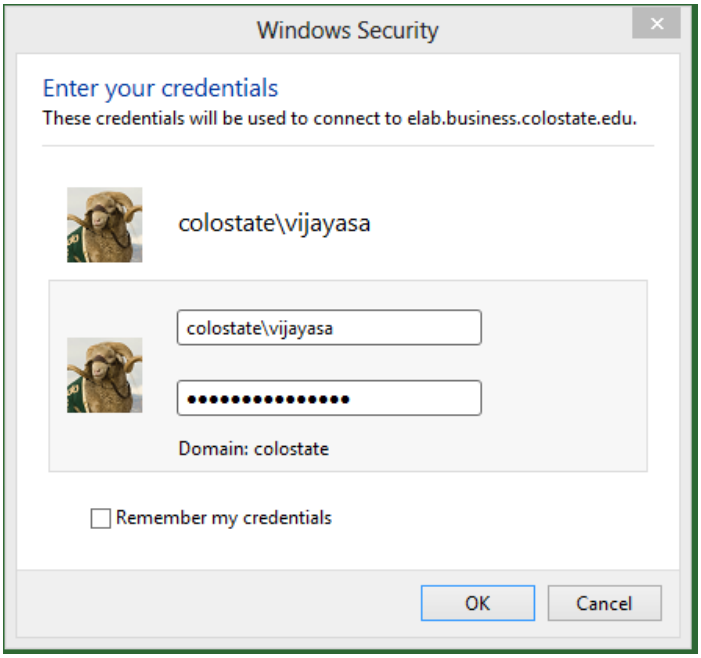
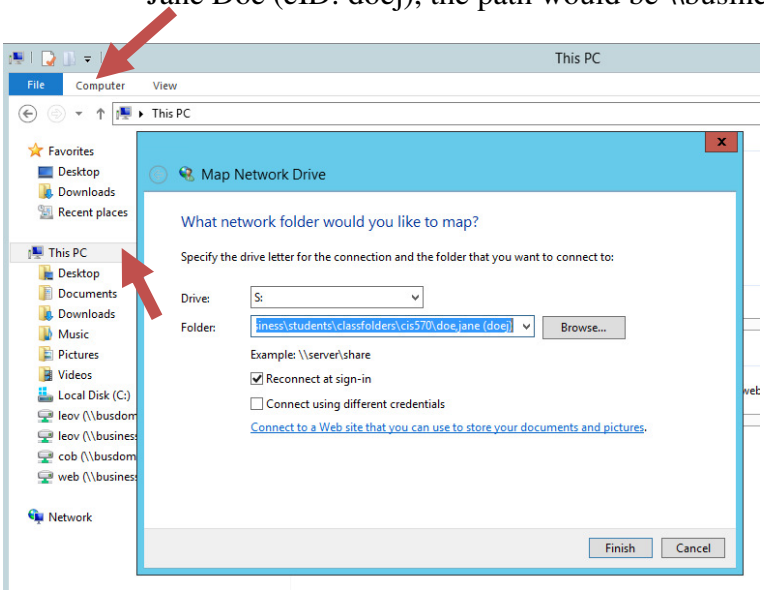
Hands-on-Exercise for Data Integration – Part 1

<u>Important Note</u>: You should have created the necessary tables in your ManufacturingDM (HOE for Data Mart – Part 1) in order to complete this assignment.

- Log on to elab (instructions are on Canvas: Modules → Course Information) using your eID credentials (see sample login dialog box below).



- Open File Explorer.
- Check if a Network location to \\business\students\classfolders\CIS570\ is already mapped. If it is, skip to the next section. If it is not, map the location with the following steps:
  - Click on "This PC" on the left-side of the window.
  - Select Computer → Map network drive → Map network drive from the menu.
  - In the Map Network Drive dialog box, choose S: for Drive and type the following path in the Folder textbox: \\business\students\classfolders\cis570\lastname,firstname (eID). Example - For student, Jane Doe (eID: doej), the path would be \\business\students\classfolders\cis570\doe,jane (doej).



- Check "Reconnect at sign-in" and click Finish.

Learn by Doing – Using Integration Services to Populate the Maximum Miniatures Manufacturing Data Mart Dimensions (Larson – Chapter 8, Pages 250-260)

Ignore the Note at the top of page 251.

Steps to create the integration services project

- For step 1 - Start Visual Studio 2017.
- Complete steps 2-5 (**Save your project in your class folder for CIS 570 (i.e., "S: drive")**
- Complete step 6

Steps to create the data source for the Load ProductType Data Flow

- Complete steps 1-4 (the Connections Tray will be at the bottom of your screen)
- For step 5 – Enter **buscissql\cisbi** for Server name. Use Windows Authentication. It is the default setting, and should already be selected for Log on to the server. Select **MaxMinAccounting2016** from the Select or enter a database name drop-down list. Click OK to return to the Configure ADO.Net Connection Manager dialog box. Click OK again to exit this dialog box.
- For Step 6 – If the ADO.Net Source item is not in the Common section, you will find it in the Other Sources section.
- Complete steps 7-8

Steps to create the data destination for the Load ProductType Data Flow

- Complete step 1
- For step 2 – Enter **buscissql\cisbi** for Server name. Use Windows Authentication. It is the default setting, and should already be selected for Log on to the server. Select **your ManufacturingDM (e.g., if your last name is Smith, your data mart will be called SmithManufacturingDM)** from the Select or enter a database name drop-down list. Click OK to return to the Configure OLE DB Connection Manager dialog box. Click OK again to exit this dialog box.
- For step 3 – Drag an **OLE DB Destination** item from the Other Destinations section of the Toolbox, and drop it on the Data Flow tab.
- For step 4 – Click the ADO.NET Source item. Click the blue data flow arrow, drag it on top of the OLE DB Destination item, and drop it on this item. This connects the source to the destination.
- For step 5 – Double click the OLE DB Destination item. The OLE DB Destination Editor dialog box appears.
- For step 6 – Select the **ManufacturingDM (it will be prefixed by BUSCISSQL\CISBI.your last name)** data connection that you just created in the OLE DB Connection manager drop-down list. Select Table or view in the Data access mode drop-down list. Select DimProductType in the Name of the table or the view drop-down list.
- For step 7 – The last sentence should read Click OK to exit the OLE DB Destination Editor dialog box.

Steps to create the Load ProductSubtype Data Flow

- Complete steps 1-5
- For step 6 – Drag an OLE DB Destination item from the Other Destinations section of the Toolbox, and drop it on the Data Flow tab.

- For step 7 – Click the ADO.NET Source item. Click the blue data flow arrow, drag it on top of the OLE DB Destination item, and drop it on this item. This connects the source to the destination.
- For step 8 – Double click the OLE DB Destination item. The OLE DB Destination Editor dialog box appears.
- For step 9 – Select the **ManufacturingDM (it will be prefixed by BUSCISSQL\CISBI.your last name)** data connection in the OLE DB Connection manager drop-down list. Select Table or view in the Data access mode drop-down list. Select DimProductSubtype in the Name of the table or the view drop-down list.
- For step 10 – The last sentence should read Click OK to exit the OLE DB Destination Editor dialog box.

Steps to create additional data flow

- Complete steps 1-2. These two steps require you to repeat the steps of the "Create the Load ProductSubType Data Flow" section (to create the data flows for Load Product and Load Country). While repeating the steps from the book, remember that some of those steps have to be modified as per the instructions provided in this document (e.g., using an OLE DB Destination item instead of a SQL Server Destination item).

Steps to create the Load Plant Data Flow

- Complete steps 1-10
- For step 11 – The **ManufacturingDM (it will be prefixed by BUSCISSQL\CISBI.your last name)** will be selected in the Connection manager drop-down list. Select [dbo].[DimCountry] from the Use a table or a view drop-down list.
- Complete steps 12-15
- For step 16 – Drag an OLE DB Destination item from the SSIS Toolbox, and drop it on the Data Flow tab.
- For step 17 – Click the Lookup item. Click the blue data flow arrow, drag it on top of the OLE DB Destination item, and drop it on this item. The Input Output Selection dialog box appears.
- Complete steps 18-19
- For step 20 – Double click the OLE DB Destination item. The OLE DB Destination Editor dialog box appears.
- For step 21 – Select the **ManufacturingDM (it will be prefixed by BUSCISSQL\CISBI.your last name)** data connection in the OLE DB Connection manager drop-down list. Select Table or view in the Data access mode drop-down list. Select DimPlant in the Name of the table or the view drop-down list.
- For step 22 – The last sentence should read Click OK to exit the OLE DB Destination Editor dialog box.

Steps to create the Load Material Data Flow

- Complete steps 1-22.
- For step 23 – Drag an OLE DB Destination item from the SSIS Toolbox, and drop it on the Data Flow tab.
- For step 24 – Click the Aggregate by Material item. Click the blue data flow arrow, drag it on top of the OLE DB Destination item, and drop it on this item.
- For step 25 – Double click the OLE DB Destination. The OLE DB Destination Editor dialog box appears.

- For step 26 – Select the **ManufacturingDM (it will be prefixed by BUSCISSQL\CISBI.your last name)** data connection in the OLE DB Connection manager drop-down list. Select Table or view in the Data access mode drop-down list. Select DimMaterial in the Name of the table or the view drop-down list.
- For step 27 – The last sentence should read Click OK to exit the OLE DB Destination Editor dialog box.

Steps to create the Load Machine Type Flow

- Complete steps 1-12.
- For step 13 – Select the OLE DB Destination item and press Delete. The OLE DB Destination is removed from the data flow.
- Complete steps 14-17.
- For step 18 – The **ManufacturingDM (it will be prefixed by BUSCISSQL\CISBI.your last name)** will be selected in the Connection manager drop-down list. Select [dbo].[DimMaterial] from the Use a table or a view drop-down list.
- Complete steps 19-22.
- For step 23 – Drag an OLE DB Destination item from the SSIS Toolbox, and drop it on the Data Flow tab.
- For step 24 – Click the Lookup item. Click the blue data flow arrow, drag it on top of the OLE DB Destination item, and drop it on this item. The Input Output Selection dialog box appears.
- Complete steps 25-26.
- For step 27 – Double click the OLE DB Destination item. The OLE DB Destination Editor dialog box appears.
- For step 28 – Select the **ManufacturingDM (it will be prefixed by BUSCISSQL\CISBI.your last name)** data connection in the OLE DB Connection manager drop-down list. Select Table or view in the Data access mode drop-down list. Select DimMachineType in the Name of the table or the view drop-down list.
- For step 29 – The last sentence should read Click OK to exit the OLE DB Destination Editor dialog box.

Steps to create the Load Machine Flow

- Complete steps 1-20.
- For step 21 – Select the OLE DB Destination item and press Delete. The OLE DB Destination is removed from the data flow.
- Complete steps 22-31.
- For step 32 – Drag an OLE DB Destination item from the SSIS Toolbox, and drop it on the Data Flow tab.
- For step 33 – Click the Data Conversion item. Click the blue data flow arrow, drag it on top of the OLE DB Destination item, and drop it on this item.
- For step 34 – Double click the OLE DB Destination item. The OLE DB Destination Editor dialog box appears.
- For step 35 – Select the **ManufacturingDM (it will be prefixed by BUSCISSQL\CISBI.your last name)** data connection in the OLE DB Connection manager drop-down list. Select Table or view in the Data access mode drop-down list. Select DimMachine in the Name of the table or the view drop-down list.

- Complete steps 36-39.
- For step 40 – Click OK to exit the OLE DB Destination Editor dialog box.

Steps to save and execute the integration services package

- Step 1 – Click the Save All button on the toolbar to save the completed package
- Step 2 – Click the Control Flow tab
- Step 3
    - **Make sure that you have 8 data flow tasks (i.e., there are eight boxes).**
    - Click the Start button (the green triangle) on the toolbar to execute the completed package. When the execution is complete, observe the circles on the top-right of the eight boxes.
        - **If all eight boxes have a green circle with a check mark,** click the "Package Execution completed with success. Click here to switch to design mode, or select Stop Debugging from the Debug menu" link to return to design mode. Go to step 4 below.
        - **If the first box (Load ProductType) has an X in a red circle,** click the "Package Execution completed with success. Click here to switch to design mode, or select Stop Debugging from the Debug menu" link to return to design mode. Check each data flow task for errors (a red X in a task box indicates an error). You can trace and fix errors by double-clicking on a task box and making sure that you completed the steps for that task correctly. After you have fixed the errors, repeat steps 1-3.
        - **If some boxes have a green circle with a check mark (make a note of these boxes) and others have an X in a red circle,** click the "Package Execution completed with success. Click here to switch to design mode, or select Stop Debugging from the Debug menu" link to return to design mode. **Right click on each box that had a green circle, and select Disable from the context menu. The disabled boxes will be gray.** Check the data flow tasks of the boxes that had the red circles for errors (a red X in a task box indicates an error). You can trace and fix errors by double-clicking on a task box and making sure that you completed the steps for that task correctly. After you have fixed the errors, repeat steps 1-3.
- Step 4
    - Check the Server Explorer window (it will be displayed either on the left or right edge of your screen).
    - If the connection to your ManufacturingDM is displayed under Data Connections, go to step 5. If not, right-click on Data Connections and Choose Add Connection from the context menu.
    - Select "Microsoft SQL Server" in Choose Data Source window → click Continue (Note: This window will appear the first time you create a new data connection. After that, you may not see this window).
    - In the Add Connection window, a) type **buscissql\cisbi** for Server name; b) from the Select or enter a database name drop-down choose **your ManufacturingDM database** (e.g., if your last name is Smith, your database will be called SmithManufacturingDM), and c) click OK. You should see your database displayed under Data Connections in the Server Explorer window.
- Step 5
    - In the Server Explorer window, expand your ManufacturingDM database connection. Expand the Tables folder. Right click on DimProductType and select Show Table Data from the context menu. A table view tab should open and display 4 product type records (the number of

rows/records will be displayed on the left-side of the status bar at the bottom of the screen). Close the table. Open and confirm that the following tables are also populated with records: DimProductSubType (15 records), DimProduct (56 records), DimCountry (4 records), DimPlant (5 records), DimMaterial (3 records), DimMachineType (3 records), and DimMachine (6 records). Exit VS2017.