**Data Analysis and Integration**

Project

Group 24

**Data Warehouse tables**

DROP DATABASE IF EXISTS northwind\_dw;

CREATE DATABASE northwind\_dw;

USE northwind\_dw;

CREATE TABLE dim\_customer (

    CustomerID VARCHAR(5),

    CompanyName VARCHAR(40),

    City VARCHAR(15),

    Country VARCHAR(15),

    PRIMARY KEY (CustomerID)

);

CREATE TABLE dim\_product (

    ProductID INTEGER,

    ProductIdentifier INTEGER,

    ProductName VARCHAR(40),

    CategoryName VARCHAR(15),

    VERSION INT,

    DATE\_FROM DATETIME,

    DATE\_TO DATETIME,

    PRIMARY KEY (ProductID)

);

CREATE TABLE dim\_supplier (

    SupplierID INTEGER,

    CompanyName VARCHAR(40),

    City VARCHAR(15),

    Country VARCHAR(15),

    PRIMARY KEY (SupplierID)

);

CREATE TABLE dim\_shipper (

    ShipperID INTEGER,

    CompanyName VARCHAR(40),

    PRIMARY KEY (ShipperID)

);

CREATE TABLE dim\_time (

    TimeID DATE,

    YearID INTEGER,

    MonthID INTEGER,

    MonthName VARCHAR(255),

    DayID INTEGER,

    PRIMARY KEY (TimeID)

);

CREATE TABLE fact\_order (

    OrderID INTEGER,

    CustomerID VARCHAR(5),

    ProductID INTEGER,

    SupplierID INTEGER,

    ShipperID INTEGER,

    TimeID DATE,

    UnitPrice DECIMAL(10,4),

    Quantity SMALLINT(2),

    Discount REAL,

    Sales DOUBLE,

    PRIMARY KEY (OrderID),

    FOREIGN KEY (CustomerID) REFERENCES dim\_customer (CustomerID),

    FOREIGN KEY (ProductID) REFERENCES dim\_product (ProductID),

    FOREIGN KEY (SupplierID) REFERENCES dim\_supplier (SupplierID),

    FOREIGN KEY (ShipperID) REFERENCES dim\_shipper (ShipperID),

    FOREIGN KEY (TimeID) REFERENCES dim\_time (TimeID)

);

**Transformations**

Dim\_customer

Graphical user interface, text, application, Word

Description automatically generated

Graphical user interface, application

Description automatically generated

Graphical user interface, application

Description automatically generated

Graphical user interface, application

Description automatically generated

Graphical user interface, application

Description automatically generated

Dim\_product

Diagram, text

Description automatically generated

Graphical user interface, application

Description automatically generated

Graphical user interface, application

Description automatically generated

Graphical user interface, application

Description automatically generated

Graphical user interface, application

Description automatically generated

Graphical user interface, application

Description automatically generated

Graphical user interface, application

Description automatically generated

Dim\_Supplier

Graphical user interface, text, application, Word

Description automatically generated

Graphical user interface, application

Description automatically generated

Graphical user interface, application

Description automatically generated

Graphical user interface, application

Description automatically generated

Graphical user interface, application

Description automatically generated

Dim\_shipper

Graphical user interface, text, application, email

Description automatically generated

Graphical user interface, text, application, Word

Description automatically generated

Graphical user interface, text, application, Word

Description automatically generated

Graphical user interface, application

Description automatically generated

Graphical user interface, application

Description automatically generated

Dim\_time

Graphical user interface, text, application, Word, email

Description automatically generated

Graphical user interface, application

Description automatically generated

Graphical user interface, application

Description automatically generated

Graphical user interface, application, Excel

Description automatically generated

Graphical user interface, application, Excel

Description automatically generated

Graphical user interface, text, application, table, Excel

Description automatically generated

Graphical user interface, text, application, table, Excel

Description automatically generated

Graphical user interface, application, Excel

Description automatically generated

Graphical user interface, application, Excel

Description automatically generated

Fact\_order

Graphical user interface, text, application

Description automatically generated

Graphical user interface, application

Description automatically generated

Graphical user interface, application

Description automatically generated

Graphical user interface, table

Description automatically generated

Graphical user interface, table

Description automatically generated

A screenshot of a computer

Description automatically generated with medium confidence

A screenshot of a computer

Description automatically generated with medium confidence

Graphical user interface, application, table, Excel

Description automatically generated

Graphical user interface, application, table, Excel

Description automatically generated

Job

Graphical user interface, text, application, email

Description automatically generated

**XML code for the cube definition**

<Schema name="northwind\_dw">

  <Cube name="Orders" visible="true" cache="true" enabled="true">

    <Table name="fact\_order">

    </Table>

    <Dimension type="StandardDimension" visible="true" foreignKey="CustomerID" highCardinality="false" name="Customer">

      <Hierarchy name="Customer Hierarchy" visible="true" hasAll="true" allMemberName="All Customers" primaryKey="CustomerID">

        <Table name="dim\_customer">

        </Table>

        <Level name="Country" visible="true" column="Country" type="String" uniqueMembers="false" levelType="Regular" hideMemberIf="Never">

        </Level>

        <Level name="City" visible="true" column="City" type="String" uniqueMembers="false" levelType="Regular" hideMemberIf="Never">

        </Level>

        <Level name="Company Name" visible="true" column="CompanyName" type="String" uniqueMembers="false" levelType="Regular" hideMemberIf="Never">

        </Level>

      </Hierarchy>

    </Dimension>

    <Dimension type="StandardDimension" visible="true" foreignKey="ProductID" highCardinality="false" name="Product">

      <Hierarchy name="Product Hierarchy" visible="true" hasAll="true" allMemberName="All Products" primaryKey="ProductID">

        <Table name="dim\_product">

        </Table>

        <Level name="Category Name" visible="true" column="CategoryName" type="String" uniqueMembers="false" levelType="Regular" hideMemberIf="Never">

        </Level>

        <Level name="Product Name" visible="true" column="ProductName" ordinalColumn="ProductName" type="String" uniqueMembers="false" levelType="Regular" hideMemberIf="Never">

        </Level>

        <Level name="Product Identifier" visible="true" column="ProductIdentifier" type="Integer" uniqueMembers="false" levelType="Regular">

        </Level>

      </Hierarchy>

    </Dimension>

    <Dimension type="TimeDimension" visible="true" foreignKey="TimeID" highCardinality="false" name="Time">

      <Hierarchy name="Time Hierarchy" visible="true" hasAll="true" allMemberName="All years" primaryKey="TimeID">

        <Table name="dim\_time">

        </Table>

        <Level name="Year" visible="true" column="YearID" type="Integer" uniqueMembers="false" levelType="TimeYears" hideMemberIf="Never">

        </Level>

        <Level name="Month" visible="true" column="MonthName" ordinalColumn="MonthID" type="String" uniqueMembers="false" levelType="TimeMonths" hideMemberIf="Never">

          <Annotations>

            <Annotation name="AnalyzerDateFormat">

              <CDATA[[yyyy].[MMM]]]>

            </Annotation>

          </Annotations>

        </Level>

        <Level name="Day" visible="true" column="DayID" type="Integer" uniqueMembers="false" levelType="TimeDays" hideMemberIf="Never">

        </Level>

      </Hierarchy>

    </Dimension>

    <Dimension type="StandardDimension" visible="true" foreignKey="ShipperID" highCardinality="false" name="Shipper">

      <Hierarchy name="Shipper Hierarchy" visible="true" hasAll="true" allMemberName="All Shippers" primaryKey="ShipperID">

        <Table name="dim\_shipper">

        </Table>

        <Level name="Company Name" visible="true" column="CompanyName" type="String" uniqueMembers="false" levelType="Regular" hideMemberIf="Never">

        </Level>

      </Hierarchy>

    </Dimension>

    <Dimension type="StandardDimension" visible="true" foreignKey="SupplierID" highCardinality="false" name="Supplier">

      <Hierarchy name="Supplier Hierarchy" visible="true" hasAll="true" allMemberName="All Suplliers" primaryKey="SupplierID">

        <Table name="dim\_supplier">

        </Table>

        <Level name="Country" visible="true" column="Country" type="String" uniqueMembers="false" levelType="Regular" hideMemberIf="Never">

        </Level>

        <Level name="City" visible="true" column="City" type="String" uniqueMembers="false" levelType="Regular">

        </Level>

        <Level name="Company Name" visible="true" column="CompanyName" type="String" uniqueMembers="false" levelType="Regular">

        </Level>

      </Hierarchy>

    </Dimension>

    <Measure name="Quantity" column="Quantity" datatype="Integer" formatString="#,###" aggregator="sum" visible="true">

    </Measure>

    <Measure name="Sales" column="Sales" datatype="Numeric" formatString="$ #,###.00" aggregator="sum" visible="true">

    </Measure>

  </Cube>

</Schema>

**Analysis queries**

Query a)

![Graphical user interface

Description automatically generated

Query b)

Graphical user interface, application

Description automatically generated

Query c)

Graphical user interface

Description automatically generated

Query d)

Table

Description automatically generated

Query e)

Table

Description automatically generated

Table

Description automatically generated

Query f)

Table

Description automatically generated with medium confidence