

# Design and implement a Type 1 slowly changing dimension with mapping data flows

```
CREATE TABLE [dbo].[CustomerSource] (  
    [CustomerID] [int] NOT NULL,  
    [Title] [nvarchar](8),  
    [FirstName] [nvarchar](50),  
    [MiddleName] [nvarchar](50),  
    [LastName] [nvarchar](50),  
    [Suffix] [nvarchar](10),  
    [CompanyName] [nvarchar](128),  
    [SalesPerson] [nvarchar](256),  
    [EmailAddress] [nvarchar](50),  
    [Phone] [nvarchar](25)  
) WITH ( HEAP )  
  
COPY INTO [dbo].[CustomerSource]  
FROM 'https://solliancepublicdata.blob.core.windows.net/dataengineering/dp-  
203/awdata/CustomerSource.csv'  
WITH (  
    FILE_TYPE='CSV',  
    FIELDTERMINATOR='|',  
    FIELDQUOTE='"',  
    ROWTERMINATOR='0x0a',  
    ENCODING = 'UTF16'  
)  
  
CREATE TABLE dbo.[DimCustomer](  
    [CustomerID] [int] NOT NULL,  
    [Title] [nvarchar](8) NULL,  
    [FirstName] [nvarchar](50) NOT NULL,  
    [MiddleName] [nvarchar](50) NULL,  
    [LastName] [nvarchar](50) NOT NULL,  
    [Suffix] [nvarchar](10) NULL,  
    [CompanyName] [nvarchar](128) NULL,  
    [SalesPerson] [nvarchar](256) NULL,  
    [EmailAddress] [nvarchar](50) NULL,  
    [Phone] [nvarchar](25) NULL,  
    [InsertedDate] [datetime] NOT NULL,  
    [ModifiedDate] [datetime] NOT NULL,  
    [HashKey] [char](64)  
)  
WITH  
(  
    DISTRIBUTION = REPLICATE,  
    CLUSTERED COLUMNSTORE INDEX  
)
```

## Column Expression

Type in	Expression
HashKey	<pre>sha2(256, iifNull(Title,'') +FirstName +iifNull(MiddleName,'') +LastName +iifNull(Suffix,'') +iifNull(CompanyName,'') +iifNull(SalesPerson,'') +iifNull(EmailAddress,'') +iifNull(Phone,''))</pre>

## Description

Creates a SHA256 hash of the table values. We use this to detect row changes by comparing the hash of the incoming records to the hash value of the destination records, matching on the `CustomerID` value. The `iifNull` function replaces null values with empty strings. Otherwise, the hash values tend to duplicate when null entries are present.

## Column

## Expression

## Description

Column	Expression
Select InsertedDate	<pre>iif(isNull(InsertedDate), currentTimestamp(), {InsertedDate})</pre>

If the `InsertedDate` value is null, insert the current timestamp. Otherwise, use the `InsertedDate` value.

Select ModifiedDate	<pre>currentTimestamp()</pre>
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Always update the `ModifiedDate` value with the current timestamp.

## Knowledge Check!

1. Which SCD type would you use to keep history of changes in dimension members by adding a new row to the table for each change?

- Type 1 SCD.
- Type 2 SCD.
- Type 3 SCD.

2. Which SCD type would you use to update the dimension members without keeping track of history?

- Type 1 SCD.
- Type 2 SCD.
- Type 3 SCD.

[Check your answers on the next page...](#)

Which SCD type would you use to keep history of changes in dimension members by adding a new row to the table for each change?

Type 1 SCD.

Type 2 SCD.

**Explanation:** When a value changes, Type 2 SCD will add a new row for the entity with a start date, end date, and unique key which will join back to any transactions in the fact table within the effective data range.

Type 3 SCD.

2.

Which SCD type would you use to update the dimension members without keeping track of history?

Type 1 SCD.

**Explanation:** When a value changes, Type 1 SCD will update the existing record without keeping history.

Type 2 SCD.

Type 3 SCD.