

CST8256 Web Programming Language I

Lab 2

Objective

1. Use third party class libraries
2. Understand and use ASP.NET Tag Helpers

Due Date

See Brightspace posting for the due date. To earn 5 points, you are required:

1. Complete the lab as required.
2. Zip your web application project folder into a zip file and submit the zip file to the Brightspace before the due date
3. Demonstrate your lab work during the lab session in the week after the due date.

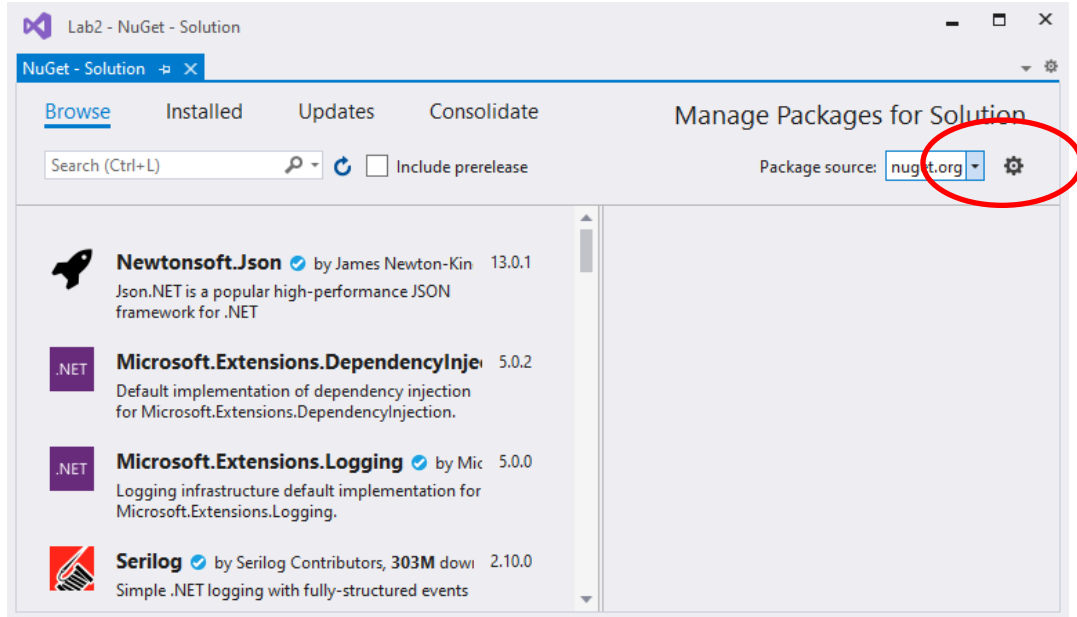
Preparation

Often, when you develop a new software application, you will not build everything from scratch. Instead, you will use some class libraries. Those class libraries are packed as NuGet packages.

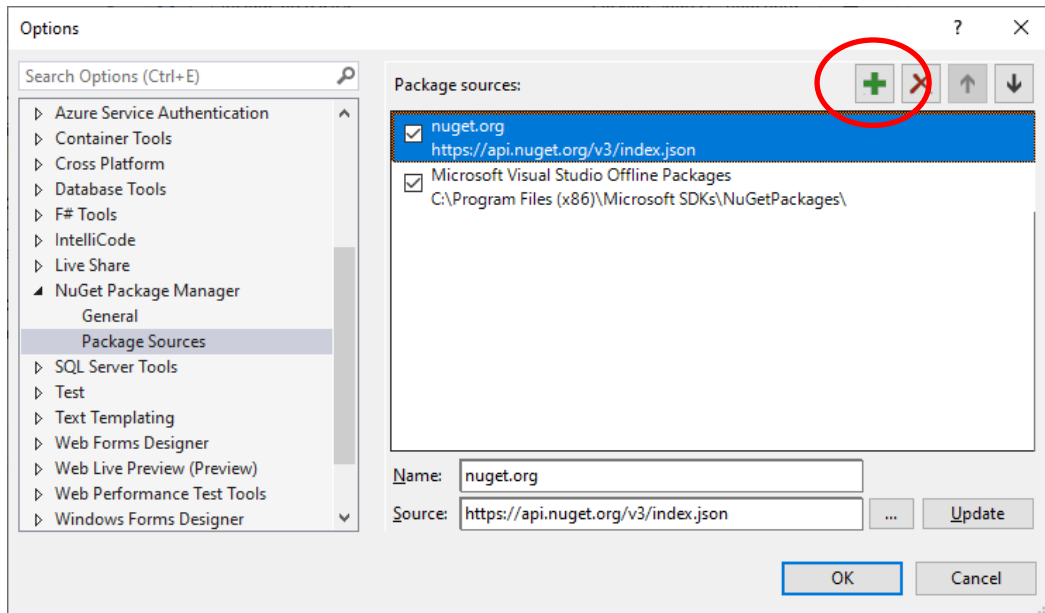
In this lab, we are going to learn how to use a class library either purchased from a third party or in-house developed previously.

In the next lab, we will use class libraries obtained from the public domain.

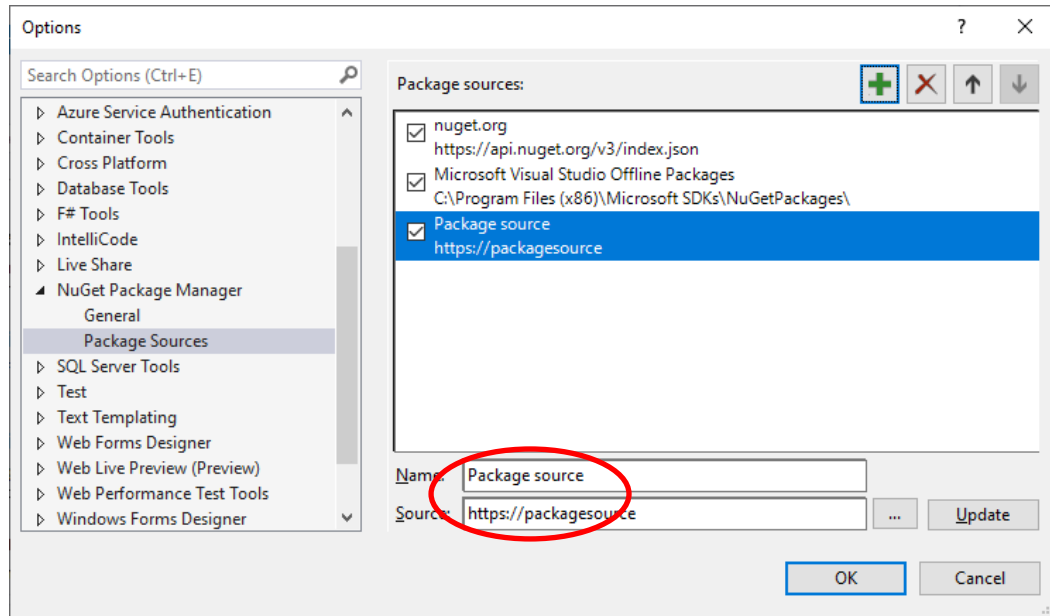
1. Create a folder **LocalClassLib** (say, c:\algonquin\LocalClassLibs). Download NuGet package **AcademicManagement.2.0.0.nupkg** from the Brightspace, and move the file into **LocalClassLib** folder.
2. Start Visual Studio and create new Razor Page web application **Lab2**
3. From the Visual Studio's menu select **Tools > NuGet Package Manager > Manage NuGet Packages for Solution ...**
4. On start, the only package source is nuget.org which has all class libraries in the public domain. We need add the class libraries in our local source. Click **setting** button next to the package source dropdown.



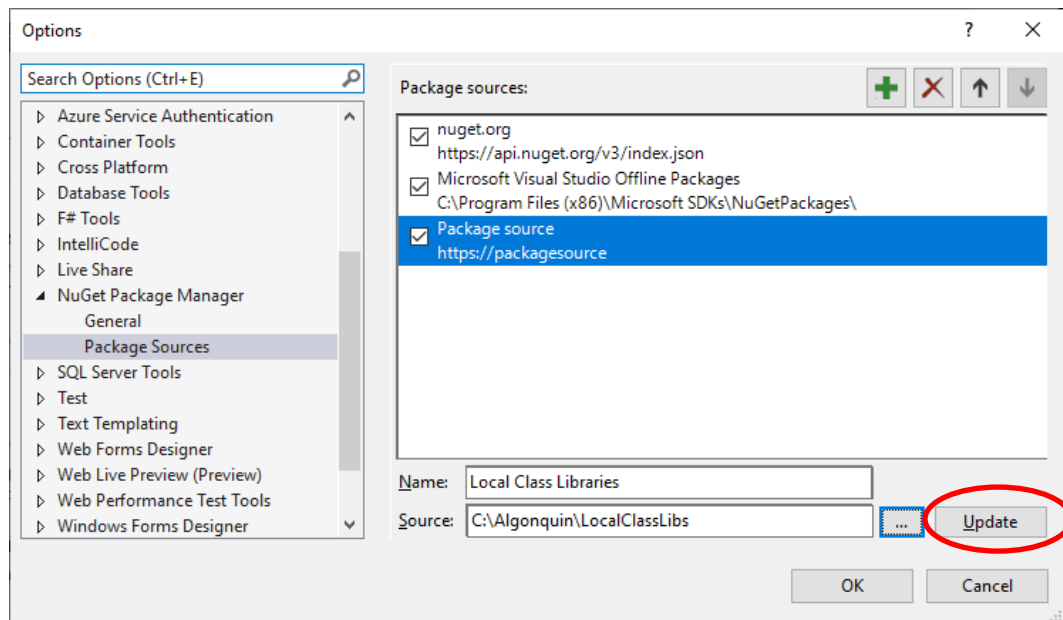
5. Click + button to add a new package source



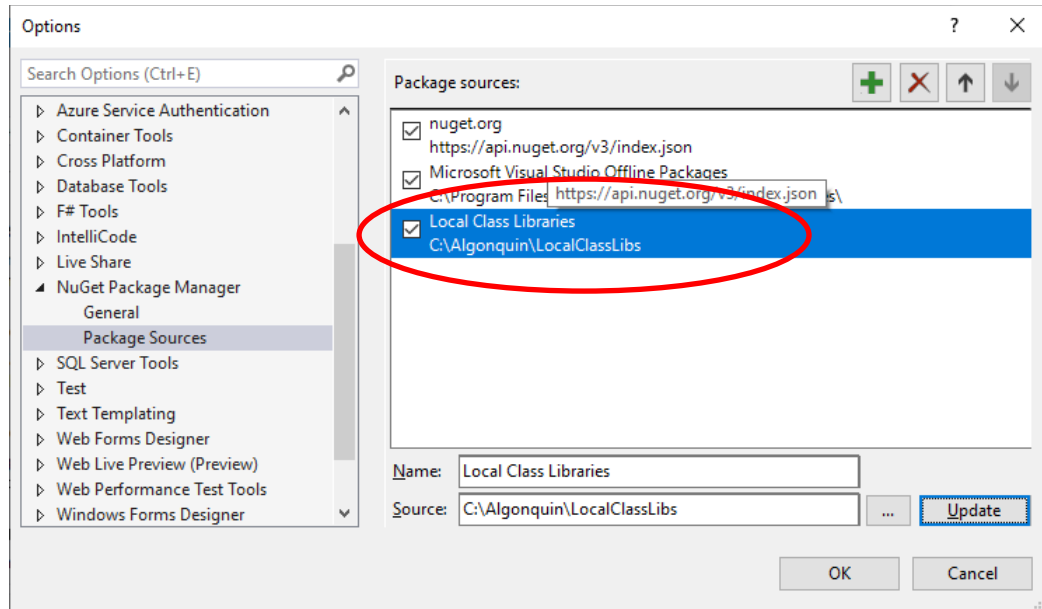
6. A new package source template is created for you in the list. You need to change its name and location.



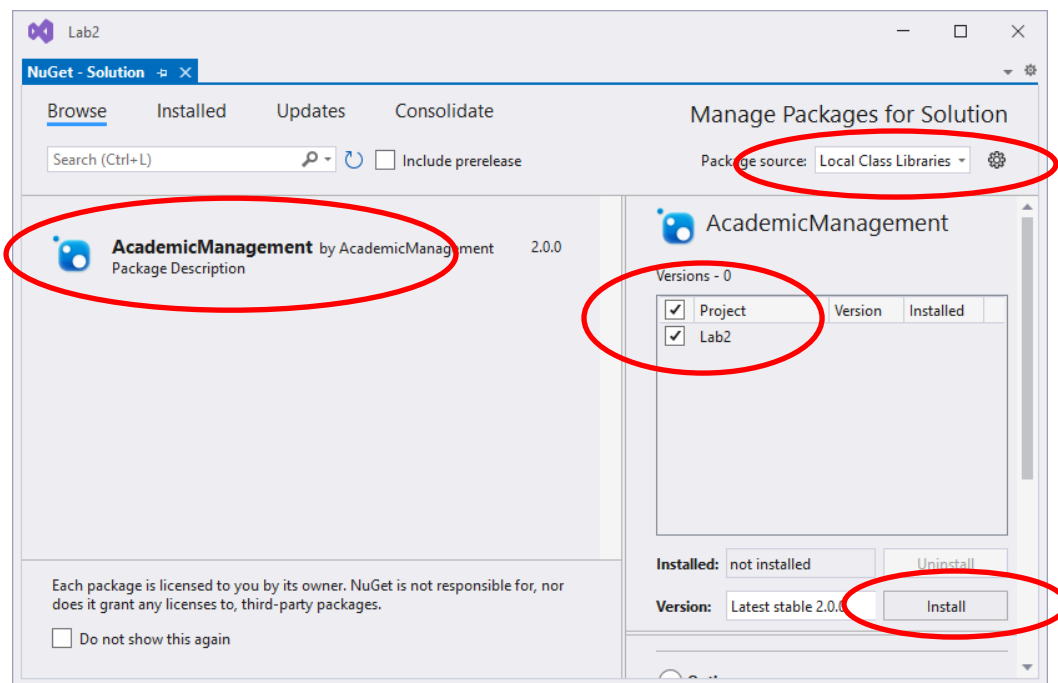
7. Enter a new name and browse to the folder where the downloaded NuGet package is located, click **Update** button.



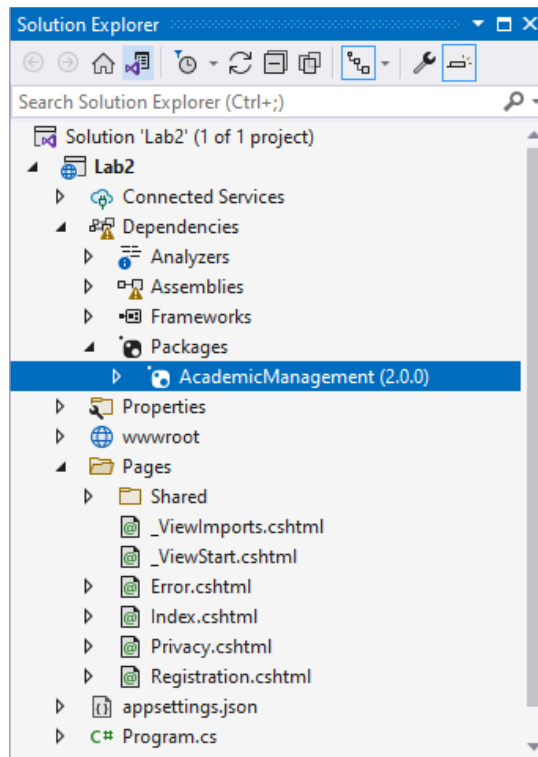
8. Make sure that the new source is in the list and with correct location, and click OK button



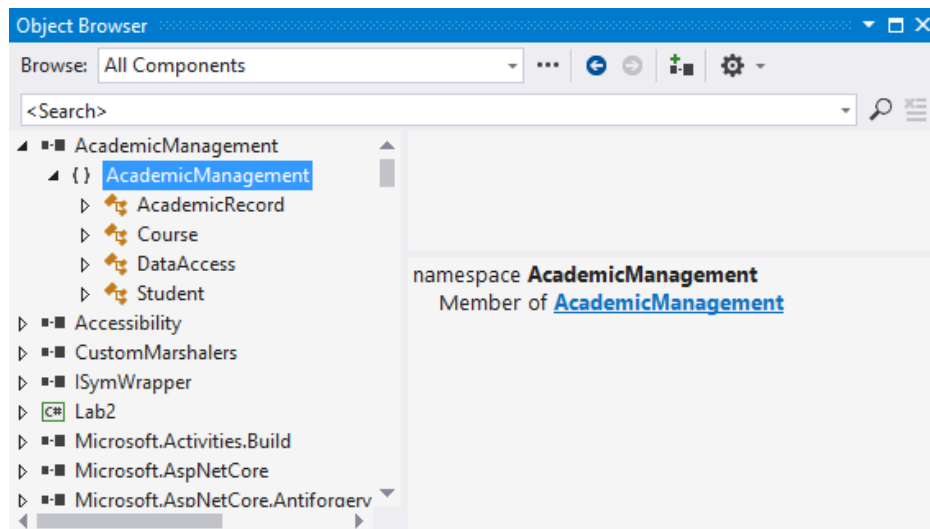
9. Select Local Class Libraries as the package source, you should see the package you downloaded. Select the package and install it to the Lab2 project.



10. The package is now added to the project's **Dependencies**



11. Select Visual Studio menu item **View > Object Browser** to browse the contents of the class library in the package



All classes are in the namespace **AcademicManagement**. To use these classes you have to include the following statement at the beginning of your C# file or Razor page file, respectively.

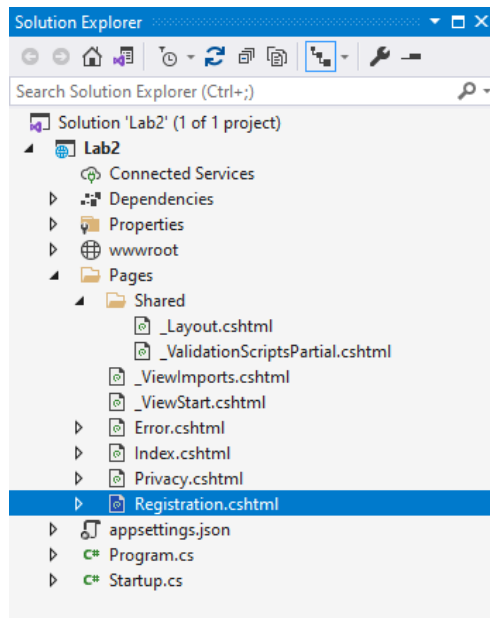
using AcademicManagement;

@using AcademicManagement;

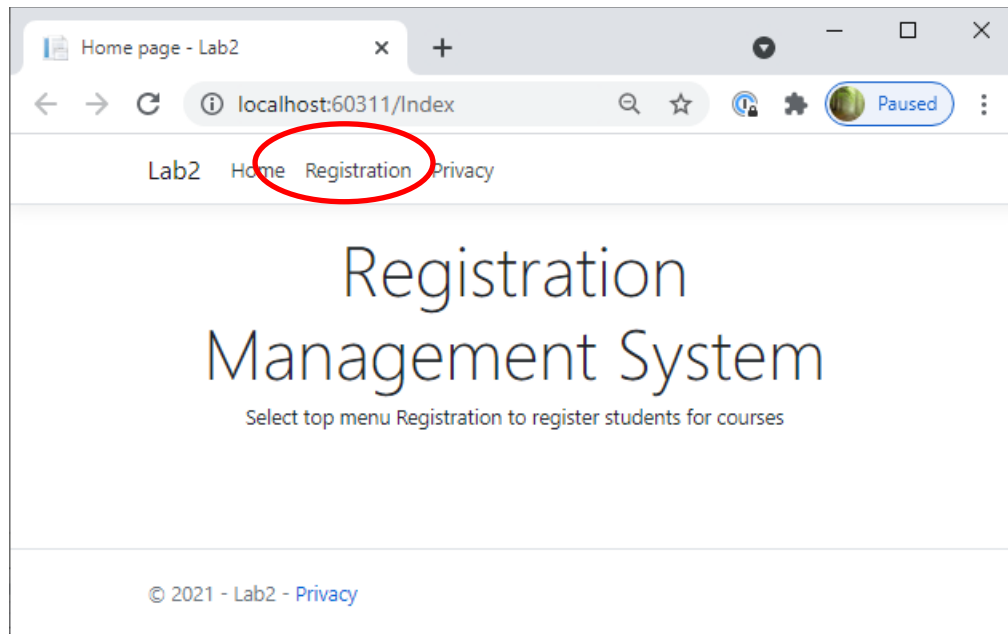
Click each class and its properties and methods. Read the descriptions to get yourself familiar with them. You will need to use them to complete Lab 2.

Requirements

1. This web application has two pages, **Index.cshtml** page and **Registration.cshtml** page. Add a new empty Razor page to the Pages folder of the project.

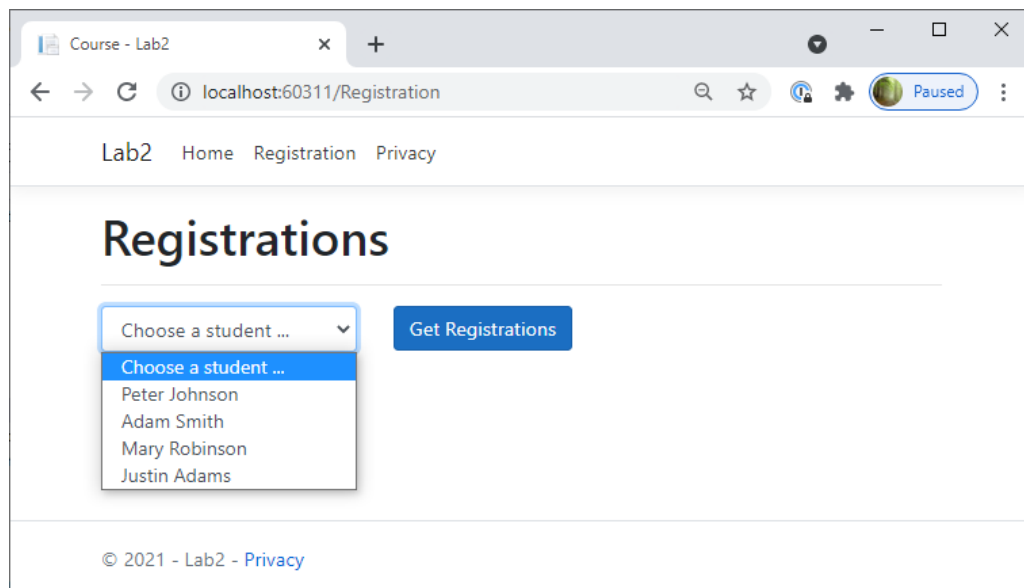


2. To navigate between these two pages, add a top menu item **Registration** to the **_Layout.cshtml** file. This menu item will link to Registration page.



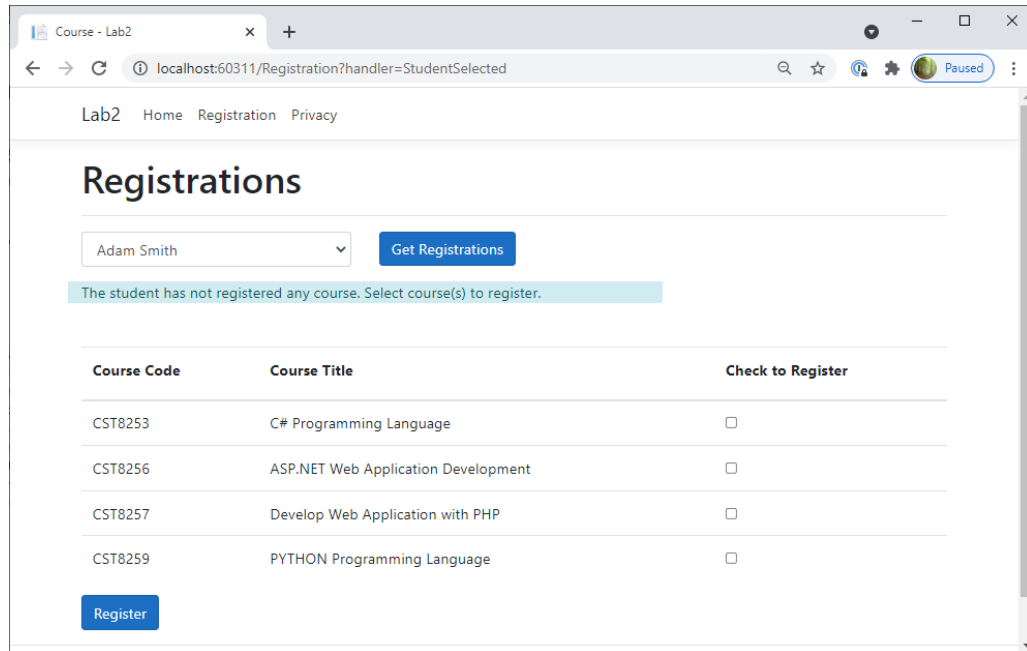
Hint: Study `_Layout.cshtml` file and pay attention to how **Home** menu item links to the Index page.

3. Like most web applications, the home (Index) page, is an introduction page. From there, the user will select the top menu items to access the different functions provided by the web application. For this lab, the only function is register students for courses. When the user clicks **Registration**, the Registration page is displayed shown a dropdown list of all available students in the system.



After the user selects a student and clicks **Get Registrations** button beside the dropdown list, if the selected student has not registered for any course, the page

will show a list of available courses the student can register for. For example, since student Adam Smith has not registered any course, the page will show as:



Hints:

- Use `DataAccess.GetAllStudents()` method to get all available students.
 - Use `DataAccess.GetAllCourses()` method to get all available courses.
 - Use `DataAccess.GetAcademicRecordsByStudentId (...)` method to get all academic records of a student with the specified student ID
 - If the result is a list with 0 element, the student has not registered for any course.
 - **DataAccess** class is defined in the class library which you installed in the Preparation section through a NuGet package. Use object browser to view the documentations for the above mentioned methods
4. The user can check one or more courses to register the selected student and click **Register** button at the bottom of page. The application will show the courses which the student has just registered.

For example, on the follow page, the use checked two courses and clicked **Register** button.

The screenshot shows a web browser window with the URL `localhost:60311/Registration?handler=StudentSelected`. The page has a navigation bar with links: Lab2, Home, Registration, Privacy. The main heading is "Registrations". Below it is a dropdown menu showing "Adam Smith" and a "Get Registrations" button. A message states: "The student has not registered any course. Select course(s) to register." Below this is a table with columns: Course Code, Course Title, and Check to Register. The table lists four courses: CST8253 (C# Programming Language), CST8256 (ASP.NET Web Application Development), CST8257 (Develop Web Application with PHP), and CST8259 (PYTHON Programming Language). The checkboxes for CST8256 and CST8257 are checked. A "Register" button is at the bottom left, and a footer shows "© 2021 - Lab2 - Privacy".

Course Code	Course Title	Check to Register
CST8253	C# Programming Language	<input type="checkbox"/>
CST8256	ASP.NET Web Application Development	<input checked="" type="checkbox"/>
CST8257	Develop Web Application with PHP	<input checked="" type="checkbox"/>
CST8259	PYTHON Programming Language	<input type="checkbox"/>

The page will show that student Adam Smith has just registered the two checked courses.

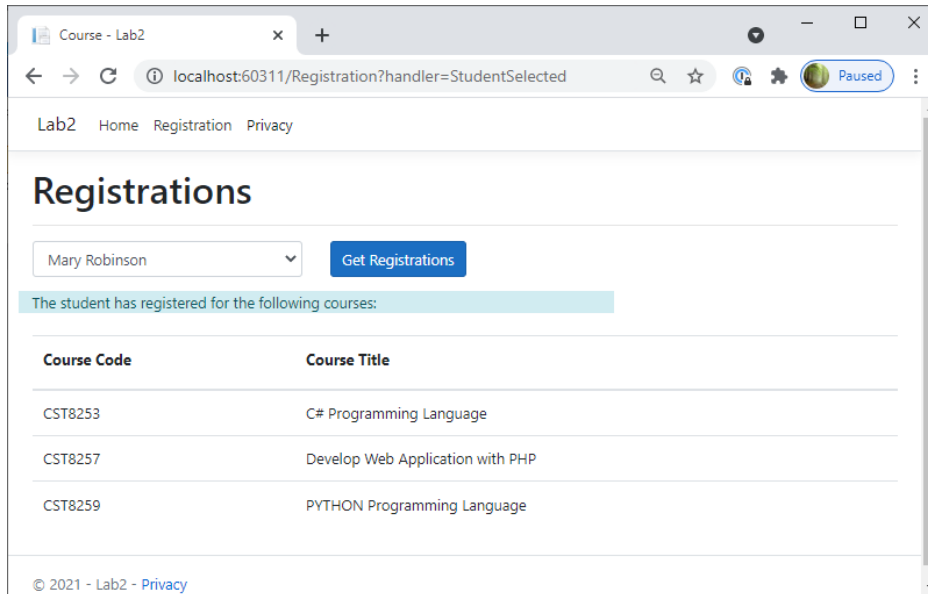
The screenshot shows the same web browser window but with the URL `localhost:60311/Registration?handler=Register`. The "Get Registrations" button is now disabled. The message states: "The student has registered for the following courses." Below this is a table with columns: Course Code and Course Title. The table lists two courses: CST8256 (ASP.NET Web Application Development) and CST8257 (Develop Web Application with PHP). The footer remains the same.

Course Code	Course Title
CST8256	ASP.NET Web Application Development
CST8257	Develop Web Application with PHP

Hints:

- For each selected course and student combination, create a new AcademicRecord object

- Use `DataAccess.AddAcademicRecord()` method to add the newly created `AcademicRecord` object to the system.
 - Since there are two submit buttons in the form, one for get the selected student registrations and the other for register the selected student for checked courses. Use `asp-page-handler="Register"` tag helper to specify that `OnPostRegister()` method of the page model class should be invoked when **Register** button is clicked. Use `asp-page-handler="StudentSelected"` tag helper to specify that `OnPostStudentSelected()` method of the page model class should be invoked when **Get Registrations** button is clicked
5. The user can then select a different student to view his/her registrations or to register the courses for the student if the student has not registered any courses.
6. For example, since student Mary Robinson has registered three courses previously, when the user selects Mary Robinson from the dropdown list and clicks **Get Registrations** button, the following inform is shown on the page:



The screenshot shows a web browser window with the address bar displaying `localhost:60311/Registration?handler=StudentSelected`. The page has a navigation bar with links: Lab2, Home, Registration, and Privacy. The main heading is "Registrations". Below the heading, there is a dropdown menu showing "Mary Robinson" and a blue button labeled "Get Registrations". A message states: "The student has registered for the following courses:". Below this message is a table with two columns: "Course Code" and "Course Title".

Course Code	Course Title
CST8253	C# Programming Language
CST8257	Develop Web Application with PHP
CST8259	PYTHON Programming Language

At the bottom of the page, there is a footer: "© 2021 - Lab2 - Privacy".

However, since student Peter Johnson has not registered any course yet, when the user selects Peter Johnson and clicks **Get Registrations** button, the page will show as follows:

Course - Lab2

localhost:60311/Registration?handler=Stu...

Lab2 Home Registration Privacy

Registrations

Peter Johnson

The student has not registered any course. Select course(s) to register.

Course Code	Course Title	Check to Register
CST8253	C# Programming Language	<input type="checkbox"/>
CST8256	ASP.NET Web Application Development	<input type="checkbox"/>
CST8257	Develop Web Application with PHP	<input type="checkbox"/>
CST8259	PYTHON Programming Language	<input type="checkbox"/>

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Note: Since the students' registrations are stored in memory, there are only temporary maintained. When you restart the application, the previous stored registrations will be lost.

- The web application should show appropriate error messages when the user's entries are incorrect:
 - When the user clicks **Get Registrations** button without selecting a student from the dropdown list:

Course - Lab2

localhost:60311/Registration?handler=StudentSelected

Lab2 Home Registration Privacy

Registrations

Choose a student ...

You must select a student!

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- When the user clicks **Register** button without check any course from the course checkbox list

Course - Lab2

localhost:60311/Registration?handler=Register

Registrations

Peter Johnson

You must select at least one course!

Course Code	Course Title	Check to Register
CST8253	C# Programming Language	<input type="checkbox"/>
CST8256	ASP.NET Web Application Development	<input type="checkbox"/>
CST8257	Develop Web Application with PHP	<input type="checkbox"/>
CST8259	PYTHON Programming Language	<input type="checkbox"/>

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