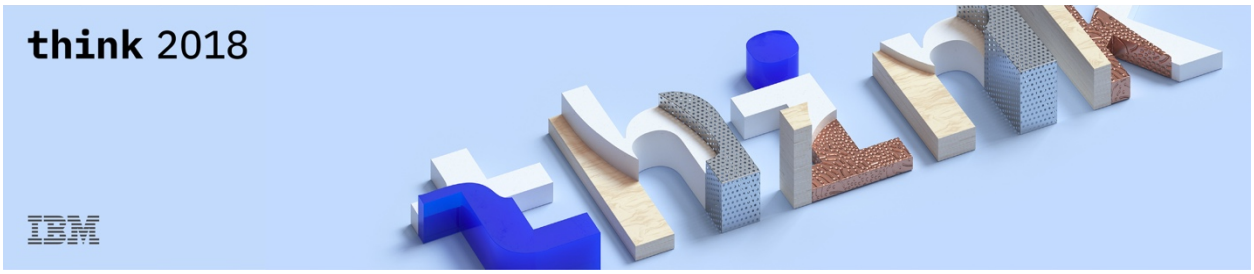

Lab Center – Hands-on Lab

3159

BI Modeling Basics in Framework Manager

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Lab Activity - Create Business Intelligence Models

In this introductory session designed for beginning Framework Manager modelers, participants will learn how to quickly and efficiently create business intelligence models using IBM Cognos Framework Manager.

You will learn basic modeling techniques using Framework Manager. You will identify how to create a star schema with facts and dimensions, and how to create joins between them using the correct cardinality, as well as how to specify measures and create calculated columns. You will examine how your model appears to report authors and create a report using the actual model that you built in the session.

This demonstration is adapted from the *IBM Cognos Framework Manager: Design Metadata Models (v11.0)* course. For more information on this course and other aspects of IBM Analytics training, please visit the IBM Training and Skills - Global website. The course can be found under codes B6052G (Instructor-Led) or J4052G (Self-Paced Virtual Learning).

Purpose: A senior manager wants to create reports about returned products to review returns data by product, customer, and return reason. Since this project has a limited scale, you will use Framework Manager to quickly produce a package for reporting.

A data warehouse has been created and will be used in this lab because it is ideally suited for reporting and ease of modeling.

Task 1. Start Framework Manager and import the data.

1. If you are prompted to allow your PC to be discoverable, click the **Yes** button on the right side of the screen.
2. If you receive any messages related to Windows Update, dismiss them.
3. In **Windows**, click **Start** > **All apps**> **IBM Cognos Framework Manager** > **IBM Cognos Framework Manager** 

.
4. On the Welcome screen, click **Create a new project**.

   The New Project dialog opens.
5. Next to the **Location** box, click **Browse**  , navigate to **C:\Training**, and then click **OK**.
6. In the **Project name** box, type **GOReturns**, and then click **OK**.

   The GOReturns folder is created and you are prompted to sign into IBM Cognos Analytics.

7. In the username box, type **admin**, and in the password box, type **Education1**, and then click **OK**.

   If you encounter any issues when logging on, please let the instructor know. You may need to start or restart the IBM Cognos service.

8. Ensure that **English** is selected, and then click **OK**.

   The **Metadata Wizard** appears.

9. Select **Data Sources**, and then click **Next**.

10. Select the **great_outdoors_warehouse** data source, and then click **Next**.

11. In the list of objects, expand **GOSALESDW** > **Tables**, and then select the following tables:

    - **DIST_RETURNED_ITEMS_FACT**
    - **DIST_RETURN_REASON_DIM**
    - **SLS_PRODUCT_DIM**
    - **SLS_PRODUCT_LINE_LOOKUP**
    - **SLS_PRODUCT_ LOOKUP**
    - **SLS_PRODUCT_TYPE_LOOKUP**
    - **SLS_RTL_DIM**

12. Click **Next**.

13. On the **Metadata Wizard - Generate Relationships** screen, click **Import** to accept the default selections.

14. Click **Finish**.

Task 2. Create a foundation objects layer.

1. In the **Project Viewer**, expand the **great_outdoors_warehouse** namespace.

2. Right-click the **great_outdoors_warehouse** namespace, and then click **Rename**.

   The namespace name is highlighted.

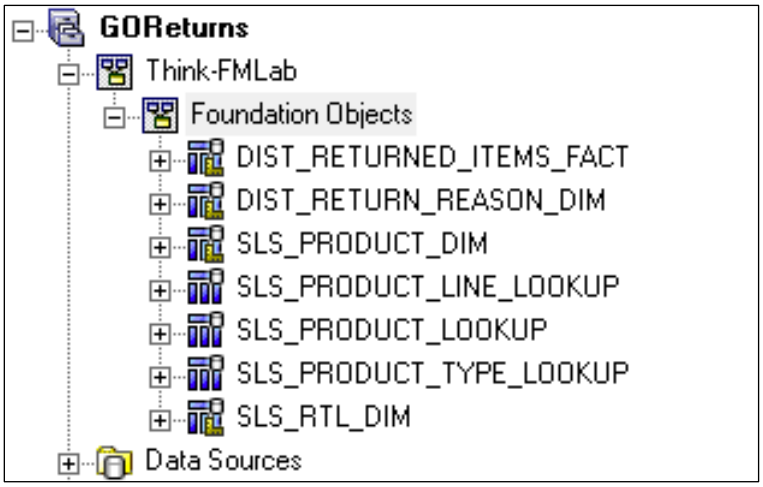
3. Type **Think-FMLab** to rename the namespace, and then press **Enter**.

4. Right-click the **Think-FMLab** namespace, from the context menu, point to **Create**, and then click **Namespace**.

5. Name the new namespace **Foundation Objects**. (Be sure to press **Enter** after typing the new name.)

6. Drag all of the existing query subjects  into the new **Foundation Objects** namespace.

   The results appear as follows:



Task 3. Create missing joins.

1. Double click the **Foundation Objects** namespace, and then in the middle pane, click the **Diagram** tab.

2. Adjust the size of the **Properties** pane (below) and the **Project Viewer** (on the left) if necessary so that you can see most of the entities in the **Diagram** window.

3. At the top of the **Diagram** window in the toolbar, click **Fit All**  so that you can see all the entities.

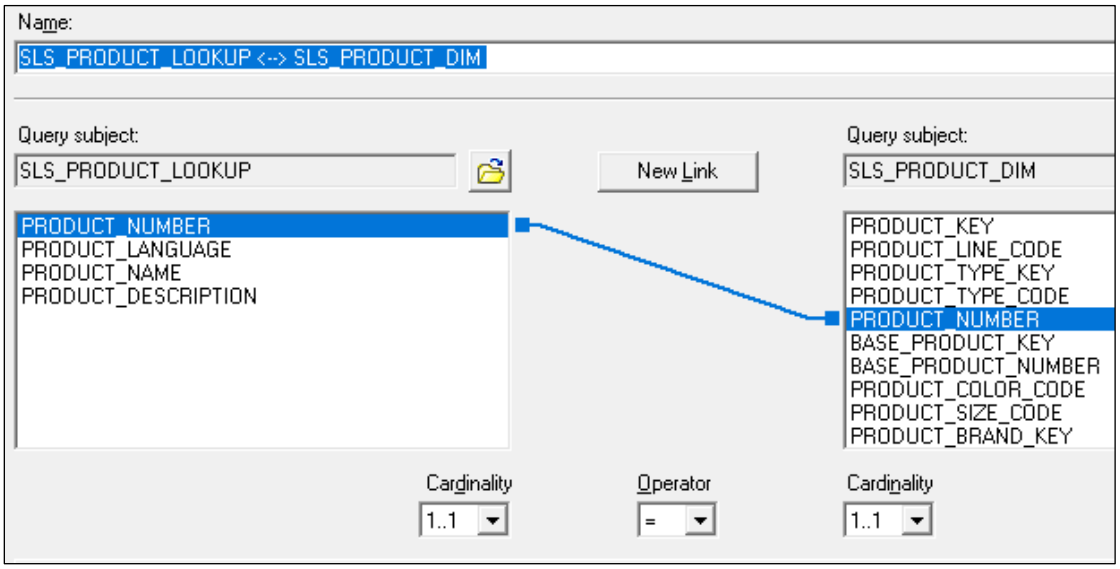
   Feel free to arrange the entities, and adjust the view size if necessary so that you can easily view and access the entities. Notice that SLS_PRODUCT_LOOKUP is not joined to any other query subject. You will create a join from SLS_PRODUCT_DIM to the SLS_PRODUCT_LOOKUP query subject.

4. Ctrl+click the following query subjects > query items:

   - **SLS_PRODUCT_LOOKUP > PRODUCT_NUMBER**
   - **SLS_PRODUCT_DIM > PRODUCT_NUMBER**

5. Right-click one of the selected query items, point to **Create**, and then click **Relationship**.

   The Relationship Definition window appears. A section of the results appears as follows:

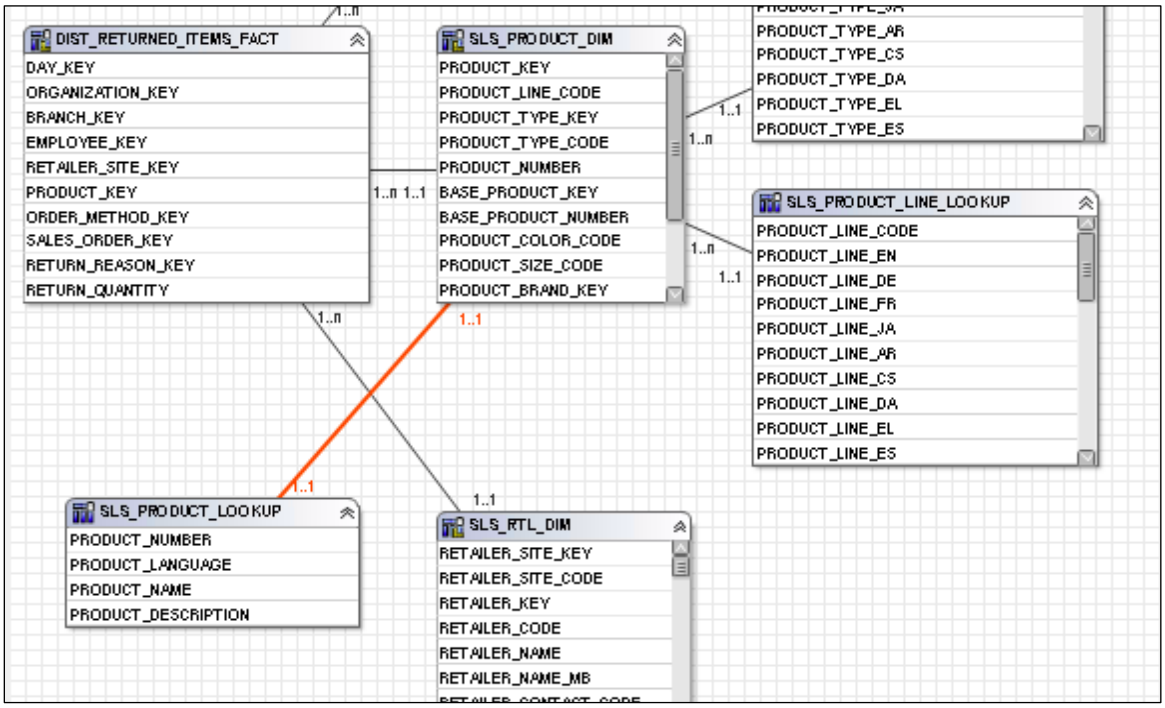


6. Ensure that the Cardinality on both sides of the relationship is set to **1:1**.

   This means that every product in the SLS_PRODUCT_DIM dimension will have one and only one PRODUCT_NUMBER from the SLS_PRODUCT_LOOKUP query subject, and vice versa.

7. Click **OK**.

   Notice that the connector between SLS_PRODUCT_DIM and SLS_PRODUCT_LOOKUP is red because there are product descriptions in multiple languages in the SLS_PRODUCT_LOOKUP table. Currently, the simple join you created may return more than one row. You will fix this in the next task by filtering the unwanted values. A section of the results appear as follows:



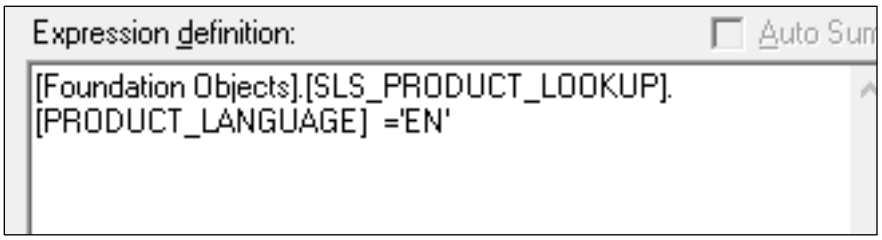
Task 4. Add a filter to the model to solve the simple join.

1. In the **Diagram** pane, double-click the **SLS_PRODUCT_ LOOKUP** table.
2. In the **Query Subject Definition** window, click the **Filters** tab, and then click **Add** 

.
3. In the **Name** text box, type **Language Filter**.
4. From the **Available Components** pane, drag the **SLS_PRODUCT_LOOKUP** > **PRODUCT_LANGUAGE** query item to the **Expression** definition pane.

5. In the **Expression definition** pane, after **PRODUCT_LANGUAGE]** type **='EN'**.

   The result appears as follows:



6. Click **OK**, click the **Test** tab, and then click **Test Sample** in the bottom right corner of the window.

   Notice that all the values in the PRODUCT_LANGUAGE column are EN.

7. Click **OK**.

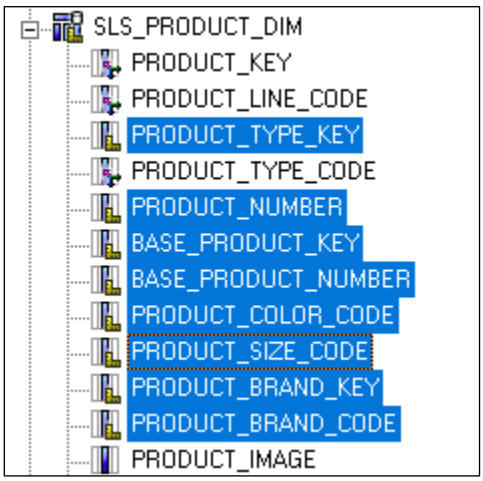
   Notice that the color of the connector now matches all the other connectors in the Diagram pane.

Task 5. Modify the Usage properties of certain attribute query items.

Because some of the query items you created are identifiers of numeric data type, Framework Manager may interpret them as facts (measures). You want to ensure that these query items are correctly identified as attributes, so you will change their Usage property.

1. In the **Project Viewer**, expand the **SLS_PRODUCT_DIM** query subject and Ctrl+click: **PRODUCT_TYPE_KEY**, **PRODUCT_NUMBER**, **BASE_PRODUCT_KEY**, **BASE_PRODUCT_NUMBER**, **PRODUCT_COLOR_CODE**, **PRODUCT_SIZE_CODE**, **PRODUCT_BRAND_KEY**, and **PRODUCT_BRAND_CODE**.

   A section of the Project Viewer appears as follows:

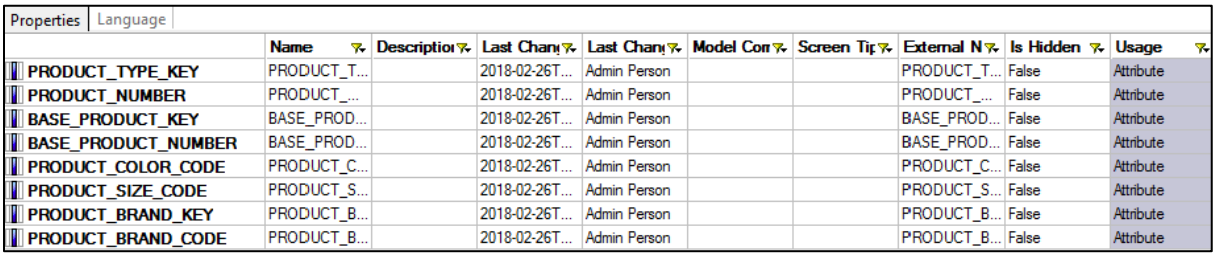


2. If necessary, resize the **Properties** pane so that all the selected query items are visible, click the value in the **Usage** column for the **PRODUCT_TYPE_KEY**, select the down arrow, and then from the list, click **Attribute**.

   A section of the results appears as follows:

3. Click the small black arrow for **PRODUCT_TYPE_KEY** under the **Attribute** value in the **Usage** column, and then drag to the end of the list.

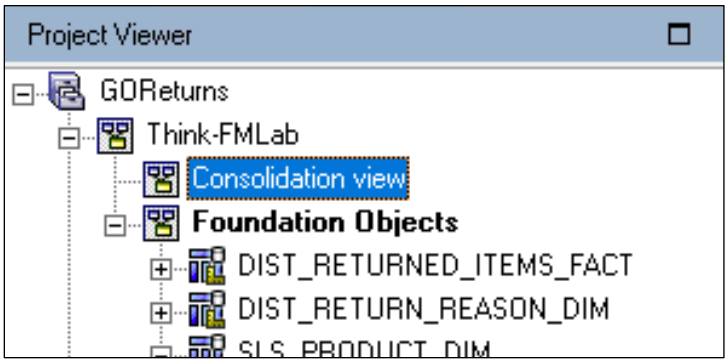
   This changes all the Usage properties in the list to Attribute:



	Name	Description	Last Chan	Last Chan	Model Con	Screen Tip	External N	Is Hidden	Usage
PRODUCT_TYPE_KEY	PRODUCT_T...		2018-02-26T...	Admin Person			PRODUCT_T...	False	Attribute
PRODUCT_NUMBER	PRODUCT_...		2018-02-26T...	Admin Person			PRODUCT_...	False	Attribute
BASE_PRODUCT_KEY	BASE_PROD...		2018-02-26T...	Admin Person			BASE_PROD...	False	Attribute
BASE_PRODUCT_NUMBER	BASE_PROD...		2018-02-26T...	Admin Person			BASE_PROD...	False	Attribute
PRODUCT_COLOR_CODE	PRODUCT_C...		2018-02-26T...	Admin Person			PRODUCT_C...	False	Attribute
PRODUCT_SIZE_CODE	PRODUCT_S...		2018-02-26T...	Admin Person			PRODUCT_S...	False	Attribute
PRODUCT_BRAND_KEY	PRODUCT_B...		2018-02-26T...	Admin Person			PRODUCT_B...	False	Attribute
PRODUCT_BRAND_CODE	PRODUCT_B...		2018-02-26T...	Admin Person			PRODUCT_B...	False	Attribute

Task 6. Create a consolidation layer with a fact query subject.

1. Right-click the **Think-FMLab** namespace, point to **Create**, and then click **Namespace**.
2. Name the new namespace **Consolidation view**.
3. Drag the **Consolidation view** namespace immediately above the **Foundation Objects** namespace.



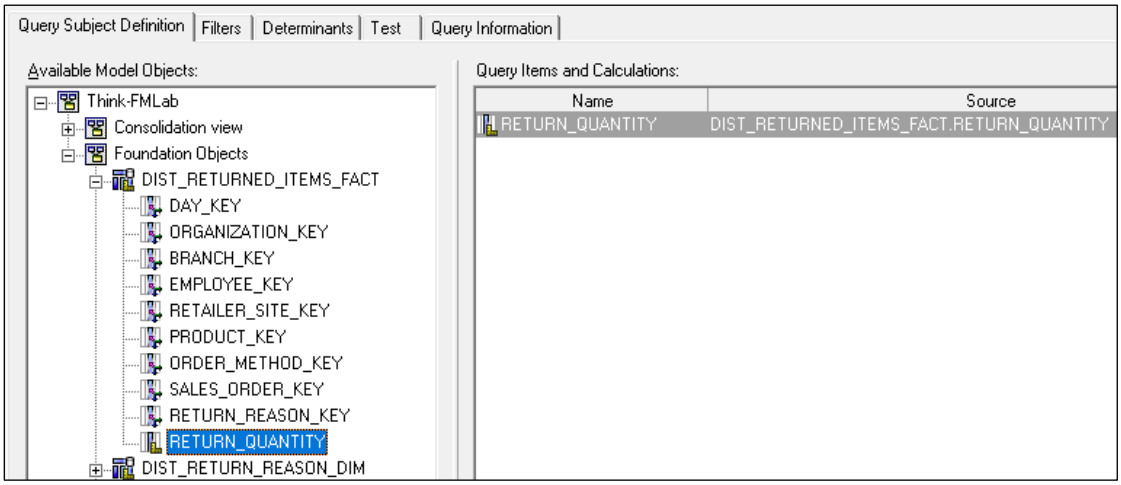
4. Right-click the **Consolidation view** namespace, point to **Create**, and then click **Query subject**.

   The New Query Subject dialog opens.

5. Change the name to **Returns Fact**, leave **Model (Query Subjects and Query Items)** selected, and then click **OK**.

6. In the **Query Subject Definition** dialog, expand the **Foundation Objects** namespace and the **DIST_RETURNED_ITEMS_FACT** query subject.

7. Drag the **RETURN_QUANTITY** query item to the **Query Items and Calculations** pane.

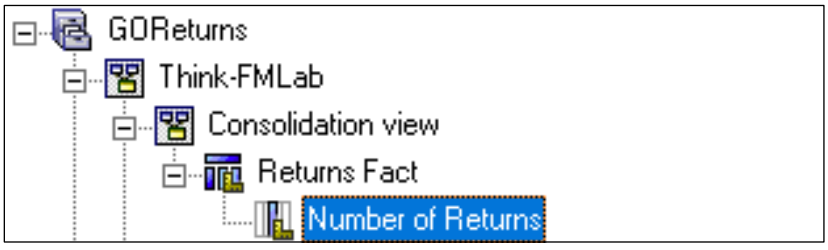


8. Click **OK**.

9. In the **Project Viewer** under **Consolidation view**, expand the **Returns Fact** query subject, right-click the **RETURN_QUANTITY** query item, and click **Rename**.

10. Type **Number of Returns**, and then press **Enter**.

    The results appear as follows:



Task 7. Add the Returns Reason dimension query subject.

1. Right-click the **Consolidation view** namespace, point to **Create**, and then click **Query Subject**.
2. In the **Name** box, type **Returns Reason**, and then click **OK**.
3. In the **Query Subject Definition**, expand the **Foundation Objects** namespace, and then expand the **DIST_RETURN_REASON_DIM** query subject.
4. Drag the **REASON_DESCRIPTION_EN** query item to the **Query Items and Calculations** pane, and then click **OK**.
5. In the **Project Viewer**, expand the **Returns Reason** query subject, right-click the **REASON_DESCRIPTION_EN** query item, and rename it **Return Reason Description**.

Task 8. Add the Retailers dimension query subject.

1. Right-click the **Consolidation view** namespace, point to **Create**, and then click **Query Subject**.
2. Name the new query subject **Retailers**, and then click **OK**.
3. In the **Query Subject Definition** window, expand **Foundation Objects**, and then expand the **SLS_RTL_DIM** query subject.
4. Add **RETAILER_NAME**, **RTL_CITY**, **RTL_PROV_STATE**, **RTL_POSTAL_ZONE**, and **RETAILER_TYPE_EN** to the **Query Items and Calculations** pane.

   There are many attributes with very similar names in this query subject, so be very careful to add the ones listed here exactly as they are spelled.
5. Click **OK**, and then expand the **Retailers** query subject that you just created.

6. Using the technique for renaming attributes, right-click the following attributes and rename them as specified in the following table:

   - **RETAILER_NAME**: rename to **Retailer Name**
   - **RTL_CITY**: rename to **Retailer City**
   - **RTL_PROV_STATE**: rename to **Retailer State**
   - **RTL_POSTAL_ZONE**: rename to **Retailer Postal Code**
   - **RETAILER_TYPE_EN**: rename to **Retailer Type**

   The Retailers query subject appears as follows:

Task 9. Add the Products dimension query subject.

1. Right-click the **Consolidation view** namespace and use the techniques you have learned to create a new query subject.
2. Name the query subject **Products**, and then click **OK**.
3. In the **Query Subject Definition** window, expand **Foundation Objects**, and then expand the **SLS_PRODUCT_DIM** query subject.
4. Drag **PRODUCT_NUMBER** to the **Query Items and Calculations** pane, and then collapse **SLS_PRODUCT_DIM**.
5. Expand **SLS_PRODUCT_LINE_LOOKUP**, drag **PRODUCT_LINE_EN** to the **Query Items and Calculations** pane, and then collapse **SLS_PRODUCT_LINE_LOOKUP**.
6. Expand **SLS_PRODUCT_LOOKUP**, drag **PRODUCT_NAME** and **PRODUCT_DESCRIPTION** to the **Query Items and Calculations** pane, and then collapse **SLS_PRODUCT_LOOKUP**.

7. Expand **SLS_PRODUCT_TYPE_LOOKUP**, drag **PRODUCT_TYPE_EN** to the **Query Items and Calculations** pane, and then collapse **SLS_PRODUCT_TYPE_LOOKUP**.

   The Query Items and Calculations pane appears as follows:

Name	Source
PRODUCT_NUMBER	SLS_PRODUCT_DIM.PRODUCT_NUMBER
PRODUCT_LINE_EN	SLS_PRODUCT_LINE_LOOKUP.PRODUCT_LINE_EN
PRODUCT_NAME	SLS_PRODUCT_LOOKUP.PRODUCT_NAME
PRODUCT_DESCRIPTION	SLS_PRODUCT_LOOKUP.PRODUCT_DESCRIPTION
PRODUCT_TYPE_EN	SLS_PRODUCT_TYPE_LOOKUP.PRODUCT_TYPE_EN

8. In the **Queries Items and Calculations** pane, select the **PRODUCT_LINE _EN** query item and then in the lower right corner select the move-to-top arrow  to move **PRODUCT_LINE _EN** to the top of the list.

9. Select **PRODUCT_TYPE_EN** and then click the move-up arrow  as many times as needed to move it to the second item on the list.

10. In the same way, move **PRODUCT_NAME** to the third item on the list.

    The modified list appears as follows:

Name	Source
PRODUCT_LINE_EN	SLS_PRODUCT_LINE_LOOKUP.PRODUCT_LINE_EN
PRODUCT_TYPE_EN	SLS_PRODUCT_TYPE_LOOKUP.PRODUCT_TYPE_EN
PRODUCT_NAME	SLS_PRODUCT_LOOKUP.PRODUCT_NAME
PRODUCT_NUMBER	SLS_PRODUCT_DIM.PRODUCT_NUMBER
PRODUCT_DESCRIPTION	SLS_PRODUCT_LOOKUP.PRODUCT_DESCRIPTION

    You previously renamed the attributes in the Project Viewer pane. You can also rename them in the Query Subject Definition window.

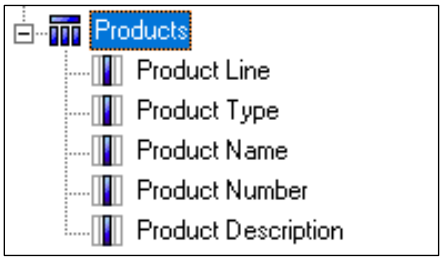
11. One by one, right-click each of the following attributes, click **Rename**, and then rename them as follows:

    - **PRODUCT_LINE_EN**: rename to **Product Line**
    - **PRODUCT_TYPE_EN**: rename to **Product Type**
    - **PRODUCT_NAME**: rename to **Product Name**
    - **PRODUCT_NUMBER**: rename to **Product Number**
    - **PRODUCT _DESCRIPTION:** rename to **Product Description**

12. Click **OK** to close the **Query Subject Definition** window.

13. In the **Project Viewer**, expand the **Products** query subject.

    Notice that the attributes have been renamed in the Project Viewer to your specifications.



Task 10. Test the model against the requirements and create a star schema.

Recall that in the Purpose section of this exercise a senior manager wanted to create reports about returned products to review returns data by product, customer, and return reason. You will now ensure that all this data is readily available in your model prior to creating your star schema view.

1. In the **Consolidation view**, in the following order, Ctrl+click the following attributes to select them:

   - **Retailers > Retailer Name**
   - **Returns Fact > Number of Returns**
   - **Returns Reason > Return Reason Description**
   - **Products > Product Name**

2. Right-click any one of the selected attributes, and then click **Test**.

3. In the **Test Results** dialog, click **Test Sample**.

   The results show a list of products by retailer, the number of returns for each product, and the reason for the returns. All of the requirements of the model, as specified in the Purpose section of this demonstration, have been met.

Test results

Retailer Name	Number of Returns	Return Reason Description	Product Name
Kanjosen Sport	74	Defective product	Capri
Sportarena	152	Wrong product shipped	Flicker Lantern
Love Sports Nanba store	30	Defective product	Polar Ice
Classens	146	Defective product	TrailChef Utensils
Hurst Ironmongers	47	Wrong product shipped	Fairway
Cyclo-cross, S.A. de C.V.	221	Unsatisfactory product	Hibernator Lite
Sport Basement	18	Wrong product shipped	Zone
VIP Department Stores	7	Defective product	Star Gazer 6
Holstein Golf	197	Wrong product ordered	Blue Steel Max Putter
Hangzhou Superman Sports Goods Co., LTD.	134	Wrong product ordered	Hailstorm Titanium Woods Set
Blizzard super outdoors Japan Inc.	4	Wrong product ordered	Trendi

Next, you will create a star schema grouping for these entities and move them to a presentation view for consumption by report authors.

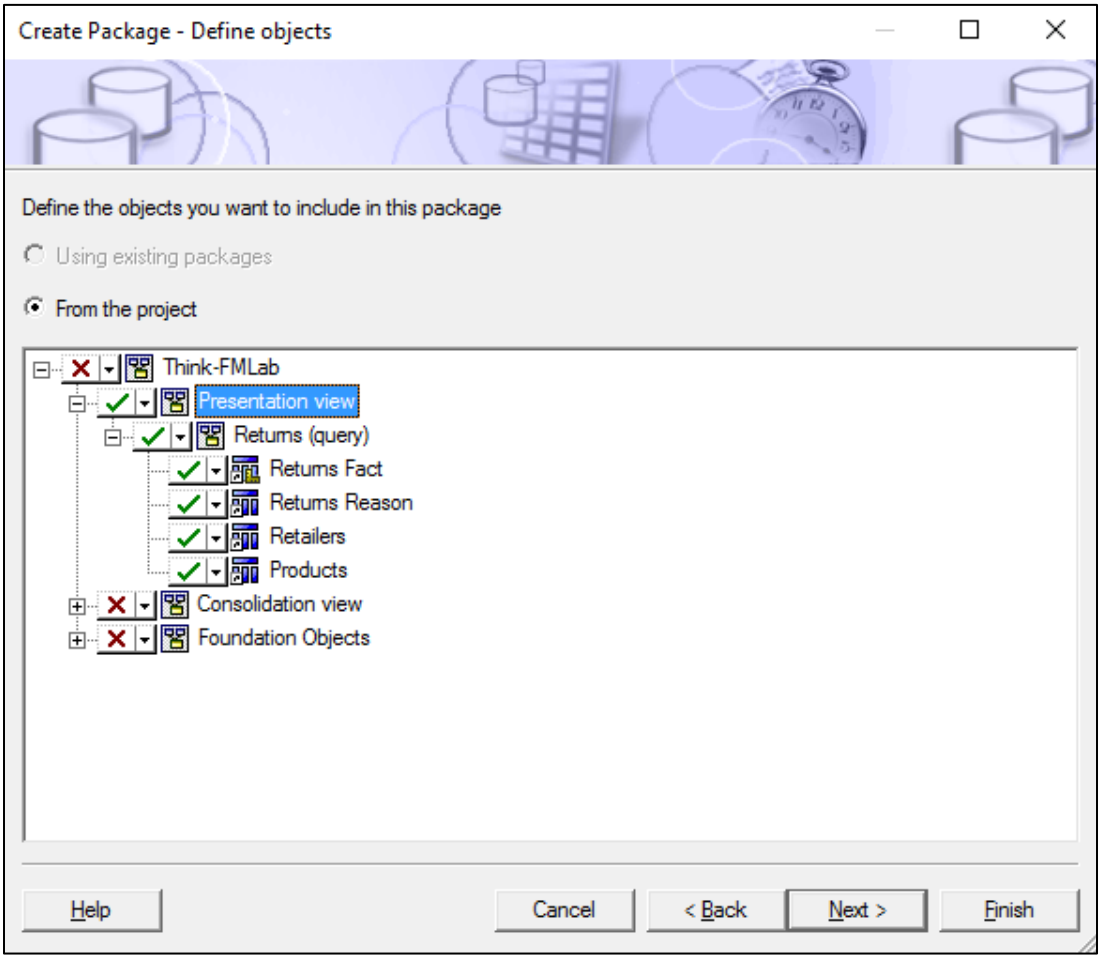
4. Click **Close**.
5. In the **Consolidation view**, collapse the **Returns Fact**, **Returns Reason**, **Retailers**, and **Products** query subjects.
6. In the **Consolidation view**, Ctrl+click all four query subjects to select them.
7. Right-click one of the selected query subjects and click **Create Star Schema Grouping**.
8. In the **Create Star Schema Grouping** dialog box, change the **Namespace name** to **Returns (query)**, and then click **OK**.
9. Right-click the **Think-FMLab** namespace and create a new namespace.
10. Name the new namespace **Presentation view**.
11. From the Consolidation view, drag the **Returns (query)** namespace into the **Presentation view** namespace.
12. Drag the **Presentation view** namespace directly above the **Consolidation view** namespace.

    At this point, you will create and publish a package containing the Presentation view, so that report authors can report against your new star schema model.

Task 11. Create and publish a package.

1. In the **Project Viewer** pane, right-click the **Packages** node, point to **Create**, and then click **Package**.
2. In the **Name** box, type **GOReturns**, and then click **Next**.
3. Click the **Think-FMLab** node to deselect all of the nodes, and then select only the **Presentation view** node.

   Notice that all the nodes within the Presentation view node are also selected:



4. Click **Next**, and then click **Finish**.
5. Click **Yes** to open the Publish Package wizard.

6. Leave the default options selected, and then click **Next**.
7. Click **Next**, and then click **Publish**.
8. Click **Finish**.

   Because you selected the option to verify the package before publishing, you see informational messages. These messages just indicate that referenced objects in the Consolidation view namespace (such as the Returns Fact query subject) will be included in the package, but hidden from report authors, which will prevent reporting errors.
9. Click **Close**, and then close Framework Manager, saving the project if prompted.

   You will now create a report using the published package.

Task 12. Create a simple report.

1. Open **Internet Explorer** and browse to **http://localhost:9300/bi/index.html** (if necessary). There is a button in the Windows Taskbar to launch Internet Explorer.
2. Log on as **admin/Education1**.
3. In the bottom left corner, click **New**, and then click **Report**.
4. Ensure that the **Blank** template is selected, and then click **OK**.

   If you run into any issues when trying to create a new, blank report, please let the instructor know. The IBM Cognos service may need to be restarted.
5. In the right pane, click the **add** icon  , and then click **List**.
6. Click **OK**.
7. In the top right pane, click the **Add report data** icon  .
8. In the **Open file** dialog box, click the **GOReturns** package, and then click **Open**.

   The contents of the published package appear on the Source tab in the left pane.
9. Expand the **Presentation view** namespace and the **Returns (query)** namespace.
10. Expand each of the query subjects in the **Returns (query)** namespace.

11. Double-click the following query items to add them to the report:

    - **Retailers > Retailer Name**
    - **Products > Product Name**
    - **Returns Reason > Return Reason Description**

    The results appear as follows:

Retailer Name	Product Name	Return Reason Description
<Retailer Name>	<Product Name>	<Return Reason Description>
<Retailer Name>	<Product Name>	<Return Reason Description>
<Retailer Name>	<Product Name>	<Return Reason Description>

12. On the toolbar, click the **Run options** button  , and then click **Run HTML**.

    The results appear as follows:

Retailer Name	Product Name	Return Reason Description
Aktiv Markt	Aloe Relief	Defective product
Anapurna	Aloe Relief	Unsatisfactory product
Ao ar livre	Aloe Relief	Unsatisfactory product
Beach Beds Pty Ltd.	Aloe Relief	Unsatisfactory product
Breathe Free ltd	Aloe Relief	Unsatisfactory product
Campingspecialisten	Aloe Relief	Wrong product ordered
Can't Beat The Bush Supplies	Aloe Relief	Wrong product ordered
Chen Yu Enterprise Co.,	Aloe Relief	Defective product
Classens	Aloe Relief	Unsatisfactory product
Edward's Department Store	Aloe Relief	Unsatisfactory product
Equipo del deporte	Aloe Relief	Unsatisfactory product
Expert Fitness	Aloe Relief	Unsatisfactory product
L'Équipée	Aloe Relief	Defective product
Maximum Sports	Aloe Relief	Unsatisfactory product
Mundo saudável	Aloe Relief	Defective product
Objetivo Sport	Aloe Relief	Unsatisfactory product
Ocio y Aventura	Aloe Relief	Unsatisfactory product
Outdoor Gear Co-op	Aloe Relief	Defective product
Outdoors Direct	Aloe Relief	Wrong product ordered
Sport Jonas	Aloe Relief	Unsatisfactory product

    You can further customize this report by adding columns, formatting the display, and so forth.

13. Close both Internet Explorer tabs without saving.

    Results: The senior manager can now review Returns data by Return Reason, Retailer, and Product. The entire model was created very quickly.

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