

Assessment- Two

1.What is the importance of data modeling in Power BI?

Power BI data modeling is the act of organizing data in a way that facilitates meaningful reporting and analysis. Its first key role is to create a single, consistent basis for your reports. By logically linking various data tables, it provides consistency in the data and minimizes redundancy, which enhances performance overall. A good model makes it easy to generate reports more quickly as well as build complex calculations, thus providing deeper business insights.

2.Can you explain the difference between fact and dimension tables?

Fact tables in a data model hold quantitative, numerical information that quantifies business events, for example, sales amounts or quantities of transactions. They are the "what" of an event. Dimension tables, on the other hand, hold the descriptive, qualitative information surrounding these facts. They hold attributes such as product names, customer information, or geographic locations, addressing the "who, what, and where." This segmentation is the basis for a well-structured, effective data model.

3.How do you create relationships between tables in Power BI?

Relationships are made in the Model view by dragging an individual key from one table onto the corresponding key in another. For example, you would connect a ProductID in your 'Products' dimension table to the ProductID in your 'Sales' fact table. Doing so makes a logical link that enables data to be filtered and grouped across tables, enabling cohesive visuals and reports to be constructed.

4.What are bi-directional filters, and when should they be used?

Bi-directional filters allow filtering to travel both ways between connected tables. Whereas a regular filter only travels from a dimension to a fact table, a bi-directional filter can also allow the filter context to travel back from the fact table. This is sometimes needed for particular many-to-many relationships or for certain analytic requirements but can have an effect on performance and create ambiguity. They are to be used sparingly and only when a one-way filter is inadequate for your reporting.

5. Why is it important to hide fields in the report view?

Suppressing unnecessary fields is an important best practice for enhancing the user experience and model readability. By suppressing technical columns (such as IDs) and intermediate calculation fields, you minimize clutter in the field list, thereby making it

simpler for report creators to discover and utilize pertinent data. This also eliminates unwanted usage of incorrect fields and provides a clean, professional-looking interface.

6.What are some basic practices for organizing tables in a data model?

Organizing in an effective manner is all about a Star Schema design with a central fact table and dimension tables around it. The best practices involve having clear, concise naming conventions for tables and columns and hiding all technical or non-reporting columns to give a simplified user interface. This will result in a clean, understandable, and high-performing data model.

7.Can you describe the concept of normalization in data modeling?

Normalization is a database design method that groups data in order to minimize redundancy and enhance data integrity. Normalization breaks a big table into some smaller, more efficient related tables. While over-normalization can be detrimental to analytical queries, some level of it is vital to preserve data consistency. Power BI mostly prefers working with slightly denormalized star schema, striking a balance between integrity and performance.

8.What is the purpose of creating hierarchies in a data model?

Hierarchies within a data model enable structured exploration and analysis of data at multiple levels of granularity. An illustration would be a date hierarchy (Year → Quarter → Month → Day), where users can drill down from a high-level aggregation to a detailed level. This functionality enables reports to be more interactive and dynamic, allowing users to explore data at multiple levels within a single visualization.

9.How do you ensure data integrity when designing a data model?

Data integrity requires several processes in order to ensure that your data is reliable and accurate. There's proper primary and foreign keys utilization for relationships, data type validation, and eliminating duplicate or null values while cleaning the data. Testing your model and its relationships with test reports regularly is also important to ensure it's performing as it should and yielding reliable results.

10.Why is it recommended to avoid complex relationships in a data model?

Complex relationships are important to be avoided for the best performance and simplicity of the model. Too complex relationships make the query execution slow and the results ambiguous as the Power BI engine works hard to unscramble complex filter paths. A simple, tidy model, such as a star schema, is easier to work with, debug, and scale, making your reports fast and reliable.