Learning Breakdown

# 1. Foundation Setup and Architecture:

* Used Analytic Workspace Manager (AWM) to create SALESTRACK workspace
* Learned the importance of proper database connections and schema management (we used OLAPTRAIN schema)
* Understanding of how OLAP differs from traditional RDBMS structures

# 2. Dimension Creation and Management:

We created four key dimensions:

## a) Channel Dimension:

* Created three levels: ALL\_CHANNELS → CLASS → CHANNEL
* Added CHANNEL\_TYPE as a user attribute
* Learned about mapping source data from the CHANNELS table

## b) Time Dimension:

* Built four levels: ALL\_YEARS → CALENDAR\_YEAR → CALENDAR\_QUARTER → MONTH
* Created CALENDAR hierarchy
* Mapped to the TIMES table with specific date formatting

## c) Geography Dimension:

* Used XML template for more complex structure
* Learned about template-based creation for standardized dimensions

## d) Product Dimension:

* Also template-based
* Understood hierarchical product categorization
* Learned to load and verify dimension data using the AWM Data Viewer

# 3. Sales Cube Development:

Detailed Steps:

* Created SALES\_CUBE incorporating all four dimensions
* Added two measures: SALES and QUANTITY
* Set aggregation parameters (30% for cost-based aggregation)
* Configured sparse storage for all dimensions
* Mapped cube to source tables:
  + SALES\_FACT
  + CHANNELS
  + TIMES
  + CUSTOMERS
  + PRODUCTS

# 4. Performance Optimization and Query Rewrite:

Practical Results:

* Enabled Materialized View (MV) Refresh
* Enabled Query Rewrite functionality
* Ran comparison tests:
  + Regular SQL queries against fact tables
  + Same queries with OLAP cube materialized views
  + Documented significant performance improvements
  + Learned to use EXPLAIN PLAN to understand query execution

Technical Challenges Encountered

# 1. Data Mapping Complexities:

* Understanding foreign key relationships
* Proper configuration of join conditions
* Ensuring data integrity across dimensions

# 2. Performance Tuning:

* Learning to interpret build logs
* Understanding aggregation settings
* Configuring proper storage options (sparse vs. dense)

# 3. Query Optimization:

* Learning to read and interpret execution plans
* Understanding when queries would/wouldn't use the cube MVs
* Proper SQL syntax for optimal cube utilization

## Practical Applications:

I now understand how this technology could be applied in real business scenarios:

* Sales analysis across multiple dimensions
* Performance optimization for large-scale reporting
* Efficient handling of complex business hierarchies
* Quick access to aggregated data at various levels

## Key Takeaways:

1. OLAP provides significant performance benefits for analytical queries
2. Proper dimension and hierarchy design is crucial
3. Understanding source data relationships is essential
4. The importance of proper mapping and maintenance procedures
5. The value of materialized views in query optimization

This practice session has given me a solid foundation in OLAP technology and its practical applications. I appreciate how the exercises built upon each other to create a complete understanding of the system.