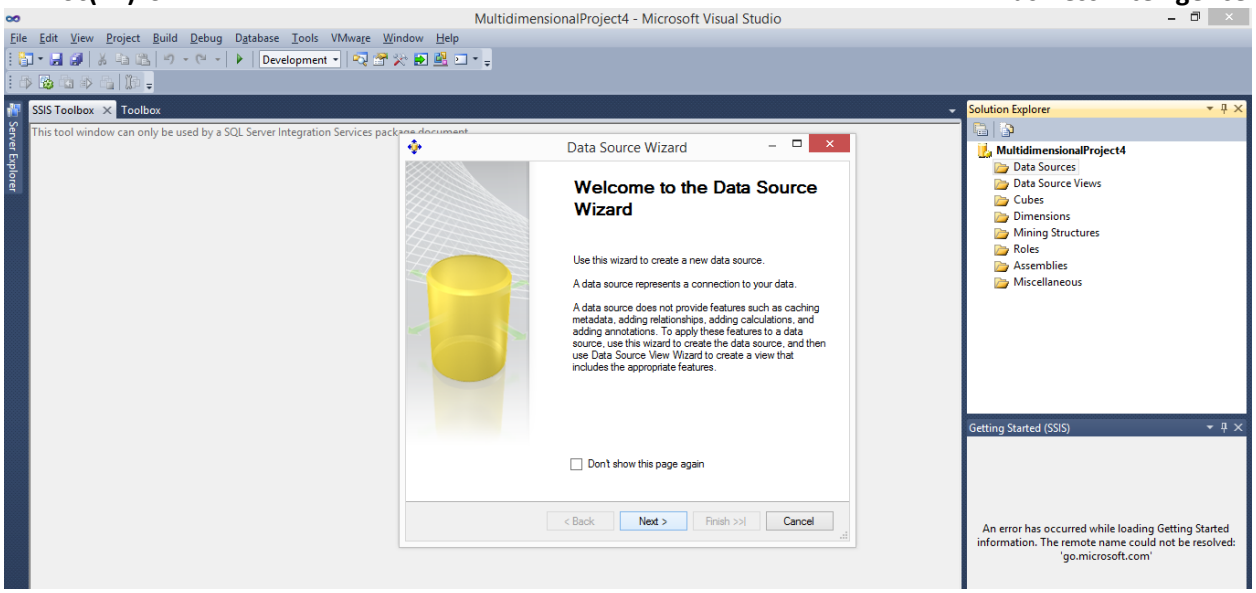


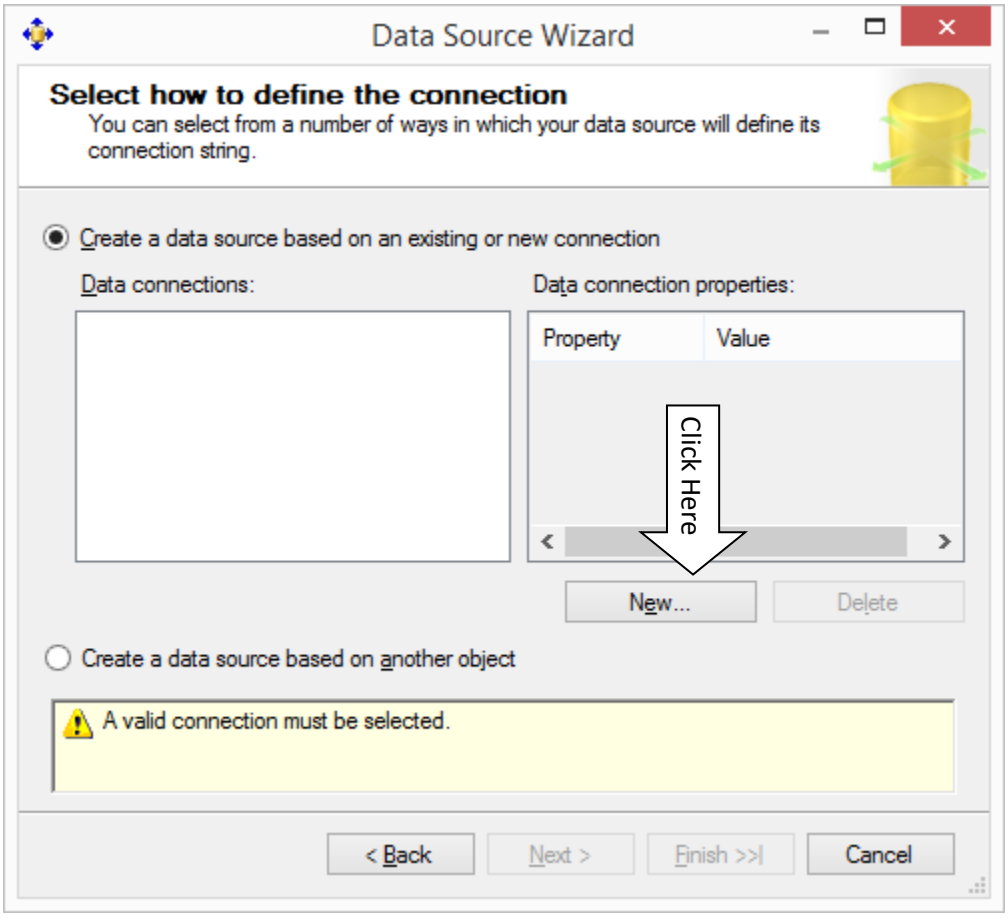


Step1 : Create a Data Source For Staging Area.

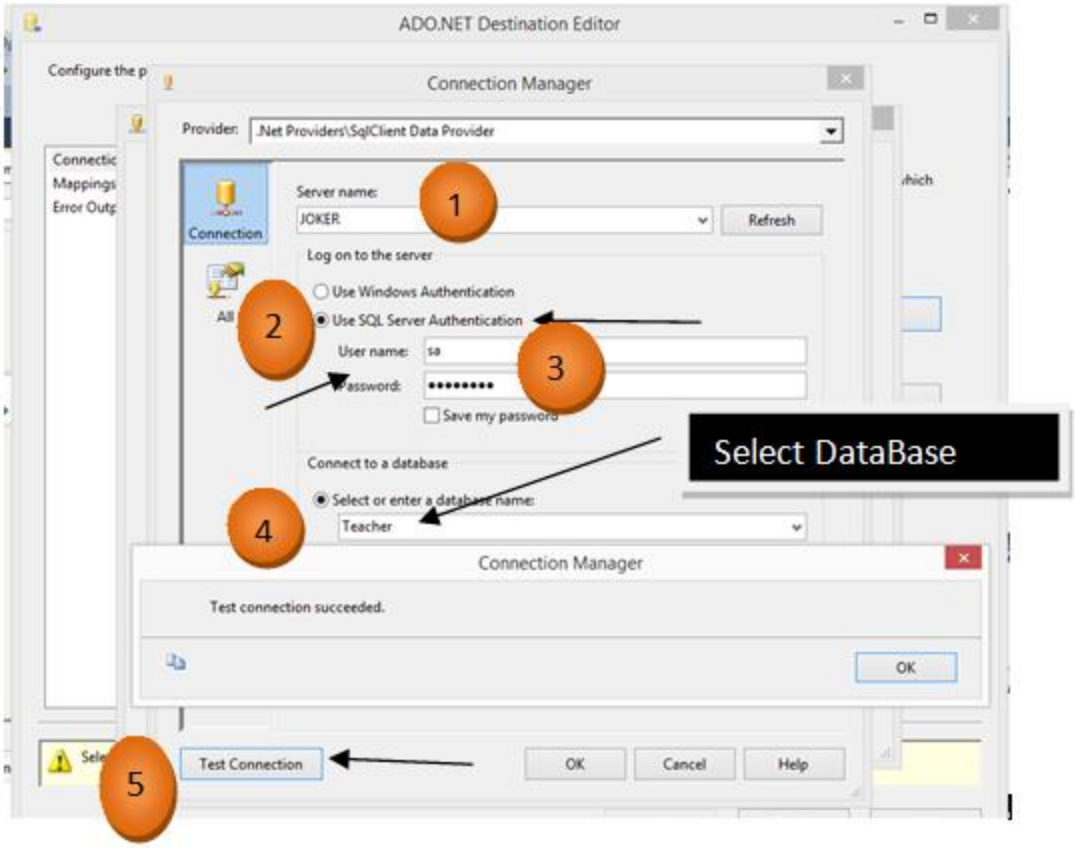
Right Click on Data Source Option and Select New Data Source from Solution Explorer as



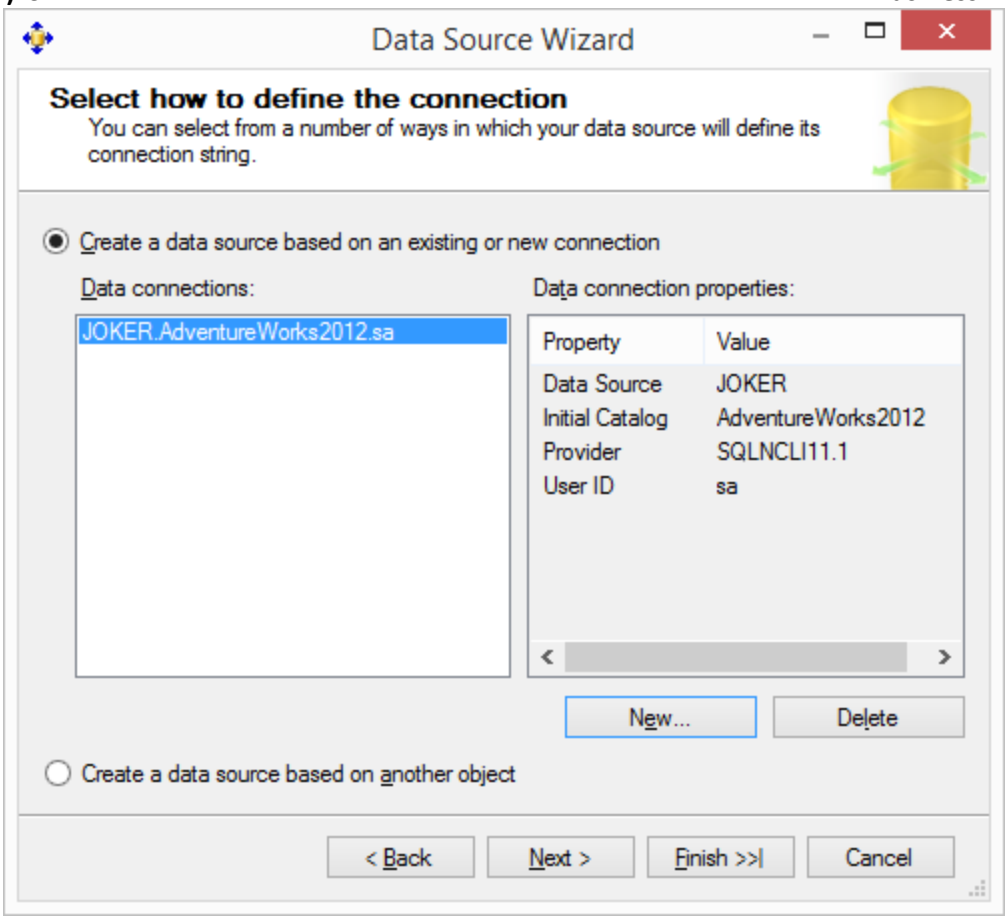

MultidimensionalProject4 - Microsoft Visual Studio
File Edit View Project Build Debug Database Tools VMware Window Help
Development
SSIS Toolbox
Toolbox
This tool window can only be used by a SQL Server Integration Services package document.
Data Source Wizard
Welcome to the Data Source Wizard
Use this wizard to create a new data source.
A data source represents a connection to your data.
A data source does not provide features such as caching metadata, adding relationships, adding calculations, and adding annotations. To apply these features to a data source, use this wizard to create the data source, and then use Data Source View Wizard to create a view that includes the appropriate features.
Don't show this page again
< Back
Next >
Finish >>|
Cancel
Solution Explorer
MultidimensionalProject4
Data Sources
Data Source Views
Cubes
Dimensions
Mining Structures
Roles
Assemblies
Miscellaneous
Getting Started (SSIS)
An error has occurred while loading Getting Started information. The remote name could not be resolved: 'go.microsoft.com'


Data Source Wizard
Select how to define the connection
You can select from a number of ways in which your data source will define its connection string.
Create a data source based on an existing or new connection
Data connections:
Data connection properties:
Property
Value
Click Here
New...
Delete
Create a data source based on another object
A valid connection must be selected.
< Back
Next >
Finish >>|
Cancel

Enter The SQL Server instance name = JOKER in this case

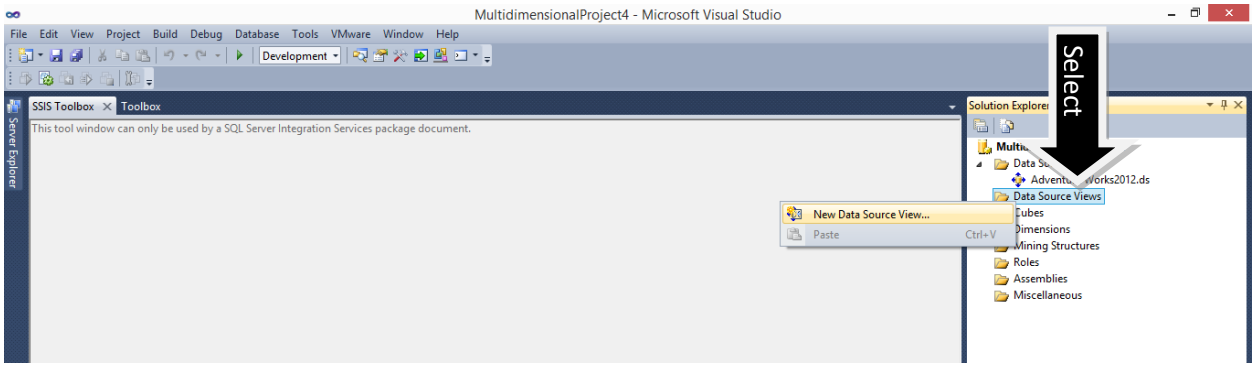


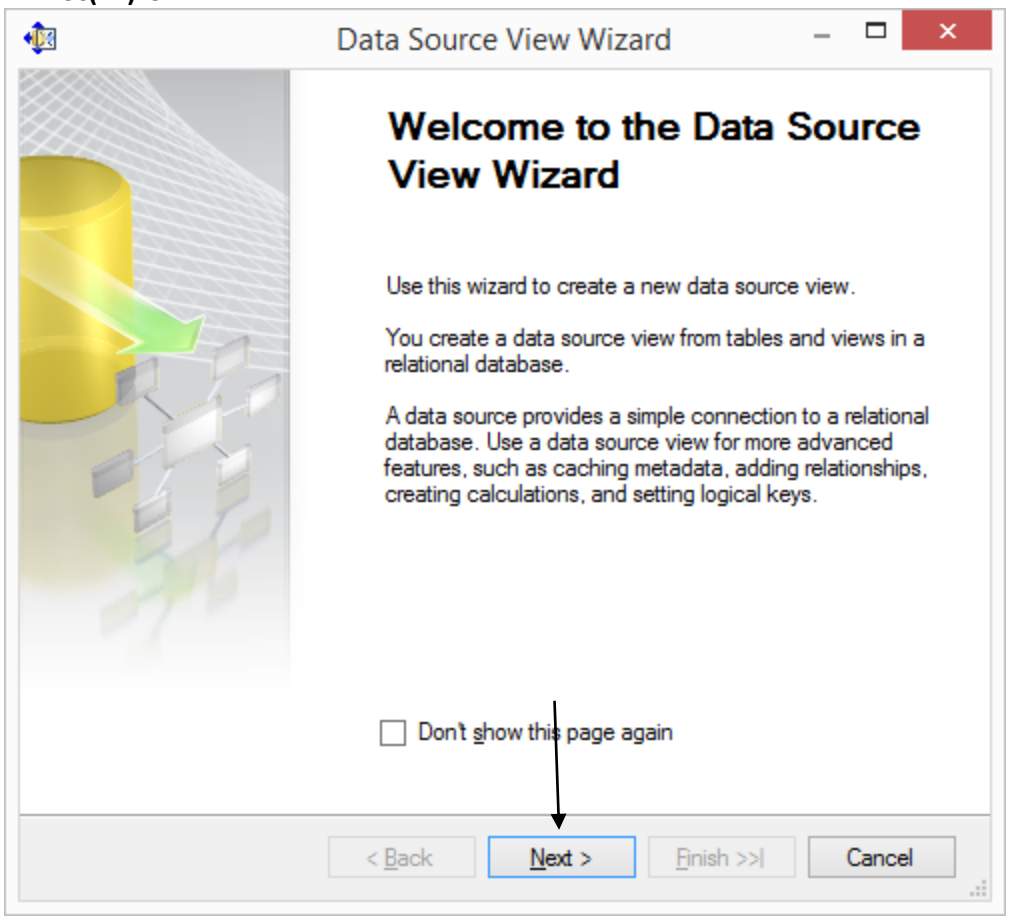
Click Ok

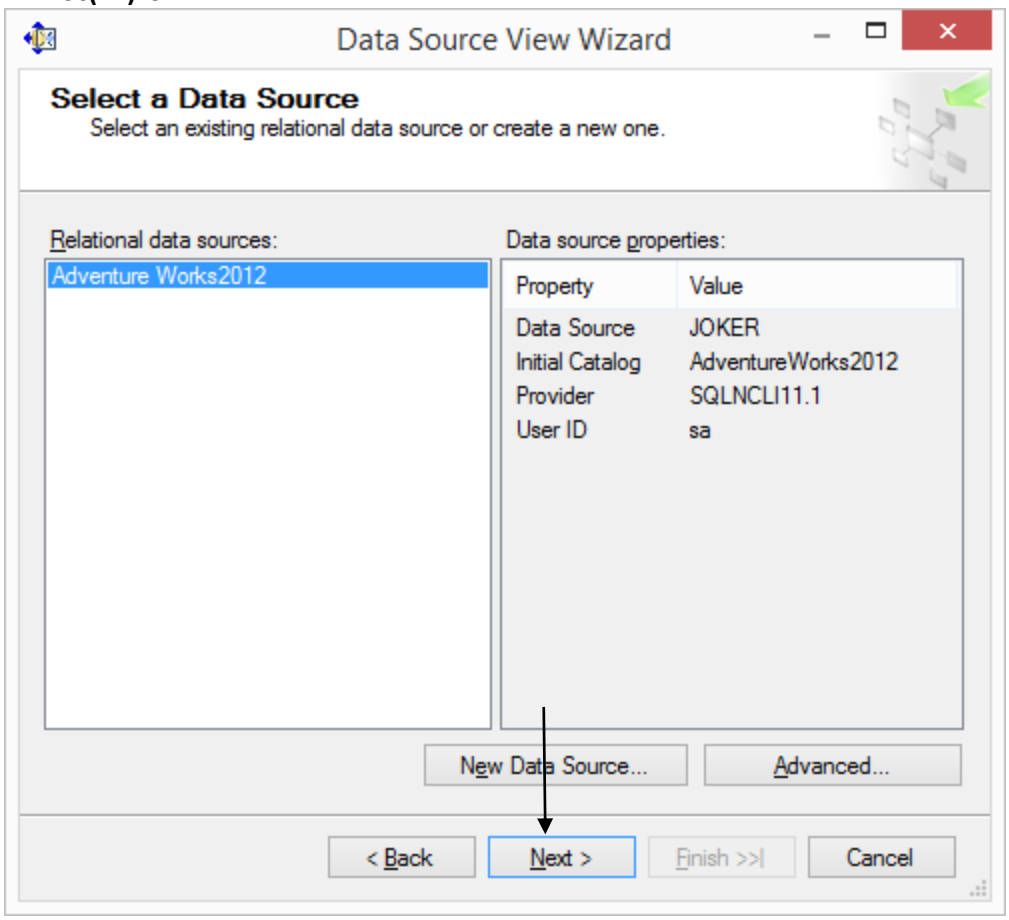


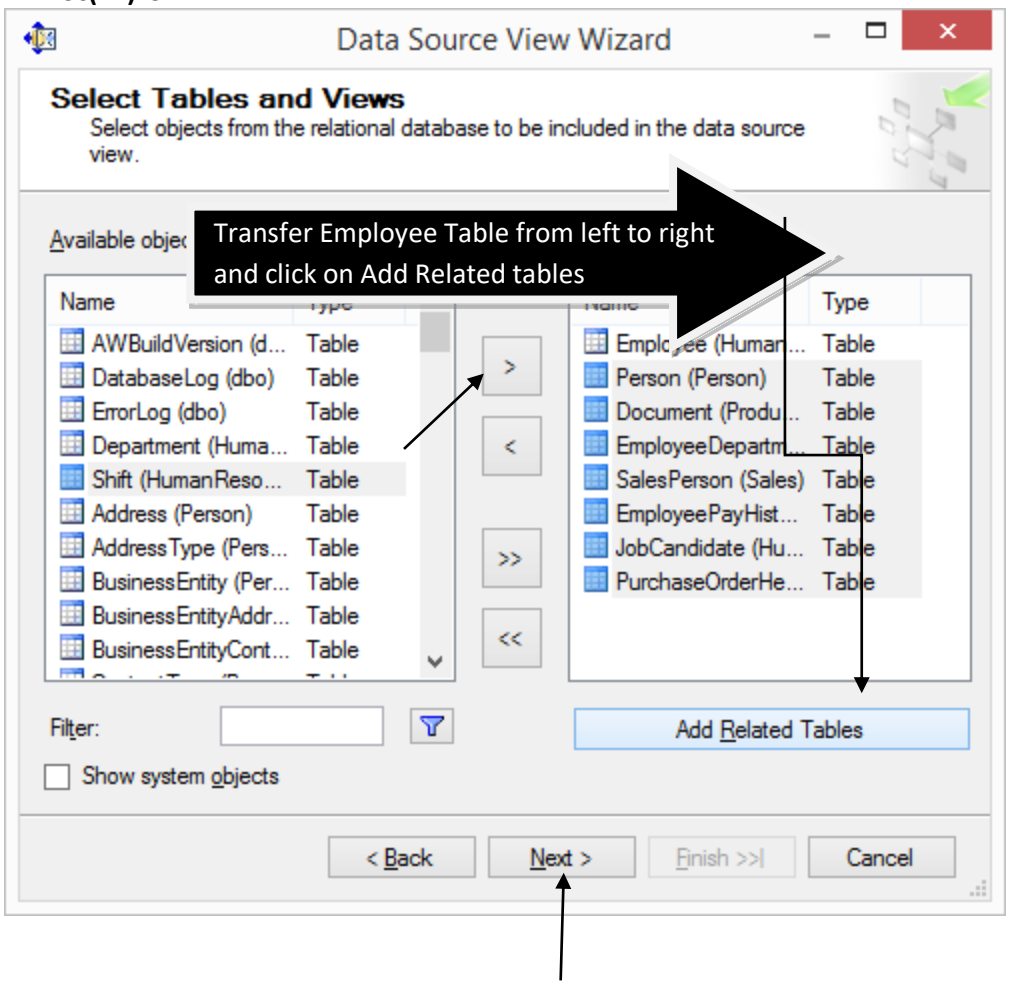
Step2: Now we will create data source View to visualize the Data Source.

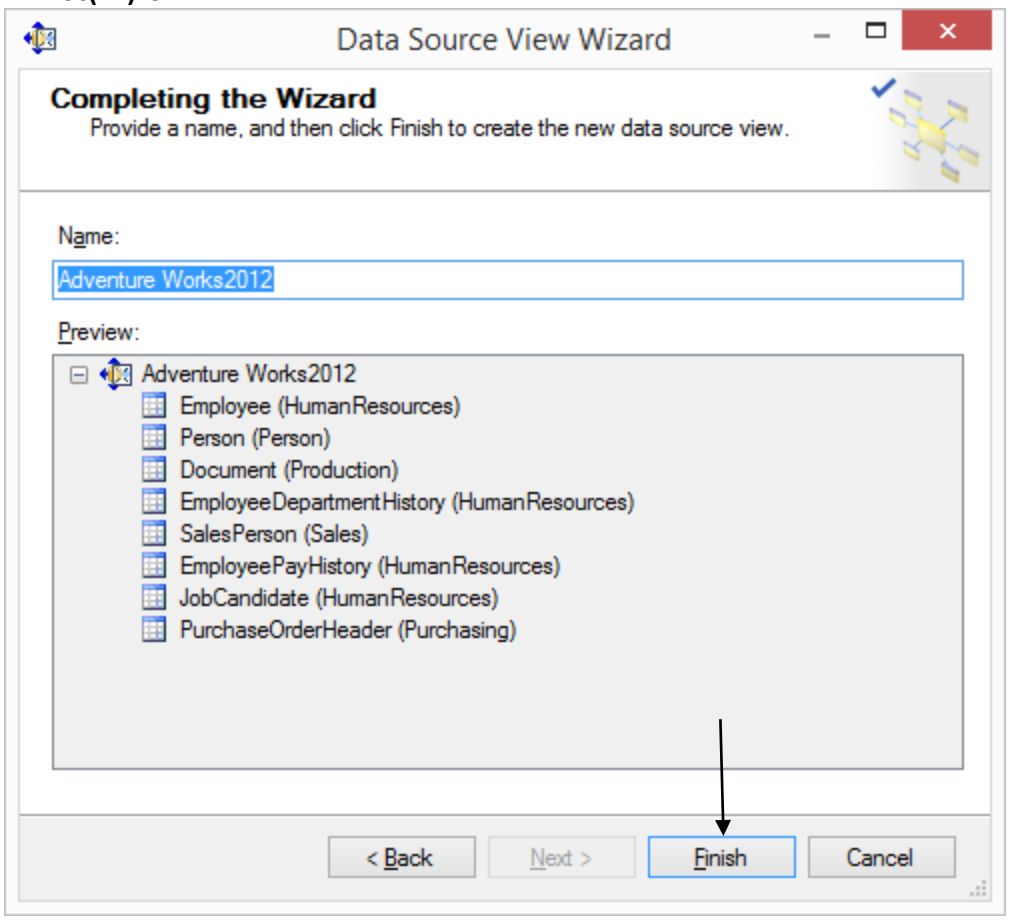
For this right click on Data Source View Option and select New Data Source View

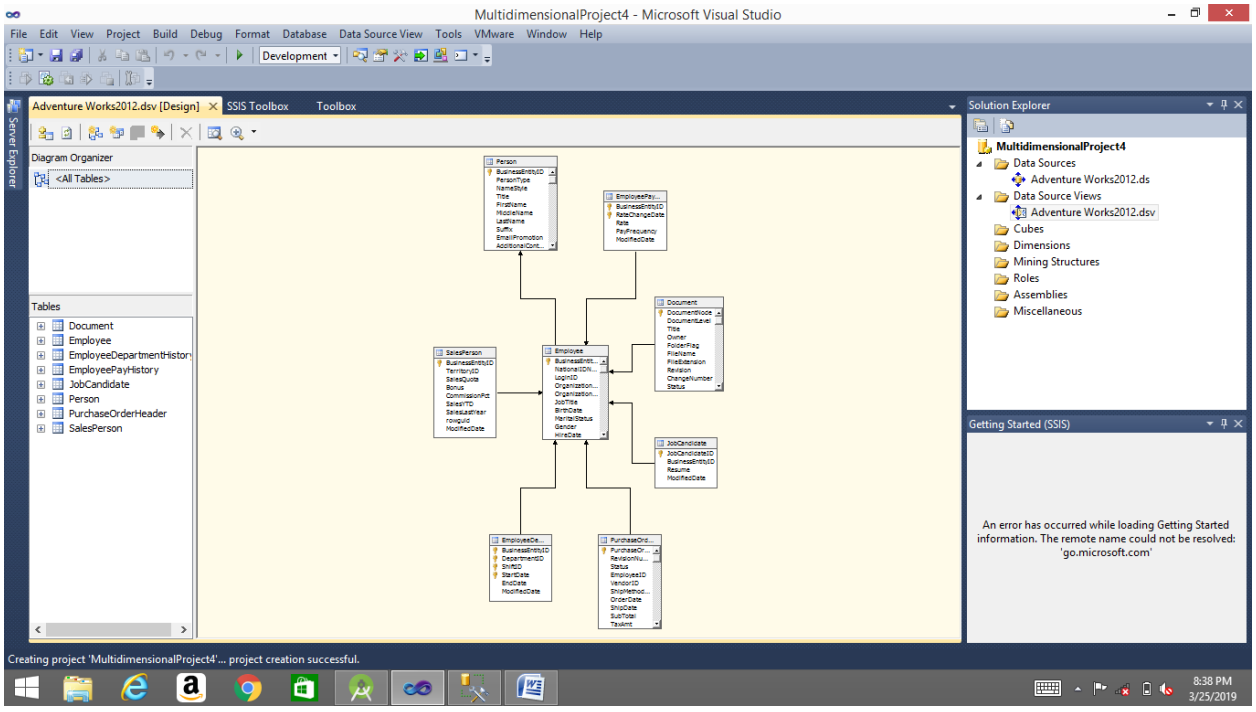



Data Source View Wizard
Welcome to the Data Source View Wizard
Use this wizard to create a new data source view.
You create a data source view from tables and views in a relational database.
A data source provides a simple connection to a relational database. Use a data source view for more advanced features, such as caching metadata, adding relationships, creating calculations, and setting logical keys.
Don't show this page again
< Back
Next >
Finish >>|
Cancel


Data Source View Wizard
Select a Data Source
Select an existing relational data source or create a new one.
Relational data sources:
Adventure Works2012
Data source properties:
Property
Value
Data Source
JOKER
Initial Catalog
AdventureWorks2012
Provider
SQLNCLI11.1
User ID
sa
New Data Source...
Advanced...
< Back
Next >
Finish >>|
Cancel


Data Source View Wizard
Select Tables and Views
Select objects from the relational database to be included in the data source view.
Available objec
Transfer Employee Table from left to right and click on Add Related tables
Name
Type
AWBuildVersion (d... Table
DatabaseLog (dbo) Table
ErrorLog (dbo) Table
Department (Huma... Table
Shift (HumanReso... Table
Address (Person) Table
AddressType (Pers... Table
BusinessEntity (Per... Table
BusinessEntityAddr... Table
BusinessEntityCont... Table
Person (Person) Table
Document (Produ... Table
EmployeeDepartm... Table
SalesPerson (Sales) Table
EmployeePayHist... Table
JobCandidate (Hu... Table
PurchaseOrderHe... Table
>
<
>>
<<
Filter:
Add Related Tables
Show system objects
< Back
Next >
Finish >>|
Cancel





This is a Staging area showing in START SCHEMA.

Practical No.3(a) done.

Practical No.3(b). Create the cube with suitable dimension and fact tables based on ROLAP, MOLAP and HOLAP model.

Dimension Table

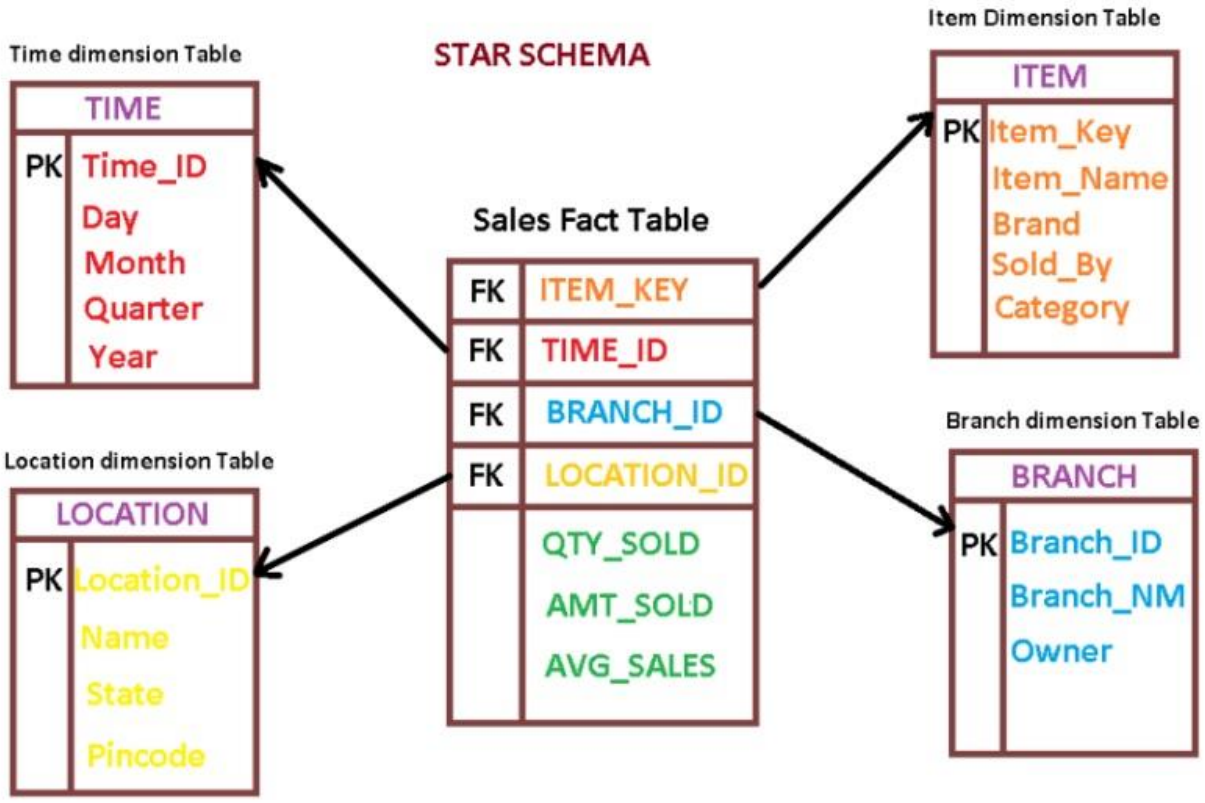
A Dimension Table is a table in a star schema of a data warehouse. Data warehouses are built using dimensional data models which consist of fact and dimension tables. Dimension tables are used to describe dimensions; they contain dimension keys, values and attributes.

Fact Table

A fact table is found at the center of a star schema or snowflake schema surrounded by dimension tables. A fact table consists of facts of a particular business process e.g., sales revenue by month by product. Facts are also known as measurements or metrics. A fact table record captures a measurement or a metric.

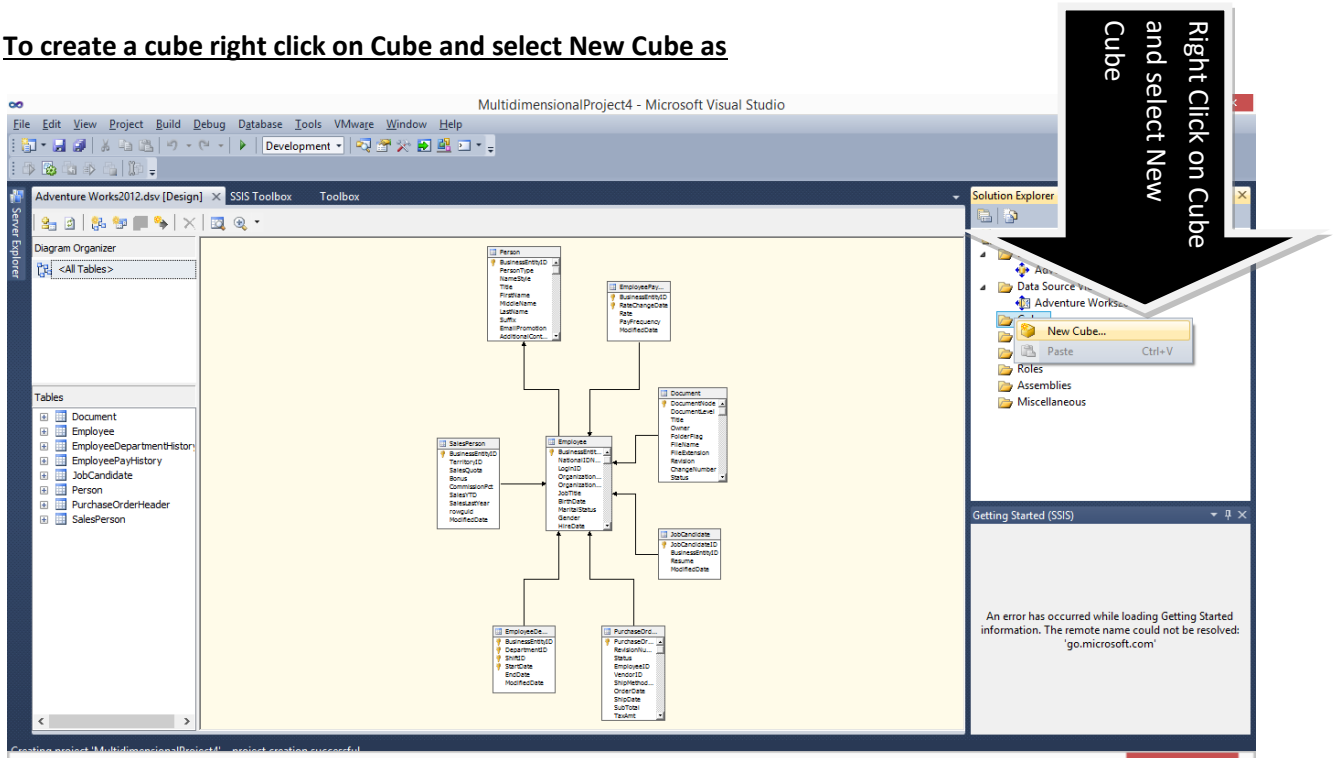
Cube

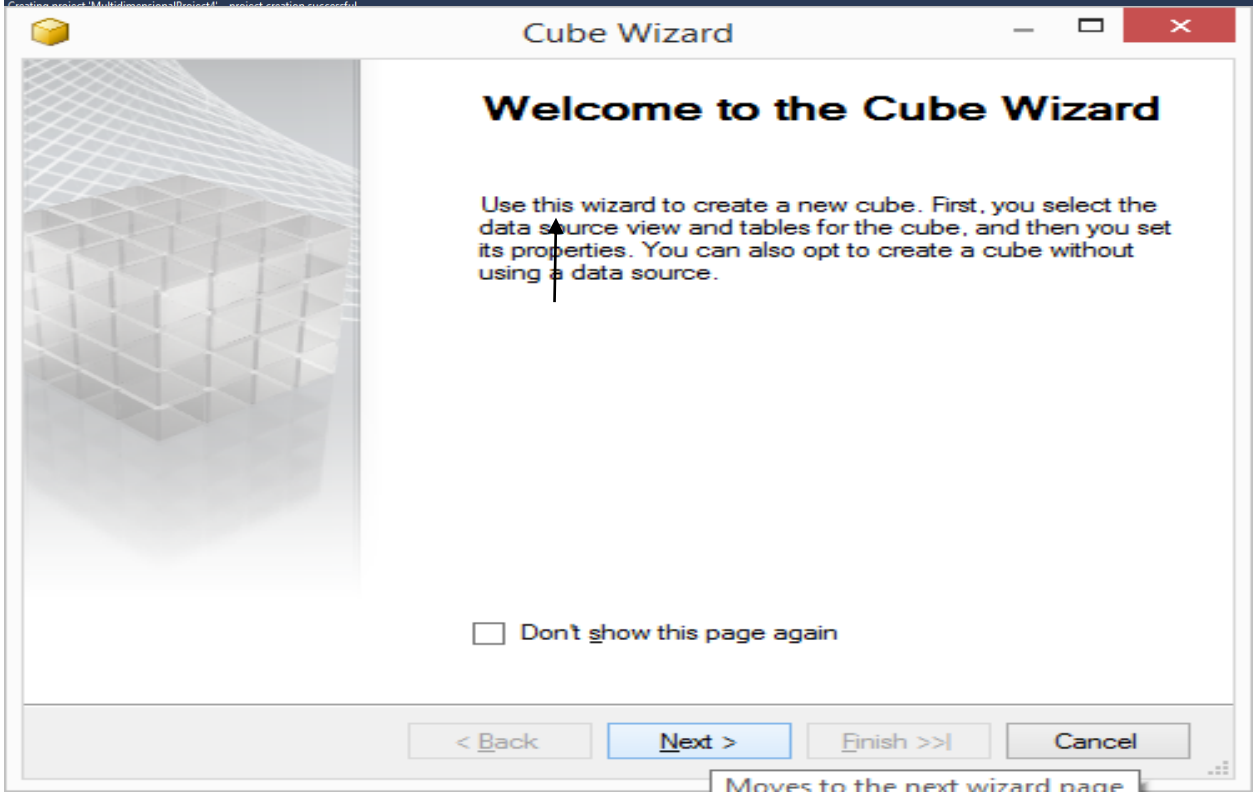
Cubes are data processing units composed of fact tables and dimensions from the data warehouse. They provide multidimensional views of data, querying and analytical capabilities to clients.

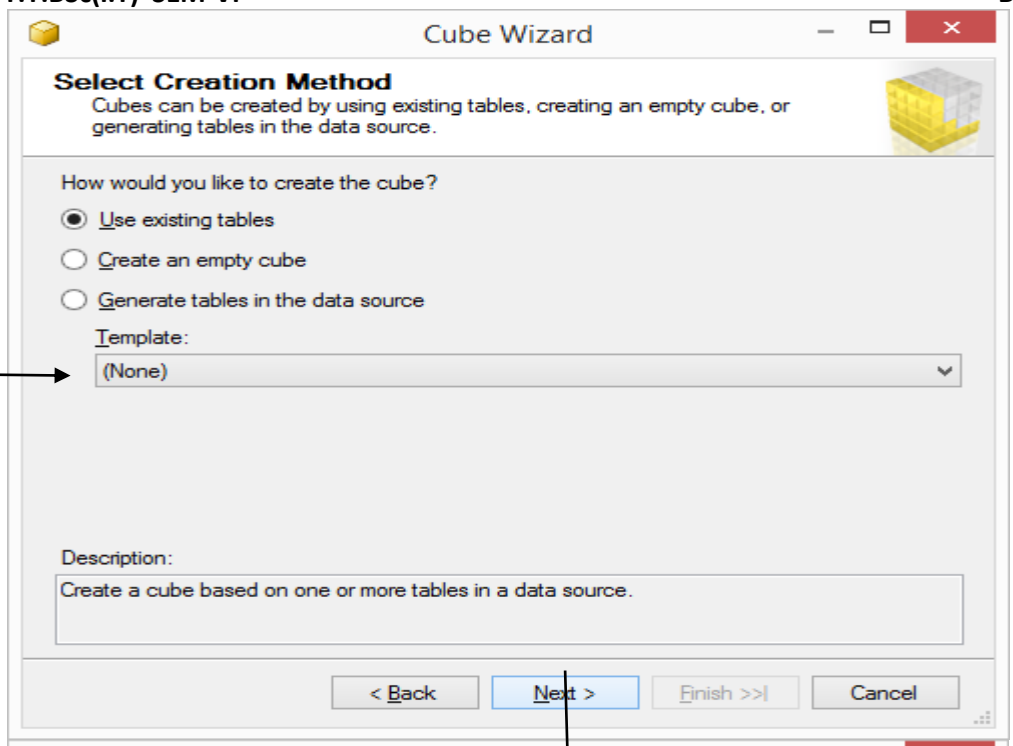


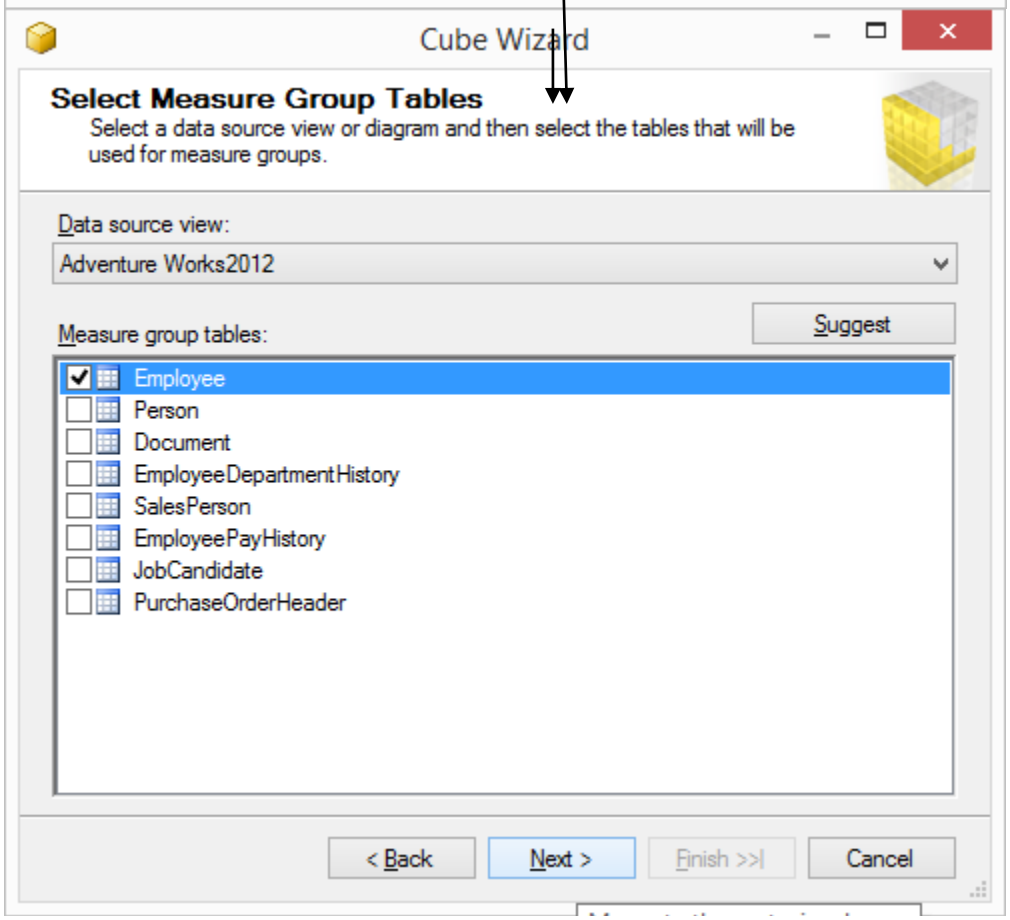
Creating a Cube in SSDT

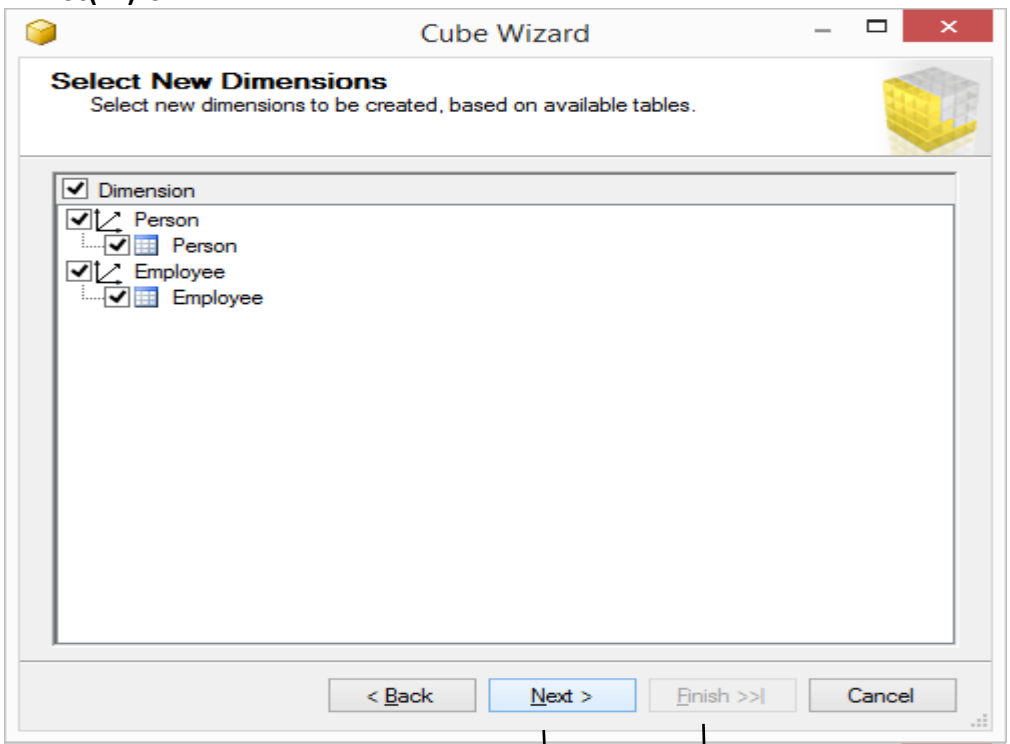
To create a cube right click on Cube and select New Cube as

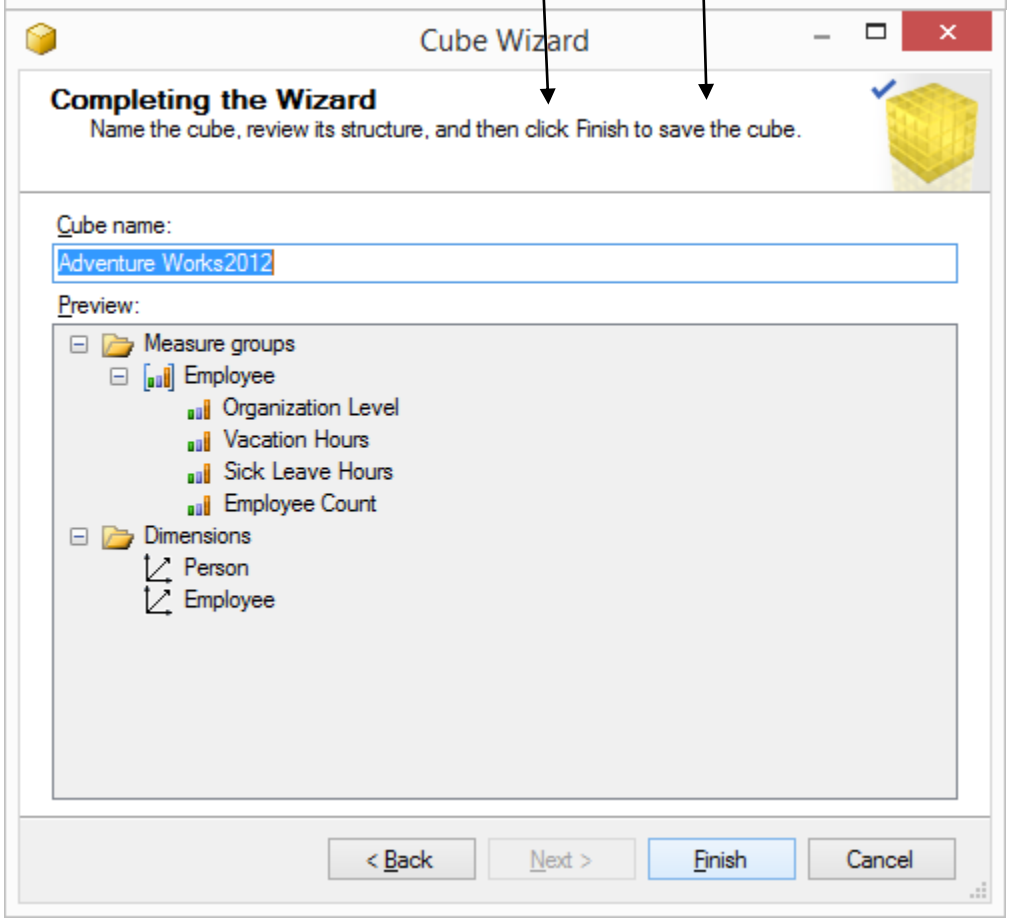


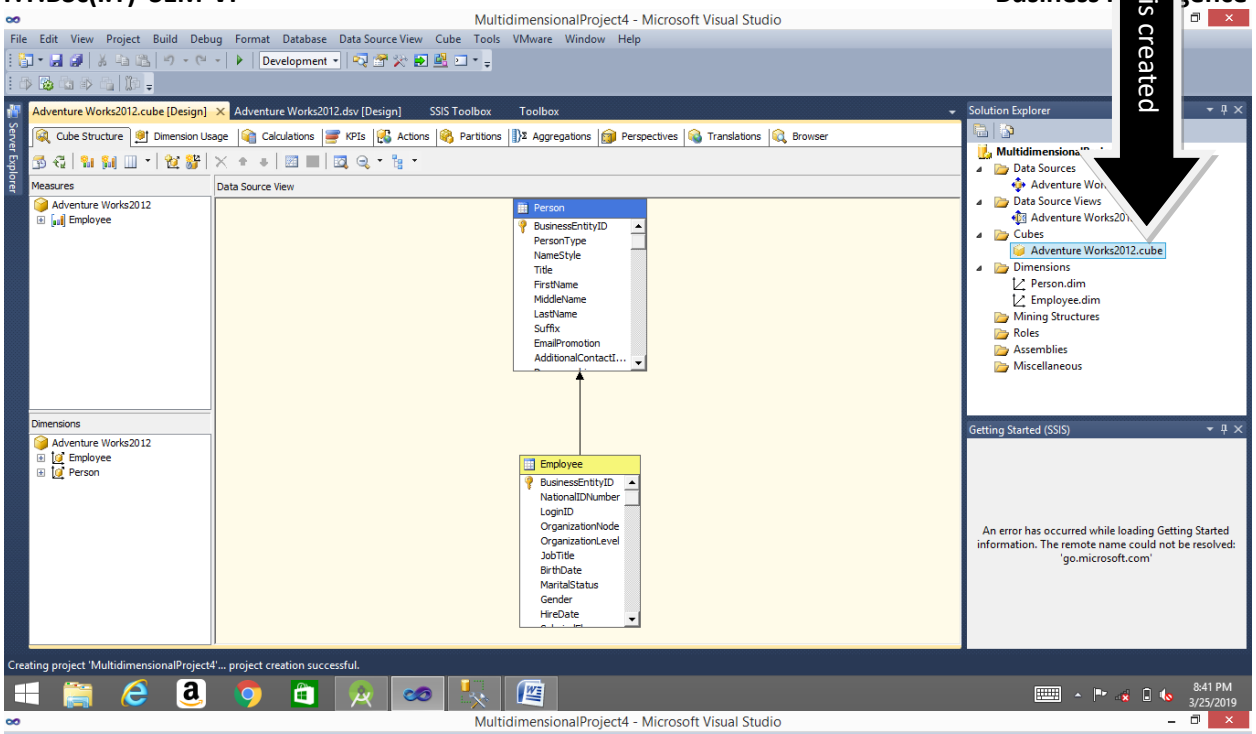


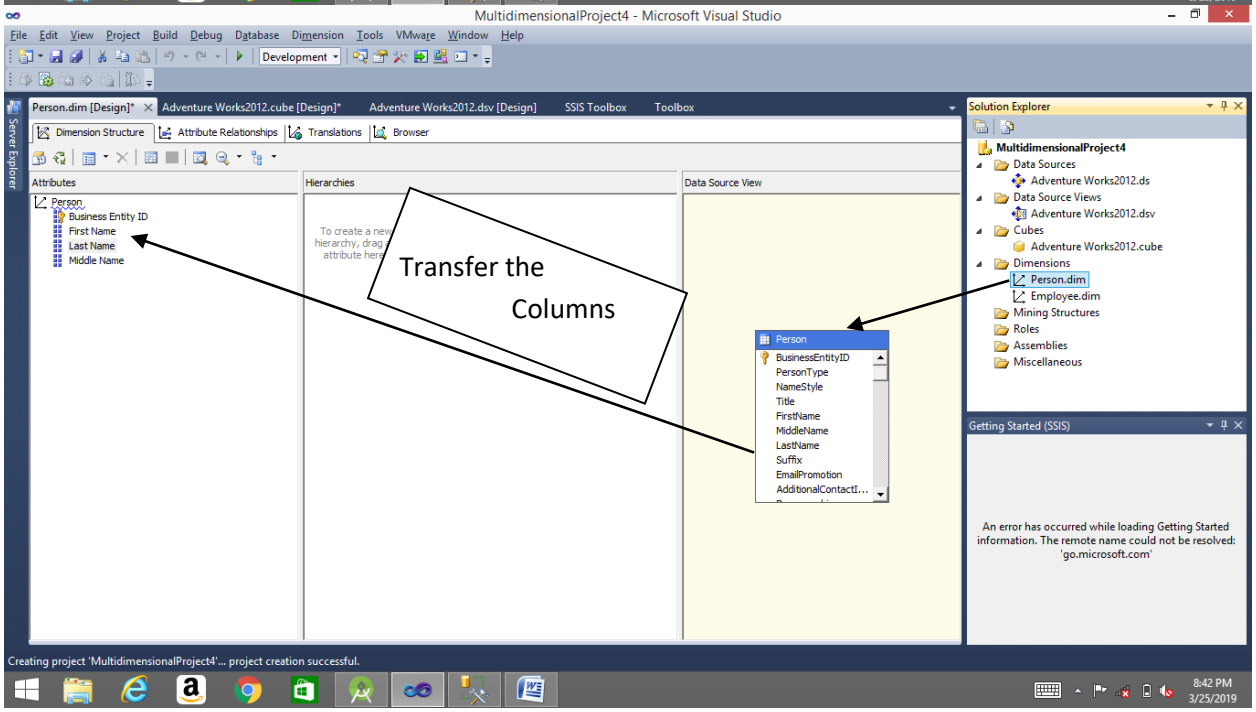

Cube Wizard
Select Creation Method
Cubes can be created by using existing tables, creating an empty cube, or generating tables in the data source.
How would you like to create the cube?
Use existing tables
Create an empty cube
Generate tables in the data source
Template:
(None)
Description:
Create a cube based on one or more tables in a data source.
< Back
Next >
Finish >>|
Cancel

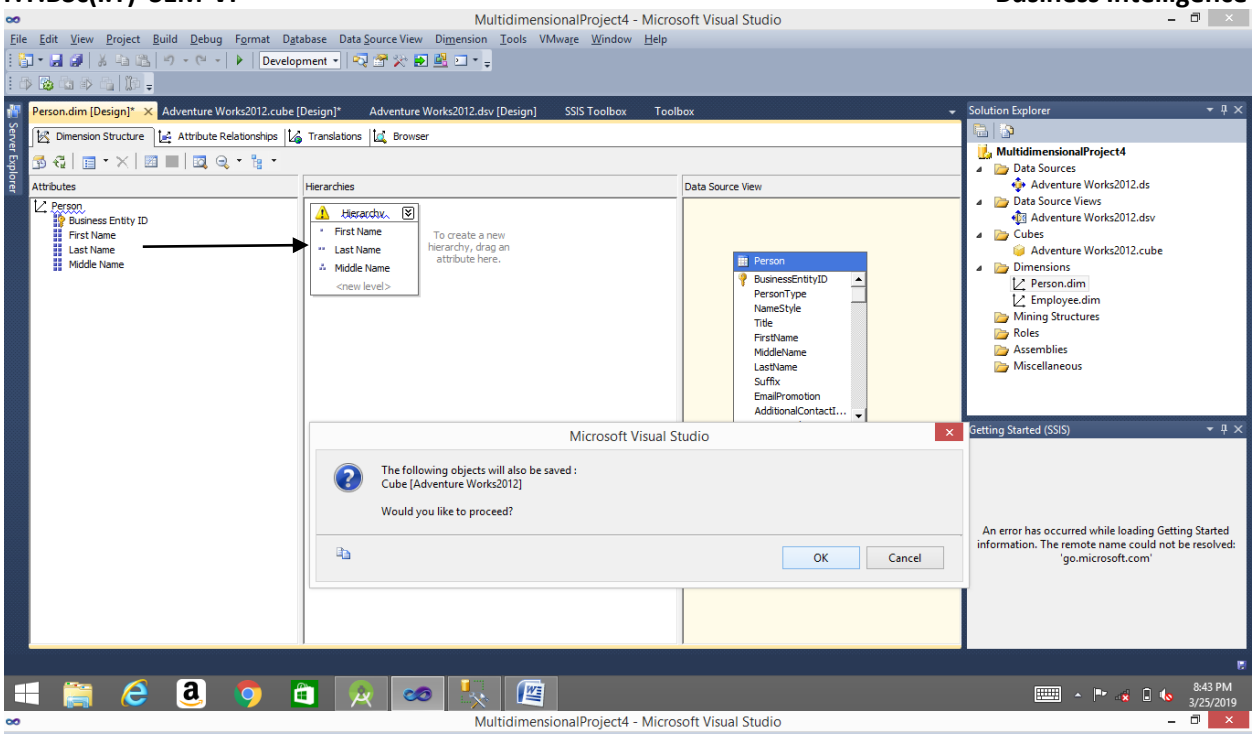

Cube Wizard
Select Measure Group Tables
Select a data source view or diagram and then select the tables that will be used for measure groups.
Data source view:
Adventure Works2012
Suggest
Measure group tables:
Employee
Person
Document
EmployeeDepartmentHistory
SalesPerson
EmployeePayHistory
JobCandidate
PurchaseOrderHeader
< Back
Next >
Finish >>|
Cancel

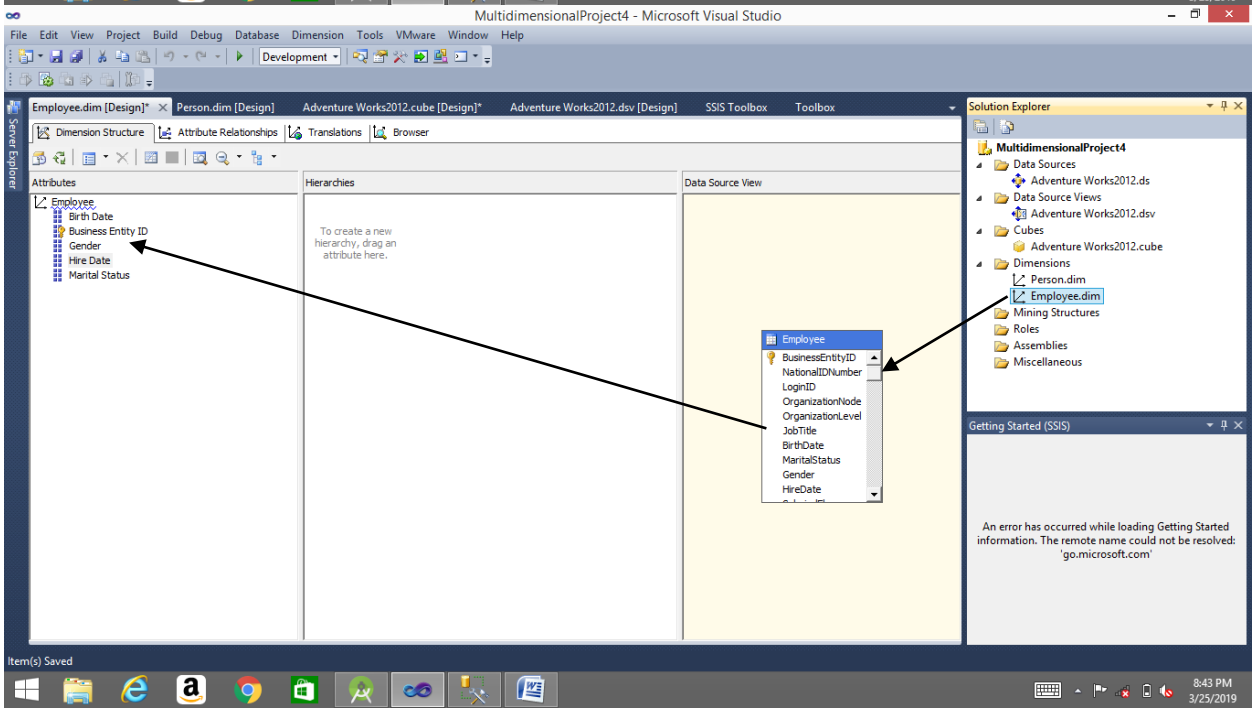

Cube Wizard
Select New Dimensions
Select new dimensions to be created, based on available tables.
Dimension
Person
Person
Employee
Employee
< Back
Next >
Finish >>|
Cancel

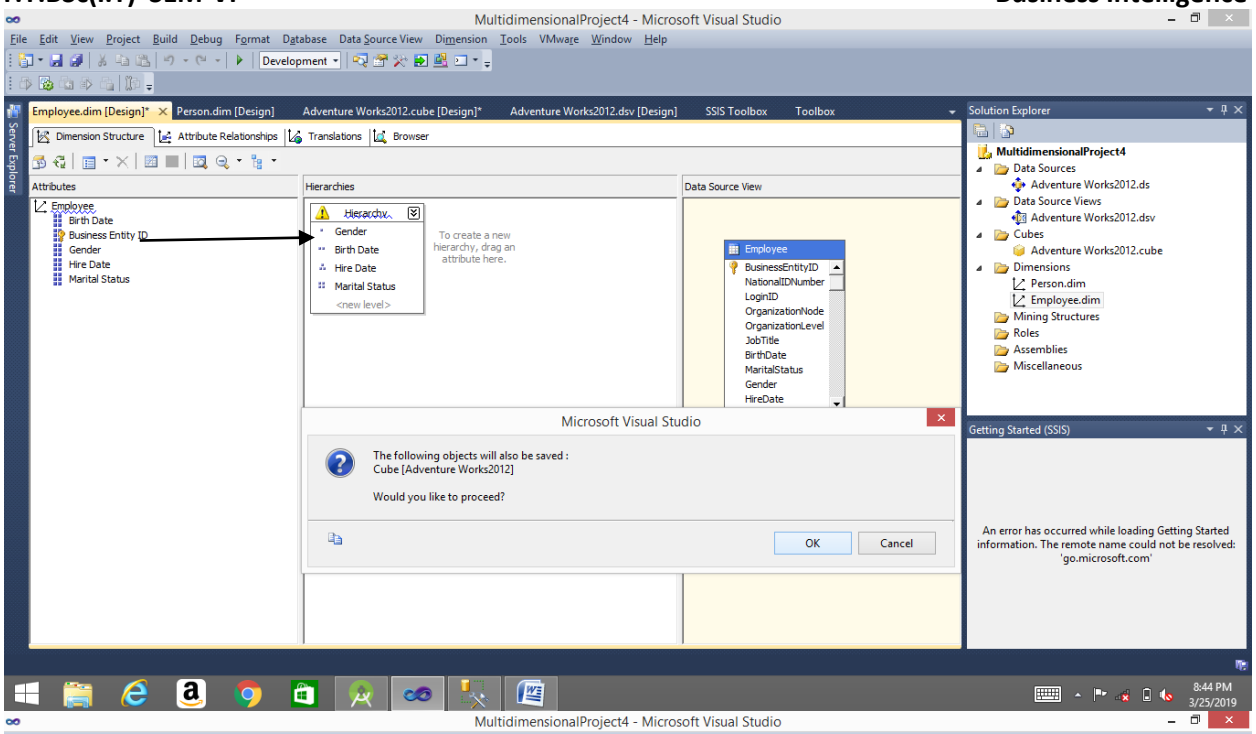

Cube Wizard
Completing the Wizard
Name the cube, review its structure, and then click Finish to save the cube.
Cube name:
Adventure Works2012
Preview:
Measure groups
Employee
Organization Level
Vacation Hours
Sick Leave Hours
Employee Count
Dimensions
Person
Employee
< Back
Next >
Finish
Cancel

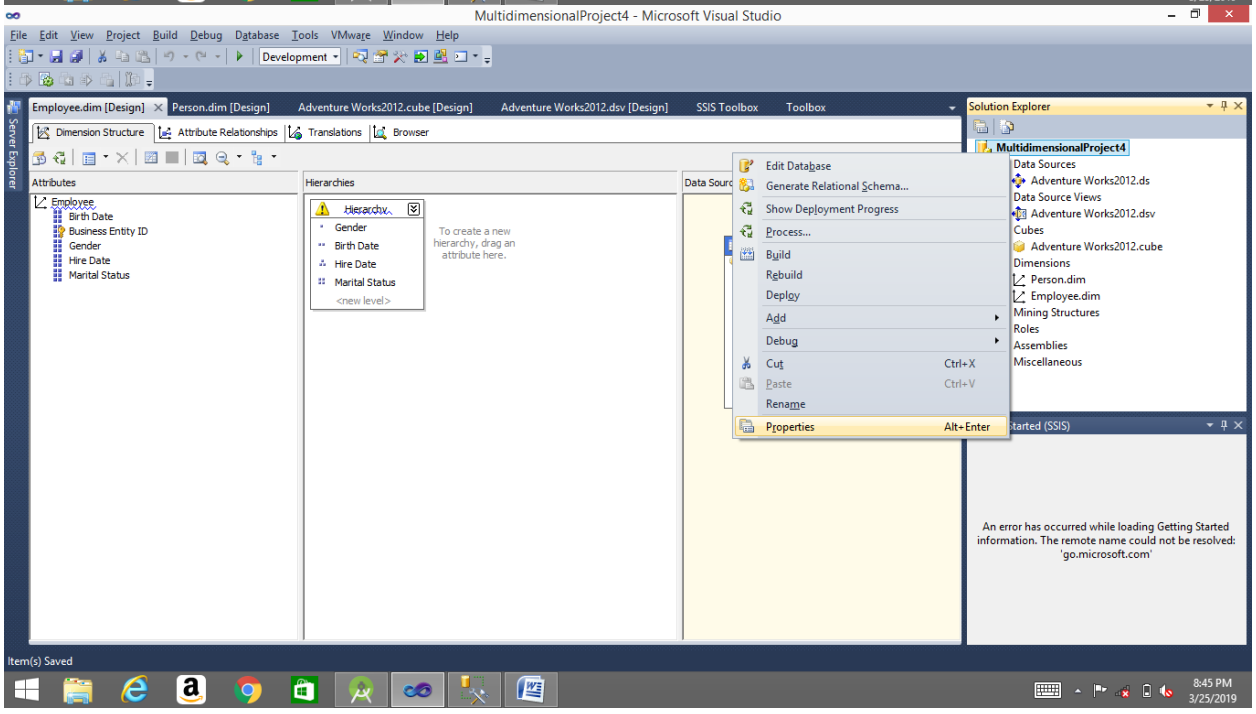

Cube is created
MultidimensionalProject4 - Microsoft Visual Studio
Adventure Works2012.cube [Design]
Adventure Works2012.dsv [Design]
SSIS Toolbox
Toolbox
Cube Structure
Dimension Usage
Calculations
KPIs
Actions
Partitions
Aggregations
Perspectives
Translations
Browser
Measures
Adventure Works2012
Employee
Data Source View
Person
BusinessEntityID
PersonType
NameStyle
Title
FirstName
MiddleName
LastName
Suffix
EmailPromotion
Employee
NationalIDNumber
LoginID
OrganizationNode
OrganizationLevel
JobTitle
BirthDate
MaritalStatus
Gender
HireDate
Dimensions
Person
Solution Explorer
Data Sources
Data Source Views
Cubes
Adventure Works2012.cube
Dimensions
Person.dim
Employee.dim
Mining Structures
Roles
Assemblies
Miscellaneous
Getting Started (SSIS)
An error has occurred while loading Getting Started information. The remote name could not be resolved: 'go.microsoft.com'
Creating project 'MultidimensionalProject4'... project creation successful.
8:41 PM
3/25/2019

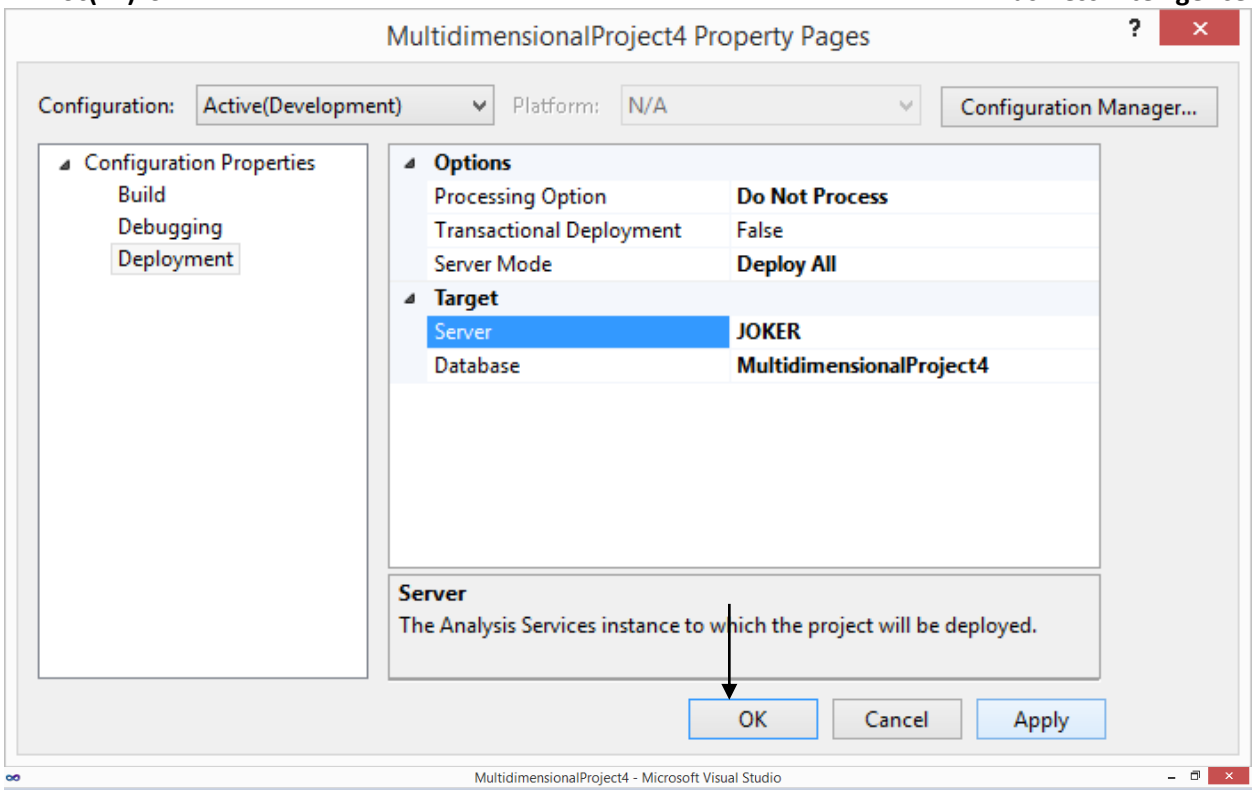

MultidimensionalProject4 - Microsoft Visual Studio
Person.dim [Design]*
Adventure Works2012.cube [Design]*
Adventure Works2012.dsv [Design]
SSIS Toolbox
Toolbox
Dimension Structure
Attribute Relationships
Translations
Browser
Attributes
Person
Business Entity ID
First Name
Last Name
Middle Name
Hierarchies
Data Source View
Transfer the Columns
Person
BusinessEntityID
PersonType
NameStyle
Title
FirstName
MiddleName
LastName
Suffix
EmailPromotion
Solution Explorer
MultidimensionalProject4
Data Sources
Adventure Works2012.ds
Data Source Views
Adventure Works2012.dsv
Cubes
Adventure Works2012.cube
Dimensions
Person.dim
Employee.dim
Mining Structures
Roles
Assemblies
Miscellaneous
Getting Started (SSIS)
An error has occurred while loading Getting Started information. The remote name could not be resolved: 'go.microsoft.com'
Creating project 'MultidimensionalProject4'... project creation successful.
8:42 PM
3/25/2019

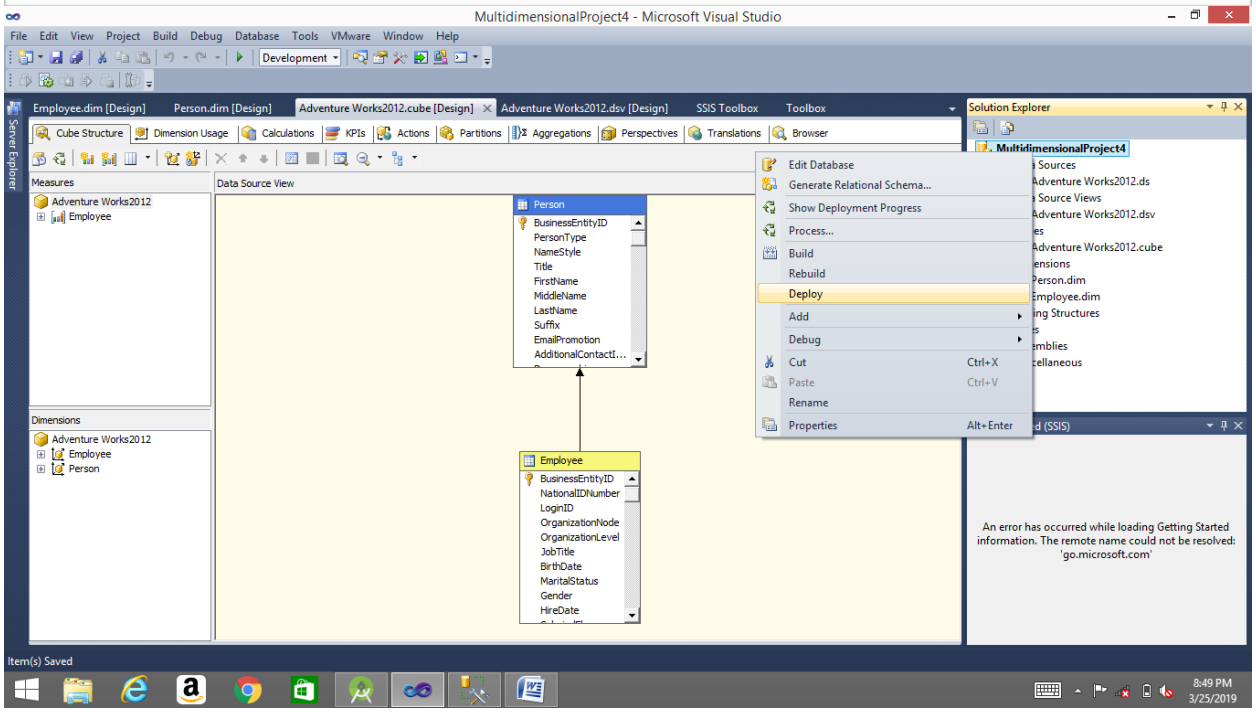

MultidimensionalProject4 - Microsoft Visual Studio
File Edit View Project Build Debug Format Database Data Source View Dimension Tools VMware Window Help
Development
Person.dim [Design]*
Adventure Works2012.cube [Design]*
Adventure Works2012.dsv [Design]
SSIS Toolbox
Toolbox
Dimension Structure
Attribute Relationships
Translations
Browser
Attributes
Person
Business Entity ID
First Name
Last Name
Middle Name
Hierarchies
Hierarchy
First Name
Last Name
Middle Name
<new level>
To create a new hierarchy, drag an attribute here.
Data Source View
Person
BusinessEntityID
PersonType
NameStyle
Title
FirstName
MiddleName
LastName
Suffix
EmailPromotion
AdditionalContactI...
Solution Explorer
MultidimensionalProject4
Data Sources
Adventure Works2012.ds
Data Source Views
Adventure Works2012.dsv
Cubes
Adventure Works2012.cube
Dimensions
Person.dim
Employee.dim
Mining Structures
Roles
Assemblies
Miscellaneous
Getting Started (SSIS)
An error has occurred while loading Getting Started information. The remote name could not be resolved: 'go.microsoft.com'
Microsoft Visual Studio
The following objects will also be saved :
Cube [Adventure Works2012]
Would you like to proceed?
OK
Cancel
8:43 PM
3/25/2019

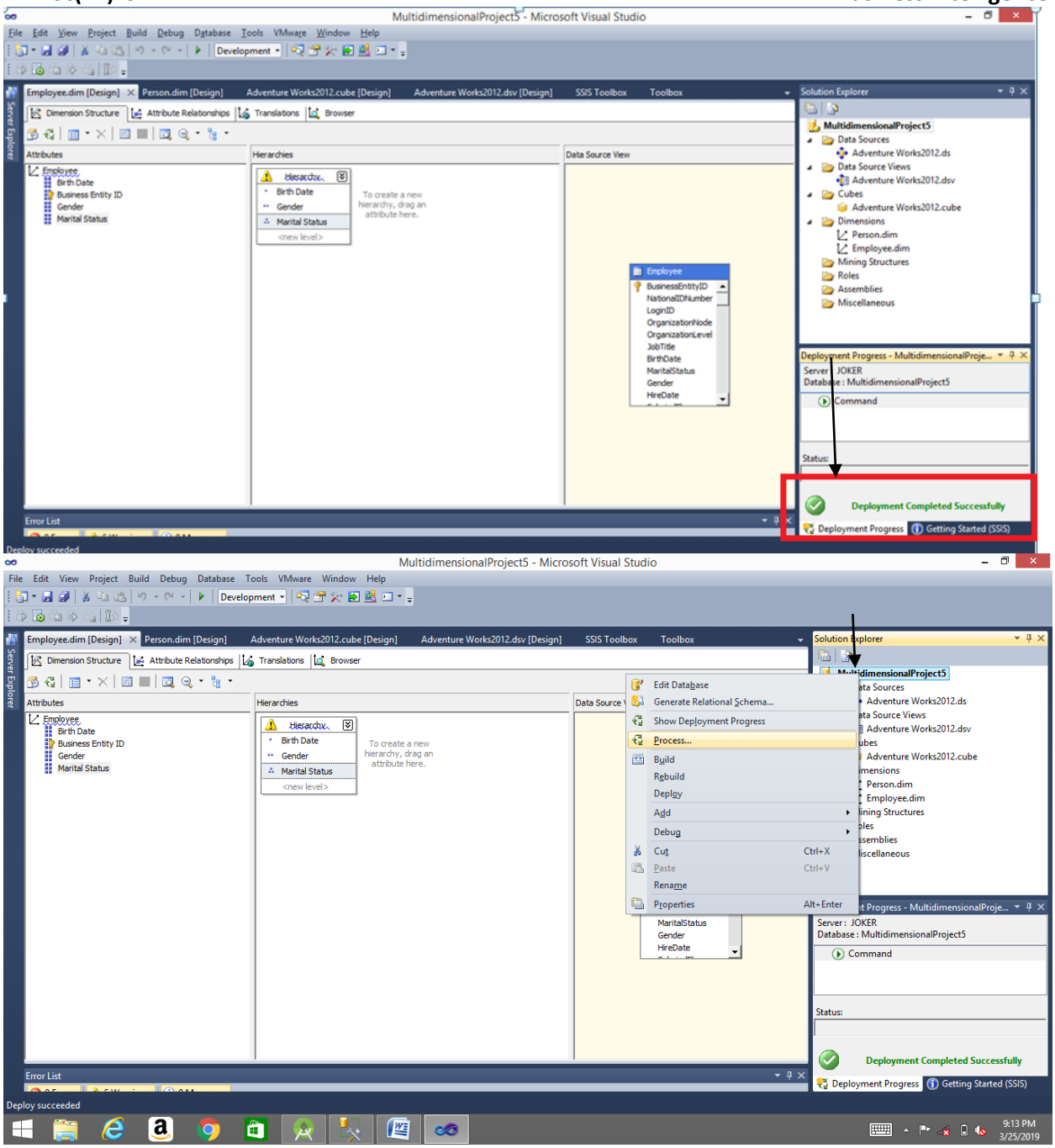

MultidimensionalProject4 - Microsoft Visual Studio
File Edit View Project Build Debug Database Dimension Tools VMware Window Help
Development
Employee.dim [Design]*
Person.dim [Design]
Adventure Works2012.cube [Design]*
Adventure Works2012.dsv [Design]
SSIS Toolbox
Toolbox
Dimension Structure
Attribute Relationships
Translations
Browser
Attributes
Employee
Birth Date
Business Entity ID
Gender
Hire Date
Marital Status
Hierarchies
To create a new hierarchy, drag an attribute here.
Data Source View
Employee
BusinessEntityID
NationalIDNumber
LoginID
OrganizationNode
OrganizationLevel
JobTitle
BirthDate
MaritalStatus
Gender
HireDate
Solution Explorer
MultidimensionalProject4
Data Sources
Adventure Works2012.ds
Data Source Views
Adventure Works2012.dsv
Cubes
Adventure Works2012.cube
Dimensions
Person.dim
Employee.dim
Mining Structures
Roles
Assemblies
Miscellaneous
Getting Started (SSIS)
An error has occurred while loading Getting Started information. The remote name could not be resolved: 'go.microsoft.com'
Item(s) Saved
8:43 PM
3/25/2019

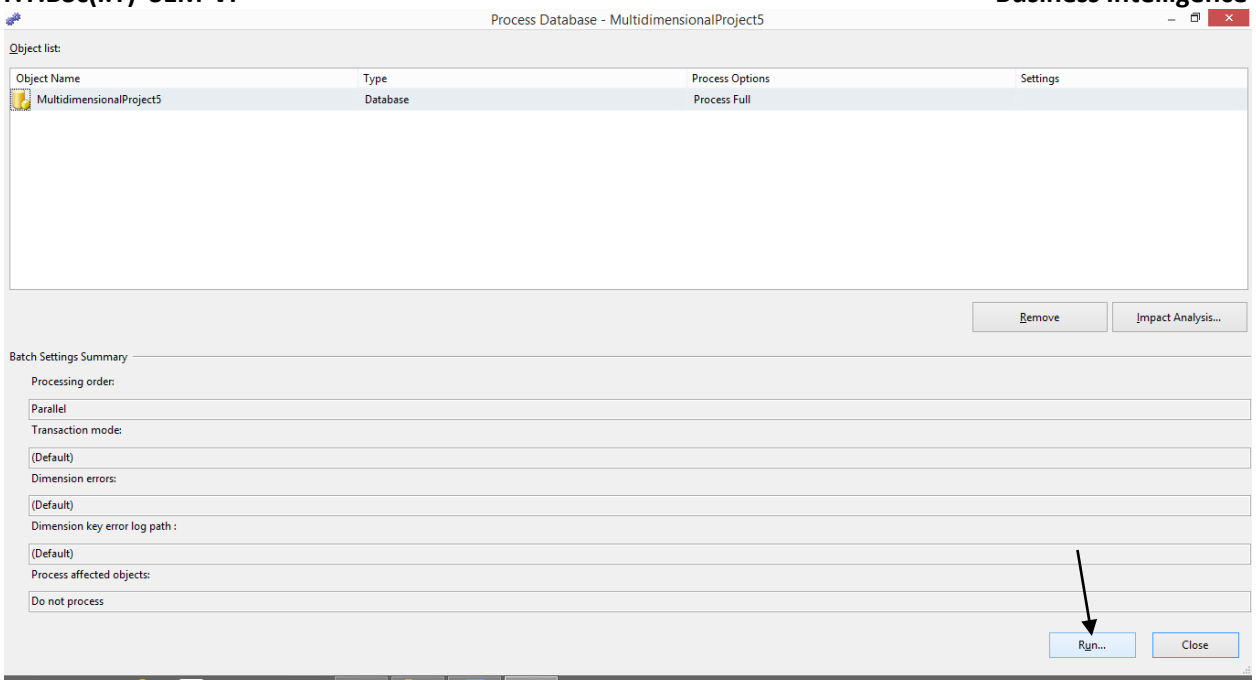

MultidimensionalProject4 - Microsoft Visual Studio
File Edit View Project Build Debug Format Database Data Source View Dimension Tools VMware Window Help
Development
Employee.dim [Design]* Person.dim [Design] Adventure Works2012.cube [Design]* Adventure Works2012.dsv [Design] SSIS Toolbox Toolbox
Dimension Structure Attribute Relationships Translations Browser
Attributes
Employee
Birth Date
Business Entity ID
Gender
Hire Date
Marital Status
Hierarchies
Hierarchy
Gender
Birth Date
Hire Date
Marital Status
<new level>
To create a new hierarchy, drag an attribute here.
Data Source View
Employee
BusinessEntityID
NationalIDNumber
LoginID
OrganizationNode
OrganizationLevel
JobTitle
BirthDate
MaritalStatus
Gender
HireDate
Solution Explorer
MultidimensionalProject4
Data Sources
Adventure Works2012.ds
Data Source Views
Adventure Works2012.dsv
Cubes
Adventure Works2012.cube
Dimensions
Person.dim
Employee.dim
Mining Structures
Roles
Assemblies
Miscellaneous
Getting Started (SSIS)
An error has occurred while loading Getting Started information. The remote name could not be resolved: 'go.microsoft.com'
Microsoft Visual Studio
The following objects will also be saved :
Cube [Adventure Works2012]
Would you like to proceed?
OK
Cancel
8:44 PM
3/25/2019

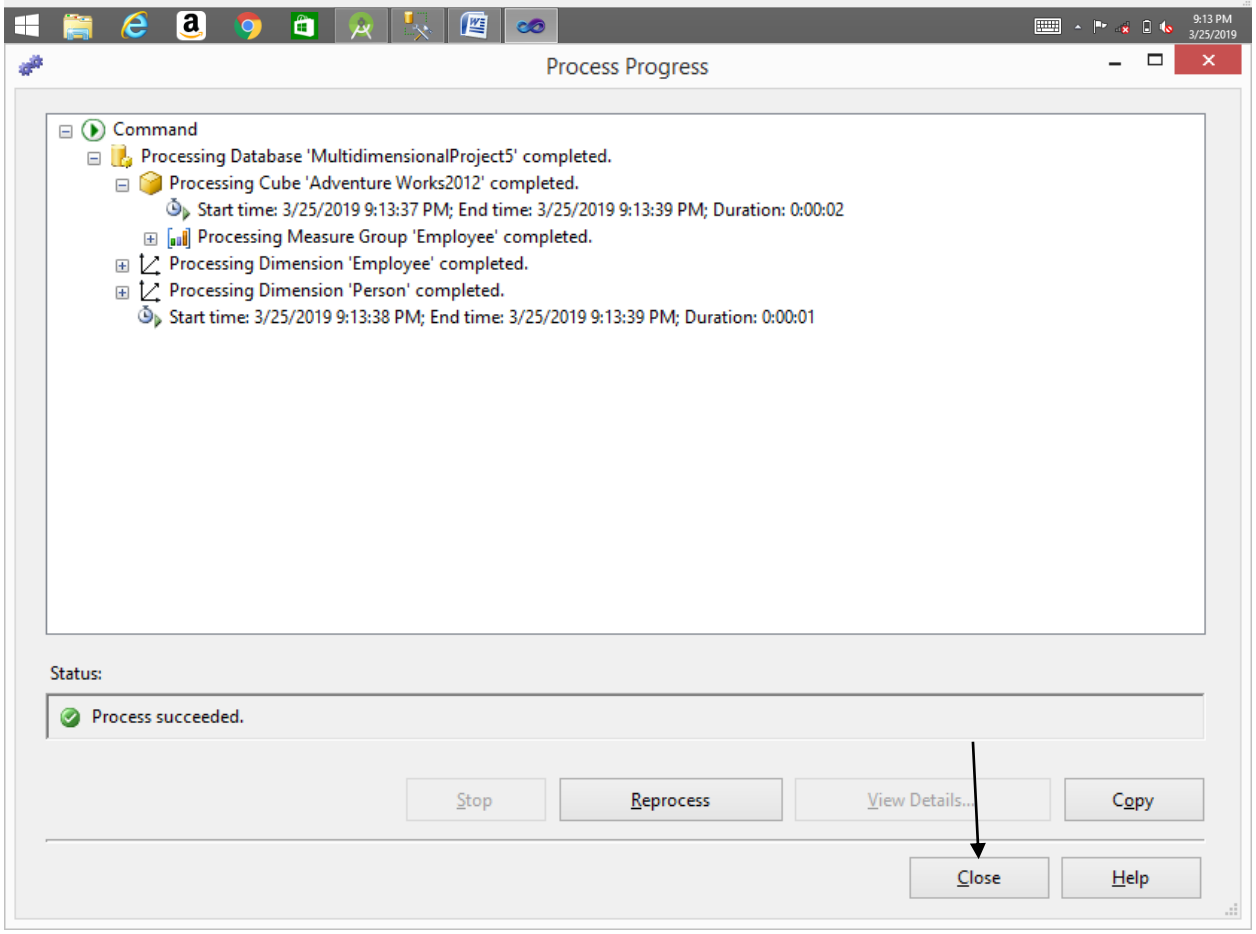

MultidimensionalProject4 - Microsoft Visual Studio
File Edit View Project Build Debug Database Tools VMware Window Help
Development
Employee.dim [Design] Person.dim [Design] Adventure Works2012.cube [Design] Adventure Works2012.dsv [Design] SSIS Toolbox Toolbox
Dimension Structure Attribute Relationships Translations Browser
Attributes
Employee
Birth Date
Business Entity ID
Gender
Hire Date
Marital Status
Hierarchies
Hierarchy
Gender
Birth Date
Hire Date
Marital Status
<new level>
To create a new hierarchy, drag an attribute here.
Edit Database
Generate Relational Schema...
Show Deployment Progress
Process...
Build
Rebuild
Deploy
Add
Debug
Cut Ctrl+X
Paste Ctrl+V
Rename
Properties Alt+Enter
Solution Explorer
MultidimensionalProject4
Data Sources
Adventure Works2012.ds
Data Source Views
Adventure Works2012.dsv
Cubes
Adventure Works2012.cube
Dimensions
Person.dim
Employee.dim
Mining Structures
Roles
Assemblies
Miscellaneous
An error has occurred while loading Getting Started information. The remote name could not be resolved: 'go.microsoft.com'
Item(s) Saved
8:45 PM
3/25/2019

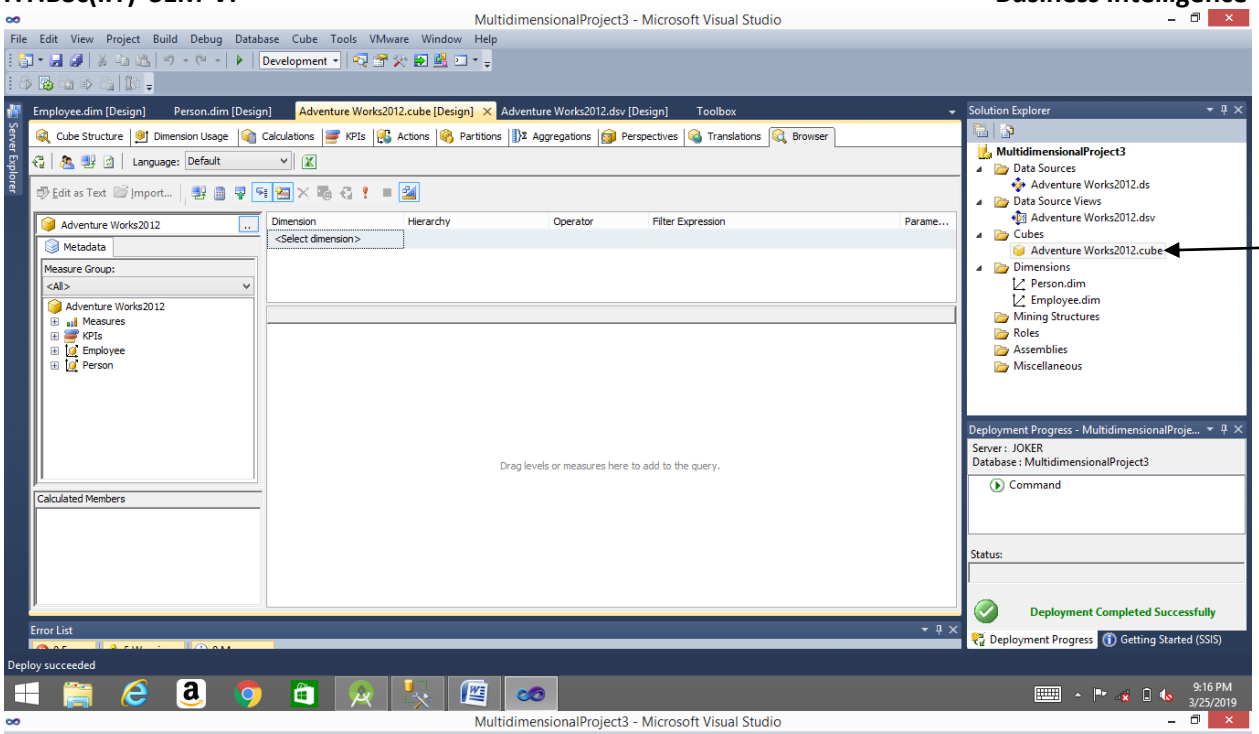

MultidimensionalProject4 Property Pages
Configuration: Active(Development)
Platform: N/A
Configuration Manager...
Configuration Properties
Build
Debugging
Deployment
Options
Processing Option
Do Not Process
Transactional Deployment
False
Server Mode
Deploy All
Target
Server
JOKER
Database
MultidimensionalProject4
Server
The Analysis Services instance to which the project will be deployed.
OK
Cancel
Apply

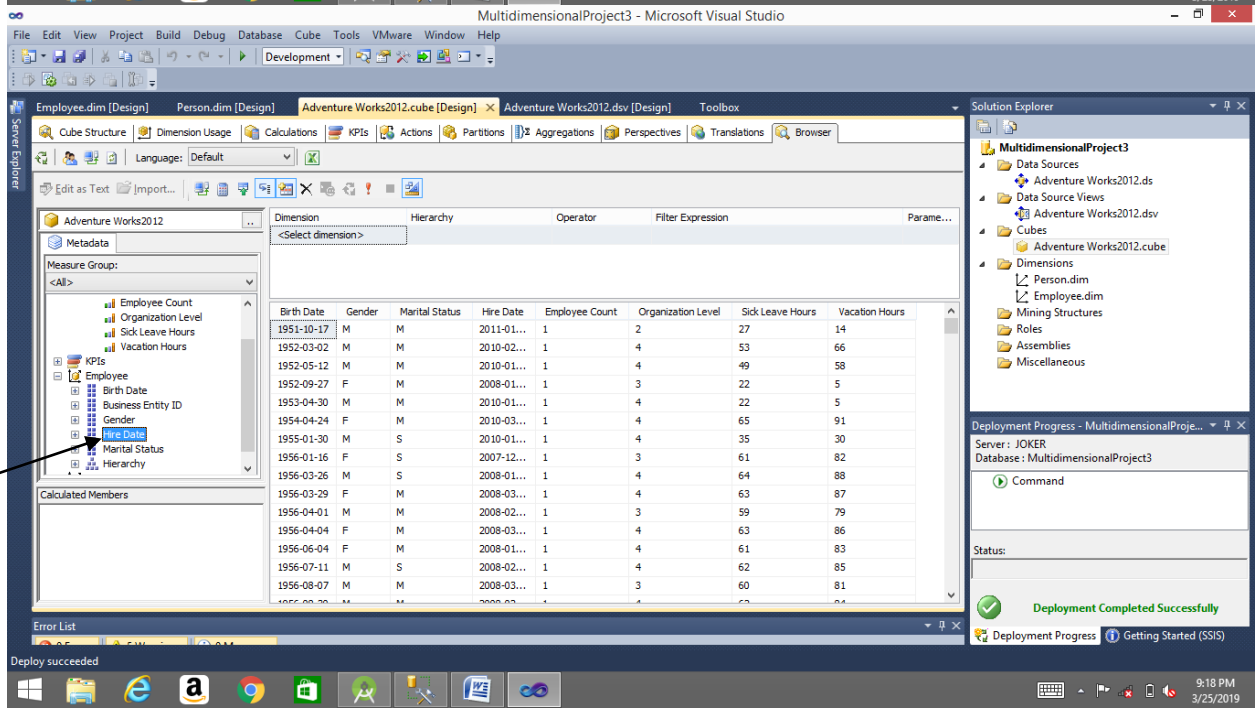

MultidimensionalProject4 - Microsoft Visual Studio
Edit Database
Generate Relational Schema...
Show Deployment Progress
Process...
Build
Rebuild
Deploy
Add
Debug
Cut
Paste
Rename
Properties
Person
Employee
Solution Explorer
An error has occurred while loading Getting Started information. The remote name could not be resolved: 'go.microsoft.com'


MultidimensionalProject5 - Microsoft Visual Studio
Deployment Completed Successfully
Deployment Progress
Getting Started (SSIS)
Deploy succeeded
Edit Database
Generate Relational Schema...
Show Deployment Progress
Process...
Build
Rebuild
Deploy
Add
Debug
Cut Ctrl+X
Paste Ctrl+V
Rename
Properties Alt+Enter
9:13 PM
3/25/2019


Process Database - MultidimensionalProject5
Object list:
Object Name
Type
Process Options
Settings
MultidimensionalProject5
Database
Process Full
Remove
Impact Analysis...
Batch Settings Summary
Processing order:
Parallel
Transaction mode:
(Default)
Dimension errors:
(Default)
Dimension key error log path :
(Default)
Process affected objects:
Do not process
Run...
Close


Process Progress
Command
Processing Database 'MultidimensionalProject5' completed.
Processing Cube 'Adventure Works2012' completed.
Start time: 3/25/2019 9:13:37 PM; End time: 3/25/2019 9:13:39 PM; Duration: 0:00:02
Processing Measure Group 'Employee' completed.
Processing Dimension 'Employee' completed.
Processing Dimension 'Person' completed.
Start time: 3/25/2019 9:13:38 PM; End time: 3/25/2019 9:13:39 PM; Duration: 0:00:01
Status:
Process succeeded.
Stop
Reprocess
View Details...
Copy
Close
Help


MultidimensionalProject3 - Microsoft Visual Studio
File Edit View Project Build Debug Database Cube Tools VMware Window Help
Development
Employee.dim [Design]
Person.dim [Design]
Adventure Works2012.cube [Design]
Adventure Works2012.dsv [Design]
Toolbox
Cube Structure
Dimension Usage
Calculations
KPIs
Actions
Partitions
Aggregations
Perspectives
Translations
Browser
Language: Default
Edit as Text
Import...
Adventure Works2012
Metadata
Measure Group:
<All>
Adventure Works2012
Measures
KPIs
Employee
Person
Dimension
Hierarchy
Operator
Filter Expression
Parame...
<Select dimension>
Drag levels or measures here to add to the query.
Calculated Members
Solution Explorer
MultidimensionalProject3
Data Sources
Adventure Works2012.ds
Data Source Views
Adventure Works2012.dsv
Cubes
Adventure Works2012.cube
Dimensions
Person.dim
Employee.dim
Mining Structures
Roles
Assemblies
Miscellaneous
Deployment Progress - MultidimensionalProje...
Server : JOKER
Database : MultidimensionalProject3
Command
Status:
Deployment Completed Successfully
Deployment Progress
Getting Started (SSIS)
Error List
Deploy succeeded
9:16 PM
3/25/2019


MultidimensionalProject3 - Microsoft Visual Studio
File Edit View Project Build Debug Database Cube Tools VMware Window Help
Development
Employee.dim [Design]
Person.dim [Design]
Adventure Works2012.cube [Design]
Adventure Works2012.dsv [Design]
Toolbox
Cube Structure
Dimension Usage
Calculations
KPIs
Actions
Partitions
Aggregations
Perspectives
Translations
Browser
Language: Default
Edit as Text
Import...
Adventure Works2012
Metadata
Measure Group:
<All>
Employee Count
Organization Level
Sick Leave Hours
Vacation Hours
KPIs
Employee
Birth Date
Business Entity ID
Gender
Hire Date
Marital Status
Hierarchy
Calculated Members
Dimension
Hierarchy
Operator
Filter Expression
Parame...
<Select dimension>
Birth Date Gender Marital Status Hire Date Employee Count Organization Level Sick Leave Hours Vacation Hours
1951-10-17 M M 2011-01... 1 2 27 14
1952-03-02 M M 2010-02... 1 4 53 66
1952-05-12 M M 2010-01... 1 4 49 58
1952-09-27 F M 2008-01... 1 3 22 5
1953-04-30 M M 2010-01... 1 4 22 5
1954-04-24 F M 2010-03... 1 4 65 91
1955-01-30 M S 2010-01... 1 4 35 30
1956-01-16 F S 2007-12... 1 3 61 82
1956-03-26 M S 2008-01... 1 4 64 88
1956-03-29 F M 2008-03... 1 4 63 87
1956-04-01 M M 2008-02... 1 3 59 79
1956-04-04 F M 2008-03... 1 4 63 86
1956-06-04 F M 2008-01... 1 4 61 83
1956-07-11 M S 2008-02... 1 4 62 85
1956-08-07 M M 2008-03... 1 3 60 81
Solution Explorer
MultidimensionalProject3
Data Sources
Adventure Works2012.ds
Data Source Views
Adventure Works2012.dsv
Cubes
Adventure Works2012.cube
Dimensions
Person.dim
Employee.dim
Mining Structures
Roles
Assemblies
Miscellaneous
Deployment Progress - MultidimensionalProje...
Server : JOKER
Database : MultidimensionalProject3
Command
Status:
Deployment Completed Successfully
Deployment Progress
Getting Started (SSIS)
Error List
Deploy succeeded
9:18 PM
3/25/2019