158.326 Software Construction – Semester 2

Tutorials 3

Create a class diagram based on the following case scenario. Next, implement the class diagram thru a project in Visual Studio.

CASE
There are many different types of testing stations nationwide for conducting vehicle inspections. Each testing station has a registered name, an address and a contact telephone number. Some of the testing stations which conduct car and truck inspections are VTNZ, DriveSafe, NZ- WoF, and AA.

You have to design an application for car inspections done by VTNZ testing station.

VTNZ offers many services for inspections. Different service types and prices apply for car and truck inspections. For car inspections, the service type and service price are given in Table 1.

Table 1

Service Type	Service Price
WoF inspection	$ 50.00
Modified vehicle check-up	$ 200.00
Pre-purchase inspection	$ 150.00
Certificate of Fitness	$ 210.00

Part A:

Name each class

1. _____
2. _____
3. _____
4. _____

How many abstract classes do you have? _____

How many are interfaces do you have? _____

How many concrete classes?   _____

Draw the class diagram, showing the relationship between them.

Hint: The class diagram is similar to the example done in class. You should use all OO concepts covered in class (i.e., inheritance, wrapper/ interface and association) for a flexible design which can be extended.

NOTE: Use proper naming conventions e.g. use camelCase, prefix private fields with _ and prefix protected fields with **z**.

Part B:
Create a new project in Visual Studio and implement the design using the class diagram identified in Part A.
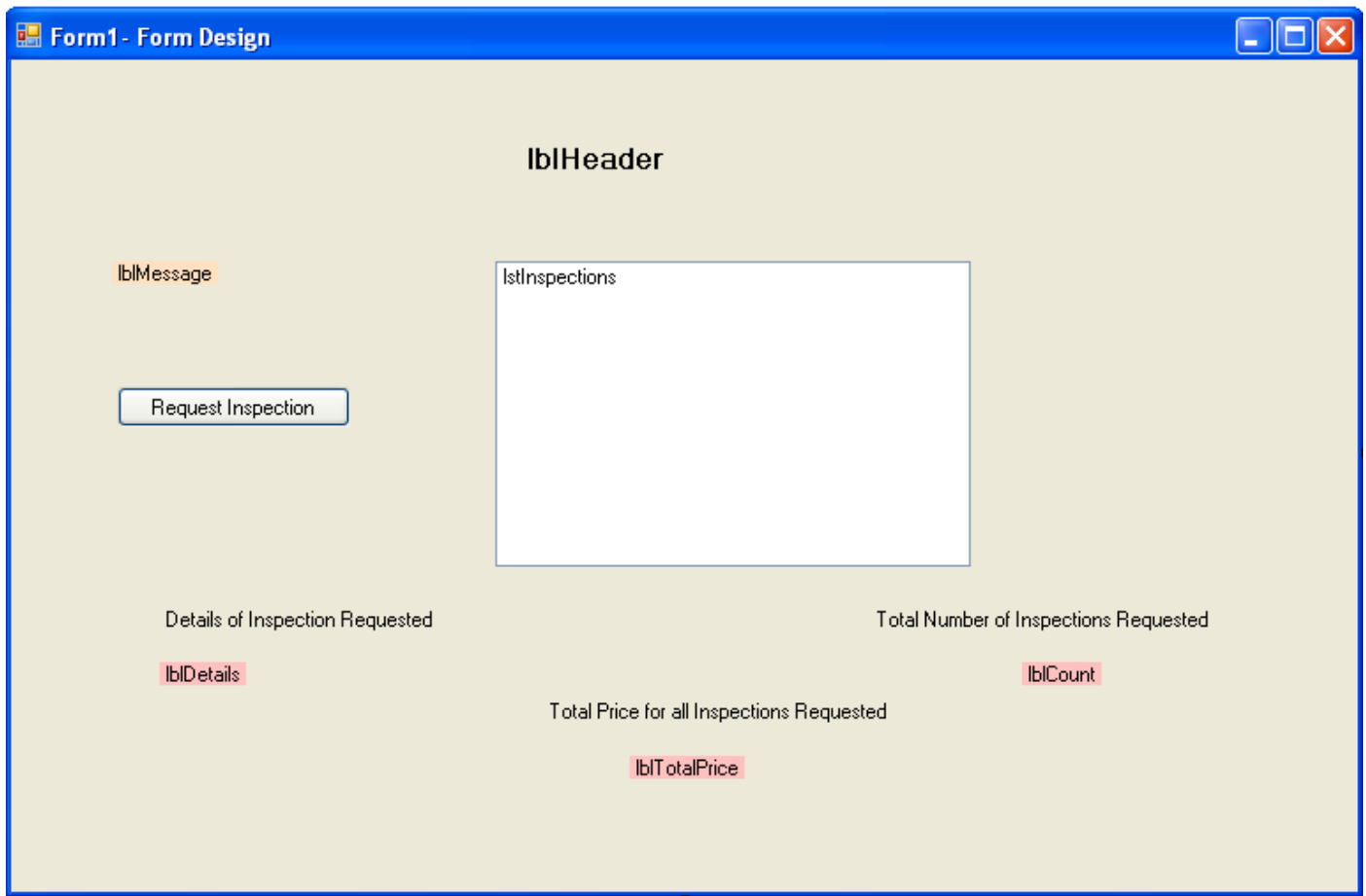
Further, note that VTNZ wants to keep track of the total number of inspections carried out and the total price for them.

To illustrate this screen shots on the following pages show you
(1) the basic form design,
(2) what will be displayed after the FormLoad event,
(3) what will be displayed after one inspection is requested and
(4) what will be displayed after two inspections are requested.

Hints: The implementation will be similar to the example demonstrated in class.
You will have to use shared/static fields/properties/methods to show summary information - 'Total Number of Inspections Requested' and 'Total Price for all Inspections Requested'.

Form1 - After FormLoad

VTNZ North Harbour
3-5 Saturn Place, Albany
Mon - Fri - 7.30am - 5pm

Select the inspection type

WoF inspection	50
Modified vehicle check-up	200
Pre-purchase inspection	150
Vehicle registration	210

Request Inspection

Details of Inspection Requested

Total Number of Inspections Requested

Total Price for all Inspections Requested

Form1 - After 1 inspection requested

VTNZ North Harbour
3-5 Saturn Place, Albany
Mon - Fri - 7.30am - 5pm

Select the inspection type

WoF inspection	50
Modified vehicle check-up	200
Pre-purchase inspection	150
Vehicle registration	210

Request Inspection

Details of Inspection Requested

Total Number of Inspections Requested

Inspection Type Modified vehicle check-up
Price $200.00

1

Total Price for all Inspections Requested

$200.00

Form1 - After 2 inspections requested

VTNZ North Harbour
3-5 Saturn Place, Albany
Mon - Fri - 7.30am - 5pm

Select the inspection type

WoF inspection	50
Modified vehicle check-up	200
Pre-purchase inspection	150
Vehicle registration	210

Request Inspection

Details of Inspection Requested

Total Number of Inspections Requested

Inspection Type Modified vehicle check-up
Price $200.00
Inspection Type Vehicle registration
Price $210.00

2

Total Price for all Inspections Requested

$410.00