CPRG 200 Lab Assignment 4

Due: 8 a.m. on Day 12 (last day of the course)

In this lab you will retrieve and update data from a database by writing code that uses ADO.NET objects. You will also have an opportunity to practice working with date values, and with nullable fields. You will also work with a calculated column. Designing appropriate user screens is part of the task.

This lab is to be completed on individual basis, but of course discussion and exchanging ideas with other students, as well as asking the instructor, is encouraged.

Problem Description

Write a 3-layer Windows Forms application that connects to the Northwind database and retrieves data from table Orders (only columns OrderID, CustomerID, OrderDate, OrderDate, RequiredDate, and ShippedDate) and Order Details (all columns). Connect to local database file to facilitate marking.

For this lab you are not allowed to use datasets; instead, you are expected to write your code that works with ADO.NET objects in connected model. Most data should be displayed in a read-only manner, except for the ShippedDate in Orders table that may be updated.

Your application should have a three-layer structure. In particular, it should contain classes that define business layer objects. All data processing code is placed in separate data access classes, and not in the form code.

Form design, in particular the decision which form controls to use, is totally up to you. However, the user should be able to select an order, and only relevant order details for the selected order should be displayed at any time.

Notice that the Orders table does not have an OrderTotal column, but the total for each order can be easily calculated from the data in the Order Details table by summing over all details that belong to the particular order: UnitPrice * (1 – Discount) * Quantity. Your form should calculate and display on the form the order total for the selected order.

No Insert or Delete operation are required. The only DML operation allowed is Update of the ShippedDate field in the Orders table. Make sure that the new value for ShippedDate is not earlier than OrderDate and no later than RequiredDate, if these date values are not null. Ignore the time part of the DateTime value. Also, keep in mind that all these three DateTime columns can have null values. This will affect your code for displaying, validating, and updating.

No screenshots are required for this lab.

Zip the entire folder with your application and submit to the appropriate Dropbox. Make sure that the name of the folder includes your name and *CPRG200_Lab4*.

The assignment must be submitted before the due date.

Marking Scheme

Marking Component	Out of
User can select order	2
Selected order data is displayed on the form in a read-only manner, except for ShippedDate, which is updateable	3
All DateTime values are displayed are showing only the date information, and no time	1
ShippedDate can be updated (all possible combinations: from null to value provided, from provided value to null, and from provided value to another value)	4
Whenever values are provided, ShippedDate has to be not earlier than OrderDate and not later than RequiredDate	2
Order total for the selected order is calculated correctly and displayed on the form	5
Rows from OrderDetails related to the selected order are displayed in a read-only manner	5
Application has appropriate entity classes defined	3
Application has 3-layer structure, with no data access code included on the form, and no user-interaction code included in the data access classes	5
Total:	**30**