

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

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

Feature	Calculated Column	Measure
<b>Stored in model</b>	Yes – stored as part of the table	No – calculated at query time
<b>Evaluation context</b>	Row context	Filter context
<b>Use case</b>	Add data to rows (e.g., profit per row)	Aggregate values (e.g., total profit)
<b>Performance</b>	Slower for large datasets	Faster and more efficient
<b>Storage impact</b>	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.