



Bài 04

Model trong ASP.NET MVC



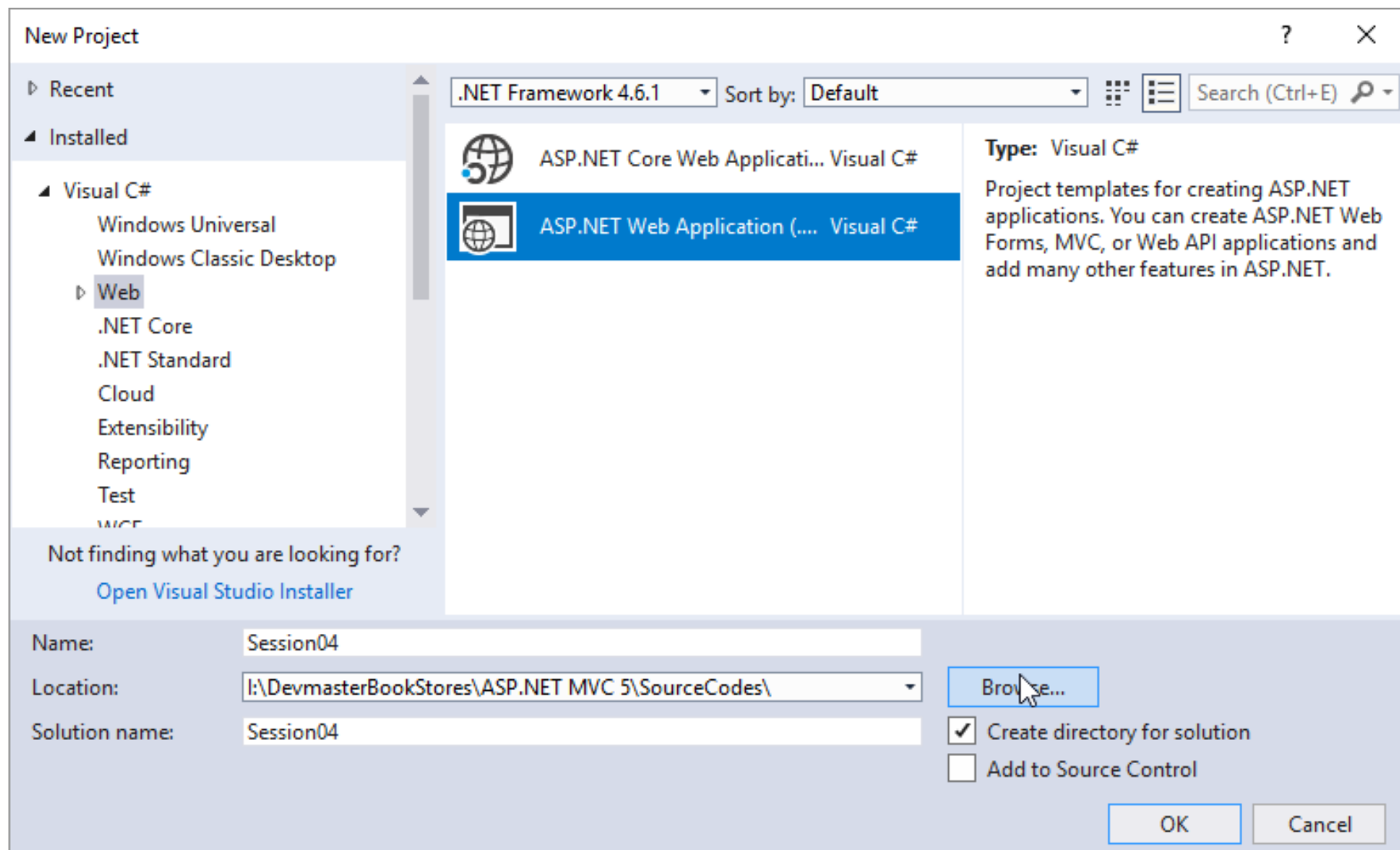
- ◆ Giới thiệu về Model
- ◆ Tạo Model và đưa dữ liệu từ Model ra View
- ◆ Sử dụng Strong Typing
- ◆ Sử dụng HTML Helper Strongly Types Views
- ◆ Giới thiệu tính năng Visual Studio.NET Scaffolding
- ◆ Sử dụng Scaffolding để sinh ra các template CRUD



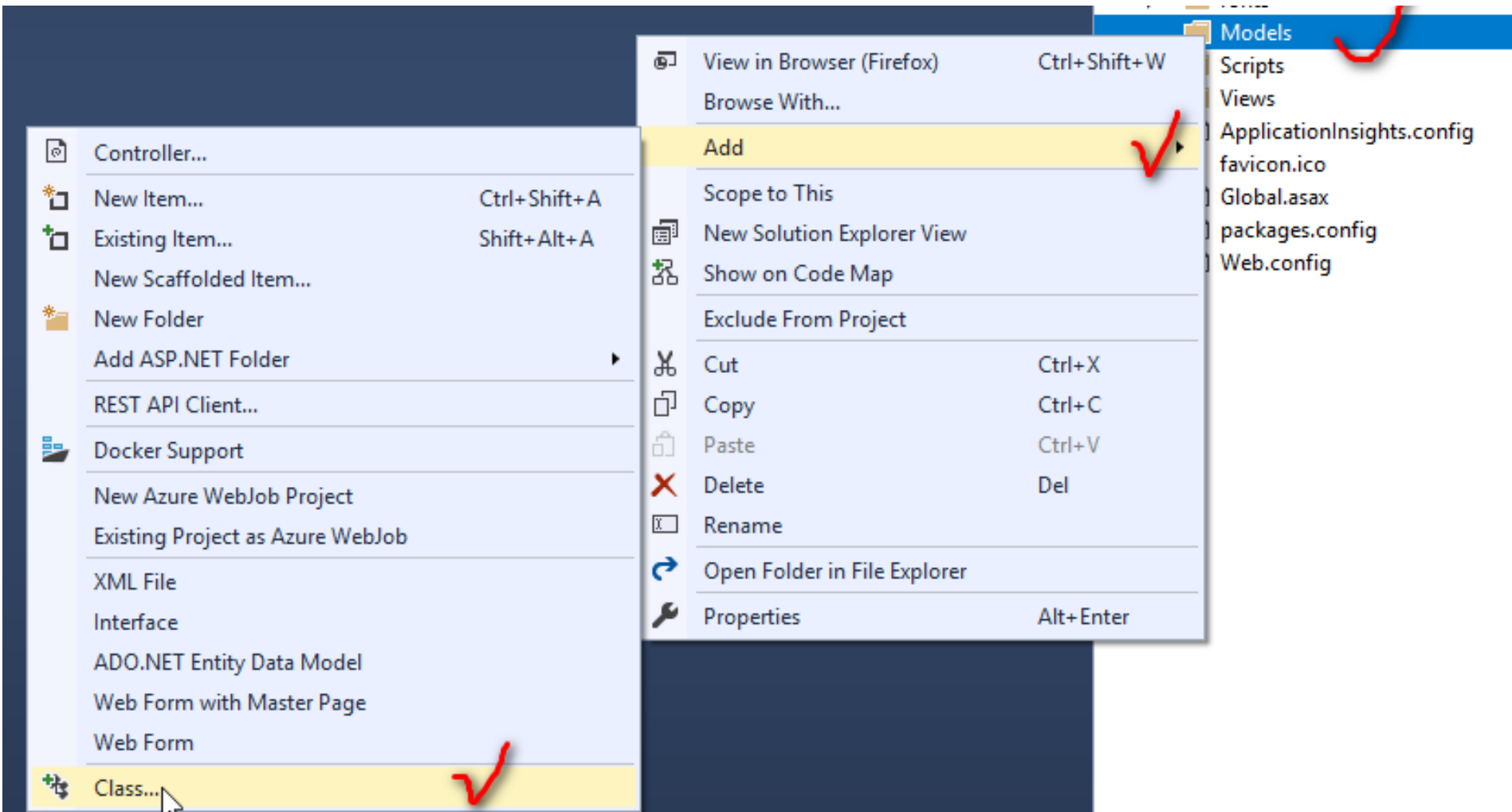
- ◆ Model là một class chứa đựng các thuộc tính biểu diễn dữ liệu của ứng dụng.
- ◆ ASP.NET MVC Framework dựa trên mẫu MVC, mẫu này có 3 kiểu model với các mục đích riêng biệt:
 - ◆ **Data model:** Bao gồm các lớp tương tác với database và được thiết kế theo Database First hoặc Code.
 - ◆ **Business model:** Bao gồm các lớp thực thi một chức năng nghiệp vụ của ứng dụng
 - ◆ **View model:** Bao gồm các lớp cung cấp thông tin được chuyển giữa controllers và views.



Tạo một model và chuyển dữ liệu ra View



Tạo một model và chuyển dữ liệu ra View



Tạo một model và chuyển dữ liệu ra View



The screenshot displays the Microsoft Visual Studio IDE with the following components:

- Menu Bar:** File, Edit, View, Project, Build, Debug, Team, Tools, Architecture, Test, Analyze, Window, Help.
- Toolbar:** Includes icons for file operations, debugging, and a search bar labeled "Quick Launch (Ctrl+Q)".
- Code Editor:** Shows the file `Customer.cs` with the following code:

```
2 using System.Collections.Generic;
3 using System.Linq;
4 using System.Web;
5
6 namespace Session04.Models
7 {
8     0 references
9     public class Customer
10     {
11         0 references | 0 exceptions
12         public string CustomerId { get; set; }
13         0 references | 0 exceptions
14         public string FirstName { get; set; }
15         0 references | 0 exceptions
16         public string LastName { get; set; }
17         0 references | 0 exceptions
18         public string Address { get; set; }
19         0 references | 0 exceptions
20         public int YearOfBirth { get; set; }
21     }
22 }
```
- Solution Explorer:** Shows the project structure for "Session04". The "Models" folder is expanded, and `Customer.cs` is selected.
- Properties Window:** Empty.
- Bottom Bar:** Includes "Error List", "Output", and a status bar showing "ASP.NET Ready", "Ln 1", "Col 1", "Ch 1", "INS", and "Add to Source Control".

Tạo một model và chuyển dữ liệu ra View

The screenshot displays the Visual Studio IDE with the following components:

- Main Editor:** Shows the `Customer.cs` file in the `Session04.Models.Customer` namespace. The code includes using statements for `System.Collections.Generic`, `System.Linq`, and `System.Web`. The `Customer` class is defined with the following properties:

```
public string FirstName { get; set; }
public string LastName { get; set; }
public string Address { get; set; }
public int YearOfBirth { get; set; }
```
- Add Controller Dialog:** A dialog box is open with the title "Add Controller". The "Controller name:" field contains the text "CustomerController". There are "Add" and "Cancel" buttons at the bottom right.
- Solution Explorer:** Located on the right, it shows the project structure for "Session04". The "Controllers" folder is expanded, showing `HomeController.cs` and `CustomerController.cs` (which is the file being added).
- Properties Window:** Located on the far right, it is currently empty.
- Bottom Bar:** Shows the status bar with "Ready", "Ln 1", "Col 1", "Ch 1", and "INS". There is also a button to "Add to Source Control".

Tạo một model và chuyển dữ liệu ra View

The screenshot displays the Visual Studio IDE with the following components:

- File Explorer:** Shows the project structure for Session04, including folders like App_Data, App_Start, Content, Controllers, Models, Scripts, and Views, and files like CustomerController.cs, HomeController.cs, Customer.cs, and Web.config.
- Code Editor:** Displays the `CustomerDetail()` method in `CustomerController.cs`. The code is as follows:

```
//Customer Detail
0 references | 0 requests | 0 exceptions
public ActionResult CustomerDetail()
{
    Customer cus = new Customer()
    {
        CustomerId = "C1001",
        FirstName = "Chung",
        LastName = "Trịnh",
        Address = "Hà nội",
        YearOfBirth = 1979
    };
    ViewBag.customer = cus;
    return View();
}
```

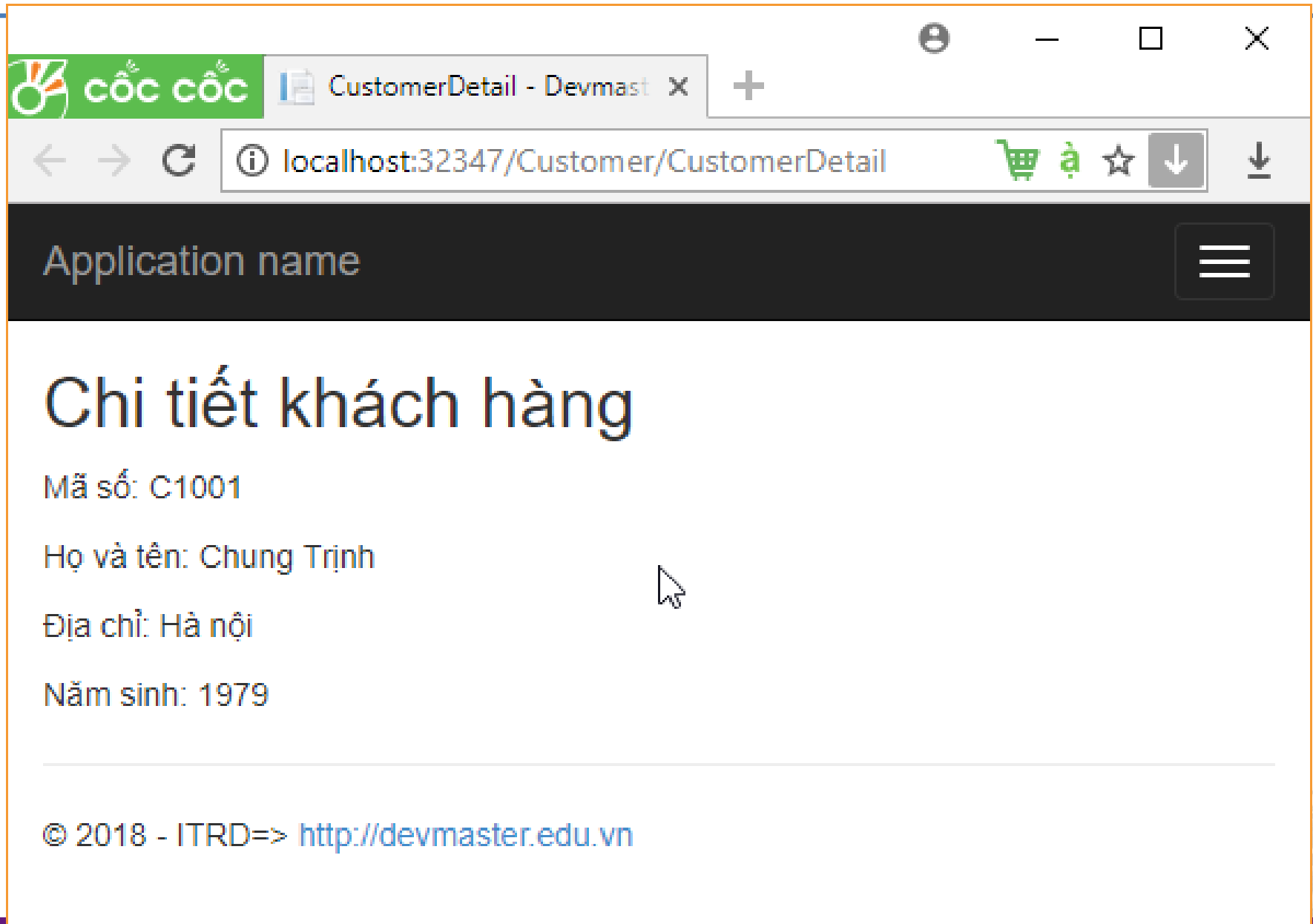
A red rectangular box highlights the block of code from line 21 to 29, which is responsible for creating the `Customer` object and assigning it to `ViewBag.customer`.
- Properties Window:** Located on the right, it shows the properties of the selected `Customer` object, including `CustomerId`, `FirstName`, `LastName`, `Address`, and `YearOfBirth`.
- Output Window:** Located at the bottom, it shows the output of the application, including the text "Item(s) Saved" and the current line and column numbers (Ln 25, Col 36).

Tạo một model và chuyển dữ liệu ra View

The screenshot shows the Microsoft Visual Studio IDE with the following components:

- Menu Bar:** File, Edit, View, Project, Build, Debug, Team, Tools, Architecture, Test, Analyze, Window, Help.
- Toolbar:** Includes buttons for Undo, Redo, and other development actions.
- Editor:** Displays the `CustomerDetail.cshtml` file with the following code:

```
1 @  
2 ViewBag.Title = "CustomerDetail";  
3 Layout = "~/Views/Shared/_Layout.cshtml";  
4  
5  
6 <h2>Chi tiết khách hàng</h2>  
7 <p>Mã số: @ViewBag.customer.CustomerId</p>  
8 <p>  
9     Họ và tên:  
10     @ViewBag.customer.FirstName  
11     @ViewBag.customer.LastName  
12 </p>  
13 <p>Địa chỉ: @ViewBag.customer.Address</p>  
14 <p>Năm sinh: @ViewBag.customer.YearOfBirth</p>  
15
```
- Solution Explorer:** Shows the project structure with folders like Properties, References, App_Data, App_Start, Content, Controllers, Models, Scripts, and Views. The `Views` folder is expanded, showing subfolders like `Customer` and `Shared`, and files like `_Layout.cshtml`, `Error.cshtml`, and `_ViewStart.cshtml`.
- Status Bar:** Displays "Ready", "Ln 15", "Col 1", "Ch 1", "INS", and "Add to Source Control".



Tạo một model và chuyển dữ liệu ra View

The screenshot displays the Visual Studio IDE with the following components:

- File Explorer:** Shows the project structure with folders like `App_Data`, `App_Start`, `Content`, `Controllers`, `fonts`, `Models`, `Scripts`, `Views`, and `Customer`.
- Code Editor:** Shows the `CustomerController.cs` file with the `ListCustomer()` method. The code is as follows:

```
public ActionResult ListCustomer()
{
    List<Customer> list = new List<Customer>()
    {
        new Customer(){CustomerId="C001",
            FirstName="Chung", LastName="Trịnh",
            Address="Hà Nội", YearOfBirth=1979},
        new Customer(){CustomerId="C002",
            FirstName="Trần Thu", LastName="Hà",
            Address="Hà Nội", YearOfBirth=1983},
        new Customer(){CustomerId="C003",
            FirstName="Trần Nhật", LastName="Quang",
            Address="Hà Nội", YearOfBirth=1994},
        new Customer(){CustomerId="C004",
            FirstName="Hoàng Văn", LastName="Thái",
            Address="Hà Nội", YearOfBirth=1995}
    };
    ViewBag.list = list;
    return View();
}
```
- Solution Explorer:** Shows the project structure with folders like `App_Data`, `App_Start`, `Content`, `Controllers`, `fonts`, `Models`, `Scripts`, `Views`, and `Customer`.
- Team Explorer:** Shows the project structure with folders like `App_Data`, `App_Start`, `Content`, `Controllers`, `fonts`, `Models`, `Scripts`, `Views`, and `Customer`.

Tạo một model và chuyển dữ liệu ra View

Session04 - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Architecture Test Analyze Window Help

Debug Any CPU Cốc Cốc

SQL Server Object Explorer Server Explorer Toolbox

ListCustomer.cshtml CustomerDetail.cshtml CustomerController.cs Customer.cs

```
2 @{
3     ViewBag.Title = "ListCustomer";
4     Layout = "~/Views/Shared/_Layout.cshtml";
5     var list = ViewBag.list;
6 }
7 <h2>Danh sách khách hàng</h2>
8 <table class="table table-bordered">
9     <tr>
10         <th>Mã số</th>
11         <th>Họ và tên</th>
12         <th>Địa chỉ</th>
13         <th>Năm sinh</th>
14     </tr>
15     @foreach (var cus in list)
16     {
17         <tr>
18             <td>@cus.CustomerId</td>
19             <td>@cus.FirstName @cus.LastName</td>
20             <td>@cus.Address</td>
21             <td>@cus.YearOfBirth</td>
22         </tr>
23     }
24 </table>
```

Solution Explorer

Search Solution Explorer ()

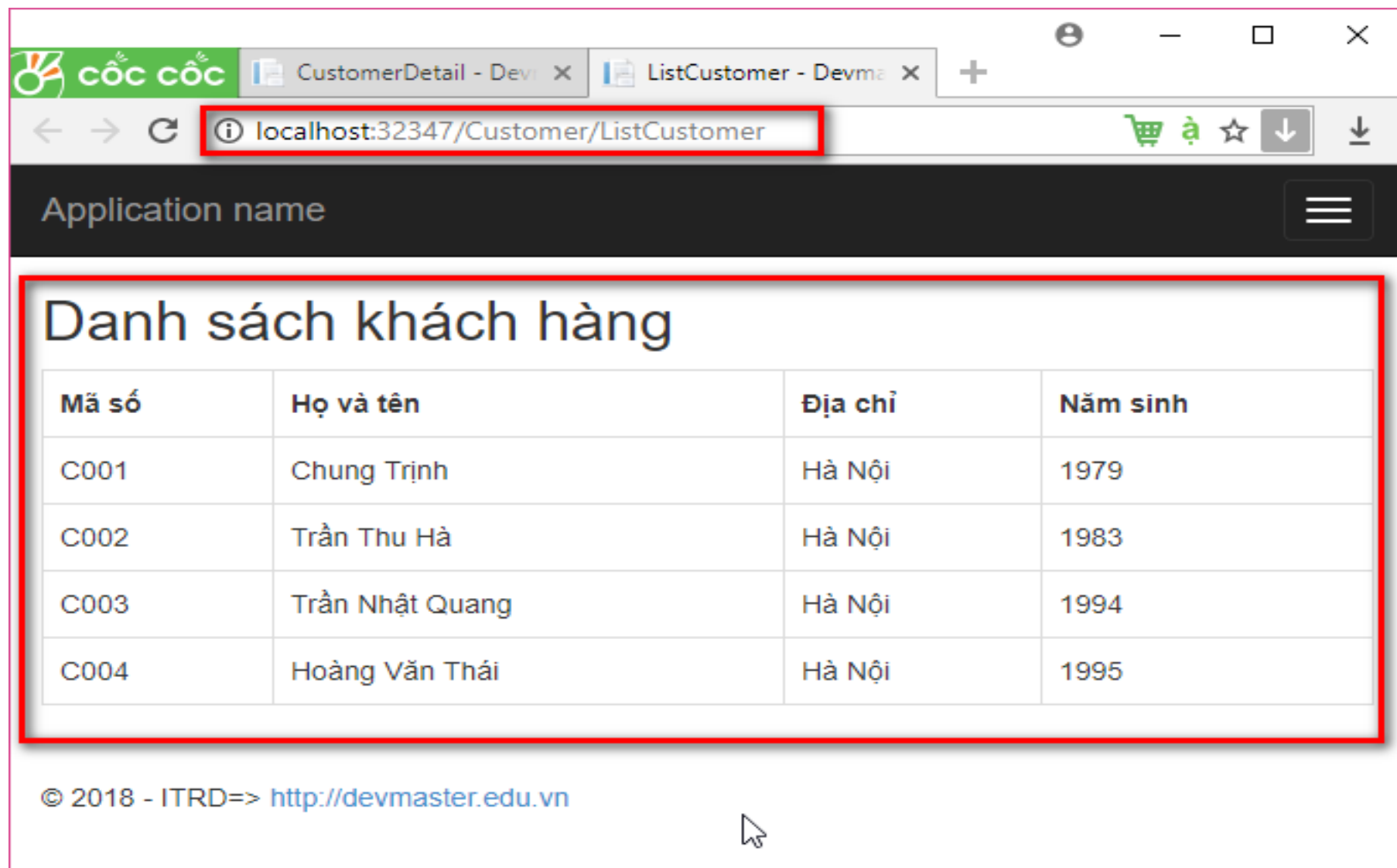
- Properties
- References
- App_Data
- App_Start
- Content
- Controllers
- C# CustomerController.
 - CustomerControl
 - HomeController.cs
 - fonts
 - Models
 - C# Customer.cs
 - Scripts
 - Views
 - Customer
 - CustomerDetail.c
 - ListCustomer.csh
 - Home
 - Shared
 - _Layout.cshtml
 - Error.cshtml
 - _ViewStart.cshtml
 - Web.config
 - ApplicationInsights.cont

Solution Expl... Team Explorer

Error List Output

Item(s) Saved Ln 21 Col 33 Ch 33 INS

ASP.NET MVC5 / Tìm hiểu về Model

A screenshot of a web browser window. The address bar shows 'localhost:32347/Customer/ListCustomer' highlighted with a red box. The page title is 'Application name'. The main content area is titled 'Danh sách khách hàng' and contains a table with 4 columns: 'Mã số', 'Họ và tên', 'Địa chỉ', and 'Năm sinh'. The table has 4 rows of data. The footer shows '© 2018 - ITRD=> http://devmaster.edu.vn'.

Mã số	Họ và tên	Địa chỉ	Năm sinh
C001	Chung Trịnh	Hà Nội	1979
C002	Trần Thu Hà	Hà Nội	1983
C003	Trần Nhật Quang	Hà Nội	1994
C004	Hoàng Văn Thái	Hà Nội	1995

Tạo một model và chuyển dữ liệu ra View

The screenshot displays the Visual Studio IDE with the following components:

- Menu Bar:** File, Edit, View, Project, Build, Debug, Team, Tools, Architecture, Test, Analyze, Window, Help.
- Toolbox:** SQL Server Object Explorer, Server Explorer, Toolbox.
- Code Editor:** Shows `CustomerController.cs` with the `ListCustomer()` method. The code creates a list of four `Customer` objects and returns the view with the list. A red box highlights the final two lines of the method: `//ViewBag.list = list;` and `return View(list);`.
- Solution Explorer:** Shows the project structure with folders like `App_Data`, `App_Start`, `Content`, `Controllers`, `CustomerController`, `Home`, `Shared`, and `Views`.
- Output Window:** Shows the error list and output.

```
31 }  
32 0 references | 0 requests | 0 exceptions  
33 public ActionResult ListCustomer()  
34 {  
35     List<Customer> list = new List<Customer>()  
36     {  
37         new Customer(){CustomerId="C001",  
38             FirstName="Chung", LastName="Trịnh",  
39             Address="Hà Nội", YearOfBirth=1979},  
40         new Customer(){CustomerId="C002",  
41             FirstName="Trần Thu", LastName="Hà",  
42             Address="Hà Nội", YearOfBirth=1983},  
43         new Customer(){CustomerId="C003",  
44             FirstName="Trần Nhật", LastName="Quang",  
45             Address="Hà Nội", YearOfBirth=1994},  
46         new Customer(){CustomerId="C004",  
47             FirstName="Hoàng Văn", LastName="Thái",  
48             Address="Hà Nội", YearOfBirth=1995}  
49     };  
50     //ViewBag.list = list;  
51     return View(list);  
52 }
```

Tạo một model và chuyển dữ liệu ra View

The screenshot displays the Microsoft Visual Studio IDE with the following components:

- File Explorer:** Shows the project structure with folders like `App_Data`, `App_Start`, `Content`, `Controllers`, `Scripts`, and `Views`.
- Solution Explorer:** Displays the project hierarchy, including `CustomerController.cs`, `CustomerDetail.cshtml`, `ListCustomer.cshtml`, and `Shared` folder.
- Code Editor:** Shows the `ListCustomer.cshtml` file with the following code:

```
2 @  
3 ViewBag.Title = "ListCustomer";  
4 Layout = "~/Views/Shared/_Layout.cshtml";  
5 //var list = ViewBag.list;  
6 var list = Model;  
7 }  
8 <h2>Danh sách khách hàng</h2>  
9 <table class="table table-bordered">  
10 <tr>  
11 <th>Mã số</th>  
12 <th>Họ và tên</th>  
13 <th>Địa chỉ</th>  
14 <th>Năm sinh</th>  
15 </tr>  
16 @foreach (var cus in list)  
17 {  
18 <tr>  
19 <td>@cus.CustomerId</td>  
20 <td>@cus.FirstName @cus.LastName</td>  
21 <td>@cus.Address</td>  
22 <td>@cus.YearOfBirth</td>  
23 </tr>  
24 }
```
- Properties Window:** Shows the properties of the selected file, including `App_Data`, `App_Start`, `Content`, `Controllers`, `Scripts`, and `Views`.

Tạo một model và chuyển dữ liệu ra View

```
2 @  
3 ViewBag.Title = "ListCustomer";  
4 Layout = "~/Views/Shared/_Layout.cshtml";  
5 //var list = ViewBag.list;  
6 var list = Model as List<Session04.Models.Customer>;  
7 }  
8 <h2>Danh sách khách hàng</h2>  
9 <table class="table table-bordered">  
10 <tr>  
11 <th>Mã số</th>  
12 <th>Họ và tên</th>  
13 <th>Địa chỉ</th>  
14 <th>Năm sinh</th>  
15 </tr>  
16 @foreach (var cus in list)  
17 {  
18 <tr>  
19 <td>@cus.CustomerId</td>  
20 <td>@cus.FirstName @cus.LastName</td>  
21 <td>@cus.Address</td>  
22 <td>@cus.YearOfBirth</td>  
23 </tr>  
24 }
```

Solution Explorer

- Properties
- References
- App_Data
- App_Start
- Content
- Controllers
- C# CustomerController.
 - CustomerControl
- C# HomeController.cs
- fonts
- Models
- C# Customer.cs
- Scripts
- Views
 - Customer
 - CustomerDetail.c
 - ListCustomer.csh
 - Home
 - Shared
 - _Layout.cshtml
 - Error.cshtml
 - _ViewStart.cshtml
 - Web.config
 - ApplicationInsights.cont

130 %

Error List Output

Item(s) Saved Ln 12 Col 27 Ch 27 INS

- ◆ Bạn có thể phớt lờ việc chuyển đổi kiểu tường minh của model bằng cách sử dụng view strongly typed. Một view strongly typed chỉ ra kiểu của model thì phải sử dụng từ khóa @model.
- ◆ Cú pháp:
@model <model_name>



Sử dụng Strong Typing

Session04 - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Architecture Test Analyze Window Help Chung Trình

SQL Server Object Explorer Server Explorer Toolbox

ListCustomer.cshtml CustomerDetail.cshtml CustomerController.cs Customer.cs

```
2 @model IEnumerable<Session04.Models.Customer>
3 @{
4     ViewBag.Title = "ListCustomer";
5     Layout = "~/Views/Shared/_Layout.cshtml";
6     //var list = ViewBag.list;
7     //var list = Model as List<Session04.Models.Customer>;
8 }
9 <h2>Danh sách khách hàng</h2>
10 <table class="table table-bordered">
11     <tr>
12         <th>Mã số</th>
13         <th>Họ và tên</th>
14         <th>Địa chỉ</th>
15         <th>Năm sinh</th>
16     </tr>
17     @foreach (var cus in Model)
18     {
19         <tr>
20             <td>@cus.CustomerId</td>
21             <td>@cus.FirstName @cus.LastName</td>
22             <td>@cus.Address</td>
23             <td>@cus.YearOfBirth</td>
24         </tr>
25     }
26     @*@foreach (var cus in list)
```

Solution Explorer

Search Solution Explorer (🔍)

- Properties
- References
- App_Data
- App_Start
- Content
- Controllers
- C# CustomerController.
 - CustomerControl
 - C# HomeController.cs
 - fonts
 - Models
 - C# Customer.cs
 - Scripts
 - Views
 - Customer
 - [@] CustomerDetail.c
 - [@] ListCustomer.csh
 - Home
 - Shared
 - [@] _Layout.cshtml
 - [@] Error.cshtml
 - [@] _ViewStart.cshtml
 - Web.config
 - ApplicationInsights.conf
 - favicon.ico
 - Global.asax

Solution Expl... Team Explorer

Error List Output

- ◆ Trong MVC Framework cho phép các phương thức liên kết trực tiếp với các thuộc tính model trong view strongly typed.

Phương thức	Mô tả
Html.LabelFor()	Là một bản strongly typed của phương thức Html.Label() sử dụng tham số là biểu thức lambda mà nó được kiểm tra tại thời điểm compile
Html.DisplayNameFor()	Sử dụng để hiển thị tên của thuộc tính Model
Html.DisplayFor()	Sử dụng để hiển thị giá trị của thuộc tính Model
Html.TextBoxFor()	Là một bản strongly typed của Html.TextBox()
Html.TextAreaFor()	Là một bản strongly typed của Html.TextArea()
Html.EditorFor()	Hiển thị một Editor cho thuộc tính Model
Html.PasswordFor()	Là một bản strongly typed của Html.Password()
Html.DropDownListFor()	Là một bản strongly typed của Html.DropDownList()

Sử dụng HTML Helper Strongly Typed Views

The screenshot displays the Microsoft Visual Studio IDE with the following components:

- Menu Bar:** File, Edit, View, Project, Build, Debug, Team, Tools, Architecture, Test, Analyze, Window, Help.
- Toolbox:** SQL Server Object Explorer, Server Explorer, Toolbox.
- Code Editor:** Shows the file `CustomerController.cs` with the following code:

```
49 //ViewBag.list = list;  
50 return View(list);  
51 }  
52 //Get:Create Customer  
53 public ActionResult CreateCustomer()  
54 {  
55     return View();  
56 }  
57 //Post: CreateCustomer  
58 [HttpPost]  
59 public ActionResult CreateCustomer(Customer cus)  
60 {  
61     string infor = "ID:" + cus.CustomerId;  
62     infor += "<br>Name:" + cus.FirstName + " " + cus.LastName;  
63     infor += "<br>Address:" + cus.Address;  
64     infor += "<br>Year:" + cus.YearOfBirth;  
65     return Content(infor);  
66 }  
67  
68
```


A red rectangular box highlights the code from line 53 to line 66, which includes the `public ActionResult CreateCustomer()` method and the `[HttpPost]` action method `public ActionResult CreateCustomer(Customer cus)`.

The Solution Explorer on the right shows the project structure:
 - App_Data
 - App_Start
 - Content
 - Controllers
 - CustomerController
 - HomeController
 - fonts
 - Models
 - Scripts
 - Views
 - Customer
 - CreateCustomer.cshtml
 - CustomerController.cs
 - ListCustomer.cshtml
 - Home
 - Shared
 - _Layout.cshtml
 - Error.cshtml
 - _ViewStart.cshtml
 - Web.config

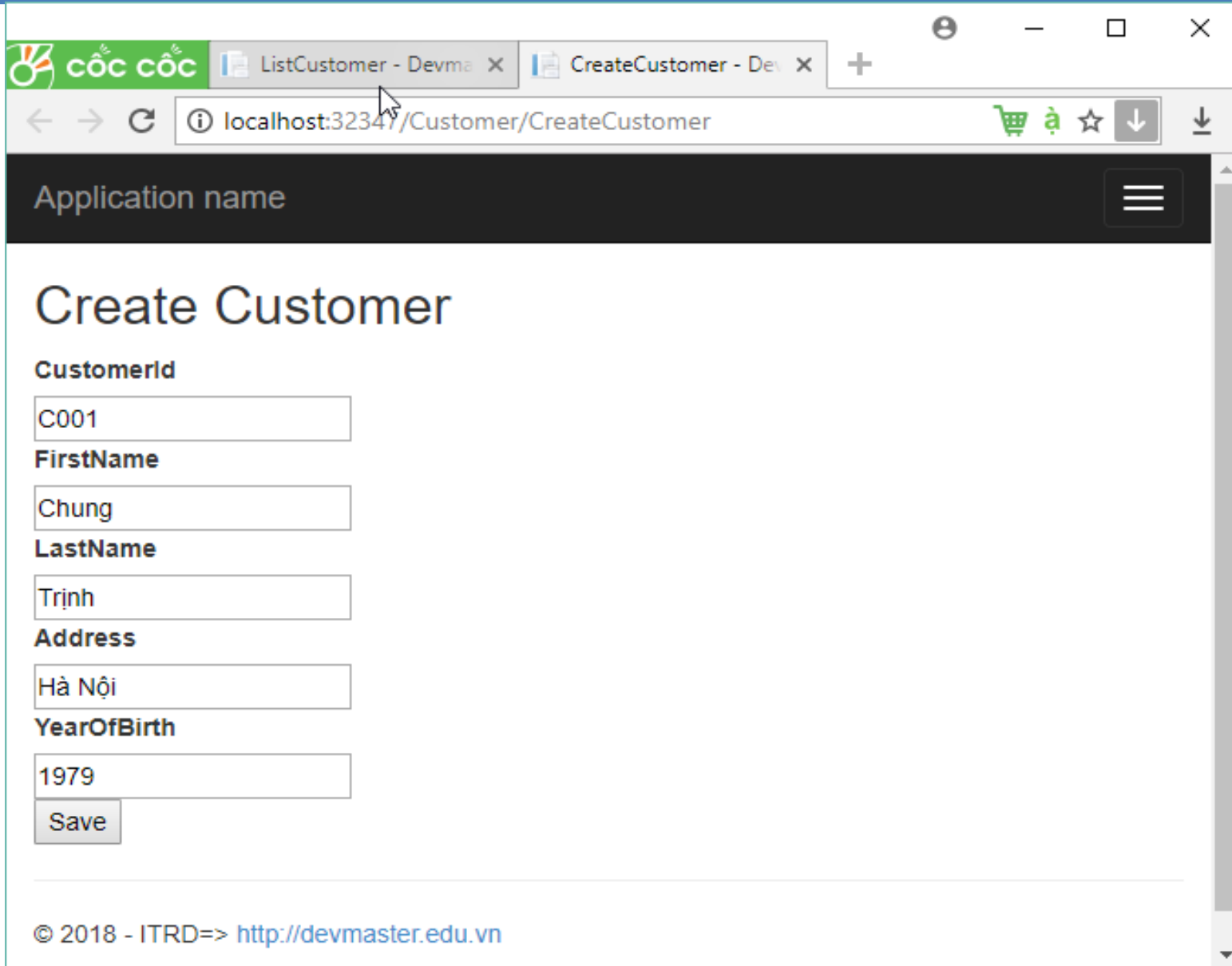
- Status Bar:** Item(s) Saved, Ln 57, Col 31, Ch 31, INS, Add to Source Control.

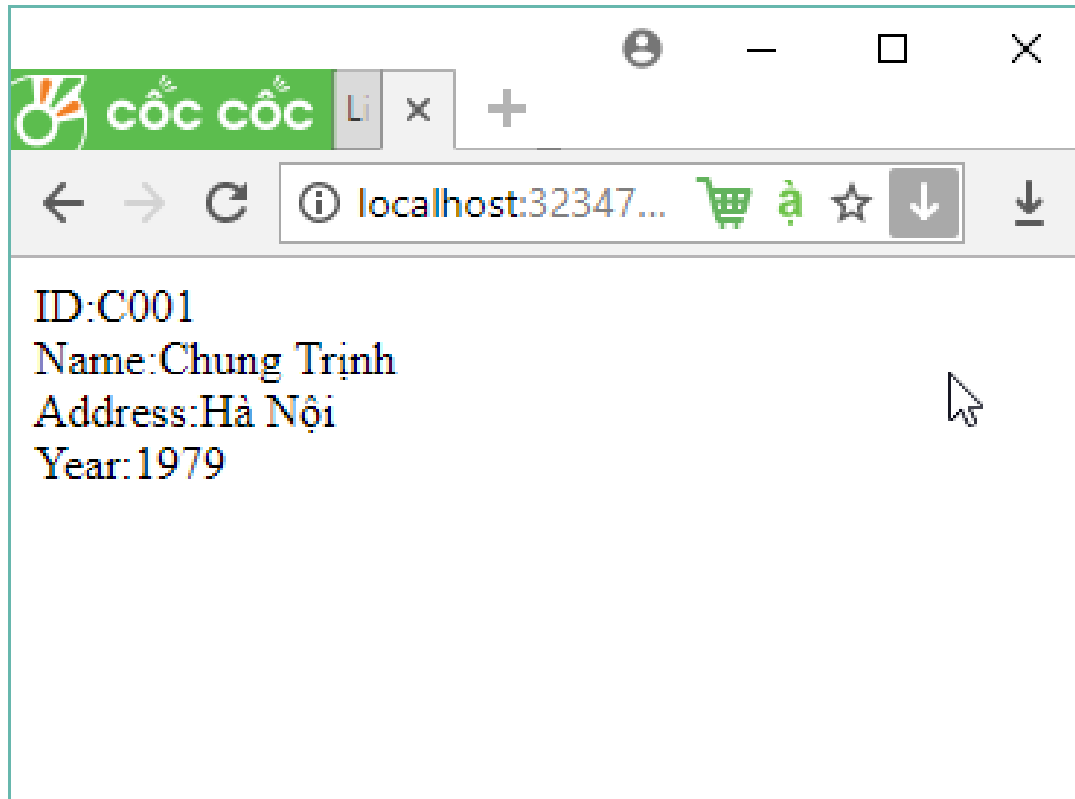
Sử dụng HTML Helper Strongly Types Views

The screenshot displays the Visual Studio IDE with the following components:

- File Explorer:** Shows the project structure for Session04, including folders like App_Data, App_Start, Content, Controllers, fonts, Models, Scripts, and Views. The Views folder is expanded, showing the Customer folder with files like CreateCus, Customerl, ListCustor, Home, and Shared.
- Code Editor:** Displays the code for CreateCustomer.cshtml. The code is as follows:

```
1 @model Session04.Models.Customer
2 @{
3     ViewBag.Title = "CreateCustomer";
4     Layout = "~/Views/Shared/_Layout.cshtml";
5 }
6 <h2>Create Customer</h2>
7 @using (Html.BeginForm())
8 {
9     <div>@Html.LabelFor(model => model.CustomerId)</div>
10    <div>@Html.EditorFor(model => model.CustomerId)</div>
11    <div>@Html.LabelFor(model => model.FirstName)</div>
12    <div>@Html.EditorFor(model => model.FirstName)</div>
13    <div>@Html.LabelFor(model => model.LastName)</div>
14    <div>@Html.EditorFor(model => model.LastName)</div>
15    <div>@Html.LabelFor(model => model.Address)</div>
16    <div>@Html.EditorFor(model => model.Address)</div>
17    <div>@Html.LabelFor(model => model.YearOfBirth)</div>
18    <div>@Html.EditorFor(model => model.YearOfBirth)</div>
19    <div><input type="submit" value="Save"/></div>
20 }
21
```
- Solution Explorer:** Shows the project structure for Session04, including folders like App_Data, App_Start, Content, Controllers, fonts, Models, Scripts, and Views. The Views folder is expanded, showing the Customer folder with files like CreateCus, Customerl, ListCustor, Home, and Shared.
- Status Bar:** Shows the current file is Ready, with line 6, column 25, and character 25.

A screenshot of a web browser window. The address bar shows 'localhost:32347/~/Customer/CreateCustomer'. The page has a dark header with 'Application name' and a hamburger menu icon. The main content area is titled 'Create Customer' and contains a form with the following fields: 'CustomerId' (C001), 'FirstName' (Chung), 'LastName' (Trịnh), 'Address' (Hà Nội), and 'YearOfBirth' (1979). There is a 'Save' button at the bottom of the form. The footer shows '© 2018 - ITRD=> http://devmaster.edu.vn'.



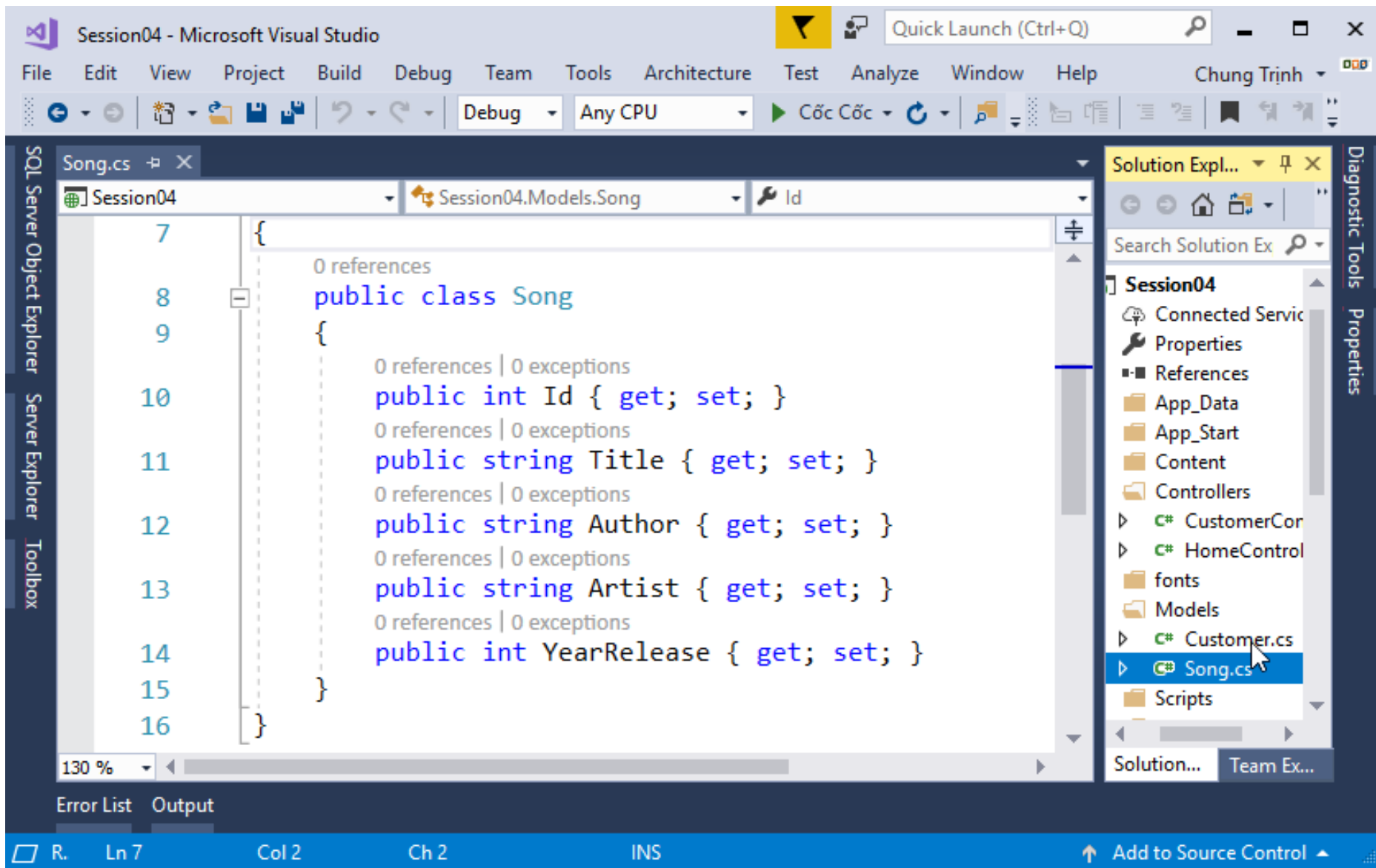
- ◆ ASP.NET MVC Framework cung cấp tính năng scaffolding cho phép bạn sinh ra view tự động.
- ◆ Theo quy ước scaffolding quy định sẵn tên cho các Views. Sau khi tạo ra một view nó sẽ tự động sinh code tại vị trí tương ứng trong ứng dụng.
- ◆ Có 5 loại template mà tính năng scaffolding cung cấp để tạo view:
 - ◆ **List:** Sinh ra code makup để hiển thị danh sách các đối tượng trong model theo bảng
 - ◆ **Create:** Sinh ra code makup để thêm mới một đối tượng (Form thêm mới).
 - ◆ **Edit:** Sinh ra code makup để sửa thông tin đối tượng được chọn.
 - ◆ **Details:** Sinh ra code makup để hiển thị chi tiết đối tượng được chọn.
 - ◆ **Delete:** Sinh ra code makup để xóa đối tượng được chọn.



- ◆ Bước 1: Tạo lớp “Song” trong thư mục Model
- ◆ Bước 2: Tạo controller “SongController” trong thư mục Controllers
- ◆ Bước 3: Code các action cho controller
- ◆ Bước 4: Tạo các template view



List template



Session04 - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Architecture Test Analyze Window Help Chung Trình

Debug Any CPU Cốc Cốc

Song.cs

Session04 Session04.Models.Song Id

```
7 {  
8     0 references  
9     public class Song  
10    {  
11        0 references | 0 exceptions  
12        public int Id { get; set; }  
13        0 references | 0 exceptions  
14        public string Title { get; set; }  
15        0 references | 0 exceptions  
16        public string Author { get; set; }  
17        0 references | 0 exceptions  
18        public string Artist { get; set; }  
19        0 references | 0 exceptions  
20        public int YearRelease { get; set; }  
21    }  
22 }
```

130 %

Error List Output

R. Ln 7 Col 2 Ch 2 INS

Add to Source Control

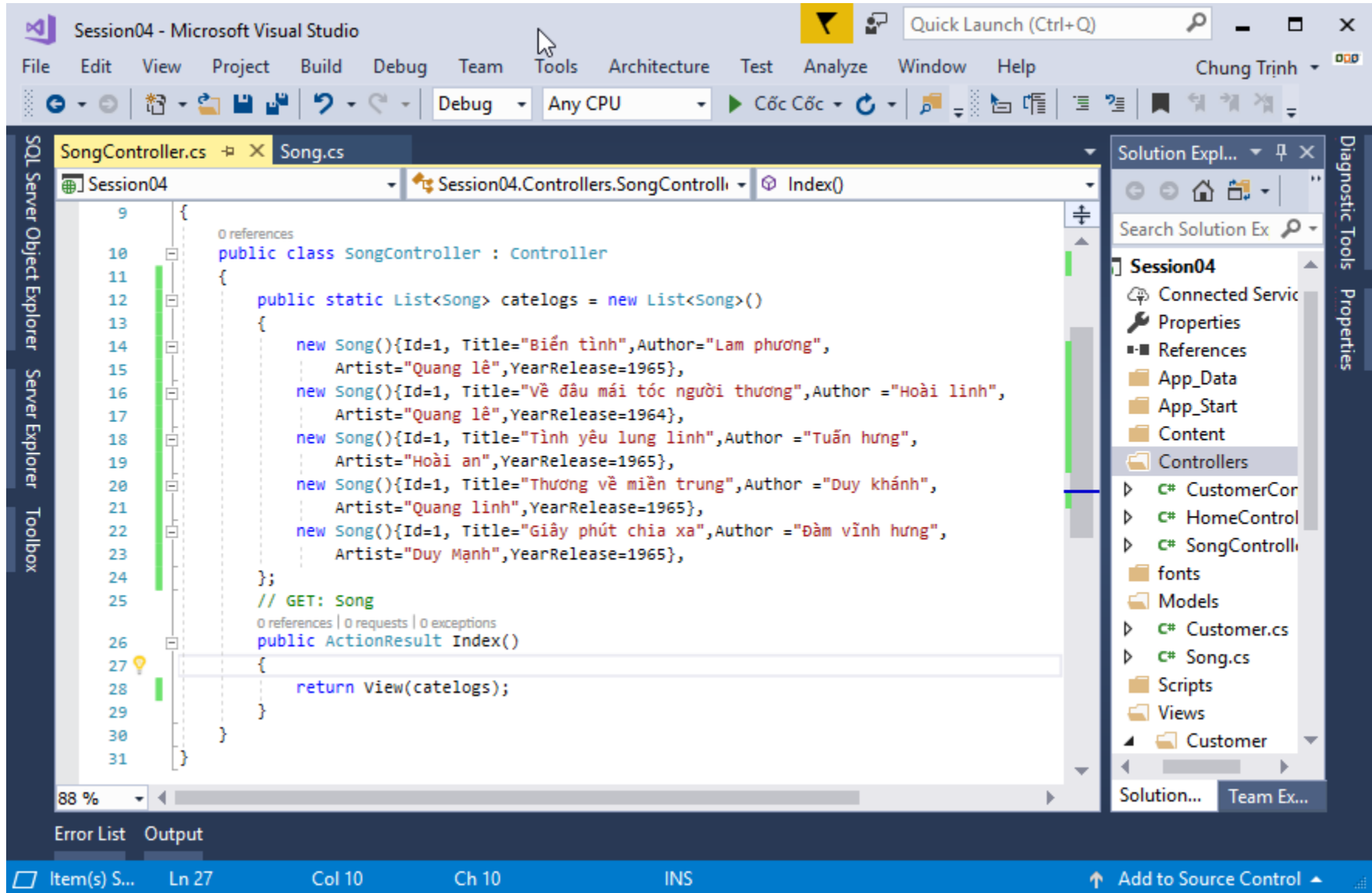
Solution Explorer

Session04

- Connected Service
- Properties
- References
- App_Data
- App_Start
- Content
- Controllers
- CustomerCor
- HomeController
- fonts
- Models
- Customer.cs
- Song.cs**
- Scripts

Solution... Team Ex...

List template



The screenshot shows the Microsoft Visual Studio IDE with the following details:

- Title Bar:** Session04 - Microsoft Visual Studio
- Menu Bar:** File, Edit, View, Project, Build, Debug, Team, Tools, Architecture, Test, Analyze, Window, Help
- Toolbar:** Includes buttons for Quick Launch (Ctrl+Q), Debug, and Any CPU.
- Code Editor:** Displays the `SongController.cs` file. The code defines a `SongController` class that inherits from `Controller`. It contains a static `List<Song>` named `catelogs` initialized with six `Song` objects. The `Index()` action returns the `View(catelogs)`.
- Solution Explorer:** Shows the project structure for `Session04`, including folders like `App_Data`, `App_Start`, `Content`, `Controllers`, `fonts`, `Models`, and files like `Customer.cs`, `HomeControl`, `SongControlli`, `Customer.cs`, `Song.cs`, `Scripts`, `Views`, and `Customer`.
- Output Window:** Shows the status bar at the bottom with "88 %", "Error List", and "Output".

List template

Add View

View name:

Index

Template:

List

Model class:

Song (Session04.Models)

Options:

☐ Create as a partial view

☐ Reference script libraries

☒ Use a layout page:

~/Views/Shared/_Layout.cshtml

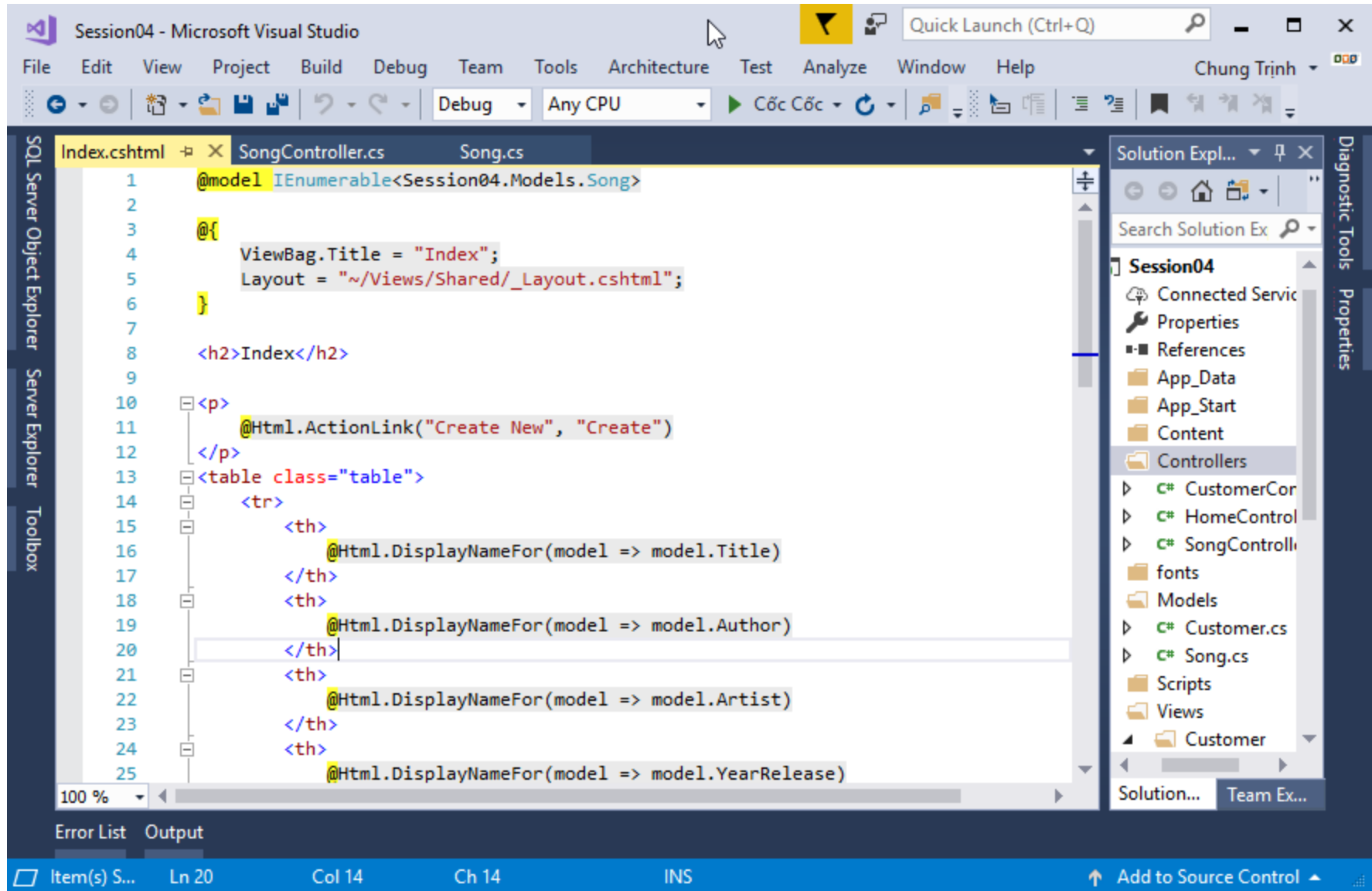
...

(Leave empty if it is set in a Razor _viewstart file)

Add

Cancel

List template



Session04 - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Architecture Test Analyze Window Help Chung Trình

Debug Any CPU Cốc Cốc

Index.cshtml SongController.cs Song.cs

```
1 @model IEnumerable<Session04.Models.Song>
2
3 @{
4     ViewBag.Title = "Index";
5     Layout = "~/Views/Shared/_Layout.cshtml";
6 }
7
8 <h2>Index</h2>
9
10 <p>
11     @Html.ActionLink("Create New", "Create")
12 </p>
13 <table class="table">
14     <tr>
15         <th>
16             @Html.DisplayNameFor(model => model.Title)
17         </th>
18         <th>
19             @Html.DisplayNameFor(model => model.Author)
20         </th>
21         <th>
22             @Html.DisplayNameFor(model => model.Artist)
23         </th>
24         <th>
25             @Html.DisplayNameFor(model => model.YearRelease)
```

Solution Explorer

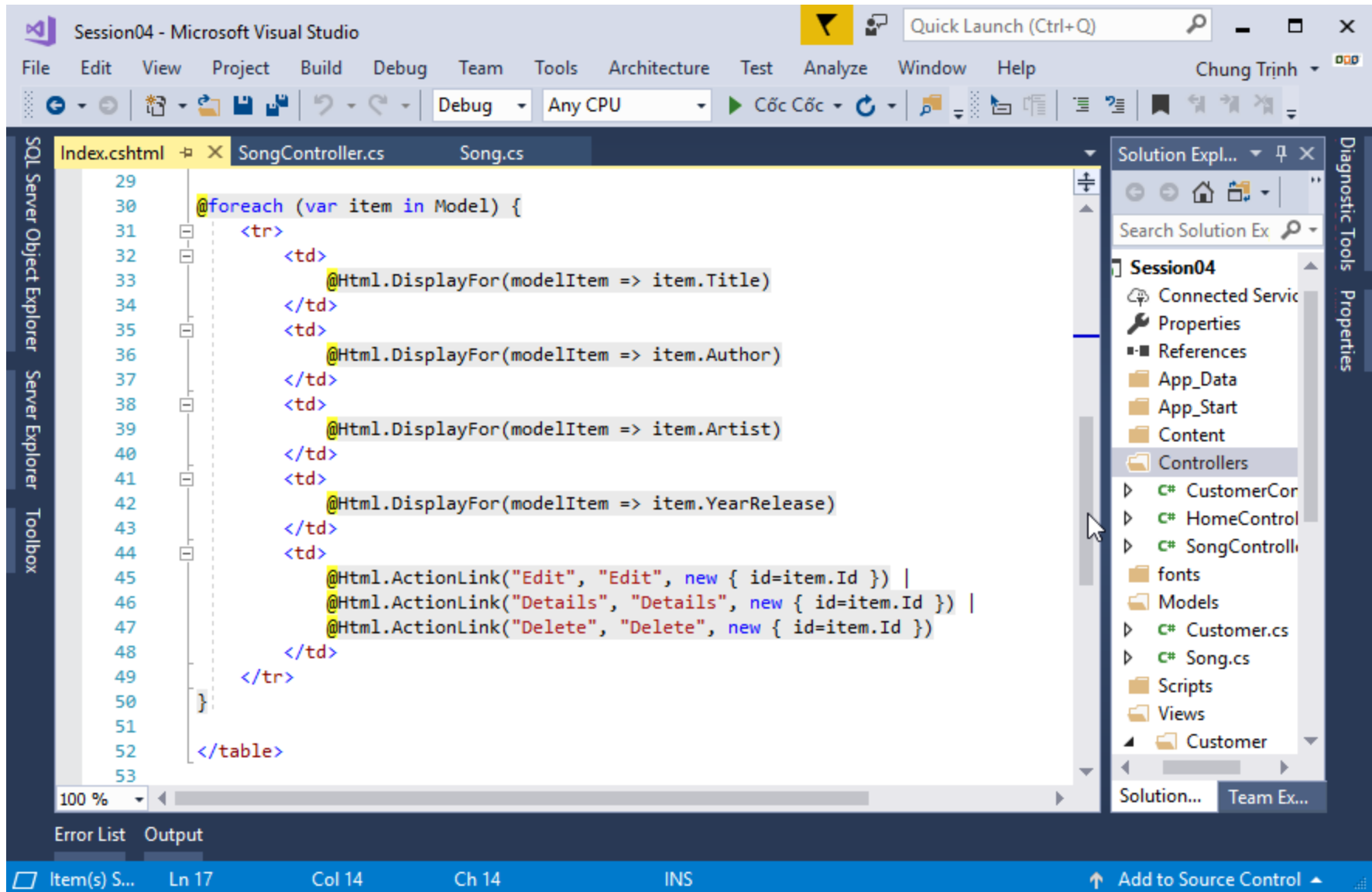
- Session04
 - Connected Service
 - Properties
 - References
 - App_Data
 - App_Start
 - Content
 - Controllers
 - CustomerCor
 - HomeControl
 - SongControll
 - fonts
 - Models
 - Customer.cs
 - Song.cs
 - Scripts
 - Views
 - Customer

100 %

Error List Output

Item(s) S... Ln 20 Col 14 Ch 14 INS Add to Source Control

List template




The screenshot shows the Microsoft Visual Studio IDE with the following details:

- Title Bar:** Session04 - Microsoft Visual Studio
- Menu Bar:** File, Edit, View, Project, Build, Debug, Team, Tools, Architecture, Test, Analyze, Window, Help
- Toolbar:** Includes icons for file operations, a dropdown for 'Debug' and 'Any CPU', and a 'Quick Launch (Ctrl+Q)' search bar.
- Left Sidebar:** Contains 'SQL Server Object Explorer', 'Server Explorer', and 'Toolbox'.
- Main Editor:** Displays the file 'Index.cshtml' with the following code:

```
29
30 @foreach (var item in Model) {
31     <tr>
32         <td>
33             @Html.DisplayFor(modelItem => item.Title)
34         </td>
35         <td>
36             @Html.DisplayFor(modelItem => item.Author)
37         </td>
38         <td>
39             @Html.DisplayFor(modelItem => item.Artist)
40         </td>
41         <td>
42             @Html.DisplayFor(modelItem => item.YearRelease)
43         </td>
44         <td>
45             @Html.ActionLink("Edit", "Edit", new { id=item.Id }) |
46             @Html.ActionLink("Details", "Details", new { id=item.Id }) |
47             @Html.ActionLink("Delete", "Delete", new { id=item.Id })
48         </td>
49     </tr>
50 }
51 </table>
52
53
```
- Right Sidebar:** Contains 'Solution Explorer' and 'Diagnostic Tools'. The 'Solution Explorer' shows a project named 'Session04' with folders like 'App_Data', 'App_Start', 'Content', 'Controllers', 'fonts', 'Models', 'Scripts', and 'Views'. Under 'Controllers', 'CustomerController.cs' and 'SongController.cs' are visible.
- Bottom Bar:** Shows 'Error List' and 'Output' tabs. The status bar at the very bottom indicates 'Item(s) S...', 'Ln 17', 'Col 14', 'Ch 14', 'INS', and 'Add to Source Control'.

List template








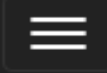
ListCustomer - x

localhost:32347 x

Index - Devmas x

localhost:32347/Song/Index

DEVMASTER.vn

Index

[Create New](#)

Title	Author	Artist	YearRelease	
Biển tình	Lam phương	Quang lê	1965	Edit Details Delete
Về đầu mái tóc người thương	Hoài linh	Quang lê	1964	Edit Details Delete
Tình yêu lung linh	Tuấn hưng	Hoài an	1965	Edit Details Delete
Thương về miền trung	Duy khánh	Quang linh	1965	Edit Details Delete
Giây phút chia xa	Đàm vĩnh hưng	Duy Mạnh	1965	Edit Details Delete

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Create template

Session04 - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Architecture Test Analyze Window Chung Trình

Help

Debug Any CPU Cốc Cốc

Session04 SongController.cs Song.cs

Session04 Session04.Controllers.SongCo Create(Song song)

```
25 // GET: Song
26 0 references | 0 requests | 0 exceptions
27 public ActionResult Index()
28 {
29     return View(catelogs);
30 }
31 //GET: /Create
32 0 references | 0 requests | 0 exceptions
33 public ActionResult Create()
34 {
35     return View();
36 }
37 //Post: thực thi khi post dữ liệu trên form lên server
38 [HttpPost]
39 0 references | 0 requests | 0 exceptions
40 public ActionResult Create(Song song)
41 {
42     //Thêm mới
43     catelogs.Add(song);
44     //Chuyển tới trang danh sách
45     return RedirectToAction("Index");
46 }
```

Solution Explorer

- C# SongControlli
- fonts
- Models
- C# Customer.cs
- C# Song.cs
- Scripts
- Views
- Customer
 - CreateCus
 - Customerl
 - ListCustor
- Home
- Shared
 - _Layout.cs
 - Error.cshtr
- Song
 - Create.csh

Diagnostic Tools Properties

Search Solution Ex

100 %

Error List Output

Ln 40 Col 32 Ch 32 INS

Add to Source Control

Create template

Add View

View name:

Create

Template:

Create

Model class:

Song (Session04.Models)

Options:

☐ Create as a partial view

☐ Reference script libraries

☒ Use a layout page:

~/Views/Shared/_Layout.cshtml

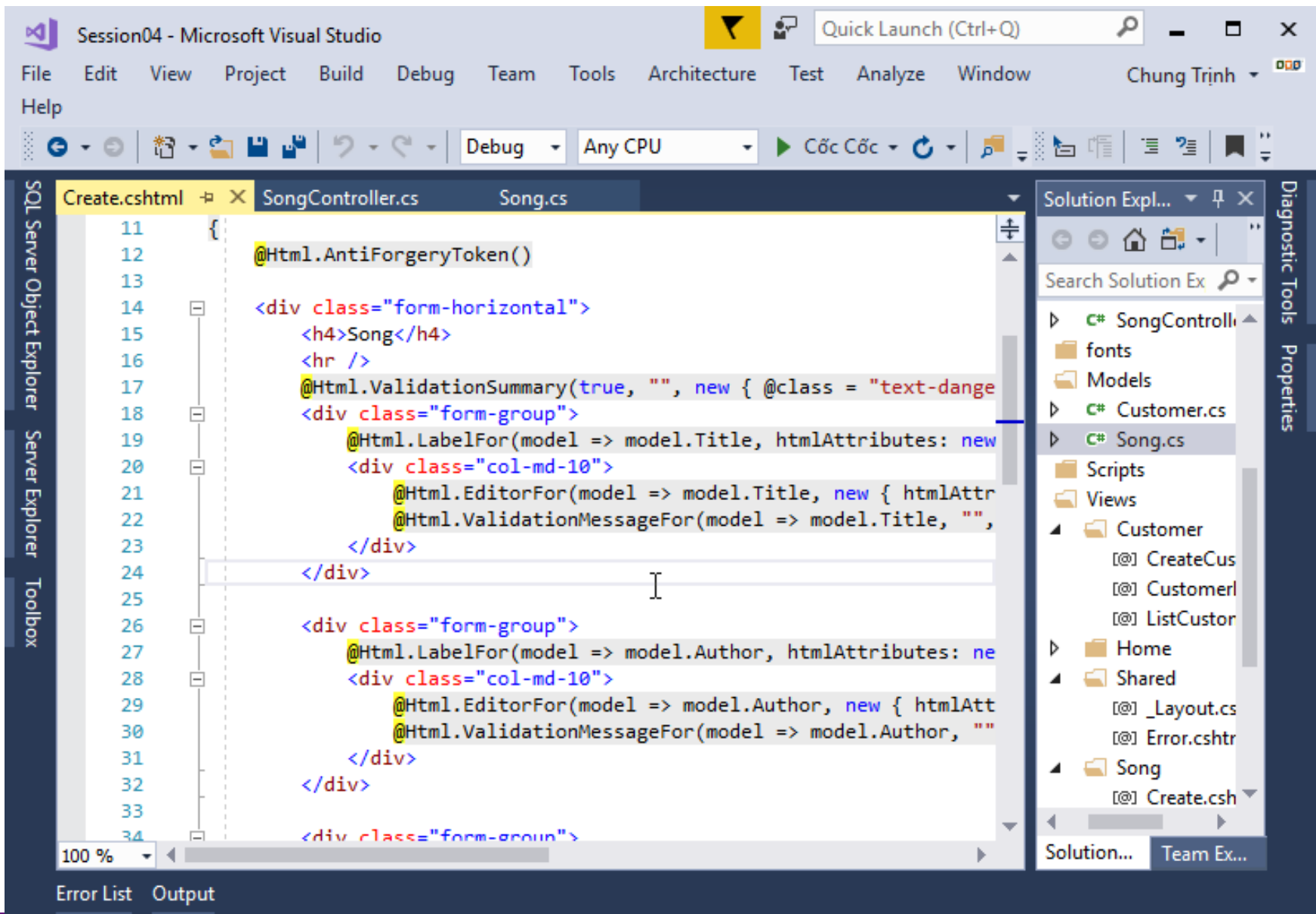
...

(Leave empty if it is set in a Razor _viewstart file)

Add

Cancel

Create template



The screenshot shows the Microsoft Visual Studio IDE with the following components:

- Title Bar:** Session04 - Microsoft Visual Studio
- Menu Bar:** File, Edit, View, Project, Build, Debug, Team, Tools, Architecture, Test, Analyze, Window, Chung Trình
- Toolbar:** Includes icons for file operations, a dropdown menu set to 'Debug', a dropdown menu set to 'Any CPU', and a 'Cock Cock' button.
- Editor Window:** Displays the code for `SongController.cs`. The code is as follows:

```
11 {
12     @Html.AntiForgeryToken()
13
14     <div class="form-horizontal">
15         <h4>Song</h4>
16         <hr />
17         @Html.ValidationSummary(true, "", new { @class = "text-dange
18         <div class="form-group">
19             @Html.LabelFor(model => model.Title, htmlAttributes: new
20             <div class="col-md-10">
21                 @Html.EditorFor(model => model.Title, new { htmlAttr
22                 @Html.ValidationMessageFor(model => model.Title, ""
23             </div>
24         </div>
25
26         <div class="form-group">
27             @Html.LabelFor(model => model.Author, htmlAttributes: ne
28             <div class="col-md-10">
29                 @Html.EditorFor(model => model.Author, new { htmlAtt
30                 @Html.ValidationMessageFor(model => model.Author, ""
31             </div>
32         </div>
33
34         <div class="form-group">
```

The cursor is positioned at the end of line 24.
- Solution Explorer:** Shows the project structure with folders for `fonts`, `Models`, `Scripts`, and `Views`. The `Views` folder is expanded, showing subfolders `Customer`, `Home`, and `Shared`. The `Customer` folder is further expanded, showing files like `CreateCus`, `Customerl`, and `ListCustor`. The `Shared` folder is also expanded, showing files like `_Layout.cs`, `Error.cshtr`, and `Song`. The `Song` folder is expanded, showing the file `Create.csh`.
- Bottom Bar:** Includes 'Error List' and 'Output' tabs, and a status bar showing 'ASP.NET', 'Ln 24', 'Col 15', 'Ch 15', 'INS', and 'Add to Source Control'.

Create template

cốc cốc | ListCustomer - Devmaster.vn | Create - Devmaster.vn

localhost:32347/Song/Create

DEVMASTER.vn | Home | About | Contact

Create

Song

Title

Mùa đông không có anh

Author

Trần Thiện Thanh

Artist

Lệ Căn

YearRelease

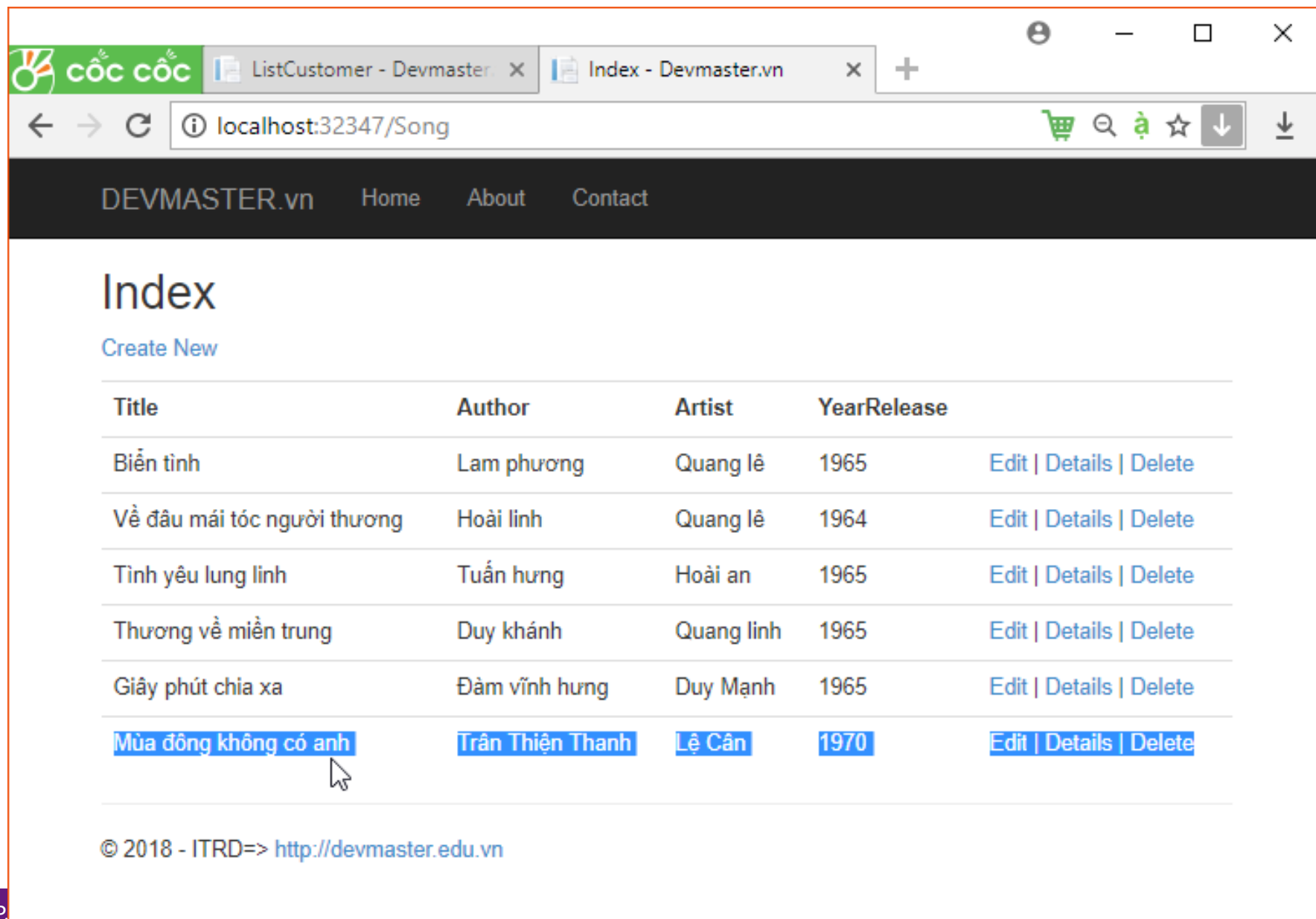
1970

Create

[Back to List](#)

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Create template



DEVMASTER.vn Home About Contact

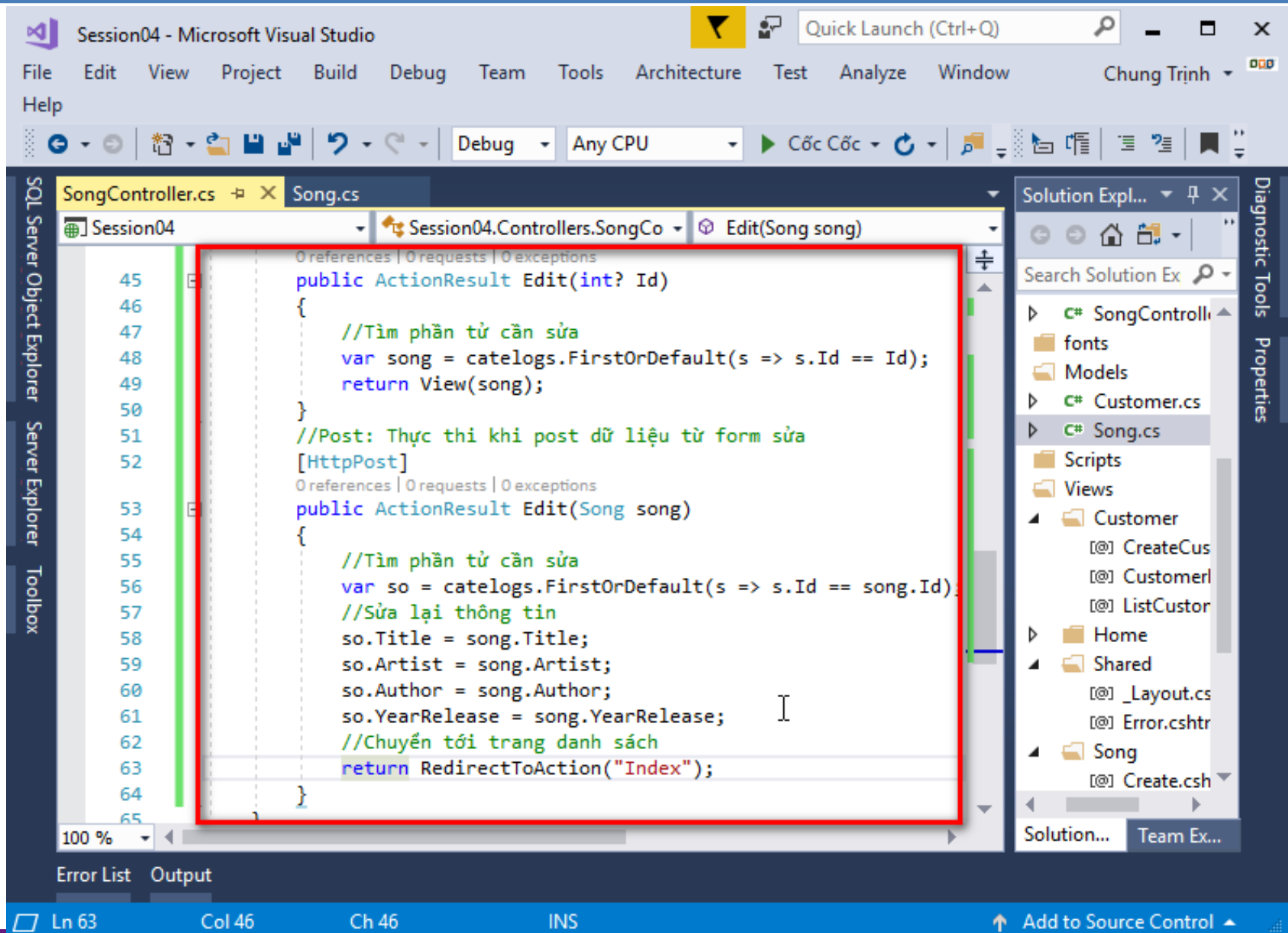
Index

[Create New](#)

Title	Author	Artist	YearRelease	
Biển tình	Lam phương	Quang lê	1965	Edit Details Delete
Về đâu mái tóc người thương	Hoài linh	Quang lê	1964	Edit Details Delete
Tình yêu lung linh	Tuấn hưng	Hoài an	1965	Edit Details Delete
Thương về miền trung	Duy khánh	Quang linh	1965	Edit Details Delete
Giây phút chia xa	Đàm vĩnh hưng	Duy Mạnh	1965	Edit Details Delete
Mùa đông không có anh	Trần Thiện Thanh	Lệ Căn	1970	Edit Details Delete

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Edit template



Session04 - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Architecture Test Analyze Window Chung Trình

Help

Debug Any CPU Cốc Cốc

SongController.cs Song.cs

Session04 Session04.Controllers.SongCo Edit(Song song)

```
0 references | 0 requests | 0 exceptions
45 public ActionResult Edit(int? Id)
46 {
47     //Tìm phần tử cần sửa
48     var song = catelogs.FirstOrDefault(s => s.Id == Id);
49     return View(song);
50 }
51 //Post: Thực thi khi post dữ liệu từ form sửa
52 [HttpPost]
53 0 references | 0 requests | 0 exceptions
54 public ActionResult Edit(Song song)
55 {
56     //Tìm phần tử cần sửa
57     var so = catelogs.FirstOrDefault(s => s.Id == song.Id);
58     //Sửa lại thông tin
59     so.Title = song.Title;
60     so.Artist = song.Artist;
61     so.Author = song.Author;
62     so.YearRelease = song.YearRelease;
63     //Chuyển tới trang danh sách
64     return RedirectToAction("Index");
65 }
```

100 %

Error List Output

Ln 63 Col 46 Ch 46 INS

Add to Source Control

Solution Explorer

- C# SongController
- fonts
- Models
- C# Customer.cs
- C# Song.cs
- Scripts
- Views
- Customer
 - CreateCus
 - Customerl
 - ListCustor
- Home
- Shared
 - _Layout.cs
 - Error.cshttr
- Song
 - Create.csh

Solution... Team Ex...

Edit template

Add View ×

View name:

Template:

Model class:

Options:

☐ Create as a partial view

☐ Reference script libraries

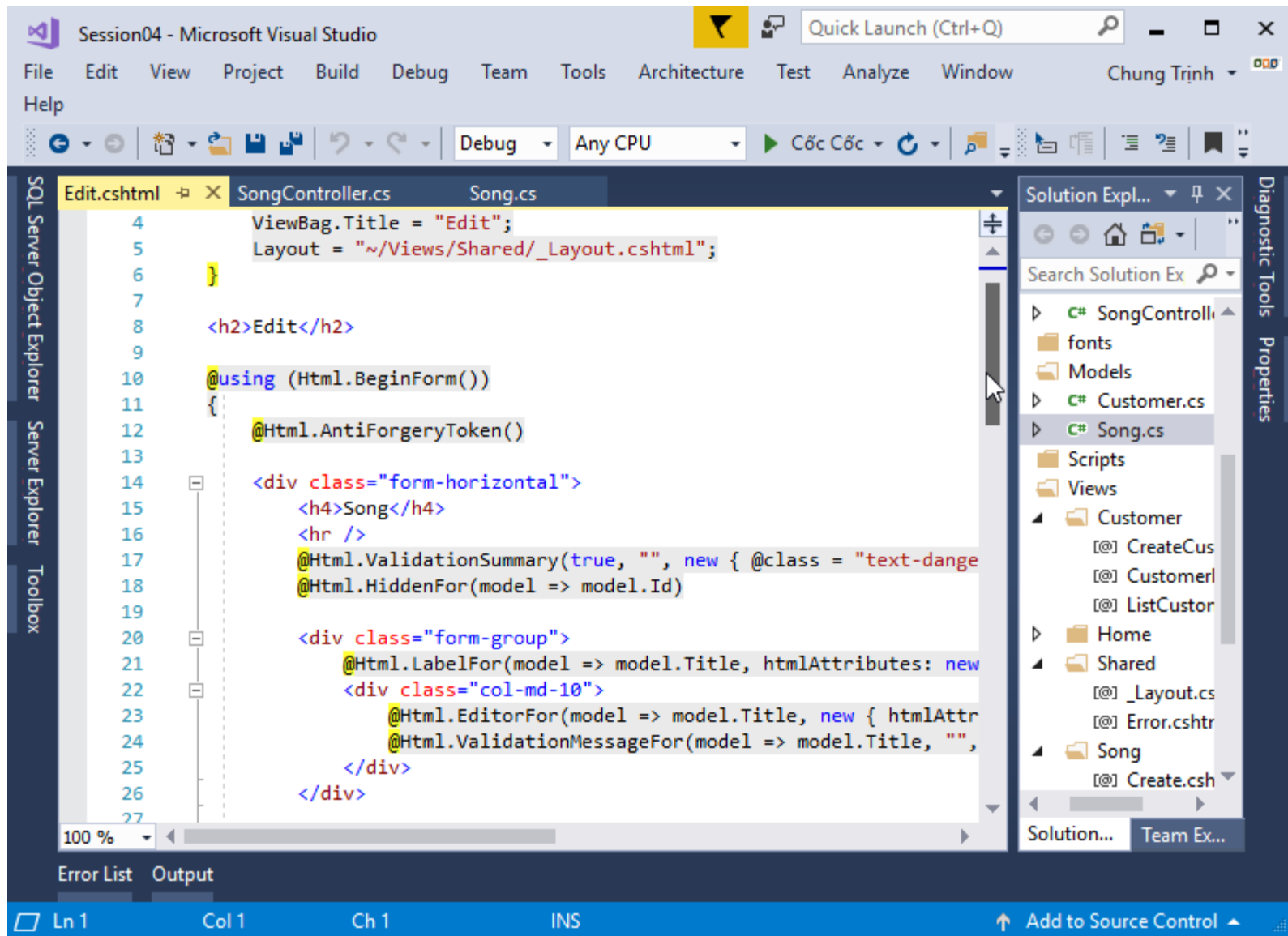
☒ Use a layout page:

...

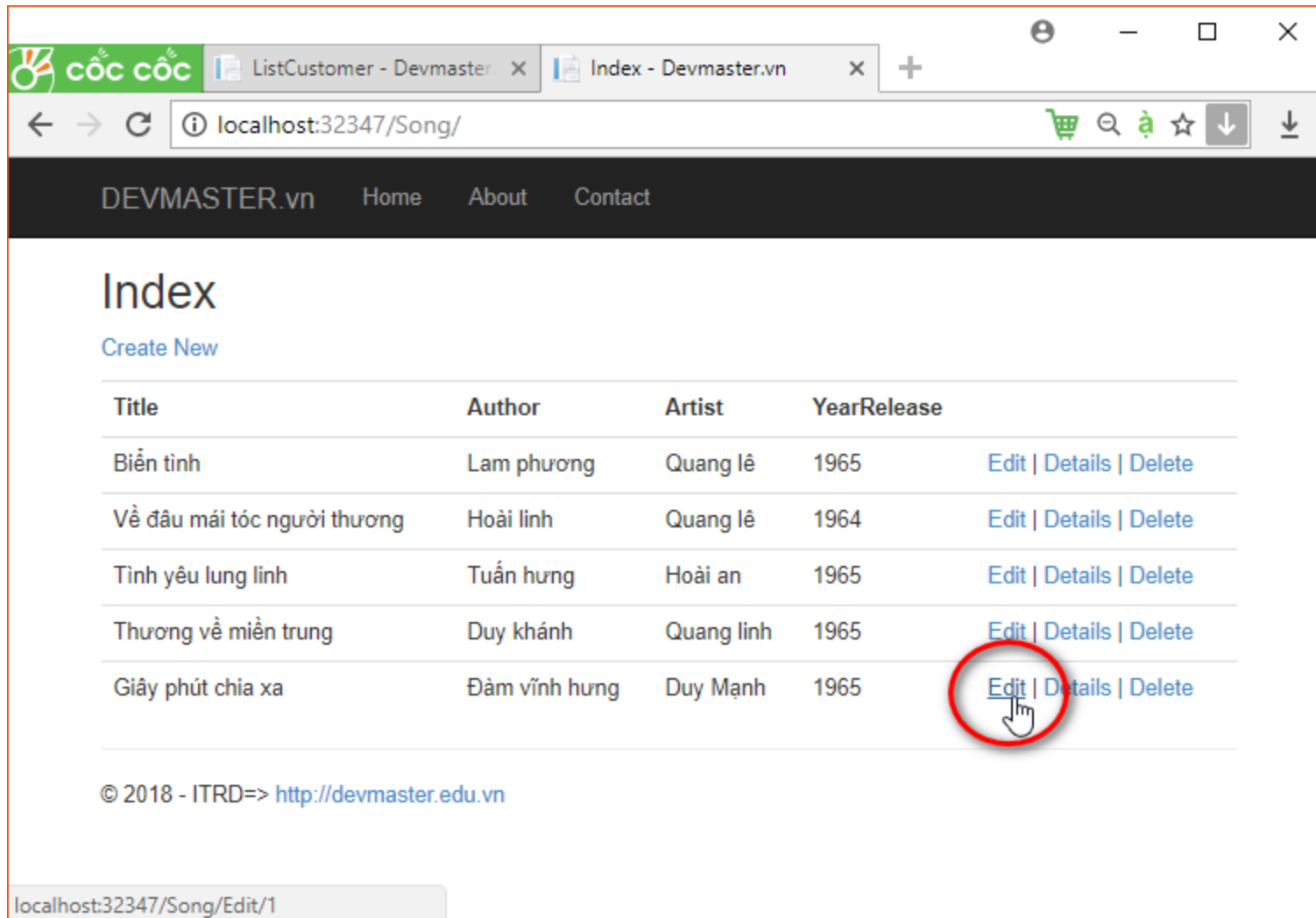
(Leave empty if it is set in a Razor _viewstart file)



Edit template



Edit template



DEVMASTER.vn Home About Contact

Index

[Create New](#)

Title	Author	Artist	YearRelease	
Biển tình	Lam phương	Quang lê	1965	Edit Details Delete
Về đầu mái tóc người thương	Hoài linh	Quang lê	1964	Edit Details Delete
Tình yêu lung linh	Tuấn hưng	Hoài an	1965	Edit Details Delete
Thương về miền trung	Duy khánh	Quang linh	1965	Edit Details Delete
Giây phút chia xa	Đàm vĩnh hưng	Duy Mạnh	1965	Edit Details Delete

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localhost:32347/Song/Edit/1

Edit template

cốc cốc ListCustomer - Devmaster.vn Edit - Devmaster.vn

localhost:32347/Song/Edit/5

DEVMASTER.vn Home About Contact

Edit

Song

Title

Giây phút chia xa

Author

Mr. Đàm

Artist

Duy Mạnh

YearRelease

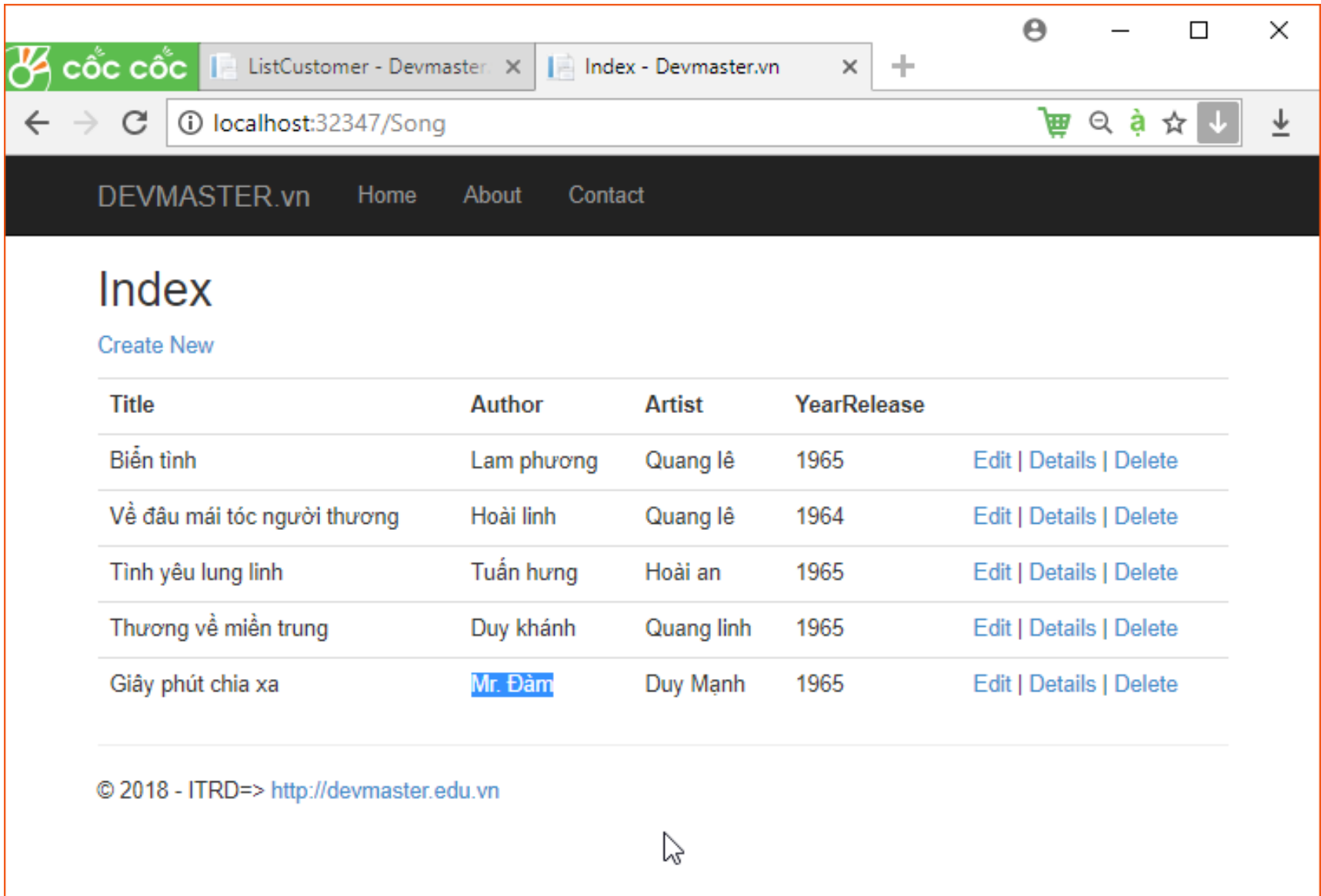
1965

Save

[Back to List](#)

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Edit template



DEVMASTER.vn Home About Contact

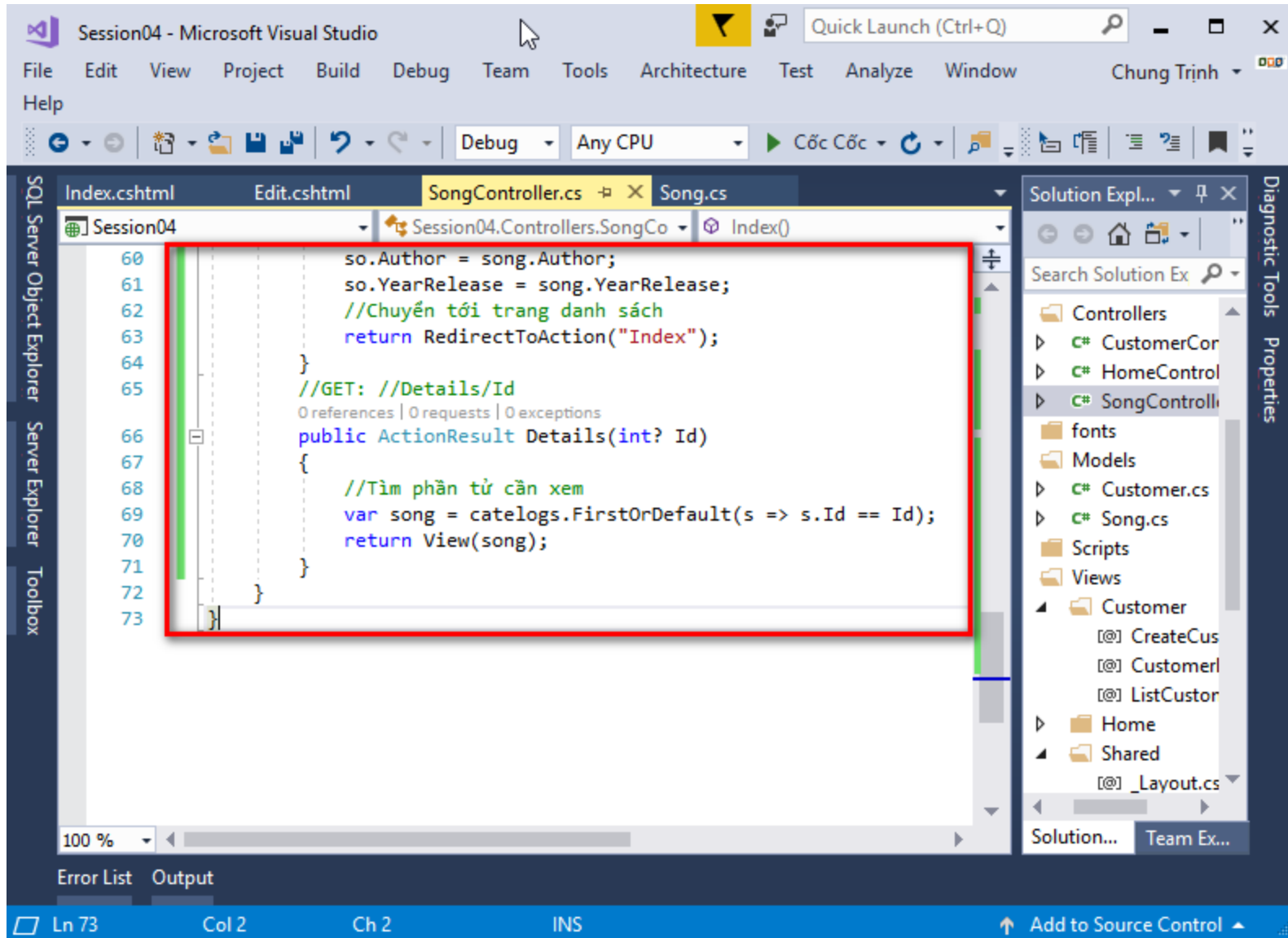
Index

[Create New](#)

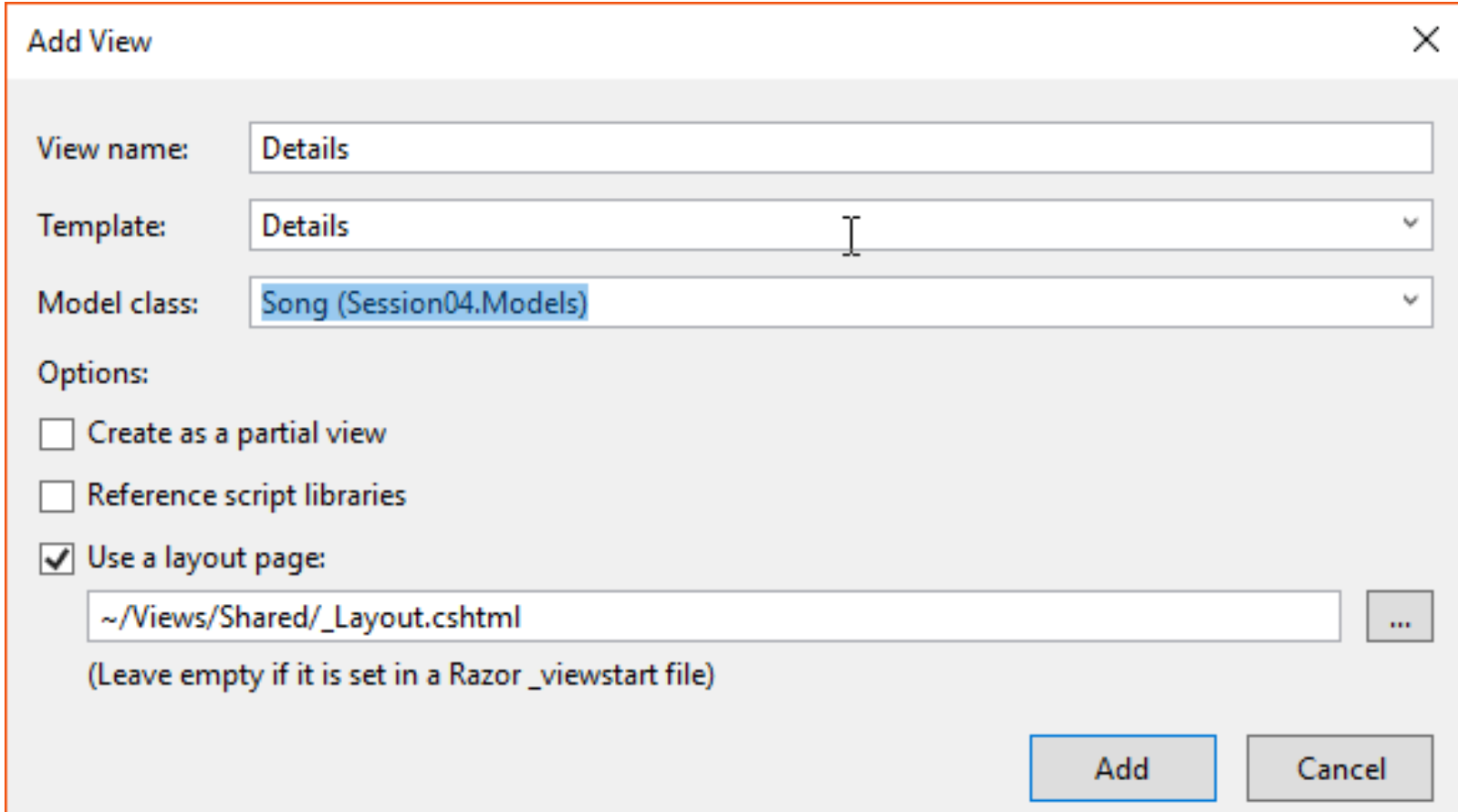
Title	Author	Artist	YearRelease	
Biển tình	Lam phương	Quang lê	1965	Edit Details Delete
Về đầu mái tóc người thương	Hoài linh	Quang lê	1964	Edit Details Delete
Tình yêu lung linh	Tuấn hưng	Hoài an	1965	Edit Details Delete
Thương về miền trung	Duy khánh	Quang linh	1965	Edit Details Delete
Giây phút chia xa	Mr. Đàm	Duy Mạnh	1965	Edit Details Delete

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Details template



Details template

A screenshot of the 'Add View' dialog box in an IDE. The dialog has a title bar 'Add View' with a close button. It contains three input fields: 'View name' with 'Details', 'Template' with 'Details', and 'Model class' with 'Song (Session04.Models)'. Below these are three checkboxes: 'Create as a partial view' (unchecked), 'Reference script libraries' (unchecked), and 'Use a layout page:' (checked). Under the checked checkbox is a text field containing '~/Views/Shared/_Layout.cshtml' and a browse button '...'. A note below the text field says '(Leave empty if it is set in a Razor _viewstart file)'. At the bottom right are 'Add' and 'Cancel' buttons.

Add View

View name: Details

Template: Details

Model class: Song (Session04.Models)

Options:

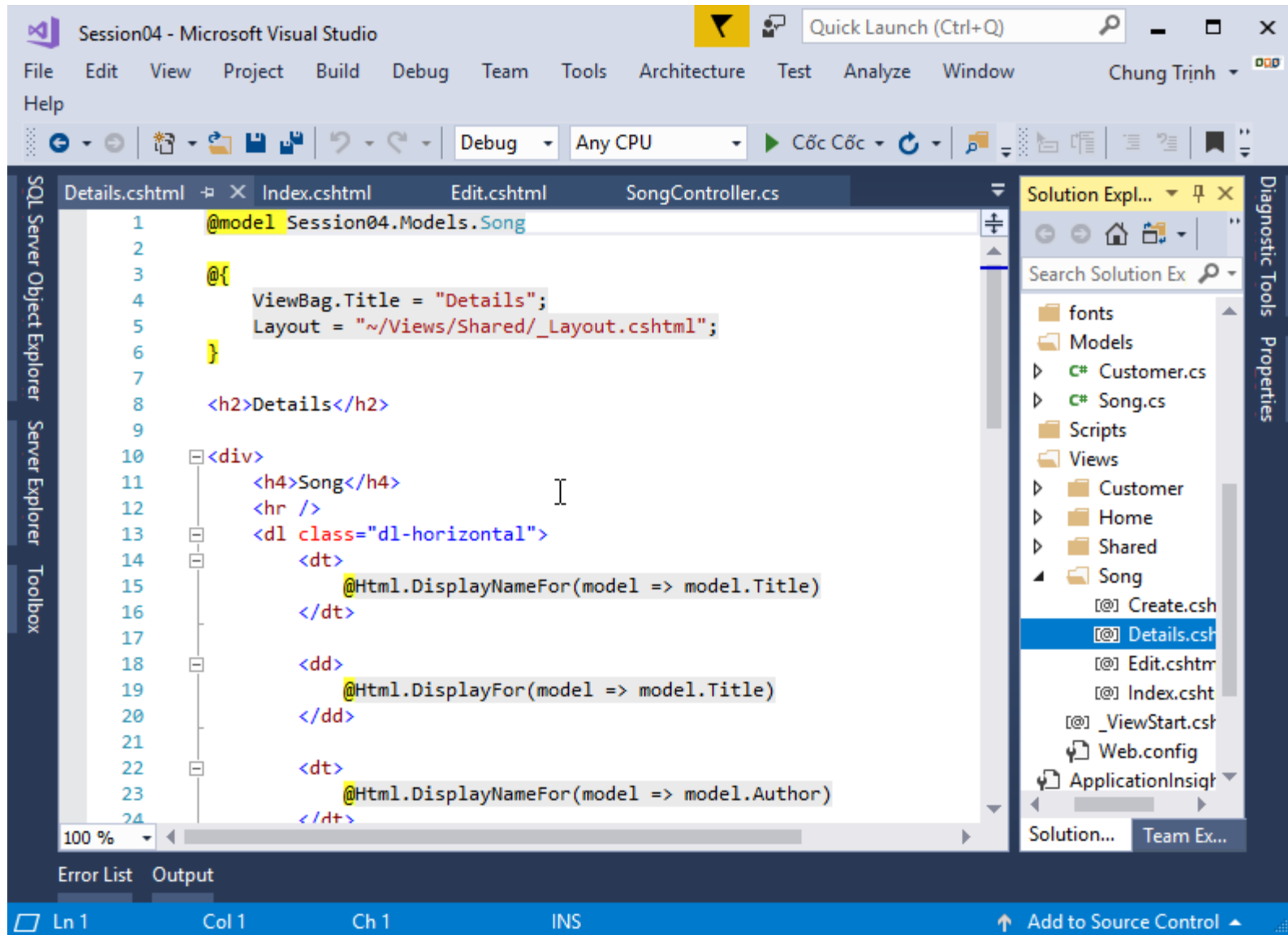
- ☐ Create as a partial view
- ☐ Reference script libraries
- ☒ Use a layout page:

~/Views/Shared/_Layout.cshtml

(Leave empty if it is set in a Razor _viewstart file)

Add Cancel

Details template

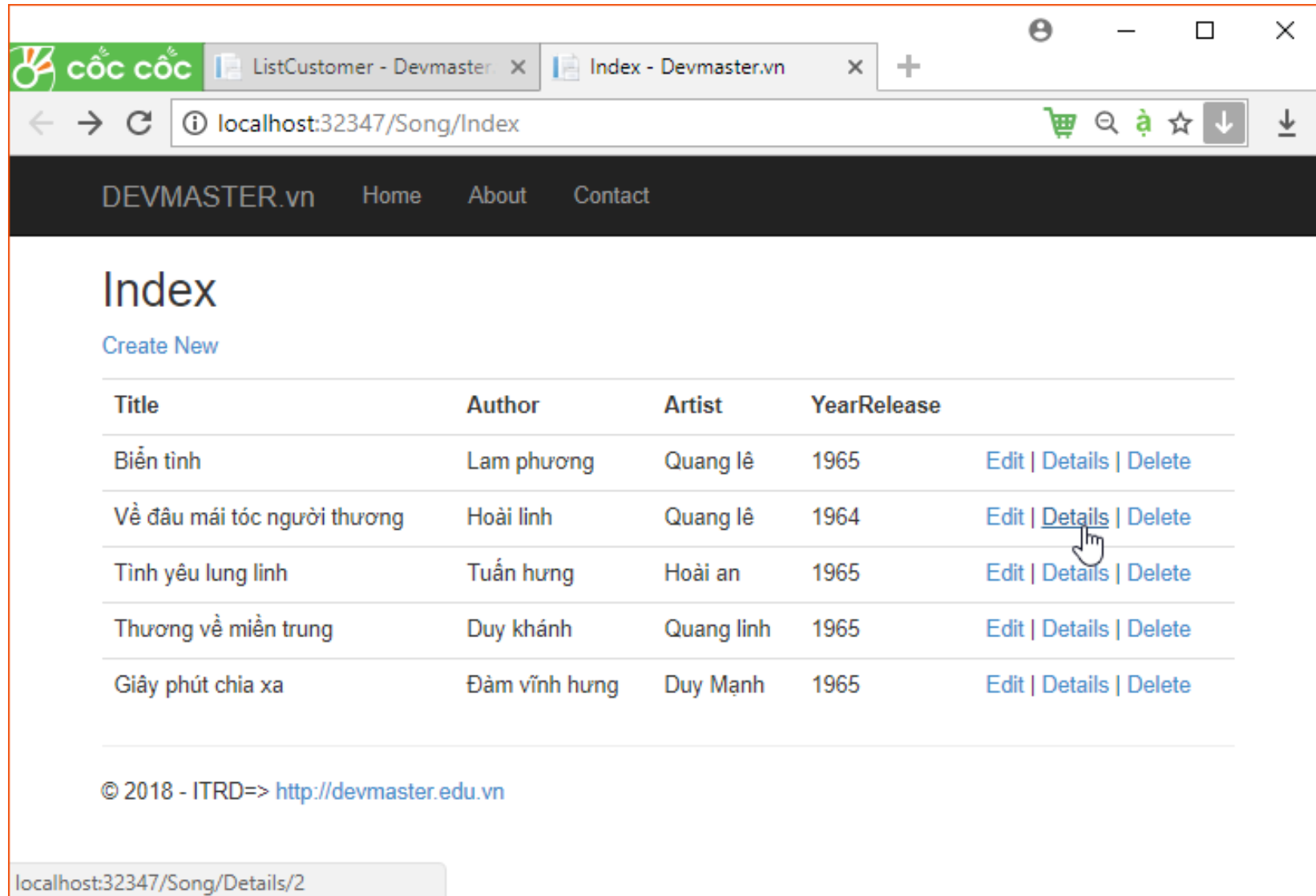


The screenshot shows the Microsoft Visual Studio IDE with the 'Details.cshtml' file open in the editor. The file is part of a project named 'Session04'. The editor displays the following code:

```
1 @model Session04.Models.Song
2
3 @{
4     ViewBag.Title = "Details";
5     Layout = "~/Views/Shared/_Layout.cshtml";
6 }
7
8 <h2>Details</h2>
9
10 <div>
11     <h4>Song</h4>
12     <hr />
13     <dl class="dl-horizontal">
14         <dt>
15             @Html.DisplayNameFor(model => model.Title)
16         </dt>
17         <dd>
18             @Html.DisplayFor(model => model.Title)
19         </dd>
20         <dt>
21             @Html.DisplayNameFor(model => model.Author)
22         </dt>
23     </dl>
24 </div>
```

The Solution Explorer on the right shows the project structure, including folders for 'fonts', 'Models', 'Scripts', and 'Views'. The 'Views' folder is expanded, showing subfolders for 'Customer', 'Home', 'Shared', and 'Song'. The 'Song' folder is selected, and the 'Details.cshtml' file is highlighted.

Details template



DEVMASTER.vn Home About Contact

Index

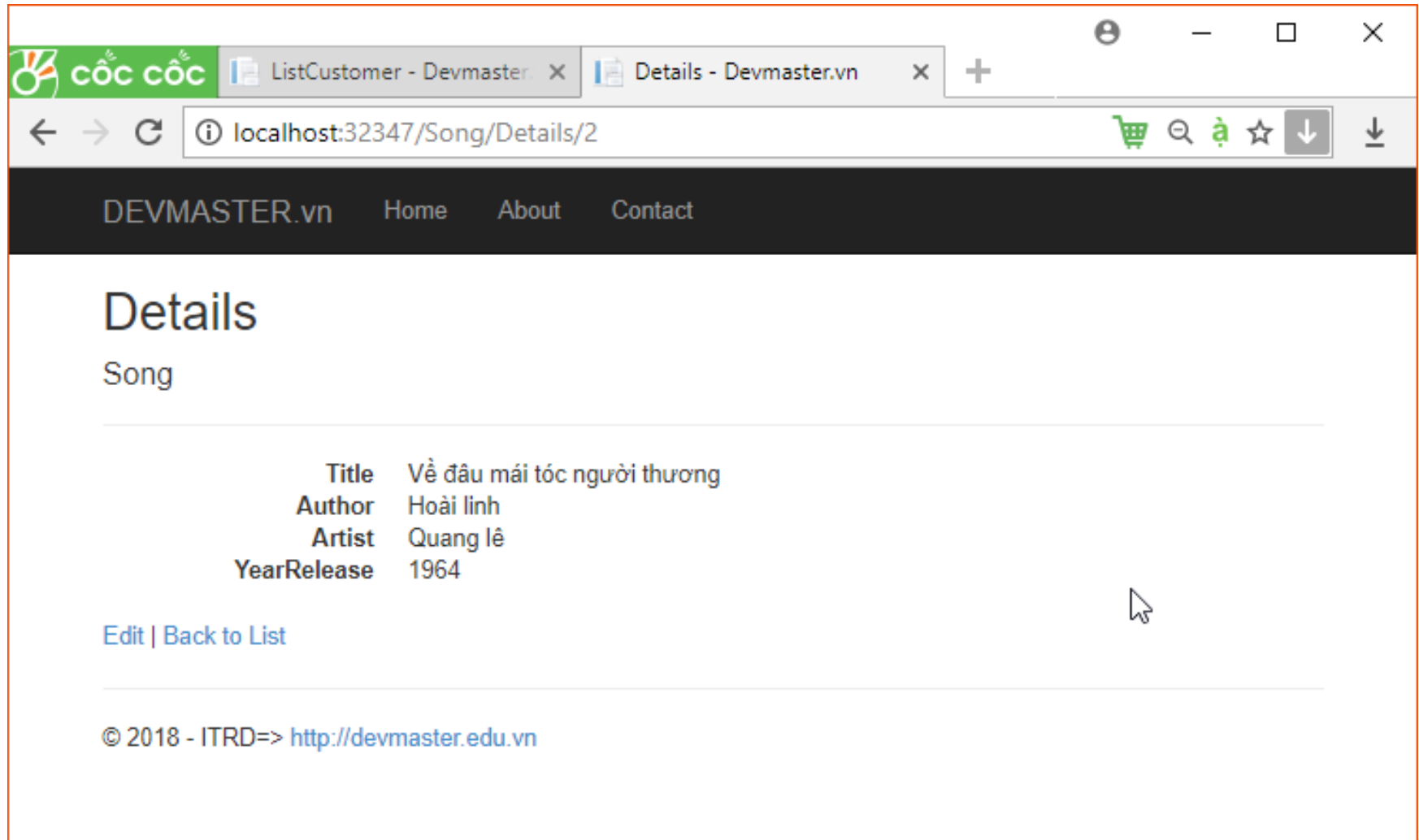
[Create New](#)

Title	Author	Artist	YearRelease	
Biển tình	Lam phương	Quang lê	1965	Edit Details Delete
Về đầu mái tóc người thương	Hoài linh	Quang lê	1964	Edit Details Delete
Tình yêu lung linh	Tuấn hưng	Hoài an	1965	Edit Details Delete
Thương về miền trung	Duy khánh	Quang linh	1965	Edit Details Delete
Giây phút chia xa	Đàm vĩnh hưng	Duy Mạnh	1965	Edit Details Delete

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localhost:32347/Song/Details/2

Details template

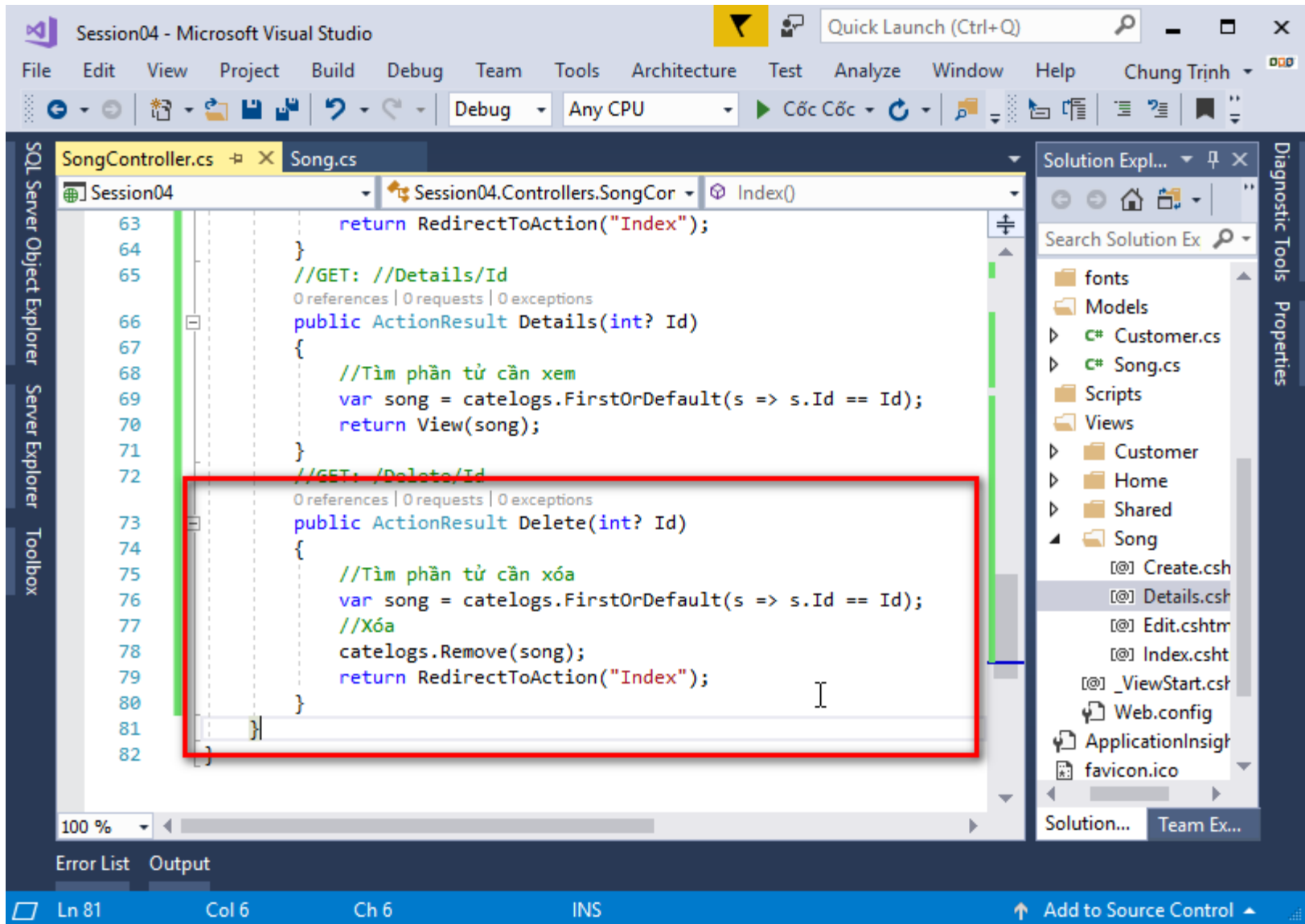


The screenshot shows a web browser window with two tabs: 'cốc cốc' and 'Details - Devmaster.vn'. The address bar shows 'localhost:32347/Song/Details/2'. The page has a dark navigation bar with 'DEVMASTER.vn', 'Home', 'About', and 'Contact'. The main content area is titled 'Details' and 'Song'. It displays a table with the following information:

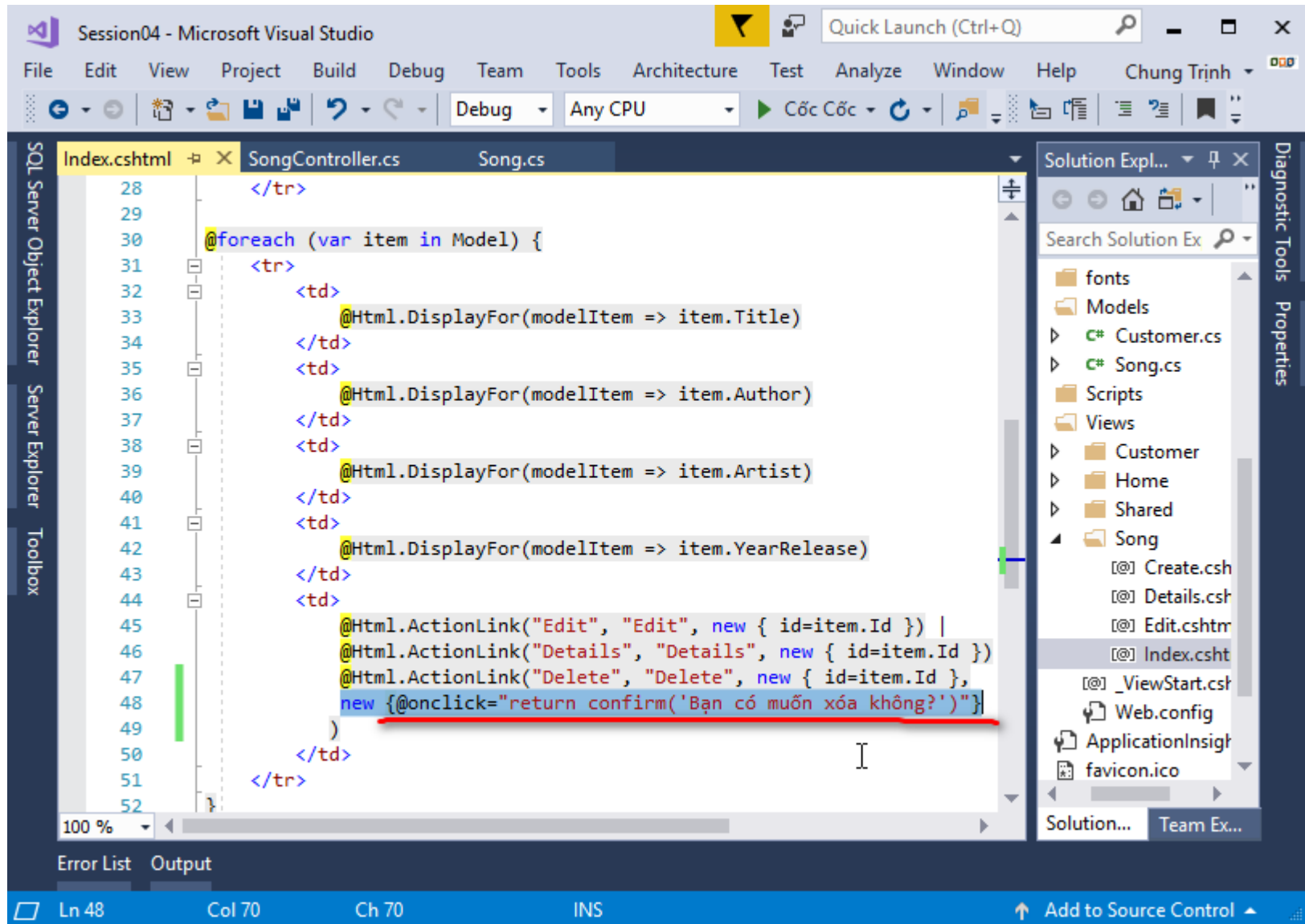
Title	Về đầu mái tóc người thương
Author	Hoài linh
Artist	Quang lê
YearRelease	1964

Below the table, there are links for 'Edit' and 'Back to List'. At the bottom, the copyright notice reads '© 2018 - ITRD=> <http://devmaster.edu.vn>'.

Delete template



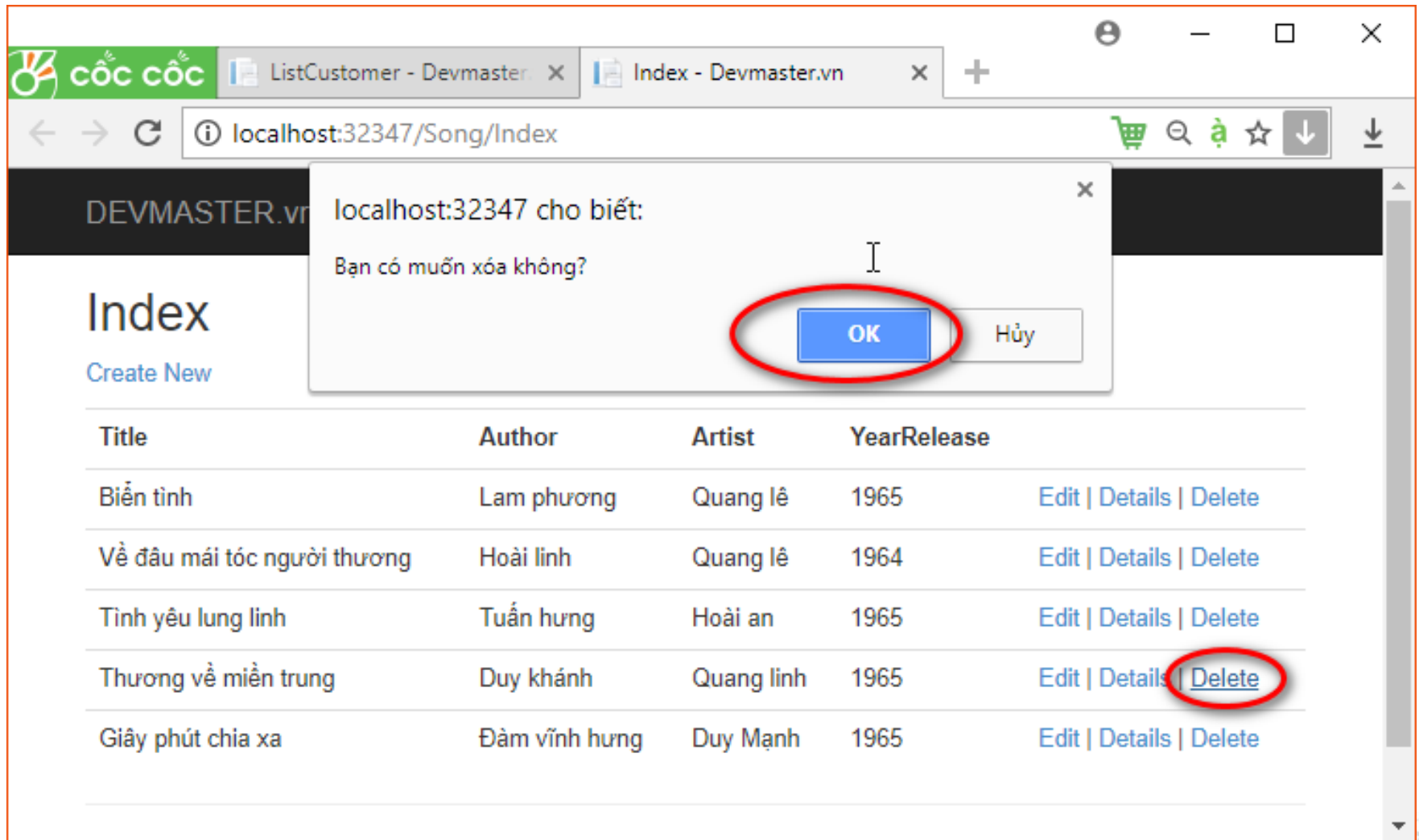
Delete template



The screenshot shows the Microsoft Visual Studio IDE with the following details:

- Title Bar:** Session04 - Microsoft Visual Studio
- Menu Bar:** File, Edit, View, Project, Build, Debug, Team, Tools, Architecture, Test, Analyze, Window, Help, Chung Trình
- Toolbar:** Includes icons for file operations, a dropdown for 'Debug', and a dropdown for 'Any CPU'.
- Editor Window:** Displays the code for `SongController.cs`. The code is an ASP.NET MVC controller action for displaying a list of songs. It uses a `@foreach` loop to iterate over a `Model` and renders each item in a table row. The table columns are Title, Author, Artist, and YearRelease. There are also links for Edit, Details, and Delete. The Delete link is highlighted with a red box, and its `@onclick` attribute is set to `return confirm('Bạn có muốn xóa không?')`.
- Solution Explorer:** Located on the right, it shows the project structure. The 'Song' folder is expanded, showing files like `Create.csh`, `Details.csh`, `Edit.cshtml`, `Index.cshtml`, `_ViewStart.csh`, `Web.config`, `ApplicationInsight`, and `favicon.ico`.
- Status Bar:** At the bottom, it shows 'Ln 48', 'Col 70', 'Ch 70', and 'INS'.

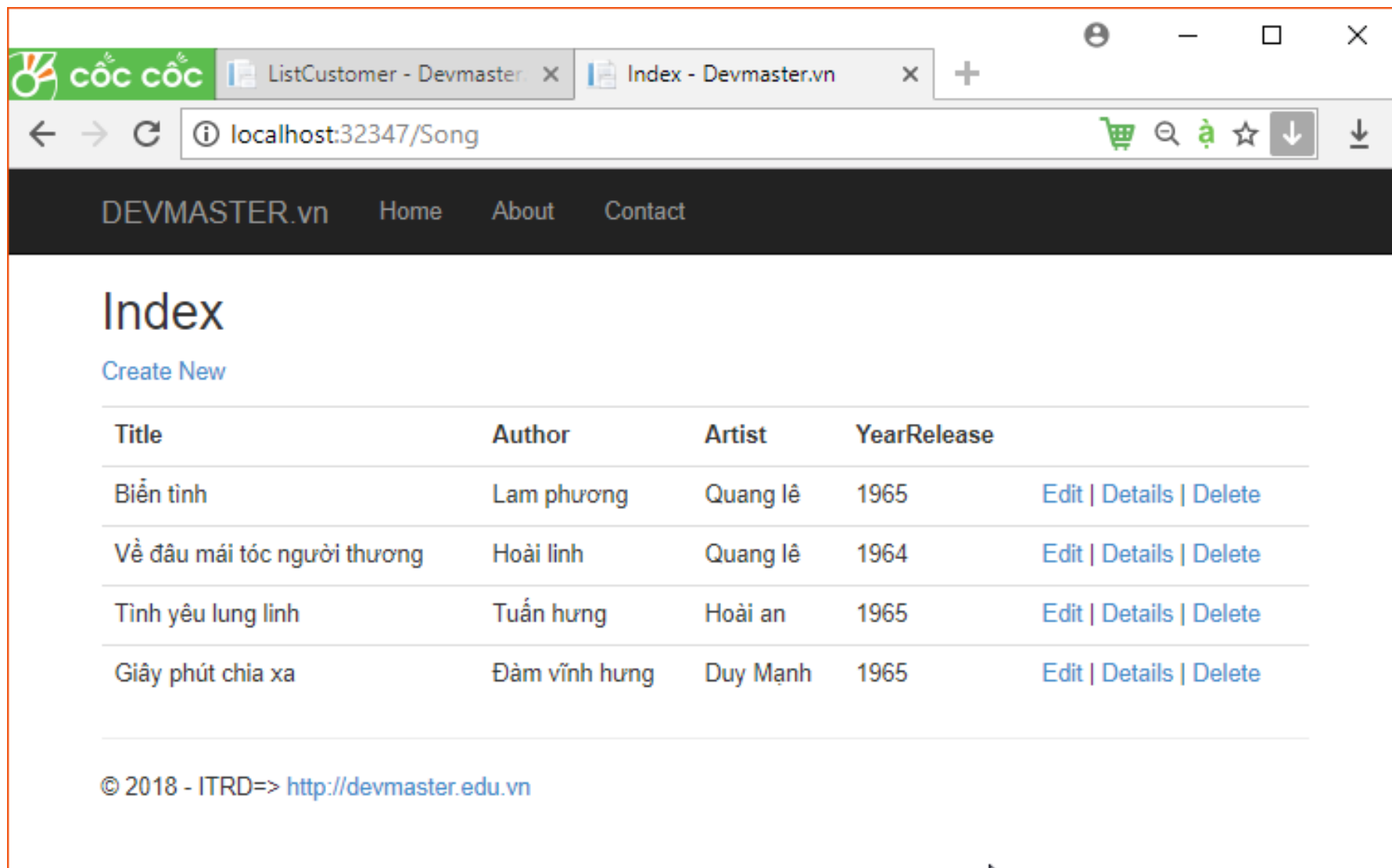
Delete template



The screenshot shows a web browser window with the address bar at `localhost:32347/Song/Index`. The page title is "Index" and it includes a "Create New" link. A table lists song templates with columns: Title, Author, Artist, YearRelease, and a set of action links (Edit, Details, Delete). A modal dialog is open in the center, asking for confirmation to delete a template. The dialog text is: "localhost:32347 cho biết: Bạn có muốn xóa không?". The "OK" button is highlighted with a red circle, and the "Delete" link in the table's action column is also highlighted with a red circle.

Title	Author	Artist	YearRelease	
Biển tình	Lam phương	Quang lê	1965	Edit Details Delete
Về đầu mái tóc người thương	Hoài linh	Quang lê	1964	Edit Details Delete
Tình yêu lung linh	Tuấn hưng	Hoài an	1965	Edit Details Delete
Thương về miền trung	Duy khánh	Quang linh	1965	Edit Details Delete
Giây phút chia xa	Đàm vĩnh hưng	Duy Mạnh	1965	Edit Details Delete

Delete template



DEVMASTER.vn Home About Contact

Index

[Create New](#)

Title	Author	Artist	YearRelease	
Biển tình	Lam phương	Quang lê	1965	Edit Details Delete
Về đầu mái tóc người thương	Hoài linh	Quang lê	1964	Edit Details Delete
Tình yêu lung linh	Tuấn hưng	Hoài an	1965	Edit Details Delete
Giây phút chia xa	Đàm vĩnh hưng	Duy Mạnh	1965	Edit Details Delete

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- ◆ Đây là tính năng rất hay của ASP.NET MVC Framework, bạn có thể tùy biến phần, Controller và View cho phù hợp với ứng dụng của mình (xem bài lab thực hành).



