**Strategic Analytics Applicant Name:  
Job Candidate Skills Assessment Position Applying For:  
Power BI and DAX Date of Interview:**

This skills assessment is meant to evaluate not only your familiarity with Power BI and your command of DAX syntax, but also your critical thinking and problem-solving skills. Please complete as much of this assessment as possible prior to your interview. We will discuss your submission and you will be asked to describe the thought-process that led to your answers.

The questions below will ask you to write out DAX code for measures meeting specific requirements. If you are unable to write out code for a specific measure, please simply do your best to make notes of what type of functions could likely be used, and factors which you’d need to consider. Remember, the thought process is as important as the syntax itself.

***Data Model Structure***

Within a Power BI data model, four of the tables are factSales, dimDate, dimSalesOrg, and dimProduct.

factSales and dimDate are related to one another in a many-to-one relationship, via a DateKey column they both share, with the DateKey column in factSales representing the invoice date for each record.

factSales and dimSalesOrg are related to one another in a many-to-one relationship, via a SalesRepKey column they both share, with the SalesRepKey column in factSales representing the sales rep responsible for the sale in each record.

factSales and dimProduct are related to one another in a many-to-one relationship, via a ProductKey column they both share, with the ProductKey column in factSales representing the product sold on each record.

Among the factSales table’s fields are the following:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| DateKey | SalesRepKey | CustomerKey | ProductKey | Revenue | Cost | Margin |

Among the dimDate table’s fields are the following:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| DateKey | Year | MonthNumber | Quarter | WeekNumber | DayOfYear |

Among the dimSalesOrg table’s fields are the following:

|  |  |  |  |
| --- | --- | --- | --- |
| SalesRepKey | SalesRepName | DivisionName | RegionName |

There is a hierarchy in this table:   
DivisionName > RegionName > SalesRepName

Among the dimProduct table’s fields are the following:

|  |  |
| --- | --- |
| ProductKey | ProductDescription |

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Using the data model structure described on the previous page, please write out DAX code meeting the requirements of the measures below, for as many of the requested DAX measures as possible.

You can use DAX Formatter (<https://www.daxformatter.com/>) or DAX Studio (<https://daxstudio.org/>) to format your code before pasting here.

***Time-Intelligence functions***

***Standalone Functions***

1. **YTD:** Write a DAX measure for YTD Revenue

Total YTD Revenue =

TOTALYTD ( SUM ( factSales[Revenue] ), dimDate[DateKey] )

1. **PY:** Write a DAX measure for Previous Year Revenue

PY Revenue =

CALCULATE (SUM ( factSales[Revenue] , DATEADD (dimDate[DateKey], -1,YEAR ) )

PY :=

VAR CurrentYearNumber = SELECTEDVALUE (dimDate[DateKey].YEAR)

VAR PreviousYearNumber = CurrentYearNumber - 1

VAR Result =

    CALCULATE (

        SUM ( factSales[Revenue],

        REMOVEFILTERS (dimDate[DateKey]),

        dimDate[DateKey].YEAR = PreviousYearNumber,

        VALUES ( 'dimDate'[MonthNumber] )

    )

RETURN

    Result

1. **PYTD:** Write a DAX measure for Previous YTD Revenue

Total Revenue Previous Year=

TOTALYTD ( SUM ( factSales[Revenue]), DATEADD ( dimDate[DateKey], -12, MONTH ) )

PYTD :=

VAR LastMonthInYearAvailable = MAX ( ' dimDate'[MonthNumber] )

VAR LastYearAvailable = SELECTEDVALUE ( ' dimDate'[Year] )

VAR PreviousYearAvailable = LastYearAvailable - 1

VAR Result =

    CALCULATE (

        [Sales Amount],

        REMOVEFILTERS ( ' dimDate' ),

        ' dimDate'[Month Number] <= LastMonthInYearAvailable,

        ' dimDate'[Year] = PreviousYearAvailable

    )

RETURN

    Result

1. **CYMTD:** Write a DAX measure for Current Year, Current Month-to-Date Revenue

CYMTD Revenue =TOTALMTD ( SUM ( factSales[Revenue] ), dimDate[DateKey], dimDate[DateKey].YEAR=YEAR(TODAY()) )

1. **CYPM:** Write a DAX measure for Current Year, Previous Month Revenue

CYPM =

CALCULATE (SUM ( factSales[Revenue] , DATEADD (DATE(YEAR(TODAY()),MONTH(TODAY()),1), -1,MONTH ) )

1. **CYPMTD:** Write a DAX measure for Current Year, Previous Month-to-Date Revenue
2. **PYMTD:** Write a DAX measure for Previous Year, Month-to-Date Revenue
3. **PYPM:** Write a DAX measure for Previous Year, Previous Month Revenue
4. **PYPMTD:** Write a DAX measure for Previous Year, Previous Month-to-Date Revenue
5. **4WA:** Write a DAX measure for a rolling 4 week average of Margin, ending yesterday
6. **8WA-5WA:** Write a DAX measure for a rolling 4 week average of Margin, for the four weeks prior to the four weeks in the previous 4WA measure
7. **PY4WA:** Write a DAX measure for a rolling 4 week average of Margin, for the same weeks in the 4WA measure, but for the previous year

***BONUS…***

1. **4FWA:** Write a DAX measure for a rolling 4 full-week average of Margin, ending on the most recent Saturday
2. **8FWA-5FWA:** Write a DAX measure for a rolling 4 full-week average of Margin, for the four full weeks prior to the four full weeks in the previous 4FWA measure
3. **PY4FWA:** Write a DAX measure for a rolling 4 full-week average of Margin, for the same full weeks in the 4FWA measure, but for the previous year

***Measures used on Dashboards with Time Slicers:***

On a dashboard with a slicer on dimDate.Year:

1. Modify, if necessary, your above YTD, PY, and PYTD functions to have values that dynamically change based upon the selected value in the Year slicer, with the slicer value being the year used as the current year
2. Modify your above YTD, PY, and PYTD functions to ignore changes in the selected value in the Year slicer, with the current calendar year being the year used as the current year

On a dashboard with a slicer on dimDate.MonthNumber:

Modify, if necessary, your above CYMTD, CYPM, PYMTD, and PYPM functions to have values that dynamically change based upon the selected value in the month slicer, with the current calendar year being the year used as the current year, and the selected value in the month slicer being the month used as the current month.

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***Semi-additive measures in multi-tiered reports (i.e. Average, Median, Mode, Rank)***

1. Write a DAX measure that would allow you to show the average sales rep revenue by Division and Region in a matrix visualization with DivsionName, RegionName, and SalesRepName as row headers, and this measure as the sole values field. Date range will be controlled by a slicer on dimDate.DateKey.
2. Write a DAX measure for the same matrix visualization above that would rank each rep within each region, each region within a division, and each division against one another, based upon your previous average sales rep revenue measure from the previous question.