



Lab Task no 5

Name : Ch Mubashir

Sap : 56892

Data Warehousing BSDS 5-1

Task

**Building a Basic BI Dashboard with Power BI and SQL Server
(AdventureWorks DB) :**

Objectives

- Connect Power BI to a SQL Server database.
- Import and transform data from **AdventureWorks**.
- Perform data modeling and establish relationships.
- Build a simple BI dashboard with KPIs and visuals.
- Prepare foundation for advanced BI labs (SSIS – ETL, SSAS – OLAP).

Step 1: Connecting Power BI to SQL Server

1. Open **Power BI Desktop**.
2. Navigate to **Home → Get Data → SQL Server**.
3. Enter your server name (example: localhost\SQLEXPRESS).
4. Select the **AdventureWorks** database.
5. Choose connection type:
 - **Import** → local copy of data.
 - **DirectQuery** → live connection to SQL Server.

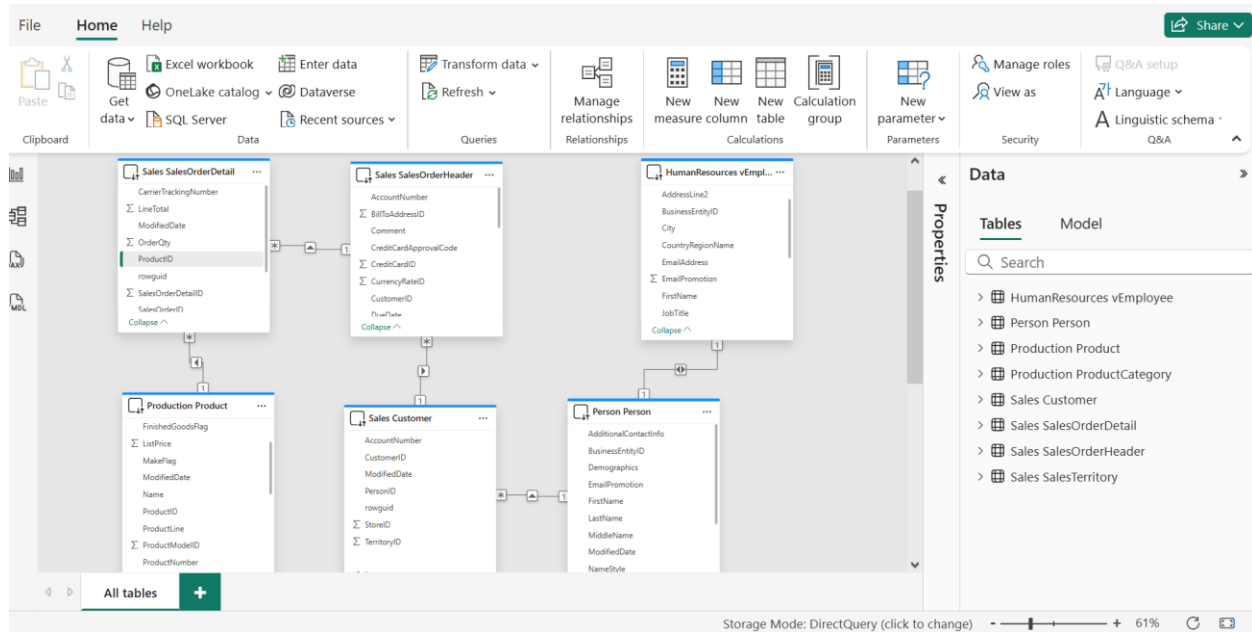
Step 2: Import Required Tables

The following tables were imported from AdventureWorks:

- Sales.SalesOrderHeader → Sales transactions.
- Sales.SalesOrderDetail → Line items and revenue.
- Production.Product → Product details.
- Sales.Customer → Customer information.
- Person.Person → Customer names.
- HumanResources.Employee → Sales staff details.

Step 3: Data Modeling in Power BI

Relationships were created in **Model View**:



- SalesOrderHeader[SalesOrderID] (1) → SalesOrderDetail[SalesOrderID] (many).
- SalesOrderDetail[ProductID] (many) → Product[ProductID] (1).
- SalesOrderHeader[CustomerID] (many) → Customer[CustomerID] (1).
- Customer[PersonID] → Person[BusinessEntityID].

Cardinalities:

- Most relationships are **one-to-many (1:*)**, where dimension tables (Customer, Product, Person) relate to fact tables (SalesOrderHeader, SalesOrderDetail).

Step 4: Building Visuals

1. Card → Total Sales Revenue

- Measure: SUM(SalesOrderDetail[LineTotal]).
- Displayed as a **Card visual**.
- Formatted as **Currency** with title *Total Sales Revenue*.

2. Bar Chart → Sales by Product Category

- **Axis:** Product Category (from Product table).
- **Values:** SUM(LineTotal).
- Sorted by descending sales.

3. Map → Sales by Region

- **Location:** Country/Region (from Customer Address).
- **Values:** SUM(LineTotal).
- Bubble/Filled Map visualization.

4. Line Chart → Monthly Sales Trend

- **X-Axis:** OrderDate (hierarchy → Month-Year).
- **Y-Axis:** SUM(LineTotal).
- **Result:** Shows sales fluctuations and seasonal trends.

5. Table/Bar Chart → Top 5 Customers by Sales

- **Axis/Rows:** Customer Name (Person table).
- **Values:** SUM(LineTotal).
- Applied **Top N Filter** → 5.

Step 5: Filters & Slicers

- **Year Slicer** → based on OrderDate.
- **Product Category Slicer** → allows filtering dashboard by category.

Final Dashboard :

