

Part - 9

Data Modelling

Interview

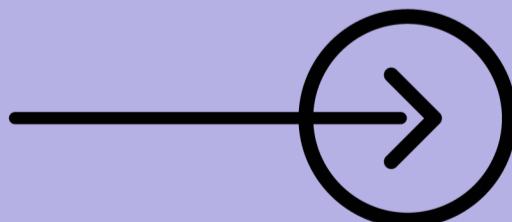
Questions and Answers...!



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When designing a data model, what factors do you consider to ensure scalability and performance?

To ensure scalability and performance in Power BI data models, focus on efficient data model design, indexing, query optimization, memory management, relationship management, and data loading practices.

These factors help in creating a robust, scalable, and high-performing data model for effective data analysis and reporting.



1. Data Model Design

- • **Star Schema:** Organize the data model using a star schema, which involves fact tables connected to dimension tables. This simplifies queries and improves performance
- **Normalization:** Normalize data to reduce redundancy and avoid data anomalies. However, for performance, a balance between normalization and denormalization is essential.
- **Data Types:** Use appropriate data types for each column to optimize storage and performance. For example, use integer data types for keys and numerical values.



okayy.. what about **Indexes**

2. Indexes

- • **Clustered Indexes:** Use clustered indexes for primary keys to ensure fast retrieval of rows.
- **Non-Clustered Indexes:** Create non-clustered indexes on columns frequently used in searches, joins, and filters.



Nice.. what about **Query Optimization**

3. Query Optimization

- ➡ • **Query Folding:** Ensure that as many transformations as possible are performed at the data source level (query folding), which reduces the load on Power BI.
- **Efficient Queries:** Write efficient DAX queries and avoid complex calculations in real-time dashboards. Pre-calculate and store results where possible.



Nice.. what about Data Volume Management

4. Data Volume Management

- **Incremental Refresh:** Implement incremental data refresh to handle large datasets efficiently by only refreshing new or updated data.
- **Data Aggregation:** Aggregate data at appropriate levels to reduce the volume of detailed data processed during analysis.



wow.. what about Memory Management

5. Memory Management



- **VertiPaq Compression:** Use VertiPaq storage engine, which compresses data in memory, to handle large datasets efficiently.
- **Data Types Optimization:** Optimize data types to use less memory. For example, prefer integers over text where applicable.



Nice.. what about Relationships

6. Relationships

- ➡ • **Manage Relationships:** Ensure relationships between tables are correctly defined and use appropriate cardinality (one-to-many, many-to-one).
- **Active/Inactive Relationships:** Use active and inactive relationships wisely. Only keep necessary relationships active to reduce complexity and improve performance..



Great. what about Calculated Columns and Measures

7. Calculated Columns and Measures

- • **Calculated Columns:** Use calculated columns sparingly as they are computed during data load, which can impact refresh time.
- **Calculated Measures:** Prefer calculated measures for dynamic calculations during query time to save memory and improve load performance.



Ohh.. what about Data Loading and Storage

8. Data Loading and Storage

- • **Data Loading:** Optimize data loading by filtering unnecessary data and reducing the amount of data imported into Power BI.
- **Storage Mode:** Choose the appropriate storage mode (Import, DirectQuery, or Composite) based on the use case and data size..



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