

ASSIGNMENT

12) Explain the concept of DirectQuery in Power BI.

DirectQuery allows Power BI to connect directly to a data source without importing the data into Power BI. Queries are sent in real-time to the data source every time you interact with a report.

1. Real-time data access.
2. Doesn't need to be stored in Power BI.
3. Useful for large datasets.

13) What are Power BI templates and how are they useful?

Power BI templates are reusable files that contain the report structure, visuals, data model, queries, and parameters—but **not the actual data**. Share standardized report formats.

14) How do you handle incremental data refresh in Power BI?

Incremental refresh loads only **new or changed data** during refreshes, improving performance and reducing load.

15) What is the role of Power Query in Power BI?

Power Query is the data transformation and preparation engine in Power BI. It uses **M language** and allows you to:

- Connect to various data sources.
- Clean, transform, and shape data (remove columns, etc.).

16) Explain the difference between calculated columns and calculated tables in Power BI.

Calculated Column	Calculated Table
Adds a new column to an existing table	Creates a new table based on a DAX expression

Stored in the model, increases
model size

Stored as a separate table

17) How do you create custom visuals in Power BI?

Custom visuals can be created using:

1. **Power BI Developer Tools** (based on TypeScript and D3.js).
2. Visual Studio Code with Power BI Visual CLI.
3. Package your visual and import it into Power BI.

18) What are the best practices for optimizing performance in Power BI?

- Use **Import mode** when possible for better performance.
- **Reduce data size** (remove unused columns/rows). Avoid complex and unnecessary DAX calculations.
- Use **aggregations** for large datasets.
- Optimize **Power Query steps**.
- Use **measure** instead of calculated columns when possible.
- Minimize visuals and slicers on each page.

19) How can you integrate Power BI with other Microsoft products like Azure and Office 365?

- **Azure:**
 - Use **Azure SQL, Data Lake, Synapse Analytics** as data sources.
 - Use **Azure Data Factory** for data pipelines.
 - Integrate with **Azure Machine Learning** models.
- **Office 365:**
 - Embed Power BI in **SharePoint Online**.
 - Use **Teams** to collaborate and share Power BI reports.
 - Automate with **Power Automate** and **Power Apps**.
 - Use **Excel** for analyzing data from Power BI datasets.

20) Explain the concept of aggregations in Power BI.

Aggregations are pre-calculated summary tables that improve performance when dealing with large datasets.

Type -: Imported aggregations: Stored in-memory for faster querying.

Power BI can automatically redirect queries to the aggregation table if it matches the query logic.

21) How do you handle error handling and data quality in Power BI?

- **In Power Query:**
 - Use **try...otherwise** to handle errors in transformations.
 - Filter or remove rows with errors.
 - Validate data types and null values.
- **In reports:**
 - Use **data profiling tools** (column quality, column distribution).
 - Use **conditional formatting** to highlight anomalies.
 - Create **data validation dashboards** for monitoring quality.

22) What is the purpose of Power BI Embedded and when would you use it?

Power BI Embedded is a Microsoft Azure service that allows you to **embed Power BI reports and dashboards** into **custom web applications**.

Use Case:

- SaaS providers who want to offer analytics to users without requiring a separate Power BI license.
- Internal applications that need embedded analytics without giving access to the full Power BI portal.