Microsoft Fabric in a Day Lab Manual – Lab 6

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# Data Analysis - Building Your Semantic Model and Reports in Fabric

## Introduction:

Now that the Data Warehouse has been loaded, you’re ready to design the Semantic Model. The Semantic Model is the business representation of your data. It’s where relationships between tables and calculations are created.

## Part 1: Creating a New Semantic Model

**Creating a New Semantic Model:** To begin, navigate to the **Power BI** experience within your **Fabric Workspace** and click on the **Fabric Warehouse** that was created in **Lab 5**. Open the **Model** tab from the bottom of the Warehouse UI to launch the **semantic modeling** experience.

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You will now see a list of all available tables in the data warehouse. Click the **Reporting** tab on the top ribbon and click **New semantic model**. Name the new semantic **model\_invoices\_{your\_initials}.** Expand the **dbo** schema and check the box for **Tables** to add all tables from the warehouse and click **Confirm**.

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## Part 2: Designing the Semantic Model

**Opening the modeling UI:** If thenew model does not open automatically, navigateto your **Workspace** landing page and select the new **semantic** **model**. Select **Open data model** from the top ribbon.

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**Configuring Data Types:** To configure the data types for **fact\_invoices**, use the **Properties Blade** of the **semantic model** UI.

Hold **Ctrl** and click all fields in the table that have a suffix of **\_id**. From the **Properties Blade**, set the **Data Type** to **Whole Number**. When prompted by the **Data Type Change** notification, select **Yes**.

Next, update the remaining data types:

* Change **invoice\_date** to **Date**.
* Set **quantity** to **Whole Number** with two decimal places.
* Change **tax\_rate** and **unit\_price** to **Fixed Decimal Number**.

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**Defining table relationships:** Begin by collapsing the navigational blades as needed to give yourself more viewing space. Create a relationship between **dim\_salesperson** and **fact\_invoices. Click and drag** the **salesperson\_id** field from **fact\_invoices** to the **person\_id** field on **dim\_salesperson** and release. In the **New Relationship** tab, confirm **fact\_invoice** as **From table** and **dim\_salesperson** is **To table** and confirm the correct columns are highlighted. Set **Cardinality** to **many-to-one**, and choose **Cross-Filter Direction** as **Single**, then click **Save**. You will now see a relationship between the **dim\_salesperson** and **fact\_invoices** table in the modeling UI. Pay close attention to the **Cross-Filter Direction** for each join.

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Repeat the steps above (5-7) for the remaining dimension tables using the following mappings:

* **fact\_invoices.customer\_id**-> **dim\_customer.customer\_id**
* **fact\_invoices.delivery\_method\_id** -> **dim\_deliver\_method.delivery\_method\_id**
* **fact\_invoices.package\_type\_id** -> **dim\_package\_types. package\_type\_id**
* **fact\_invoices.stock\_item\_id** -> **dim\_stock\_items. stock\_item\_id**

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**Creating Measures for Aggregation:** To add measures for aggregation, click on the **fact\_invoices** table from the Explorer and select **New Measure** from the top ribbon. The expression bar for creating a measure will appear at the top. Created the **Extended** Amount measure by adding the following DAX to the expression box:

**Extended Amount =**

**SUMX(**

**fact\_invoices**

**,fact\_invoices[unit\_price] \* fact\_invoices[quantity]**

**)**

Select **New Measure** again and create the **Tax Amount** measure with the below DAX. Also apply formatting to format the measure as Currency with 2 decimal places.

**Tax Amount =**

**SUMX(**

**fact\_invoices**

**,(fact\_invoices[unit\_price] \* fact\_invoices[quantity]) \* (fact\_invoices[tax\_rate] / 100)**

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## Part 2: Visualizing Your Data via Custom Power BI Report

**Visualizing Your Data via Custom Power BI Report:** Once the **Semantic Model** has been defined, you are ready to begin visualizing the data using **Power BI**. One of the unique aspects of **Fabric** is that all modeling and reporting activities can be done directly through the browser. However, you can still use **Power BI Desktop** if needed.

To begin, select the **New** report option from the Home navigation bar or navigate to the **Power BI** experience in your **Fabric Workspace** and select the **model\_invoice Semantic Model**. From the navigation tiles, click the dropdown for **Explore This Data** and choose **Create a Blank Report**.

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You will see a familiar report development experience, resembling the current web-based **Power BI** report creation environment:

* The **Data Blade** contains all available objects from your semantic model.
* The **Visualization Blade** allows you to select the type of visualization to use.
* The **Filters Blade** provides options for visual, page, and report-level filters.

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Next, click the down arrow next to **dim\_customer** in the **Data Blade** and check the box next to **customer\_name** to create the first visualization on your canvas. Click on the table that was created to select it.

Repeat this process for the following tables and fields:

* **dim\_customer.delivery\_state\_province\_name**
* **dim\_customer.delivery\_city\_name**

Lastly, add the two **Measures** created in the previous section, **Extended Amount** and **Tax Amount**. Once done, resize the table and move it to the bottom of the canvas.

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Next, create a **Clustered Column Chart** by selecting the appropriate icon from the **Visualization Blade**. From the **Data Blade**, add **dim\_salesperson.salesperson\_name** and the **Extended Amount** measure to the chart. Adjust the visualization and position it to the left of the canvas.

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To complete the report, add a **Card Visualization** to the canvas and add the **invoice\_line\_id** field to it. Change the aggregation to **Count.**

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Finally, click **Save** in the top-right corner to save your report. Name your report **manual\_invoice\_report\_{your\_initials}** and click **Save**.

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## Part 3: Visualizing Your Data via Auto-Generated Power BI Report

**Visualizing Your Data via Auto-Generated Power BI Report:** To start, navigate to the **Power BI** experience within your **Fabric Workspace** and click on the **model\_invoice** **Semantic Model**.

From the navigation tiles, click the dropdown for **Explore this data** and choose **Auto-create a report**. **Fabric** will automatically generate a **Power BI** report based on the data points in your semantic model.

If needed, you can further edit and tailor this report to fit specific scenarios. Otherwise, simply click **Save** from the top ribbon. Name your report **auto\_created\_invoice\_report\_{your\_initials}** and click **Save**.

Finally, navigate back to your **Workspace Landing Page** to view all artifacts created during the course.

You have now successfully completed **Lab 6**.

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