SSIS and ETL

# Goal:

This assignment provides you with experience in Visual Studio Integration Services Project and ETL Pipeline. Specifically, you will practice how to import fact and dimension tables from relational database to Data warehouse using SSIS, you will also practice how to track the changes in your dimension table using two different ways: Lookup transformation and Slowly Changing Dimension. We will use AdventureWorks2019 and AdventureWorksDW2019 as our data sources.

# Environment:

Before working on this assignment, ensure that you have installed SQL Server, SQL Server Management Studio and Visual Studio (with Integration Service extension). You are also welcomed to read [Microsoft SSIS tutorial](https://docs.microsoft.com/en-us/sql/integration-services/).

# Tasks:

Task 1: Importing the Currency Dimension Table

Using **“*Create DimCurrency\_Stage Table”***script to create the DimCurrency\_Stage table in the AdventureWorksDW2019. Load the data of the *“Sales.Currency”* in the AdventureWorks2019 to the DimCurrency\_Stage table in the AdventureWorksDW2019. Ensure that the data won’t be re-inserted when you re-run the SSIS package.

Task 2: Importing the Currency Fact Table

Using the **“*Create Dim\_Date Table”*** script to create the time dimension in the AdventureWorksDW2019 and then using the **“*Insert DIM\_Date Table”*** script to insert the date records in the dimension table.

A typical fact table consists of facts(measures) and foreign keys that linked to the dimension tables. Normally, we need to load the facts from a transaction table in relational database and then add the foreign keys to the fact table using lookup transformation in SSIS. In our case, the fact table *FactCurrencyRate\_Stage* only has two foreign keys: CurrencyKey and DateKey. Besides these two foreign keys, it contains two facts: AverageRate and EndOfDayRate, and another column called Date, which shows the date associate with the currency rate.

Using the **“*Create Table FactCurrencyRate\_Stage”***script to create the fact table in AdventureWorksDW2019. Load the transaction data from the *Sales.CurrencyRate* table in AdventureWorks2019. Using the lookup transformation to add the foreign keys into the fact table.

Task 3: Tracking Changes in Dimension Table

To capture the changing data within the dimension, we can take two ways: Lookup Transformation and Slowing Changing Dimension in SSIS. Using these two ways to maintain our created Currency Dimension. Specifically, first use the **“*Create Table DimCurrency\_Lookup”*** and **“*Create Table DimCurrency\_SCD”***scriptsto create the destination tables in the AdventureWorksDW2019, then design your ETL pipelines in Visual Studio and test them, finally insert and update some records in the Sales.Currency table in AdventureWorks2019 using the **“*update and insert incremental load*”** script. Re-Run your package and see whether your package can track your changes properly.

# Deliveries:

The deliverable should be a word document showing screen shots of your working ETL from SSIS showing the high-level control flow view and the individual data flow views. Show the data base containing the tables for fact and dimension tables. Include screen shots showing query results from each of the tables to demonstrate the data that was loaded. Please use the format of

**dw\_hw3\_<firstname>\_<lastname>\_<studentid**>.

to save your file and submit it.