Question 8. List Top 5 tips to optimize DAX query manually and explain why you choose.

Avoid Repeated Calculations: Use Variables

- ***Problem:*** *Repeated calculations can slow down performance.*
- ***Solution:*** *Store results in variables to avoid recalculating.*
- ***Example:***

SalesGrowth = VAR PrevYearSales = CALCULATE(SUM(Sales[Amount]), PREVIOUSYEAR(Calendar[Date])) RETURN IF(PrevYearSales = 0, BLANK(), SUM(Sales[Amount]) - PrevYearSales)

- ***Explanation:*** *Variables are calculated once and reused, enhancing performance.*

2. Filter Context Optimization: Use KEEPFILTERS

- ***Problem:*** *Unnecessary filters can degrade performance.*
- ***Solution:*** *Use KEEPFILTERS to maintain specific filters and avoid recalculations.*
- ***Example:***

TotalSales = CALCULATE(SUM(Sales[Amount]), KEEPFILTERS(Product[Category] = "Bikes"))

- ***Explanation:*** *KEEPFILTERS avoids overwriting filters, improving efficiency.*

3. Minimize Use of CALCULATE

- ***Problem:*** *Excessive use of CALCULATE can slow down performance.*
- ***Solution:*** *Avoid unnecessary use of CALCULATE.*
- ***Example:***

TotalProfit = SUMX(FILTER(Sales, Sales[Profit] > 0), Sales[Profit])

- ***Explanation:*** *Direct use of SUMX reduces the need for CALCULATE.*

4. Leverage SUMMARIZECOLUMNS for Aggregations

- ***Problem:*** *Complex aggregations can be slow.*
- ***Solution:*** *Use SUMMARIZECOLUMNS for more efficient grouping and aggregation.*
- ***Example:***

SalesByCategory = SUMMARIZECOLUMNS(Product[Category], "Total Sales", SUM(Sales[Amount]))

- ***Explanation:*** *SUMMARIZECOLUMNS is optimized for such operations.*

5. Optimize Date Calculations with DATESBETWEEN

- ***Problem:*** *Date-related calculations can be slow.*
- ***Solution:*** *Use DATESBETWEEN for efficient date range calculations.*
- ***Example:***

SalesLastQuarter = CALCULATE(SUM(Sales[Amount]), DATESBETWEEN(Calendar[Date], STARTOFQUARTER(TODAY()), ENDOFQUARTER(TODAY())))

- ***Explanation:*** *DATESBETWEEN directly calculates the range, reducing overhead.*

- Question 9. What is the benefit of using DAX optimization tools like DAX Studio, Performance Analyzer,Tabular Editor

Using DAX optimization tools like DAX Studio, Performance Analyzer, and Tabular Editor provides significant benefits for improving the performance and efficiency of Power BI and Analysis Services models.

DAX Studio:

- ***Query Optimization and Profiling:***

Allows for detailed analysis of DAX queries, identifying bottlenecks, and understanding how the formula and storage engines process queries.