Power BI

Power BI Advanced

Enhance your Data Model

Module 1 Lab

1. Open up the file **Student Modeling Pre-class.pbix**

2. Create the relationships between the tables!
   HINT: You may need to preview some of the tables to see what is in them

   Think about: What sort of data model are you creating?

Power BI

1. What is a *data model* in the context of Power BI?

2. What are some advantages of a star schema over a flat or denormalized model?

3. How might you improve the performance of a Power BI model?

4. How does Power BI store DateTime information? What are some consequences of this?

Module 2 Lab

1. Create a MEASURE for Total Units Sold
    HINT: The formula will probably use SUM()

2. Create a CALCULATED COLUMN on the fact table that shows product
    category and campaign traffic channel combined
    Example: Urban, Organic Search

3. It is fairly easy to see that the CALCULATED COLUMN is working. Create
    some visuals that allow you to confirm that the Total Units Sold MEASURE is
    working right
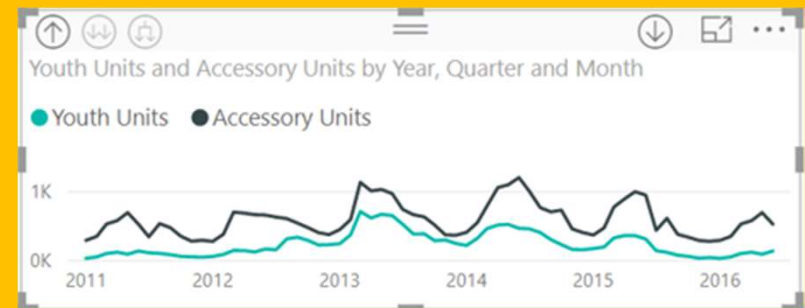
KNOWLEDGE CHECK Module 2

Power BI

- When is Calculated Column Evaluated?

- What is Default Summarization?

- When is a Measure Evaluated?

- When to use Measures and Calculated Columns?

Module 4 Lab

Create a report for the VP in charge of the Youth and Accessory Segments

1. Include a table visualization showing total units sold in the Youth Segment, Accessory Segment, and all other segments; by Campaign Device

2. Include a line chart showing total units sold in Youth and Accessory Segments by month

3. BONUS: Use the Unit Cost and Unit Price from the ProductDim table to calculate Sales Amount, Cost of Goods Sold, Profit and build some visuals around them

Device	Total Units	Youth Units	Accessory Units	Rest of Company Units
Deskop	10806	222	653	9931
Desktop	218680	4933	12412	201335
Mobile	198014	4427	11420	182167
Paper	40524	908	2376	37240
Tablet	207344	5151	12308	189885
Total	**675368**	**15641**	**39169**	**620558**

Youth Units and Accessory Units by Year, Quarter and Month

● Youth Units ● Accessory Units

1K

0K

2011 2012 2013 2014 2015 2016

Power BI

- What are the different kinds of evaluation contexts?

- When are filter or a row contexts present?

- Which functions are commonly used to *modify* existing evaluation contexts?

Power BI

- Can I parse advanced DAX formulas?

- What are some standard DAX patterns?

- Which time intelligence functions are built-in to DAX?

Appendix

KNOWLEDGE CHECK ANSWERS Module 1

- What is a *data model* in the context of Power BI?

  - *A data model is a collection of tables and relationships*

- What are some advantages of a star schema over a flat or denormalized model?
  - *Dimension tables save space by reducing the amount of data that needs to be repeated over and over in every row*
  - *Relationships between tables can be leveraged for more complex measures*

- How might you improve the performance of a Power BI model?
  - *Try using a star schema instead of a flat or denormalized model*
  - *Remove unnecessary columns*
  - *Set appropriate data types*

- How does Power BI store DateTime information? What are some consequences of this?

  - *DateTime information is stored as a floating-point decimal number. This means that datetimes are very precise but not very efficient to store.*

KNOWLEDGE CHECK ANSWERS Module 2

Power BI

- When is Calculated Column Evaluated?
  - *At the time of data load/data refresh.*

- What is Default Summarization?
  - *A default summarization is an implicit measure created in the background when you put a numeric field on a visualization. The function used (sum/max/min/avg/...) is based on the numeric field's default summarization setting.*

- When is a Measure Evaluated?
  - *At render time.*

- When to use Measures and Calculated Columns?
  - *It depends ☺. Calculated columns are useful when each row of data should be independently considered (although measures can do this too!) and the result won't change until the next data refresh. Measures should be used everywhere else.*

Power BI

- What are the different kinds of evaluation contexts?
  - *Filter context and row context*

- When are filter or a row contexts present?
  - *Row contexts are present in iterator functions and calculated column evaluations. Filter contexts are present in pivot tables and other visualizations.*

- Which functions are commonly used to *modify* existing evaluation contexts?
  - *CALCULATE, ALL, etc.*

Power BI

- Can I parse advanced DAX formulas?
  - *Yes I can!*

- What are some standard DAX patterns?
  - *CALCULATE(…)*

- Which time intelligence functions are built-in to DAX?
  - *Lots of them…YTD, FY, previous month, etc*

CALCULATE

CALCULATE – Steps in Evaluating the CALCULATE Function

CALCULATE(Expression, [Filter1], [Filter2].....)

- Step1 : Copy the current filter context
- Step 2: Add new filters if any
- Step 3: Update/ignore existing filters if any
- Step 4: Convert row context to filter context
- Step 5: AND all filter conditions to create new filter context
- Step 6: Evaluate the Expression
- Step 7: Return back to original filter context

Power BI

Iterator Function Example 3
- Ranking Using Iterators in Calc. Column
- CALCULATE to convert Row Context to Filter Context

Rank Of Sales =

VAR CurrentProductSales = CALCULATE (SUM (Sales[Sales Amount]))

RETURN

SUMX(FILTER(ProductDim, CALCULATE (SUM (Sales[Sales Amount])) > CurrentProductSales), 1)+1