1. What is a primary key in a table?

A primary key is a column (or set of columns) in a table that uniquely identifies each row. It must contain unique values. It cannot contain NULLs. Each table can have only one primary key, but it may consist of multiple columns (composite key).

2. Name the two types of table relationships in Power BI.

1. One-to-Many (1:*) – most common relationship type. 2. Many-to-Many (*:*) – used when both tables contain duplicate values in the related columns.

3. How do you create a relationship between two tables in Power BI?

1. Go to Model view. 2. Drag a field from one table to the matching field in another table. 3. In the relationship dialog, set Cardinality (1:* or *:*) and Cross filter direction (Single or Both). 4. Click OK.

4. What is a 'star schema'?

A star schema is a data model structure where a central fact table is connected to multiple dimension tables, forming a star-like shape. Fact table contains numeric transactional data (e.g., Sales). Dimension tables provide descriptive context (e.g., Products, Customers, Date).

5. Which table is typically the fact table in a sales dataset?

In a sales dataset, the fact table is typically the Sales table, containing measures like Quantity, Amount, and links to dimension tables through foreign keys.

7. Why is ProductID in Sales.csv a foreign key?

ProductID in Sales only acts as a reference. Detailed product information (Name, Price, Category) is stored in the Products table. Therefore, Sales[ProductID] → Products[ProductID] is a foreign key relationship.

8. Fix a relationship error where ProductID has mismatched data types.

If Sales[ProductID] is a number and Products[ProductID] is text: 1. In Data view, change both to the same data type (preferably Whole Number). 2. Recreate the relationship between the two tables. This ensures Power BI recognizes a valid relationship.

9. Explain why a star schema improves performance.

Queries are simpler and faster because fact tables are centralized. Fewer relationships mean less complexity. Column storage compression works better with star schema. Recommended by Microsoft as the best practice for Power BI models.

11. Optimize a model with circular relationships—how would you resolve it?

Circular relationships happen when filters create loops between tables. To resolve: 1. Remove one of the relationships. 2. Introduce a bridge table. 3. Use DAX functions like TREATAS() or LOOKUPVALUE() instead of direct relationships. 4. Adjust cross filter direction carefully.

14. Use bidirectional filtering sparingly—when is it appropriate?

Bidirectional filtering should only be used in specific scenarios: - When implementing a many-to-many relationship. - When using bridge tables. - When users need filters to propagate across multiple related tables. In most cases, single-direction filtering is preferred because it’s

faster and avoids ambiguity.