

Data Analysis Expressions (DAX) Assignment

1.What is DAX? Why it is used?

=> **DAX (Data Analysis Expressions)** is a formula language used in **Power BI, Power Pivot,** and **SSAS Tabular models** to define custom calculations and queries on data.

Why is DAX used?

- To create **calculated columns, measures, and tables.**
- To perform complex **aggregations, time intelligence** (e.g., YTD, QTD), and **conditional calculations.**
- It enables users to analyze data efficiently in a data model.

2.What are the data types supported by DAX?

| DAX Data Type | Description |
|-----------------------|--|
| Whole Number | Integer values |
| Decimal Number | Floating-point numbers (real numbers) |
| Currency | Fixed-point numbers with four decimals |
| Boolean | TRUE/FALSE values |
| Text | String values |
| Date/Datetime | Dates and times |
| Blank | Represents null or missing values |
| Table | A table of data (used in advanced DAX) |

3.What is the difference between a calculated column and a measure?

| Feature | Calculated Column | Measure |
|---------------------------|---|---------------------------------------|
| Stored in model | Yes – stored as part of the table | No – calculated at query time |
| Evaluation context | Row context | Filter context |
| Use case | Add data to rows (e.g., profit per row) | Aggregate values (e.g., total profit) |
| Performance | Slower for large datasets | Faster and more efficient |
| Storage impact | Consumes more memory | Does not consume memory for storage |

4. How to exclude all filters while calculations on any measure.

=> To **ignore all filters** in a DAX measure, use the `ALL ()` function.

Example:

Total Sales All = CALCULATE(SUM(Sales[Amount]), ALL(Sales))

5. What are circular dependencies? How can you avoid creating circular dependencies in your DAX expressions?

Circular dependencies occur when two or more calculated columns or measures **refer to each other directly or indirectly**, creating a loop.

Example of Circular Dependency:

- Column A depends on Column B
- Column B depends on Column A

This leads to a **conflict** during calculation and Power BI will throw an error.

How to avoid them:

- **Separate logic** into independent calculations.
- Use **measures** instead of calculated columns when possible (since measures are evaluated after data is loaded).
- Avoid referencing **calculated columns that depend on each other**.
- Consider **using variables (VAR)** to break dependency chains.