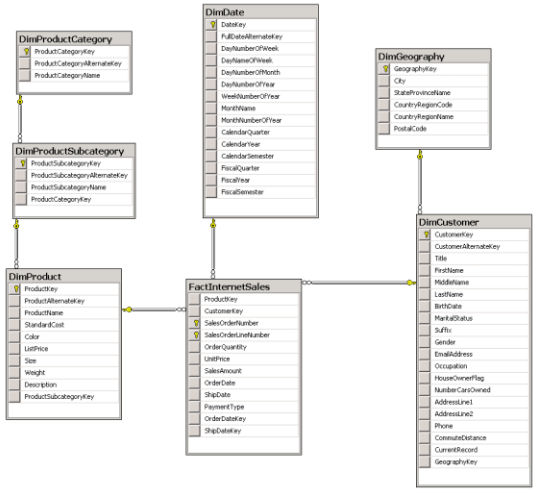
SSIS Project – Part 1

1. Create and SSIS project “Staging_DW_Init”. Using the scripts provided below, create two packages, each should create one database: Staging and DW database. Please take time to review the scripts and understand what they do. Use “Execute SQL Task” to send these scripts to the server. You are free to decide how may SQL tasks you need to create for each package. Execute package.
2. Using the SQL Server Management Studio, review the two databases created. For the DW, create a database diagram. It should look like this:



3. Create another SSIS Project, called “Internet Sales Project”. This project should contain two packages: “Extract Customers” and “Extract Internet Sales”. The source DB on the the localhost server is InternetSales, the destination would be the staging DB that you created in step 1.
    a. “Extract Customers” should load the first 1000 customers into the staging Customers table. No transformation required.
    b. “Extract Internet Sales” should use this query, but load only first 1000 order lines into the staging DB. In the data flow, include a derived column that would calculate the sales amount

```
SELECT
    od.ProductKey,
    oh.CustomerKey,
    od.SalesOrderNumber,
    od.SalesOrderLineNumber,
    od.OrderQuantity,
    od.UnitPrice,
    oh.OrderDate,
    oh.ShipDate,
    ISNULL(pt.PaymentTypeName, 'Other') PaymentType
FROM SalesOrderDetail od
    JOIN SalesOrderHeader oh ON od.SalesOrderNumber = oh.SalesOrderNumber
    JOIN PaymentTypes pt ON oh.PaymentType = pt.PaymentTypeKey
```

4. Make sure to send a notification email about success or failure for each of the two packages, created in step 3.

```
USE master
GO

-- Create the Staging database
CREATE DATABASE SsisProjectStaging
GO

-- Create staging tables
USE SsisProjectStaging
GO

-- Customers
CREATE TABLE [dbo].[Customers](
	[CustomerBusinessKey] [nvarchar](15) NOT NULL,
	[Title] [nvarchar](8) NULL,
	[FirstName] [nvarchar](50) NULL,
	[MiddleName] [nvarchar](50) NULL,
	[LastName] [nvarchar](50) NULL,
	[BirthDate] [date] NULL,
	[MaritalStatus] [nchar](1) NULL,
	[Suffix] [nvarchar](10) NULL,
	[Gender] [nvarchar](1) NULL,
	[EmailAddress] [nvarchar](50) NULL,
	[Occupation] [nvarchar](100) NULL,
	[HouseOwnerFlag] [nchar](1) NULL,
	[NumberCarsOwned] [tinyint] NULL,
	[AddressLine1] [nvarchar](120) NULL,
	[AddressLine2] [nvarchar](120) NULL,
	[City] [nvarchar](30) NULL,
	[StateProvinceName] [nvarchar](50) NULL,
	[CountryRegionCode] [nvarchar](3) NULL,
	[CountryRegionName] [nvarchar](50) NULL,
	[PostalCode] [nvarchar](15) NULL,
	[Phone] [nvarchar](20) NULL,
	[CommuteDistance] [nvarchar](15) NULL
)

-- InternetSales
CREATE TABLE [dbo].[InternetSales](
	[ProductBusinessKey] [nvarchar](25) NOT NULL,
	[CustomerBusinessKey] [int] NOT NULL,
	[SalesOrderNumber] [nvarchar](20) NOT NULL,
	[SalesOrderLineNumber] [tinyint] NOT NULL,
	[OrderQuantity] [smallint] NULL,
	[UnitPrice] [money] NULL,
	[SalesAmount] [money] NULL,
	[OrderDate] [datetime] NULL,
	[ShipDate] [datetime] NULL,
	[PaymentType] [varchar](15) NULL,
	[ProductName] [nvarchar](50) NOT NULL,
	[StandardCost] [money] NULL,
	[Color] [nvarchar](15) NOT NULL,
	[ListPrice] [money] NULL,
	[Size] [nvarchar](50) NULL,
	[Weight] [float] NULL,
	[Description] [nvarchar](400) NULL,
	[ProductSubcategoryBusinessKey] [int] NULL,
	[ProductSubcategoryName] [nvarchar](50) NOT NULL,
	[ProductCategoryBusinessKey] [int] NULL,
	[ProductCategoryName] [nvarchar](50) NOT NULL
)
GO
```

```
Use master
GO

-- Create the AWDataWarehouse database
CREATE DATABASE SsisProjectDataWarehouse
GO

-- Create dimension tables
USE SsisProjectDataWarehouse
GO



-- Product
CREATE TABLE [dbo].[DimProduct](
	[ProductKey] [int] IDENTITY(1,1) NOT NULL PRIMARY KEY CLUSTERED,
	[ProductAlternateKey] [nvarchar](25) NULL,
	[ProductName] [nvarchar](50) NOT NULL,
	[StandardCost] [money] NULL,
	[Color] [nvarchar](15) NOT NULL,
	[ListPrice] [money] NULL,
	[Size] [nvarchar](50) NULL,
	[Weight] [float] NULL,
	[Description] [nvarchar](400) NULL
)

GO

CREATE TABLE [dbo].[DimCustomer](
	[CustomerKey] [int] IDENTITY(1,1) NOT NULL PRIMARY KEY CLUSTERED,
	[CustomerAlternateKey] [nvarchar](15) NOT NULL,
	[Title] [nvarchar](8) NULL,
	[FirstName] [nvarchar](50) NULL,
	[MiddleName] [nvarchar](50) NULL,
	[LastName] [nvarchar](50) NULL,
	[BirthDate] [date] NULL,
	[MaritalStatus] [nchar](1) NULL,
	[Suffix] [nvarchar](10) NULL,
	[Gender] [nvarchar](1) NULL,
	[EmailAddress] [nvarchar](50) NULL,
	[Occupation] [nvarchar](100) NULL,
	[HouseOwnerFlag] [nchar](1) NULL,
	[NumberCarsOwned] [tinyint] NULL,
	[AddressLine1] [nvarchar](120) NULL,
	[AddressLine2] [nvarchar](120) NULL,
	[CountryRegionCode] [nvarchar](3) NULL,
	[Phone] [nvarchar](20) NULL,
	[CommuteDistance] [nvarchar](15) NULL,
	[CurrentRecord] bit
)

GO



-- Create Internet Sales fact table
CREATE TABLE [dbo].[FactInternetSales](
	[ProductKey] [int] NOT NULL REFERENCES [dbo].[DimProduct] ([ProductKey]),
	[CustomerKey] [int] NOT NULL REFERENCES [dbo].[DimCustomer] ([CustomerKey]),
	[SalesOrderNumber] [nvarchar](20) NOT NULL,
	[SalesOrderLineNumber] [tinyint] NOT NULL,
	[OrderQuantity] [smallint] NOT NULL,
```

```
	[UnitPrice] [money] NOT NULL,
	[SalesAmount] [money] NOT NULL,
	[OrderDate] [datetime] NULL,
	[ShipDate] [datetime] NULL,
	[PaymentType] [nvarchar](15) NULL,
	 CONSTRAINT [PK_FactInternetSales_SalesOrderNumber_SalesOrderLineNumber] PRIMARY KEY CLUSTERED
	(
		[SalesOrderNumber] ASC,
		[SalesOrderLineNumber] ASC
	)
)

GO

-- IMPLEMENT PRODUCT CATEGORY SNOWFLAKE TO CREATE A NATURAL HIERARCHY

--Create DimProductCategory table
CREATE TABLE [dbo].[DimProductCategory](
	[ProductCategoryKey] [int] IDENTITY(1,1) NOT NULL PRIMARY KEY CLUSTERED,
	[ProductCategoryAlternateKey] [int] NULL,
	[ProductCategoryName] [nvarchar](50) NOT NULL
)
GO

-- Create DimProductSubcategory table
CREATE TABLE [dbo].[DimProductSubcategory](
	[ProductSubcategoryKey] [int] IDENTITY(1,1) NOT NULL PRIMARY KEY CLUSTERED,
	[ProductSubcategoryAlternateKey] [int] NULL,
	[ProductSubcategoryName] [nvarchar](50) NOT NULL,
	[ProductCategoryKey] [int] NULL REFERENCES [dbo].DimProductCategory(ProductCategoryKey)
)
GO

--Add foreign key to DimProductSubcategory


ALTER TABLE [dbo].DimProduct
ADD ProductSubcategoryKey int NULL REFERENCES [dbo].DimProductSubcategory(ProductSubcategoryKey)
GO


-- IMPLEMENT GEOGRAPHY SNOWFLAKE TO SHARE A HIERARCHY ACROSS DIMENSIONS

-- Create DimGeography Table
CREATE TABLE [dbo].[DimGeography](
	[GeographyKey] [int] IDENTITY(1,1) NOT NULL PRIMARY KEY CLUSTERED,
	[City] [nvarchar](30) NULL,
	[StateProvinceName] [nvarchar](50) NULL,
	[CountryRegionCode] [nvarchar](3) NULL,
	[CountryRegionName] [nvarchar](50) NULL,
	[PostalCode] [nvarchar](15) NULL,
 )

GO


-- Modify DimCustomer table to add foreign key to DimGeography
ALTER TABLE [dbo].DimCustomer
ADD GeographyKey int NULL REFERENCES [dbo].DimGeography(GeographyKey)
GO

-- Create DimDate dimension table
CREATE TABLE [dbo].[DimDate](
	[DateKey] [int] NOT NULL PRIMARY KEY CLUSTERED,
```

```
	[FullDateAlternateKey] [date] NOT NULL,
	[DayNumberOfWeek] [tinyint] NOT NULL,
	[DayNameOfWeek] [nvarchar](10) NOT NULL,
	[DayNumberOfMonth] [tinyint] NOT NULL,
	[DayNumberOfYear] [smallint] NOT NULL,
	[WeekNumberOfYear] [tinyint] NOT NULL,
	[MonthName] [nvarchar](10) NOT NULL,
	[MonthNumberOfYear] [tinyint] NOT NULL,
	[CalendarQuarter] [tinyint] NOT NULL,
	[CalendarYear] [smallint] NOT NULL,
	[CalendarSemester] [tinyint] NOT NULL,
	[FiscalQuarter] [tinyint] NOT NULL,
	[FiscalYear] [smallint] NOT NULL,
	[FiscalSemester] [tinyint] NOT NULL
)
GO

-- Create relationships to DimDate
ALTER TABLE [dbo].FactInternetSales
ADD
	OrderDateKey int NULL REFERENCES [dbo].DimDate(DateKey),
	ShipDateKey int NULL REFERENCES [dbo].DimDate(DateKey)
GO

-- Create indexes on date key fields
CREATE NONCLUSTERED INDEX [IX_FactInternetSales_OrderDateKey] ON [dbo].FactInternetSales
(
	[OrderDateKey] ASC
)
GO

CREATE NONCLUSTERED INDEX [IX_FactInternetSales_ShipDateKey] ON [dbo].FactInternetSales
(
	[ShipDateKey] ASC
)
GO


-- Populate DimDate dimension table with values from 1/1/2000 to 1/1/2003
-- declare variables to hold the start and end date
DECLARE @StartDate datetime
DECLARE @EndDate datetime

--- assign values to the start date and end date we
-- want our reports to cover (this should also take
-- into account any future reporting needs)
SET @StartDate = '01/01/2000'
SET @EndDate = getdate()

-- using a while loop increment from the start date
-- to the end date
DECLARE @LoopDate datetime
SET @LoopDate = @StartDate

WHILE @LoopDate <= @EndDate
BEGIN
 -- add a record into the date dimension table for this date
  INSERT INTO dbo.DimDate VALUES
	(
		CAST(CONVERT(VARCHAR(8), @LoopDate, 112) AS int) , -- date key
		@LoopDate, -- date alt key
		datepart(dw, @LoopDate), -- day number of week
		datename(dw, @LoopDate), -- day name of week
	    Day(@LoopDate),  -- day number of month
```

```
            datepart(dy, @LoopDate), -- day of year
            datepart(wk, @LoopDate), --  week of year
            datename(mm, @LoopDate), -- month name
            Month(@LoopDate), -- month number of year
            datepart(qq, @LoopDate), -- calendar quarter
            Year(@LoopDate), -- calendar year
            CASE
                  WHEN Month(@LoopDate) < 7 THEN 1
                  ELSE 2
             END, -- calendar semester
             CASE
                  WHEN Month(@LoopDate) IN (1, 2, 3) THEN 3
                  WHEN Month(@LoopDate) IN (4, 5, 6) THEN 4
                  WHEN Month(@LoopDate) IN (7, 8, 9) THEN 1
                  WHEN Month(@LoopDate) IN (10, 11, 12) THEN 2
             END, -- fiscal quarter (assuming fiscal year runs from Jul to June)
            CASE
                  WHEN Month(@LoopDate) < 7 THEN Year(@LoopDate)
                  ELSE Year(@Loopdate) + 1
             END, -- Fiscal year
            CASE
                  WHEN Month(@LoopDate) > 6 THEN 1
                  ELSE 2
             END -- fiscal semester
      )
       -- increment the date by 1 day and do next loop
      SET @LoopDate = DateAdd(dd, 1, @LoopDate)
END
GO
```