Adventure Works Sales Trends - Star Schema Documentation

# Star Schema Structure

## 1. Fact Tables

### Fact Table: AdventureWorks\_Sale\_Data

This fact table contains transactional sales data and links to the dimension tables through foreign keys.

|  |  |  |
| --- | --- | --- |
| Column Name | Data Type | Description |
| OrderDate | TEXT | The date when the order was placed. |
| StockDate | TEXT | The date when the product was stocked. |
| OrderNumber | TEXT | The unique identifier for each order. |
| CustomerKey | INTEGER | Foreign key to the Customer Dimension. |
| TerritoryKey | INTEGER | Foreign key to the Territory Dimension. |
| OrderLineItem | INTEGER | Line item number for the order. |
| OrderQuantity | INTEGER | Number of units ordered. |
| ProductKey | INTEGER | Foreign key to the Product Dimension. |

```sql  
CREATE TABLE "AdventureWorks\_Sale\_Data" (  
 "OrderDate" TEXT,  
 "StockDate" TEXT,  
 "OrderNumber" INTEGER,  
 "ProductKey" INTEGER,  
 "CustomerKey" INTEGER,  
 "TerritoryKey" INTEGER,  
 "OrderLineItem" INTEGER,  
 "OrderQuantity" INTEGER,  
 PRIMARY KEY("OrderNumber", "OrderLineItem"),  
 FOREIGN KEY("ProductKey") REFERENCES "AdventureWorks\_Products"("ProductKey"),  
 FOREIGN KEY("TerritoryKey") REFERENCES "AdventureWorks\_Territories"("SalesTerritoryKey"),  
 FOREIGN KEY("CustomerKey") REFERENCES "AdventureWorks\_Customers"("CustomerKey")  
);  
```

### Fact Table: AdventureWorks\_Returns

This table tracks product returns associated with sales.

|  |  |  |
| --- | --- | --- |
| Column Name | Data Type | Description |
| ReturnDate | TEXT | Date when the product was returned. |
| TerritoryKey | INTEGER | Foreign key to the Territory Dimension. |
| ProductKey | INTEGER | Foreign key to the Product Dimension. |
| ReturnQuantity | INTEGER | Number of units returned. |
| Return\_ID | INTEGER | Primary key for the return transaction. |
|  |  |  |

CREATE TABLE "AdventureWorks\_Returns" (  
 "ReturnDate" TEXT,  
 "TerritoryKey" INTEGER,  
 "ProductKey" INTEGER,  
 "ReturnQuantity" INTEGER,  
 "Return\_ID" INTEGER,  
 FOREIGN KEY("TerritoryKey") REFERENCES "AdventureWorks\_Territories"("SalesTerritoryKey"),  
 FOREIGN KEY("ProductKey") REFERENCES "AdventureWorks\_Products"("ProductKey"),  
 PRIMARY KEY("Return\_ID")  
);

## 2. Dimension Tables

### Customer Dimension: AdventureWorks\_Customers

This dimension provides customer details linked to sales transactions.

|  |  |  |
| --- | --- | --- |
| Column Name | Data Type | Description |
| CustomerKey | INTEGER | Primary key for the customer. |
| Prefix | TEXT | Customer title (e.g., Mr., Ms.). |
| FirstName | TEXT | Customer's first name. |
| LastName | TEXT | Customer's last name. |
| BirthDate | TEXT | Customer's date of birth. |
| MaritalStatus | TEXT | Customer's marital status. |
| Gender | TEXT | Customer's gender. |
| EmailAddress | TEXT | Customer's email address. |
| AnnualIncome | REAL | Customer's annual income. |
| TotalChildren | INTEGER | Total number of children in the household. |
| EducationLevel | TEXT | Customer's education level. |
| Occupation | TEXT | Customer's occupation. |
| HomeOwner | TEXT | Whether the customer is a homeowner. |

```sql  
CREATE TABLE "AdventureWorks\_Customers" (  
 "CustomerKey" INTEGER,  
 "Prefix" TEXT,  
 "FirstName" TEXT,  
 "LastName" TEXT,  
 "BirthDate" TEXT,  
 "MaritalStatus" TEXT,  
 "Gender" TEXT,  
 "EmailAddress" TEXT,  
 "AnnualIncome" REAL,  
 "TotalChildren" INTEGER,  
 "EducationLevel" TEXT,  
 "Occupation" TEXT,  
 "HomeOwner" TEXT,  
 PRIMARY KEY("CustomerKey")  
);  
```

#### ****Product Dimension: AdventureWorks\_Products****

This dimension describes products sold in the store.

| Column Name | Data Type | Description |
| --- | --- | --- |
| ProductKey | INTEGER | Primary key for the product. |
| ProductSubcategoryKey | INTEGER | Foreign key to the Product Subcategory Dimension. |
| ProductSKU | TEXT | Product stock keeping unit (SKU) code. |
| ProductName | TEXT | Name of the product. |
| ModelName | TEXT | Model of the product. |
| ProductDescription | TEXT | Detailed description of the product. |
| ProductColor | TEXT | Color of the product. |
| ProductSize | TEXT | Size of the product. |
| ProductStyle | TEXT | Style of the product. |
| ProductCost | REAL | Cost price of the product. |
| ProductPrice | REAL | Sale price of the product. |

sql

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CREATE TABLE "AdventureWorks\_Products" (

"ProductKey" INTEGER,

"ProductSubcategoryKey" INTEGER,

"ProductSKU" TEXT,

"ProductName" TEXT,

"ModelName" TEXT,

"ProductDescription" TEXT,

"ProductColor" TEXT,

"ProductSize" TEXT,

"ProductStyle" TEXT,

"ProductCost" REAL,

"ProductPrice" REAL,

FOREIGN KEY("ProductSubcategoryKey") REFERENCES "AdventureWorks\_Product\_Subcategories"("ProductSubcategoryKey"),

PRIMARY KEY("ProductKey")

);

#### ****Product Subcategory Dimension: AdventureWorks\_Product\_Subcategories****

This dimension categorizes products into subcategories.

| **Column Name** | **Data Type** | **Description** |
| --- | --- | --- |
| ProductSubcategoryKey | INTEGER | Primary key for the subcategory. |
| SubcategoryName | TEXT | Name of the product subcategory. |
| ProductCategoryKey | INTEGER | Foreign key to the Product Category Dimension. |
|  |  |  |

CREATE TABLE "AdventureWorks\_Product\_Subcategories" (

"ProductSubcategoryKey" INTEGER,

"SubcategoryName" TEXT,

"ProductCategoryKey" INTEGER,

PRIMARY KEY("ProductSubcategoryKey"),

FOREIGN KEY("ProductCategoryKey") REFERENCES "AdventureWorks\_Product\_Categories"("ProductCategoryKey")

);

#### ****Product Category Dimension: AdventureWorks\_Product\_Categories****

This dimension classifies products into categories.

| **Column Name** | **Data Type** | **Description** |
| --- | --- | --- |
| ProductCategoryKey | INTEGER | Primary key for the category. |
| CategoryName | TEXT | Name of the product category. |

CREATE TABLE "AdventureWorks\_Product\_Categories" (

"ProductCategoryKey" INTEGER,

"CategoryName" TEXT,

PRIMARY KEY("ProductCategoryKey")

);

#### ****Territory Dimension: AdventureWorks\_Territories****

This dimension provides geographic data related to sales.

| **Column Name** | **Data Type** | **Description** |
| --- | --- | --- |
| SalesTerritoryKey | INTEGER | Primary key for the territory. |
| Region | TEXT | Region where the sales occurred. |
| Country | TEXT | Country where the sales occurred. |
| Continent | TEXT | Continent where the sales occurred. |

CREATE TABLE "AdventureWorks\_Territories" (

"SalesTerritoryKey" INTEGER,

"Region" TEXT,

"Country" TEXT,

"Continent" TEXT,

PRIMARY KEY("SalesTerritoryKey")

);

**Data Source Integration**:

* + Data from three years (2015-2017) were combined using SQL UNION to create the main AdventureWorks\_Sale\_Data table.

CREATE TABLE AdventureWorks\_Sale\_Data AS

SELECT \* FROM AdventureWorks\_Sales\_2015

UNION

SELECT \* FROM AdventureWorks\_Sales\_2016

UNION

SELECT \* FROM AdventureWorks\_Sales\_2017;