# Title: Implement SCD Type 1

## **Step 1: Create Tables**

### **Create the Sales\_Dimension Table**:

This table will store the main sales dimension data.

CREATE TABLE Sales\_Dimension\_jyothi (

    SalesID INT PRIMARY KEY,

    Sales\_Dimension\_jyothi INT,

    ProductID INT,

    SalesAmount DECIMAL(10, 2),

    SalesDate DATE

);

### **Create the Incremental\_Data\_Table**:

This table simulates the incremental updates (new or changed data).

CREATE TABLE Incremental\_data\_Table\_jyothi (

    SalesID INT PRIMARY KEY,

    Sales\_Dimension\_jyothi INT,

    ProductID INT,

    SalesAmount DECIMAL(10, 2),

    SalesDate DATE

);

## **Step 2: Insert Initial Data into Sales\_Dimension**

Let’s insert some sample sales records into the **Sales\_Dimension** table.

INSERT INTO Sales\_Dimension\_jyothi (SalesID, Sales\_Dimension\_jyothi, ProductID, SalesAmount, SalesDate)

VALUES

(1, 101, 1001, 250.75, '2024-01-15'),

(2, 102, 1002, 150.50, '2024-02-20'),

(3, 103, 1003, 300.00, '2024-03-10'),

(4, 104, 1004, 450.25, '2024-04-05'),

(5, 105, 1005, 500.00, '2024-05-25');

## **Step 3: Insert Updated Data into Incremental\_Data\_Table**

Simulate incremental updated customer data. Some records will have changes, and others will remain the same.

INSERT INTO Incremental\_data\_Table\_jyothi (SalesID, Sales\_Dimension\_jyothi, ProductID, SalesAmount, SalesDate)

VALUES

(1, 108, 1001, 250.75, '2024-01-15'),--update in Sales\_Dimension\_jyothi

(2, 102, 1012, 150.50, '2024-02-20'),--update in ProductID

(6, 103, 1003, 300.00, '2024-03-10'),--update in SalesID

(4, 104, 1004, 800.25, '2024-04-05'),--update in SalesAmount

(5, 105, 1005, 500.00, '2025-10-16');--update in SalesDate

## **Step 4: expected outcomes**

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## **Step 4: Implement SCD Type 1 Logic**

We will use the **MERGE** statement to compare the Incremental\_data\_Table\_jyothi table with the Sales\_Dimension\_jyothi table.

* If a **match** is found based on Sales\_Dimension\_jyothi, the existing data will be **overwritten**.
* If there’s a new record (not matched), it will be **inserted**.

### **SCD Type 1 MERGE Statement**:

MERGE INTO [dbo].[Sales\_Dimension\_jyothi] AS target

USING [dbo].[Incremental\_data\_Table\_jyothi] AS source

ON target.SalesID = source.SalesID

WHEN MATCHED THEN

UPDATE SET

        target.CustomerID = source.CustomerID,

        target.ProductID = source.ProductID,

        target.SalesAmount = source.SalesAmount,

        target.SalesDate = source.SalesDate

WHEN NOT MATCHED THEN

    INSERT (SalesID, CustomerID, ProductID, SalesAmount, SalesDate)

    VALUES(source.SalesID,source.CustomerID, source.ProductID, source.SalesAmount,source.SalesDate);

### **Explanation**:

1. **MERGE INTO**: Targets the Sales\_Dimension\_jyothi table.
2. **USING**: Specifies the Incremental\_data\_Table\_jyothi table as the source.
3. **ON**: Matches records based on the Sales\_Dimension\_jyothi.
4. **WHEN MATCHED**: If a match is found, updates the record in the Sales\_Dimension\_jyothi table.
5. **WHEN NOT MATCHED**: If no match is found, inserts the record as new.

## **Step 5: Validate the Results**

Run the following query to check the updated data in the Sales\_Dimension\_jyothi table:

SELECT \* FROM Sales\_Dimension\_jyothi;

**Expected Output** (Final Updated Table):

| **SalesID** | | **CustomerID** | | **ProductID** | | **SalesAmount** | | **SalesDate** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 108 | | 1001 | | 250.75 | | 2024-01-15 | |
| 2 | 102 | | 1012 | | 150.50 | | 2024-02-20 | |
| 3 | 103 | | 1003 | | 300.00 | | 2024-03-10 | |
| 4 | 104 | | 1004 | | 800.25 | | 2024-04-05 | |
| 5 | 105 | | 1005 | | 500.00 | | 2025-10-16 | |
| 6 | 103 | | 1003 | | 300.00 | | 2024-03-10 | |

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## **Summary of Changes**:

1.Sales\_Dimension\_jyothi :

update in ProductID 1002-> 1012

2.Sales\_Dimension\_jyothi

update in SalesAmount 450.25 -> 500.00

4.Sales\_Dimension\_jyothi

update in SalesDate '2025-10-16'

* + Remained unchanged as there was no incoming update.

## **Clean-up (Optional)**:

If you want to reset your tables for further testing:

TRUNCATE TABLE Customer\_Dimension;

TRUNCATE TABLE Incoming\_Customer\_Data;

### **Key Notes**:

* **MERGE** is the most efficient way to implement SCD Type 1 in SQL.
* Azure SQL Database fully supports the MERGE statement for such operations.
* You can integrate these scripts into stored procedures or pipelines in Azure Data Factory for automation.

Let me know if you need further assistance or enhancements! 😊