Lab 05
Rental Housing
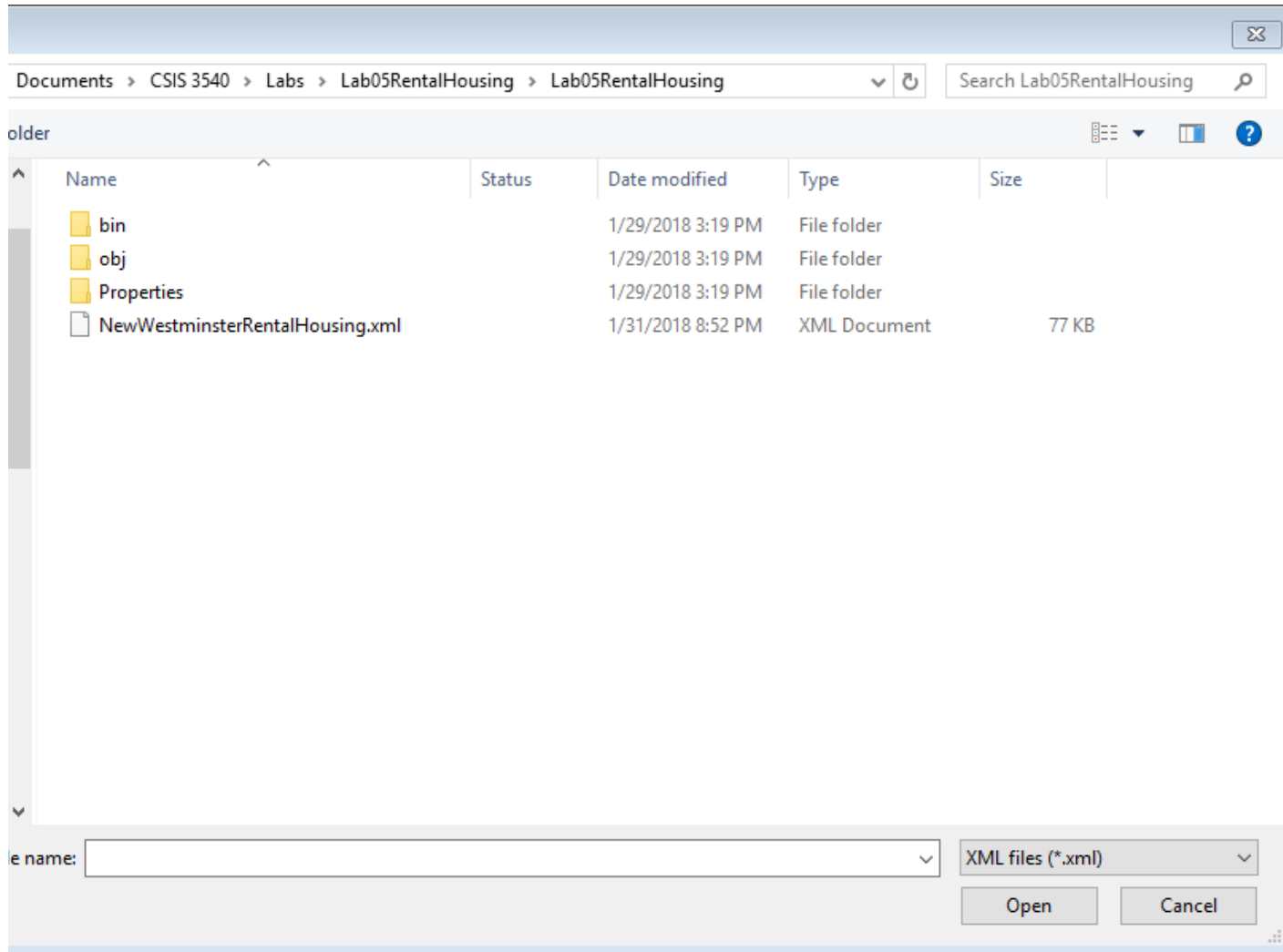
Using LINQ and Windows Forms

Rental Housing Application

- Unpack Visual Studio Project
  - Download Lab05RentalHousing.zip and unpack it to your project directory.
    - This contains the xml data file as well
  - Name: Lab05RentalHousing
  - Windows Forms Application
  - **Start up the project by clicking on Lab05RentalHousing.sln in the solution folder.**

- Description
  - The City of New Westminster provides data on rental housing in XML format. This data is in the file **NewWestminsterRentalHousing.xml** in the project folder.
  - The application reads the data from the xml file, and displays the data in a DataGridView control.
  - The application can filter based on neighborhood or building name, and displays the rental housing that matches.
  - The form and template code is already done.

- Project requirements
  - Controls have already been created in Designer. No need to change any of this.
  - Complete the code in Lab05RentalHousingForm.cs

- Application flow
  - Open the data file using OpenFileDialog
  - Deserialize the data and store the data in a List<NewWestminsterRentalHousing>
  - Fill the DataGridView control with List<NewWestminsterRentalHousing> data
  - All neighborhoods are displayed and selected in a ListBox.
  - Depending on the listBoxNeighborhoods selection and textBoxBuildingNameSearch, change the records displayed
    - Hint: use LINQ to query the main list.
  - Show the number of apartments and total number of residences.
  - The Reset button should clear the textbox and select all neighborhoods in the listbox.

- Show instructor your progress, and submit via Blackboard by the due date and time.

Open the XML file

Read in data from file and populate control

- Read in the file, storing each record in List<NewWestminsterRentalHousing>, and then add records/fields to the DataGridView control

- Records are ordered by neighborhood then building name.

- Show the number of apartments and total residences

- All neighborhoods in the listbox are selected, and the building name search is clear.

Refine the item list by search

- Use LINQ to filter the data by selected neighborhood in the listbox and by building name (but only if the button is clicked).

- Reset button selects all neighborhoods and shows all records (as at program start)

Coding Tasks

- You must complete the coding tasks in order to make the application functional.

- Do each task carefully, one at a time, and test/debug thoroughly.

- Examine the xml file in the project carefully!

Coding Tasks (also in code comments)

- InitializeDataGridViewRentalHousing()
  - Set up the column headers (names)
  - Test by compiling and running
    - you should see a blank form with the headers correct

- GetRentalHousingFromXML()
  - Open the xml file and set to StreamReader
  - Deserialize data from xml file and store in rentalHousingList.
  - Code a test method to populate the datagridview control (can be used later) from rentalHousingList

- InitializeAllOtherFormControls()
  - Query (LINQ) rentalHousingList to create a unique set of neighborhoods, and add this list of strings to listBoxNeighborhoods.
  - Neighborhoods should be converted to UPPERCASE
  - Test by running the program, it should show the listbox properly populated.

- ResetControlsToDefault()
  - Unregister/register event handlers
  - Clear the search textbox
  - Create the listBoxNeighborhoods.SelectedIndexChanged event method (hint: use += TAB)
  - Make sure all neighborhoods are **selected** in the listbox.
  - Test by running the program, all neighborhoods should be shaded blue (selected).

- DisplayRentalHousing()
  - Using a LINQ query, display all of the rental housing that matches the **selected** neigborhoods in the listbox.
  - Also, if the search button is clicked, display rental housing that matches the building name.
  - Display all rental housing records ordered by neighborhood then building name

- In the main form method
  - set the buttonBuildingNameSearch.Click event method and handler
  - set the buttonReset.Click event method and handler

- Test thoroughly and submit via Blackboard

Rental Housing XML file

- Note the format of the file, and how it corresponds to the class definition of NewWestminsterRentalHousing

```
<ArrayOfNewWestminsterRentalHousing xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <NewWestminsterRentalHousing>
    <BuildingId>3768</BuildingId>
    <Address>1221 CAMERON ST</Address>
    <BuildingName>PINE CREST</BuildingName>
    <NumberOfResidences>10</NumberOfResidences>
    <Neighborhood>BROW OF THE HILL</Neighborhood>
  </NewWestminsterRentalHousing>
```