# IIHT - Capgemini Big Data and Azure Engineering Batch

## Assignments

## RDBMS & SQL Server (TSQL) concepts

## Introduction to SQL Server

### Working with SQL Tables

Open a new query window in SQL Server management studio, create database SQL2016SBS database, and the following queries.

– Create a schema–

1. CREATE SCHEMA Customers AUTHORIZATION dbo

Go

1. CREATE SCHEMA Orders AUTHORIZATION dbo

Go

1. CREATE SCHEMA Products AUTHORIZATION dbo

Go

1. CREATE SCHEMA LookupTables AUTHORIZATION dbo

Go

1. CREATE SCHEMA HumanResources AUTHORIZATION dbo

Go

1. CREATE TABLE Customers.Customer

(CustomerID INT IDENTITY(1,1),

CompanyName VARCHAR(50) null,

FirstName VARCHAR(50) NULL,

LastName VARCHAR(50) NULL,

ModifiedDate VARCHAR(50) NOT NULL)

Go

1. CREATE TABLE Customers.Customer

(AddressID INT IDENTITY(1,1),

AddressType VARCHAR(20) NOT NULL,

AddressLine1 VARCHAR(50) NOT NULL,

AddressLine2 VARCHAR(50) NULL,

AddressLine3 VARCHAR(50) NULL,

City VARCHAR(50) NOT NULL,

StateProvince VARCHAR(50) NULL,

Country VARCHAR(70) NOT NULL)

Go

1. CREATE TABLE Orders.OrderHeader

(OrderId INT IDENTITY(1,1),

OrderDate DATE NOT NULL,

SubTotal MONEY NOT NULL,

TaxAmount MONEY NOT NULL,

ShippingAmount MONEY NOT NULL,

FinalShipDate Date NULL)

Go

1. CREATE TABLE Orders.OrderDetail

(OrderDetailId INT IDENTITY(1,1),

SKU Char(10) NOT NULL,

Quantity INT NOT NULL,

UnitPrice MONEY NOT NULL,

ShipDate Date NULL)

Go

1. CREATE TABLE Products.Product

(ProductID INT IDENTITY(1,1),

ProductName VARCHAR(50) NOT NULL,

ProductCost MONEY NOT NULL,

ListPrice MONEY NOT NULL,

ProductDescription XML NULL)

Go

1. CREATE TABLE HumanResources.Employee

(EmployeeID INT IDENTITY(1,1),

FirstName VARCHAR(50) NOT NULL,

LastName VARCHAR(50) NOT NULL,

JobTitle VARCHAR(50) NOT NULL,

BirthDate DATE NOT NULL,

HireDate DATE NOT NULL)

Go

1. CREATE TABLE HumanResources.EmployeeAddress

(AddressID INT IDENTITY(1,1),

AddressType VARCHAR(20) NOT NULL,

AddressLine1 VARCHAR(50) NOT NULL,

AddressLine2 VARCHAR(50) NULL,

AddressLine3 VARCHAR(50) NULL,

City VARCHAR(50) NOT NULL,

StateProvince VARCHAR(50) NULL,

Country VARCHAR(70) NOT NULL)

Go

### 2. Check with Computed Columns

Open a new query window and execute the following code in SQL Server Management studio.

1. DROP TABLE Orders.OrderHeader

Go

1. CREATE TABLE Orders.OrderHeader

(OrderID INT IDENTITY(1,1),

(OrderDate DATE NOT NULL,

SubTotal MONEY NOT NULL,

TaxAmount MONEY NOT NULL,

ShippingAmount MONEY NOT NULL,

GrandTotal AS (SubTotal + TaxAmount + ShippingAmount),

FinalShipDate DATE NULL)

Go

Check the node for the Orders.OrderHeader table and observe the new column definition

1. ALTER TABLE Products.Product

ADD ProductMargin AS (ListPrice - ProductCost)

Go

### 3. Sparse Columns

Execute the following code in SSMS

1. DROP TABLE Customers.CustomerAddress

Go

1. CREATE TABLE Customers.CustomerAddress

(AddressID INT IDENTITY(1,1),

AddressType VARCHAR(20) NOT NULL,

AddressLine1 VARCHAR(50) NOT NULL,

AddressLine2 VARCHAR(50) SPARSE NULL,

AddressLine3 VARCHAR(50) SPARSE NULL,

City VARCHAR(50) NOT NULL,

StateProvince VARCHAR(50) NULL,

Country VARCHAR(70) NULL,

CONSTRAINT pk\_customeraddress PRIMARY KEY (AddressID))

Go

DROP TABLE HumanResources.EmployeeAddress

Go

CREATE TABLE HumanResources.EmployeeAddress

(AddressID INT IDENTITY(1,1),

AddressType VARCHAR(20) NOT NULL,

AddressLine1 VARCHAR(50) NOT NULL,

AddressLine2 VARCHAR(50) SPARSE NULL,

AddressLine3 VARCHAR(50) SPARSE NULL,

City VARCHAR(50) NOT NULL,

StateProvince VARCHAR(50) NULL,

Country VARCHAR(70) NULL,

Constraint pk\_employeeaddress PRIMARY KEY (AddressID))

Go

### 4. Create Primary Key Constraints

Create the following tables with primary key

1. DROP TABLE Customers.Customer

Go

1. CREATE TABLE Customers.Customer

(CustomerID INT IDENTITY(1,1),

CompanyName VARCHAR(50) NULL,

FirstName VARCHAR(50) NOT NULL,

LastName VARCHAR(50) NULL,

ModifiedDate DATE NOT NULL,

CONSTRAINT pk\_customer PRIMARY KEY (CustomerID))

Go

1. DROP TABLE Customers.CustomerAddress

Go

1. CREATE TABLE Customers.CustomerAddress

(CustomerAddressID INT IDENTITY(1,1),

AddressType VARCHAR(20) NULL,

AddressLine1 VARCHAR(50) NOT NULL,

AddressLine2 VARCHAR(50) NULL,

AddressLine3 VARCHAR(50) NULL,

City VARCHAR(50) NOT NULL,

StateProvince VARCHAR(50) NULL,

Country VARCHAR(70) NOT NULL,

CONSTRAINT pk\_customeraddress PRIMARY KEY (CustomerAddressID))

Go

1. DROP TABLE Orders.OrderHeader

Go

1. CREATE TABLE Orders.OrderHeader

(OrderID INT IDENTITY(1,1),

OrderDate DATE NOT NULL,

ShippingDate DATE NULL,

TaxAmount MONEY NULL,

ShippingAmount MONEY NULL,

GrandTotal AS ( SubTotal + TaxAmount + ShippingAmount),

FinalShipDate DATE NOT NULL,

CONSTRAINT pk\_orderid PRIMARY KEY (OrderID))

Go

Add Primary Key to an Existing Table

1. ALTER TABLE Orders.OrderDetail

ADD CONSTRAINT pk\_orderdetail PRIMARY KEY (OrderDetailID)

Go

1. ALTER TABLE Products.Product

ADD CONSTRAINT pk\_product PRIMARY KEY (ProductID)

Go

1. ALTER TABLE HumanResources.Employee

ADD CONSTRAINT pk\_employee PRIMARY KEY (employeeID)

Go

### 5. Create Unique Key Constraints

CREATE TABLE Products.ProductDocument

(DocumentID UNIQUEIDENTIFIER ROWGUID UNIQUE,

DocumentType VARCHAR(20) NOT NULL,

Document VARBINARY(MAX) FILESTREAM NULL,

CONSTRAINT pk\_productdocument PRIMARY KEY (DocumentID)

Go

### 6. Check Constraints

DROP TABLE Products.Product

Go

CREATE TABLE Products.Product

(ProductID INT IDENTITY(1,1),

ProductName VARCHAR(50) NOT NULL,

ProductCost MONEY NOT NULL CHECK (ProductCost > 0),

ListPrice MONEY NOT NULL CHECK (ListPrice > 0),

ProductMargin AS (ListPrice - ProductCost),

ProductDescription XML NULL,

CONSTRAINT pk\_product PRIMARY KEY (ProductID))

Go

Add Check Constraints in existing table

ALTER TABLE Orders.OrderHeader WITH CHECK

ADD CONSTRAINT ck\_subtotal CHECK (SubTotal > 0)

ALTER TABLE Orders.OrderHeader WITH CHECK

ADD CONSTRAINT ck\_taxamount CHECK (taxamount > 0)

ALTER TABLE Orders.OrderHeader WITH CHECK

ADD CONSTRAINT ck\_shippingamount CHECK (shippingamount > 0)

ALTER TABLE Orders.OrderDetail WITH CHECK

ADD CONSTRAINT ck\_quantity CHECK (Quantity > 0)

ALTER TABLE Orders.OrderDetail WITH CHECK

ADD CONSTRAINT ck\_unitprice CHECK (unitprice > 0)

### 7. Default Constraint

DROP TABLE Customers.Customer

Go

CREATE TABLE Customers.Customer

(CustomerID INT IDENTITY(1,1),

CompanyName VARCHAR(50) NULL,

FirstName VARCHAR(50) NULL,

LastName VARCHAR(50) NULL,

ModifiedDate DATE NOT NULL CONSTRAINT df\_modifieddate DEFAULT GETDATE(),

CONSTRAINT pk\_customer PRIMARY KEY (CustomerID))

Go

DROP TABLE Orders.OrderHeader

Go

CREATE TABLE Orders.OrderHeader

(OrderID INT IDENTITY(1,1),

OrderDate DATE NOT NULL CONSTRAINT df\_orderdate DEFAULT GETDATE(),

SubTotal MONEY NOT NULL CONSTRAINT ck\_subtotal CHECK (SubTotal > 0),

TaxAmount MONEY NOT NULL CONSTRAINT ck\_taxamount CHECK (TaxAmount >=0),

ShippingAmount MONEY NOT NULL CONSTRAINT ck\_shippingamount CHECK (ShippingAmount >= 0),

GrandTotal AS (SubTotal + TaxAmount + ShippingAmount),

FinalShipDate DATE NULL,

CONSTRAINT pk\_orderheader PRIMARY KEY (OrderID))

Go

### 

### 8. Foreign Key to an existing table

CREATE TABLE LookupTables.Country

(CountryID INT IDENTITY(1,1),

CountryName VARCHAR(70) NOT NULL UNIQUE,

CONSTRAINT pk\_country PRIMARY KEY (CountryID))

CREATE TABLE LookupTables.Country

(CountryID INT IDENTITY(1,1),

CountryName VARCHAR(70) NOT NULL UNIQUE,

StateProvinceAbbrev CHAR(2) NOT NULL,

CONSTRAINT pk\_stateprovince PRIMARY KEY (StateProvinceID))

Go

ALTER TABLE LookupTables.StateProvince

ADD CONSTRAINT fk\_countrytostateprovince FOREIGN KEY (CountryID)

GO