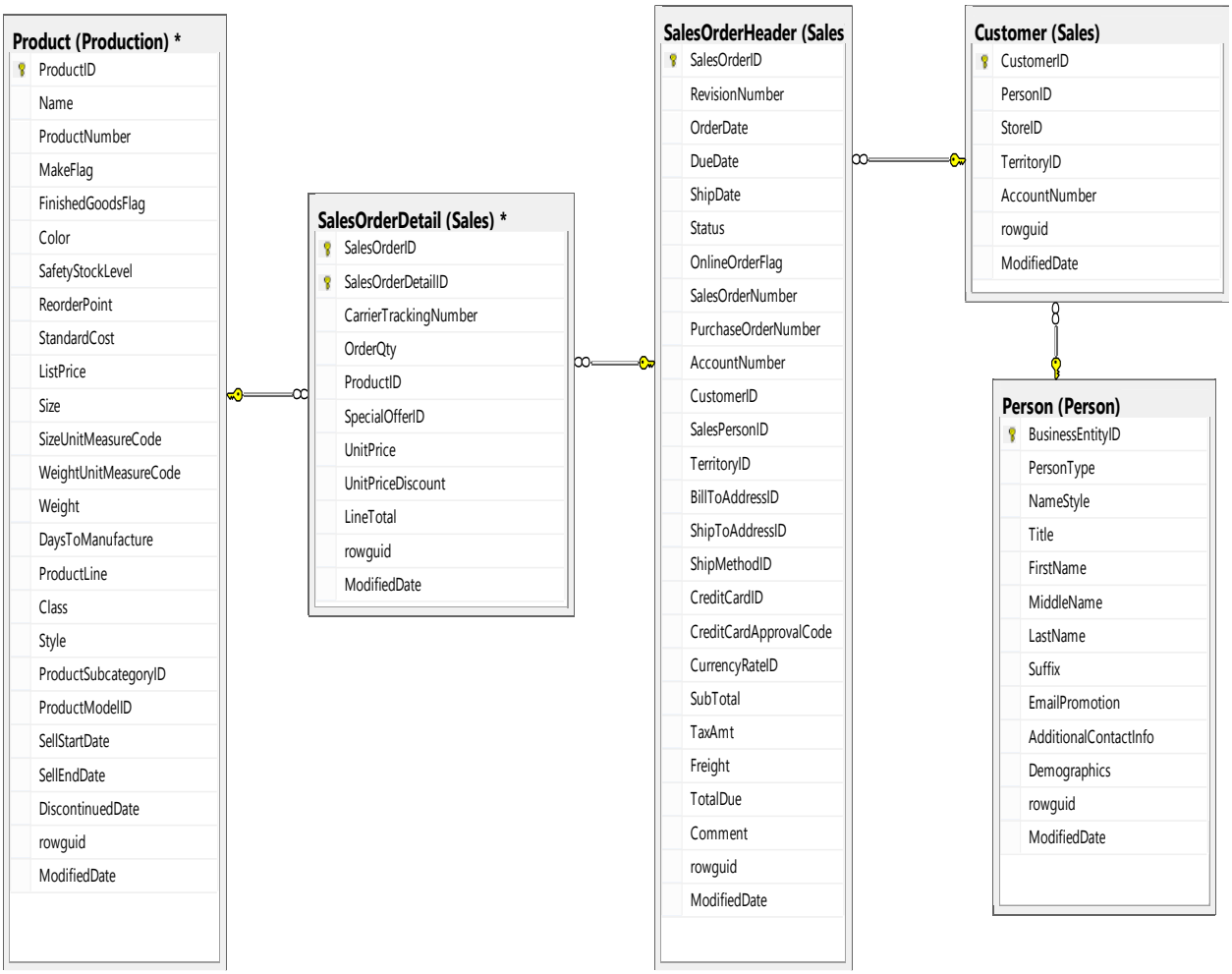
Lab 5 Exercises

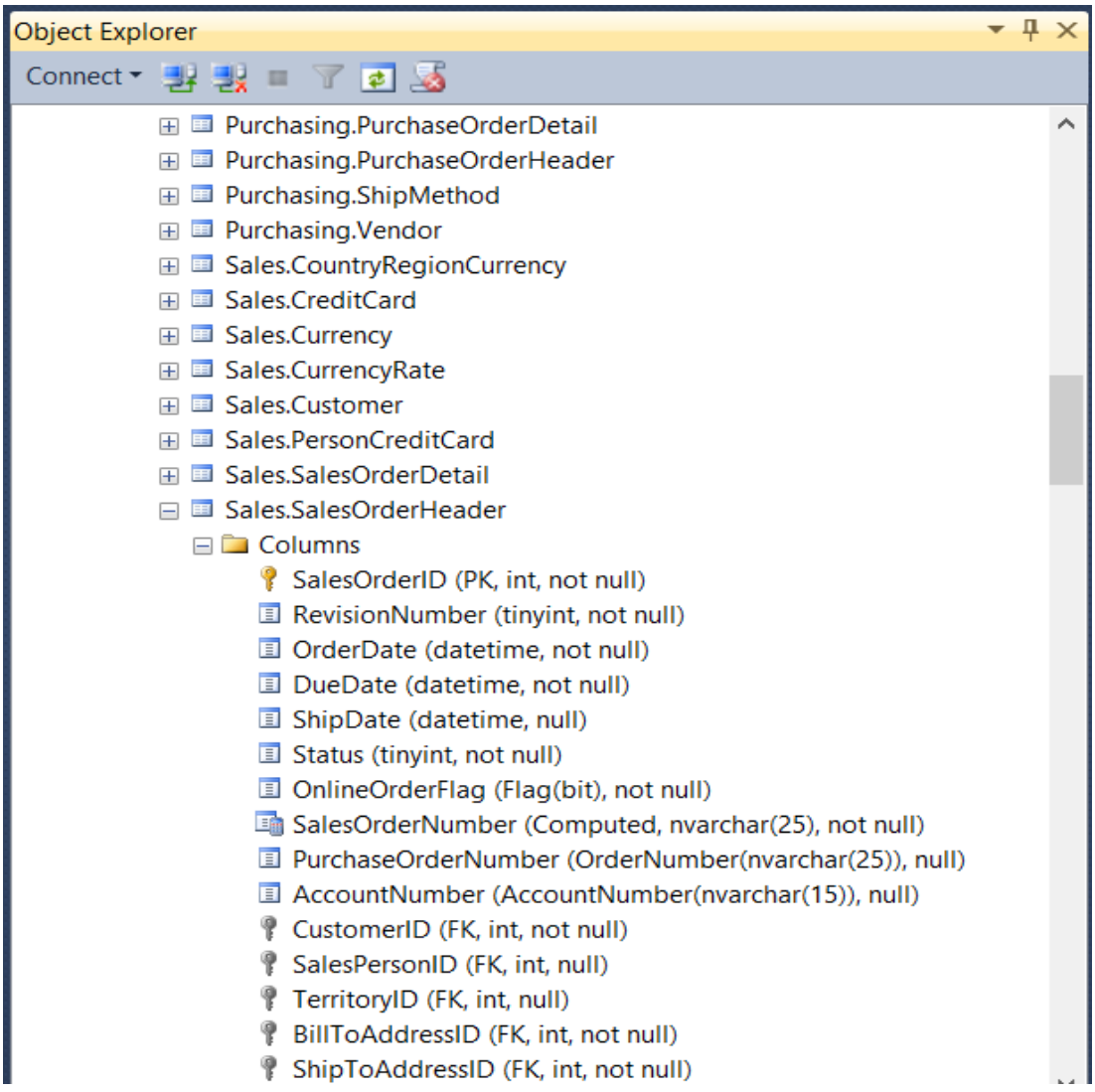
These exercise questions are for self-practice. No submission is needed.

Notes: The following partial ERD for AdventureWorks2008R2 was generated by SQL Server Management Studio. Use it to locate data when writing SQL queries.



Notes: If we don't have an ERD, we can also use the Object Explorer in SQL Server Management Studio to locate data by following the steps listed below.

1) Under Object Explorer in SQL Server Management Studio, expand Databases
2) Expand the database we want to work with, such as AdventureWorks2008R2
3) Expand Tables
4) Expand the table we want to work with, such as Sales.Customer
5) Expand Columns
6) Then we'll see all columns contained in a table



```
USE "The name of a database you have created.";
```

Exercise 1

```
/*
   Create a scalar function that will accept a customer ID and return
   the customer's account number.
*/
```

Exercise 2

```
/*
   Create a table-valued function that will accept a customer ID and
   return all orders of the customer, including the sales order ID,
   order date, purchase order number, and total due. Sort the results
   first by the order date (descending), then by the sales order
   ID (ascending).

   Hint: We'll need to use the TOP keyword in the SELECT statement
         so that we can sort the results. Use an arbitrary number with
         the TOP keyword, but it needs to be large enough to
         accommodate the largest possible row set that may be
         returned.
*/
```

Exercise 3

```
/*
Use a WHILE loop to create a stored procedure that takes an int
parameter and returns the result of adding all the numbers from 1 to
that given number, if the number is 0 or less, return -1.
*/
```

For example:

```
an input of 1 would return 1   (1)
an input of 2 would return 3   (1 + 2)
an input of 3 would return 6   (1 + 2 + 3)
an input of 4 would return 10  (1 + 2 + 3 + 4)
an input of 5 would return 15  (1 + 2 + 3 + 4 + 5)
```

Exercise 4

```
/*
   Convert the following statement into a procedure that will accept
   a time parameter and extend the transaction by the input amount
   of time.

   NOTE: We need to work on this exercise on our own computer using
         the AdventureWorks2008R2 database.
*/
```

```
BEGIN TRAN;
   UPDATE [Sales].[Customer]
   SET [ModifiedDate] = getdate()
   WHERE [CustomerID] = 100;
   WAITFOR DELAY @d;
ROLLBACK TRAN;
```

Exercise 5

```
/*
Create a stored procedure containing a WHILE loop that takes
an integer parameter and prints the consecutive integers
from the input integer up to 10. If the number is smaller
than 1 or greater than 10, print “Out of Range.”
*/

For example:

An input of 5 would return 5
                           6
                           7
                           8
                           9
                          10
```

Exercise 6

```
/* With three tables as defined below: */

CREATE TABLE Customer
(CustomerID VARCHAR(20) PRIMARY KEY,
 CustomerLName VARCHAR(30),
 CustomerFName VARCHAR(30),
 --TotalPurchaseBeforeTax INT,
 CustomerStatus VARCHAR(10));

CREATE TABLE SaleOrder
(OrderID INT IDENTITY PRIMARY KEY,
 CustomerID VARCHAR(20) REFERENCES Customer(CustomerID),
 OrderDate DATE,
 OrderAmountBeforeTax INT);

CREATE TABLE SaleOrderDetail
(OrderID INT REFERENCES SaleOrder(OrderID),
 ProductID INT,
 Quantity INT,
 UnitPrice INT,
 PRIMARY KEY (OrderID, ProductID));

/* Write a trigger to put the total sale order amount before tax
   (unit price * quantity for all items included in an order)
   in the OrderAmountBeforeTax column of SaleOrder. */
```

Don’t look at the solution until you have completed an exercise question.

```
-- Solutions


USE “The name of a database you have created.”;


-- Exercise 1 Solution

CREATE FUNCTION uf_GetAccountNumberForCustomer
(@CustID int)
RETURNS varchar(10)
AS
BEGIN
   DECLARE @AcctNo varchar(10);

   SELECT @AcctNo = AccountNumber
   FROM AdventureWorks2008R2.Sales.Customer
   WHERE CustomerID = @CustID;

   RETURN @AcctNo;
END

-- Use the function

SELECT dbo.uf_GetAccountNumberForCustomer(29811);

-- Do housekeeping

DROP FUNCTION dbo.uf_GetAccountNumberForCustomer;
```

```sql
-- Exercise 2 Solution

CREATE FUNCTION uf_GetAllOrdersForCustomer
(@CustID int)
RETURNS TABLE
AS
RETURN (SELECT TOP 10000
               SalesOrderID,
               OrderDate,
               PurchaseOrderNumber,
               TotalDue
        FROM AdventureWorks2008R2.Sales.SalesOrderHeader
        WHERE CustomerID = @CustID
        ORDER BY OrderDate DESC, SalesOrderID
        );

-- Top keyword must be used so that we can sort the results.
-- 10000 was arbitrarily picked.

-- Use the function

SELECT * FROM dbo.uf_GetAllOrdersForCustomer(29811);

-- Do housekeeping

DROP FUNCTION dbo.uf_GetAllOrdersForCustomer;
```

```
-- Exercise 3 Solution


CREATE PROCEDURE usp_Calculate
   @InNumber INT,
   @OutNumber INT OUTPUT
AS
BEGIN
   IF @InNumber <= 0
      SET @OutNumber = -1;
   ELSE
      BEGIN
         DECLARE @counter INT;
         SET @counter = 0;
         SET @OutNumber = 0;
         WHILE @counter < @InNumber
            BEGIN
               SET @counter = @counter + 1;
               SET @OutNumber = @OutNumber + @counter;
            END
      END
   PRINT @OutNumber;
END
GO
--Run stored procedure, retrieve output

-- Declare variables
DECLARE @MyInput INT;
DECLARE @MyOutput INT;
-- Initilize variable
SET @MyInput = -5;
-- Execute the procedure
EXEC usp_Calculate @MyInput, @MyOutput OUTPUT;
-- See result
SELECT @MyOutput;

-- Do housekeeping

DROP PROC usp_Calculate;
```

```sql
-- Exercise 4 Solution

/*
   Convert the following statement into a procedure that will accept
   a time parameter and extend the transaction by the input amount
   of time.
*/


CREATE PROC usp_Transaction_Delay @Delay time
AS
BEGIN
   DECLARE @d datetime;
   SET @d = @Delay;
   BEGIN TRAN;
      UPDATE [Sales].[Customer]
      SET [ModifiedDate] = getdate()
      WHERE [CustomerID] = 100;
      WAITFOR DELAY @d;
   ROLLBACK TRAN;
END

-- Execute the procedure

EXEC usp_Transaction_Delay '00:1:00'

-- Do housekeeping

DROP PROC usp_Transaction_Delay;
```

```sql
-- Exercise 5 Solution

CREATE PROCEDURE Consecutive
      @InNumber INT
AS
BEGIN
      IF @InNumber < 1 OR @InNumber > 10
            PRINT 'Out of Range';
      ELSE
            BEGIN
                  WHILE @InNumber <= 10
                  BEGIN
                        PRINT @InNumber;
                        SET @InNumber = @InNumber + 1;
                  END
            END
END;


-- Execute the procedure

EXEC dbo.Consecutive 5;

-- Do housekeeping

DROP PROC dbo.Consecutive;
```

```sql
-- Exercise 6 Solution

CREATE TRIGGER TR_SaleOrder
ON dbo.SaleOrderDetail
AFTER INSERT AS
BEGIN
   DECLARE @Amount INT=0;
   SELECT @Amount = SUM(UnitPrice * Quantity)
      FROM SaleOrderDetail
      WHERE OrderID = (SELECT OrderID FROM Inserted);
   UPDATE SaleOrder
   SET OrderAmountBeforeTax = @Amount
   WHERE OrderID = (SELECT OrderID FROM Inserted)
END;
```