(T16)討論OutputCacheAttribute(輸出快取屬性)的Duration、ChildAction、CustomCacheAttribute(自訂快取屬性)、VaryByParam、Location、ClearOutputCache(清除輸出快取)  
CourseGUID: 8503b39c-5887-4634-8291-facfb3117924  
=======================================================================  
(T16)討論OutputCacheAttribute(輸出快取屬性)的Duration、ChildAction、CustomCacheAttribute(自訂快取屬性)、VaryByParam、Location、ClearOutputCache(清除輸出快取)

(T16-1)討論OutputCacheAttribute(輸出快取屬性)的Duration (1. to 4.3.)

(T16-2)討論OutputCacheAttribute(輸出快取屬性)的ChildAction、Duration (4.4.)

(T16-3)討論OutputCacheAttribute(輸出快取屬性)的Duration、ChildAction、CustomCacheAttribute(自訂快取屬性) (4.5. to 4.6.)

(T16-4)討論OutputCacheAttribute(輸出快取屬性)的Duration、VaryByParam (5.)

(T16-5)討論OutputCacheAttribute(輸出快取屬性)的ChildAction、Location (6.)

(T16-6)討論OutputCacheAttribute(輸出快取屬性)的ChildAction、Duration、VaryByParam、ClearOutputCache (7. to 8.)  
=======================================================================  
0. Summary

-----------

1. OnlineGame DB

1.1. TSQL

1.2. Security login

-----------

2. New Project - OnlineGame

2.1. New Project - OnlineGame.Web

2.1.1. App\_Start/FilterConfig.cs

2.1.2. App\_Start/RouteConfig.cs

2.1.3. Global.asax.cs

2.1.4. Web.config

2.1.5. Add Customized Error View and Error Controller

2.1.5.1. Controllers/ErrorController.cs

2.1.5.2. Views/Shared/Error.cshtml

2.1.5.3. Views/Shared/UnauthorizedError.cshtml

2.1.5.4. Views/Shared/NotFound.cshtml

2.1.5.5. Views/Shared/InternalServerError.cshtml

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3. OnlineGame.Web

3.1. ADO.Net Entity Data Model - Entity Framework

3.2. Controllers/GamersController.cs

-----------

4. OnlineGame.Web

4.1. Web.config

4.2. WebShared/CustomizeCacheAttribute.cs

4.3. Controllers/GamerController.cs

4.4. Views/Gamer/Index2.cshtml

4.5. Views/Gamer/Index3.cshtml - The Child Action Cache is shared.

4.5.1. Views/Gamer/Index3.cshtml

4.5.2. Views/Gamer/Index3V2.cshtml

4.6. Views/Gamer/Index4.cshtml

-----------

5. OnlineGame.Web - VaryByParam

5.1. Controllers/GamerController.cs

5.2. Views/Gamer/Index5.cshtml

-----------

6. OnlineGame.Web : Location= OutputCacheLocation.Any

6.1. Controllers/GamerController.cs

6.2. Views/Gamer/Index7.cshtml

6.3. Views/Gamer/Index2.cshtml

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7. OnlineGame.Web - VaryByParam with GridView

7.1. Install NuGet Package

7.2. Controllers/GamerController.cs

7.3. Views/Gamer/Index6.cshtml

-----------

8. Output Cache Settings  
=======================================================================

0. Summary

=========================================

In this tutorial, we will discuss

\* Please ensure you fully understand T013 Grid View before you continue.

\* Action filters

Reference:

<https://docs.microsoft.com/en-us/aspnet/mvc/overview/older-versions-1/controllers-and-routing/understanding-action-filters-cs>

An action filter is an attribute that you can apply to a controller action -- or an entire controller -- that modifies the way in which the action is executed.

    \* Authorize

    \* ChildActionOnly

    \* HandleError

**\* OutputCache**

    \* RequireHttps

    \* ValidateInput

    \* ValidateAntiForgeryToken

\* CustomizeCacheAttribute

\* ClearOutputCache

\* Fragment Cache in Child action

---------------------------

動作過濾器Action Filter 2 - Cache完全攻略。歐買尬。內建的Cache屬性GG了!?別怕。有密技。手寫自定Cache屬性。

\* Cache可以讓你的Web Application擁有更好的效率和效能。

\* Cache一直是許多工程師心中的痛啊，如果對Cache一知半解，Web Application很容易就死給你看。

\* 內建的Cache屬性肯定不夠用，有些場合就GG。

\* 不過別怕，本章節會帶你手寫自定客製化的Cache屬性。

\* 完美攻略**Duration屬性，VaryByName屬性，ClearOutputCache屬性，ChildAction屬性**。

=========================================

1.

VaryByParam

1.1.

Vary by "\*"

//[OutputCache(Duration = 60, VaryByParam = "\*")]

It means for cache for every parameters,

it is dangerous becuase of the view might have too many parameters.

1.2.

Vary by "None"

//[OutputCache(Duration = 5, VaryByParam = "none")]

It means always cache the same contents.

1.3.

Vary by "Name"

//[OutputCache(Duration = 60, VaryByParam = "pageNumber")]

//[OutputCache(Duration = 60, VaryByParam = "searchBy;searchText;pageNumber;sortBy")]

It means for cache for every value of name parameters.

2.

Location

//[OutputCache(Duration = 10, VaryByParam = "None", Location = OutputCacheLocation.ServerAndClient)]

There are 3 locations option can store the cached response, Server, Client, and Proxy server.

2.1.

//OutputCacheLocation.Any

By default, cached response is at any available locations.

2.2.

//OutputCacheLocation.Client

2.3.

OutputCacheLocation.Downstream

Any HTTP 1.1 devices which includes proxy servers.

2.4.

//OutputCacheLocation.None

Do not store cache.

2.5.

//OutputCacheLocation.Server

2.6.

//OutputCacheLocation.ServerAndClient

3.

VaryByHeader

It will cache on an HTTP header.  E.g. Accept-Language.

4.

VaryByCustom

It need the implementation of custom method in global.asax.

5.

SqlDependency

It will cache everything until the data in a Sql server table changes.

=========================================

Reference:

* <http://www.c-sharpcorner.com/code/1994/how-to-clear-output-cache-in-asp-net-mvc.aspx>
* <https://docs.microsoft.com/en-us/aspnet/mvc/overview/older-versions-1/controllers-and-routing/improving-performance-with-output-caching-cs>
* [https://forums.asp.net/t/2077235.aspx?How+to+clear+OutPutCache+Asp+net+Mvc](https://forums.asp.net/t/2077235.aspx?How%2Bto%2Bclear%2BOutPutCache%2BAsp%2Bnet%2BMvc)
* <http://taswar.zeytinsoft.com/disable-browser-cache-in-asp-mvc/>
* <https://stackoverflow.com/questions/13463939/net-mvc-controller-force-cache-refresh-depending-on-situation>
* [https://msdn.microsoft.com/zh-cn/library/bb516932(v=vs.110).aspx](https://msdn.microsoft.com/zh-cn/library/bb516932%28v=vs.110%29.aspx)
* <https://stackoverflow.com/questions/28061486/mvcdonutcaching-how-to-remove-child-action-cache-mvc-donut-caching>
* [https://books.google.com.au/books?id=mQqnBAAAQBAJ&pg=SA6-PA189&lpg=SA6-PA189&dq=OutputCacheLocation+%E6%98%AF&source=bl&ots=fFg4FuxG5g&sig=dKr0tR8j5EAs7mnJYAV5TyV9\_IU&hl=en&sa=X&ved=0ahUKEwik3vj4gbLZAhVDqJQKHV7GAekQ6AEIKTAA#v=onepage&q=OutputCacheLocation%20%E6%98%AF&f=false](https://books.google.com.au/books?id=mQqnBAAAQBAJ&pg=SA6-PA189&lpg=SA6-PA189&dq=OutputCacheLocation%2B%E6%98%AF&source=bl&ots=fFg4FuxG5g&sig=dKr0tR8j5EAs7mnJYAV5TyV9_IU&hl=en&sa=X&ved=0ahUKEwik3vj4gbLZAhVDqJQKHV7GAekQ6AEIKTAA#v=onepage&q=OutputCacheLocation%20%E6%98%AF&f=false)
* <https://stackoverflow.com/questions/12612545/how-to-remove-output-cache-for-child-action-mvc3>

=========================================

1. OnlineGame DB

1.1. TSQL

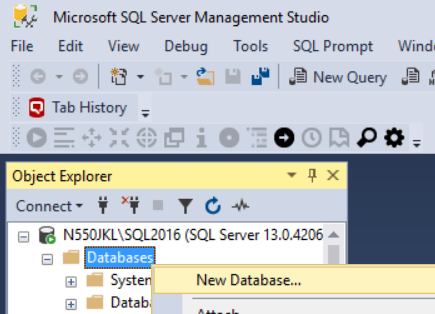
In SQL server Management Studio (SSMS)

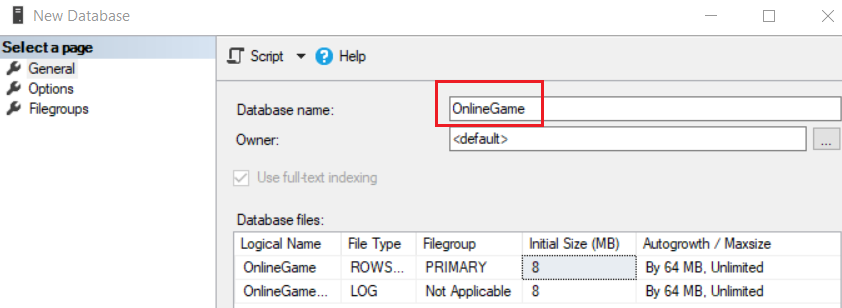
Database --> Right Click --> New Database -->

In General Tab -->

Name: **OnlineGame**

In options Tab --> Recovery model : **Simple**





Graphical user interface, text, application

Description automatically generated

--1. Drop if it exists

--Drop Table if it exists.

IF ( EXISTS ( SELECT    \*

              FROM      INFORMATION\_SCHEMA.TABLES

              WHERE     TABLE\_NAME = 'Gamer' ) )

    BEGIN

        TRUNCATE TABLE Gamer;

        DROP TABLE Gamer;

    END;

GO -- Run the previous command and begins new batch

--2. Create Table

CREATE TABLE Gamer

(

   Id INT PRIMARY KEY

             IDENTITY(1, 1)

             NOT NULL ,

   [Name] NVARCHAR(100) NOT NULL ,

   Gender NVARCHAR(10) NOT NULL,

   EmailAddress nvarchar(100) NOT NULL,

)

--3. Insert Data

INSERT  Gamer

VALUES  ( N'Name01 ABB', N'Male', '[1@AAA.com](mailto:1@AAA.com)');

INSERT  Gamer

VALUES  ( N'Name02 CDDE', N'Female', '[2@BBB.com](mailto:2@BBB.com)');

INSERT  Gamer

VALUES  ( N'Name03 FIJK', N'Female', '[3@CCCC.com](mailto:3@CCCC.com)');

INSERT  Gamer

VALUES  ( N'Name04 LMOPPQ', N'Male', '[4@DD.com](mailto:4@DD.com)');

INSERT  Gamer

VALUES  ( N'Name05 QRSTT', N'Male', '[5@EEE.com](mailto:5@EEE.com)');

INSERT  Gamer

VALUES  ( N'Name06 TUVVX', N'Female', '[6@FF.com](mailto:6@FF.com)');

INSERT  Gamer

VALUES  ( N'Name07 XYZZXX', N'Female', '[7@GGGG.com](mailto:7@GGGG.com)');

INSERT  Gamer

VALUES  ( N'Name08 ABBCDE', N'Male', '[8@HH.com](mailto:8@HH.com)');

INSERT  Gamer

VALUES  ( N'Name09 QRSTTUVXX', N'Male', '[9@IIII.com](mailto:9@IIII.com)');

INSERT  Gamer

VALUES  ( N'Name10 GGAAEE', N'Male', '[10@XXWFFS.com](mailto:10@XXWFFS.com)');

INSERT  Gamer

VALUES  ( N'Name11 HFSASER', N'Male', '[11@AAA.com](mailto:11@AAA.com)');

INSERT  Gamer

VALUES  ( N'Name12 ESVSADC', N'Female', '[12@BBB.com](mailto:12@BBB.com)');

INSERT  Gamer

VALUES  ( N'Name13 REDSVF', N'Female', '[13@CCCC.com](mailto:13@CCCC.com)');

INSERT  Gamer

VALUES  ( N'Name14 BBGVDD', N'Male', '[14@DD.com](mailto:14@DD.com)');

INSERT  Gamer

VALUES  ( N'Name15 WWVFSSQ', N'Male', '[15@EEE.com](mailto:15@EEE.com)');

INSERT  Gamer

VALUES  ( N'Name16 TTVSS', N'Female', '[16@FF.com](mailto:16@FF.com)');

INSERT  Gamer

VALUES  ( N'Name17 AAQERR', N'Female', '[17@GGGG.com](mailto:17@GGGG.com)');

INSERT  Gamer

VALUES  ( N'Name18 BBFSAQ', N'Male', '[18@HH.com](mailto:18@HH.com)');

INSERT  Gamer

VALUES  ( N'Name19 QRSTTUVXX', N'Male', '[19@IIII.com](mailto:19@IIII.com)');

INSERT  Gamer

VALUES  ( N'Name20 HHFWSWQ', N'Male', '[20@XXWFFS.com](mailto:20@XXWFFS.com)');

GO -- Run the previous command and begins new batch

1.2. Security login

In SQL server

Object Explorer --> Security --> Logins --> New Logins

-->

General Tab

Login Name :

**Tester**

Password:

**1234**

Default Database:

**OnlineGame**

-->

Server Roles Tab

Select

**sysadmin**

-->

User Mapping Tab

Select **OnlineGame**

Select every single role.









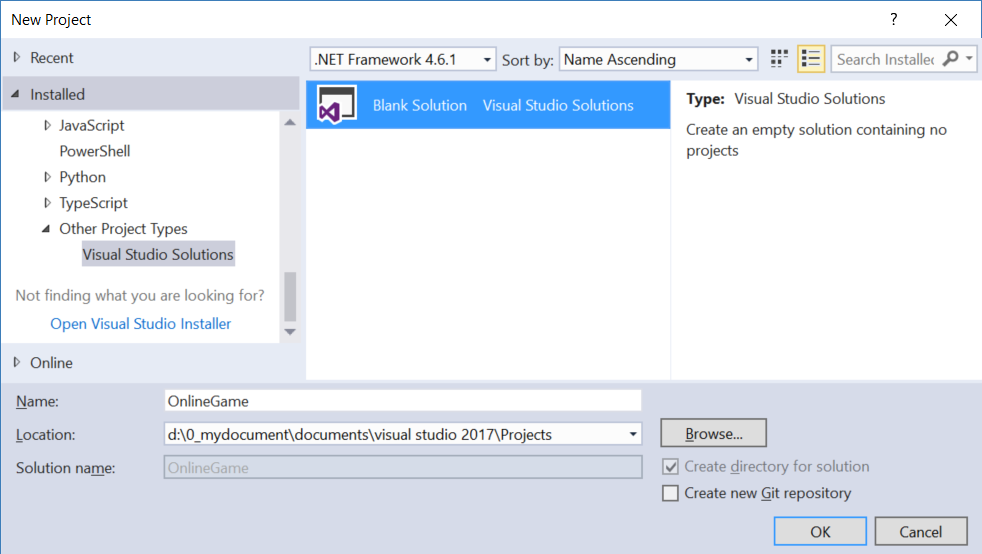
2. New Project - OnlineGame

File --> New --> Project... -->

Other Project Types --> Visual Studio Solutions -->  Blank Solution

-->

Name: **OnlineGame**



2.1. New Project - OnlineGame.Web

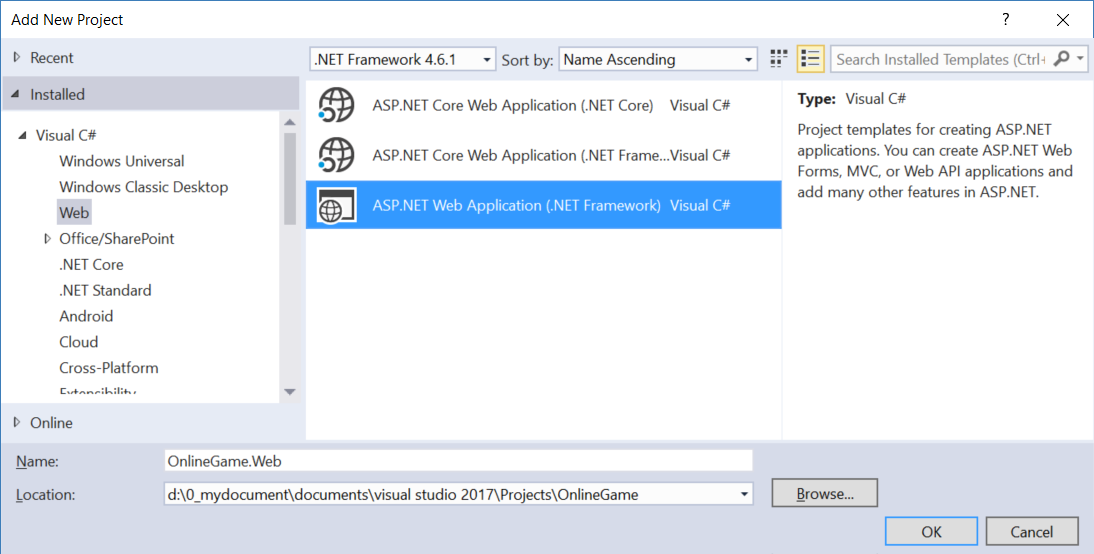
Solutions Name --> Add --> New Project -->

Visual C# --> Web --> [ASP.NET](http://asp.net/)Web Application (.Net Framework)

-->

Name: **OnlineGame.Web**

Empty --> Select "MVC" --> OK



Graphical user interface, text, application

Description automatically generated

2.1.1. App\_Start/FilterConfig.cs

using System.Web;

using System.Web.Mvc;

namespace WebApplication1

{

    public class FilterConfig

    {

        public static void RegisterGlobalFilters(GlobalFilterCollection filters)

        {

            filters.Add(new HandleErrorAttribute());

        }

    }

}

/\*

1.

Register Customized Error View

1.1.

Register HandleErrorAttribute to global filter

In Global.asax,

//FilterConfig.RegisterGlobalFilters(GlobalFilters.Filters);

We pass the GlobalFilters.Filters to

//public static void RegisterGlobalFilters(GlobalFilterCollection filters)

Here, we register "HandleErrorAttribute" to global filter.

1.2.

In Web.Config, add the customErrors mode="On"

//<system.web>

//    <customErrors mode="On">

//    </customErrors>

1.3.

Create error view, Views/Shared/Error.cshtml

\*/

2.1.2. App\_Start/RouteConfig.cs

using System.Web.Mvc;

using System.Web.Routing;

namespace OnlineGame.Web

{

    public class RouteConfig

    {

        public static void RegisterRoutes(RouteCollection routes)

        {

            //Handle the Route of the axd request file.

            //E.g. [ASP.Net](http://asp.net/) Tracing

            routes.IgnoreRoute("{resource}.axd/{\*pathInfo}");

            //Handle the Route called "Default".

            //The mapping URL is "{controller}/{action}/{id}"

            //Set the default value of Controller, action, and id.

            routes.MapRoute(

                name: "Default",

                url: "{controller}/{action}/{id}",

                defaults: new { controller = "Gamer", action = "Index", id = UrlParameter.Optional }

            );

        }

    }

}

/\*

1.

//routes.MapRoute(

//    name: "Default",

//    url: "{controller}/{action}/{id}",

//    defaults: new { controller = "Home", action = "Index", id = UrlParameter.Optional }

//);

1.1.

When a request comes in,

it's trying to do a pattern match based on

all the templates it sees in these mapped routes.

A route is some instructions for

how to take a URI coming into a request

and map it to some code,

normally a controller.

In this case,

look at defaults parameter,

when user request <http://localhost:PortNumber/>

IIS Express will run

HomeController Index action.

It will map to Controllers/HomeController.cs

and   map to Index Method

1.2.

By convention in MVC.

All controllers will have Controller suffix.

This suffix is not required in the URL.

So, if you want to invoke Home controller,

you specify /Home and not /HomeController.

-----------------------------------

2.

//routes.IgnoreRoute("{resource}.axd/{\*pathInfo}");

2.1.

Reference:

<https://stackoverflow.com/questions/9016650/what-is-routes-ignorerouteresource-axd-pathinfo>

This line can handle the axd file request route,

E.g. trace.axd

.axd files don't exist physically.

[ASP.NET](http://asp.net/) uses URLs with .axd extensions

(ScriptResource.axd and WebResource.axd) internally,

and they are handled by an HttpHandler.

Therefore, you should keep this rule,

to prevent [ASP.NET](http://asp.net/) MVC from trying to handle the request

instead of letting the dedicated HttpHandler do it.

2.2.

trace.axd

Reference:

<https://msdn.microsoft.com/en-us/library/wwh16c6c.aspx>

trace.axd trace details for a specific request.

If you want to enable trace.axd,

then you have to go to Web.config

Add <trace enabled="true" pageOutput="false"/> under <system.web>

Then run the project, type the following URL

<http://localhost/OnlineGame.Web/trace.axd>

This will return [ASP.NET](http://asp.net/) trace, trace.axd.

If you do not have

// routes.IgnoreRoute("{resource}.axd/{\*pathInfo}");

then you can not enable the trace.axd.

\*/

2.1.3. Global.asax.cs

using System.Web.Mvc;

using System.Web.Routing;

using WebApplication1;

namespace OnlineGame.Web

{

    public class MvcApplication : System.Web.HttpApplication

    {

        //Application\_Start() is the magic start point of this application

        protected void Application\_Start()

        {

            AreaRegistration.RegisterAllAreas();

            //Register HandleErrorAttribute to global filter

            FilterConfig.RegisterGlobalFilters(GlobalFilters.Filters);

            //1.

            //Register Route Configure in RouteConfig.cs

            //If you want to see route configuration,

            //you may find it in RouteConfig.cs

            //2.

            //System.Web.Routing.RouteCollection Routes { get; }

            //Gets a collection of objects that derive from the System.Web.Routing.RouteBase class.

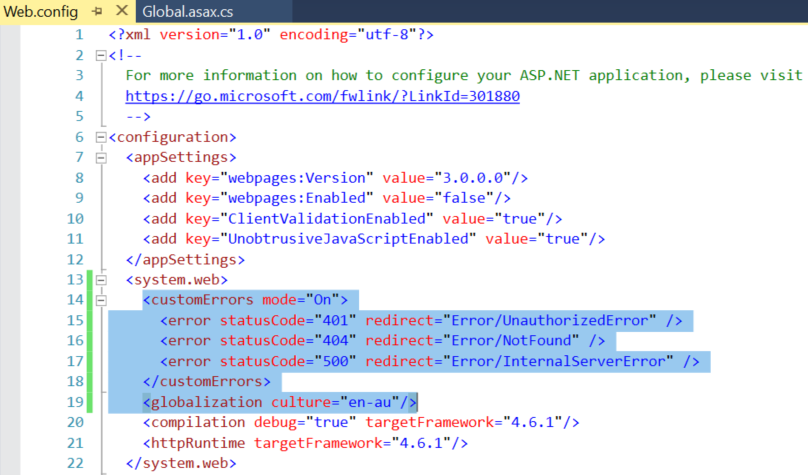
            RouteConfig.RegisterRoutes(RouteTable.Routes);

        }

    }

}

2.1.4. Web.config



<system.web>

  <customErrors mode="On">

    <error statusCode="401" redirect="Error/UnauthorizedError" />

    <error statusCode="404" redirect="Error/NotFound" />

    <error statusCode="500" redirect="Error/InternalServerError" />

  </customErrors>

  <globalization culture="en-au"/>

  <compilation debug="true" targetFramework="4.6.1"/>

  <httpRuntime targetFramework="4.6.1"/>

</system.web>

2.1.5. Add Customized Error View and Error Controller

2.1.5.1. Controllers/ErrorController.cs

using System.Web.Mvc;

namespace OnlineGame.Web.Controllers

{

    public class ErrorController : Controller

    {

        //error statusCode="401"

        [HttpGet]

        public ActionResult UnauthorizedError()

        {

            return View();

        }

        //error statusCode="404"

        [HttpGet]

        public ActionResult NotFound()

        {

            return View();

        }

        //error statusCode="500"

        [HttpGet]

        public ActionResult InternalServerError()

        {

            return View();

        }

    }

}

/\*

1.

In the Web.config

//<customErrors mode="On" defaultRedirect="Error/DefaultError">

//    <error statusCode="401" redirect="Error/UnauthorizedError" />

//    <error statusCode="404" redirect="Error/NotFound" />

//    <error statusCode="500" redirect="Error/InternalServerError" />

//</customErrors>

We notice that it will still show the Views/Shared/Error.cshtml

when exception occurs.

Thus, we can delete Views/Shared/DefaultError.cshtml.

We also can delete DefaultError() in ErrorController.cs

In the Web.config, we can set as the following.

//<customErrors mode="On">

//    <error statusCode="401" redirect="Error/UnauthorizedError" />

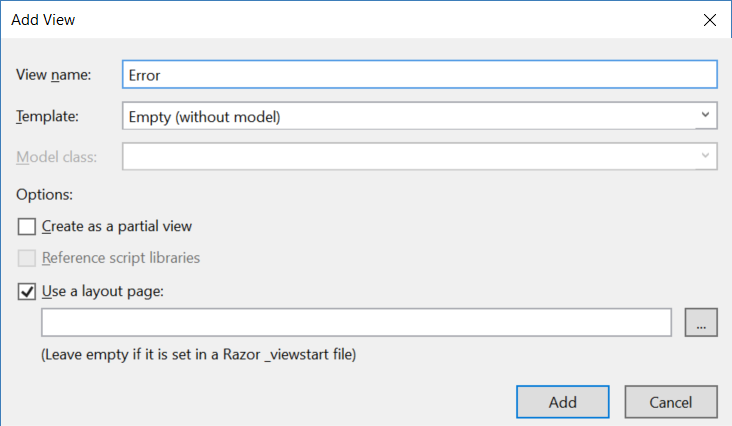
//    <error statusCode="404" redirect="Error/NotFound" />

//    <error statusCode="500" redirect="Error/InternalServerError" />

//</customErrors>

\*/

2.1.5.2. Views/Shared/Error.cshtml



@{

    ViewBag.Title = "Error";

}

<h2>Something occurs, please contact support.</h2>

2.1.5.3. Views/Shared/UnauthorizedError.cshtml

@{

    ViewBag.Title = "UnauthorizedError";

}

<h2>Error UnauthorizedError statusCode=401</h2>

You are trying to access something which you are not allowed to access.

<http://localhost/onlinegame.web/Error/UnauthorizedError>



2.1.5.4. Views/Shared/NotFound.cshtml

@{

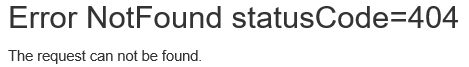
    ViewBag.Title = "NotFound";

}

<h2>Error NotFound statusCode=404</h2>

The request can not be found.

<http://localhost/onlinegame.web/Error/NotFound>



2.1.5.5. Views/Shared/InternalServerError.cshtml

@{

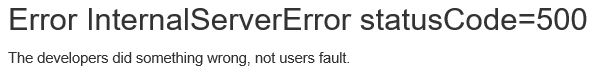
    ViewBag.Title = "InternalServerError";

}

<h2>Error InternalServerError statusCode=500</h2>

The developers did something wrong, not users fault.

<http://localhost/onlinegame.web/Error/InternalServerError>



3. OnlineGame.Web

3.1. ADO.Net Entity Data Model - Entity Framework

In Visual Studio 2017

**Models** folder --> Right Click --> Add --> New Item

--> Visual C# --> Data  -->  ADO.Net Entity Data Model

Name:

**OnlineGameDataModel**

-->

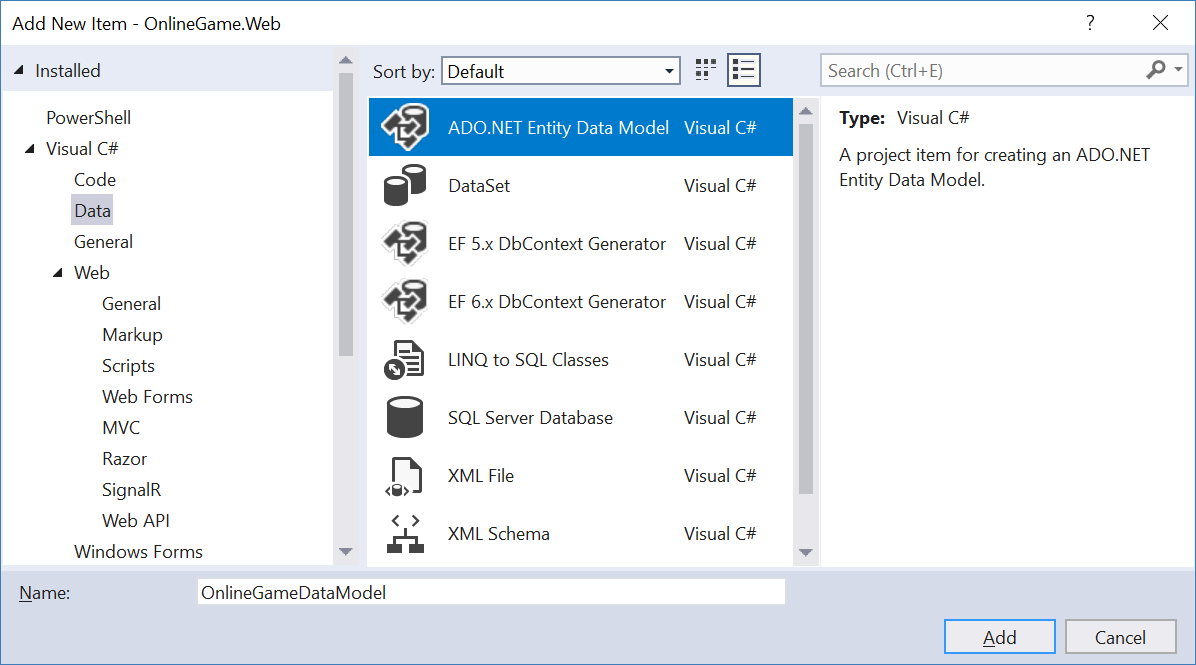
EF Designer from database

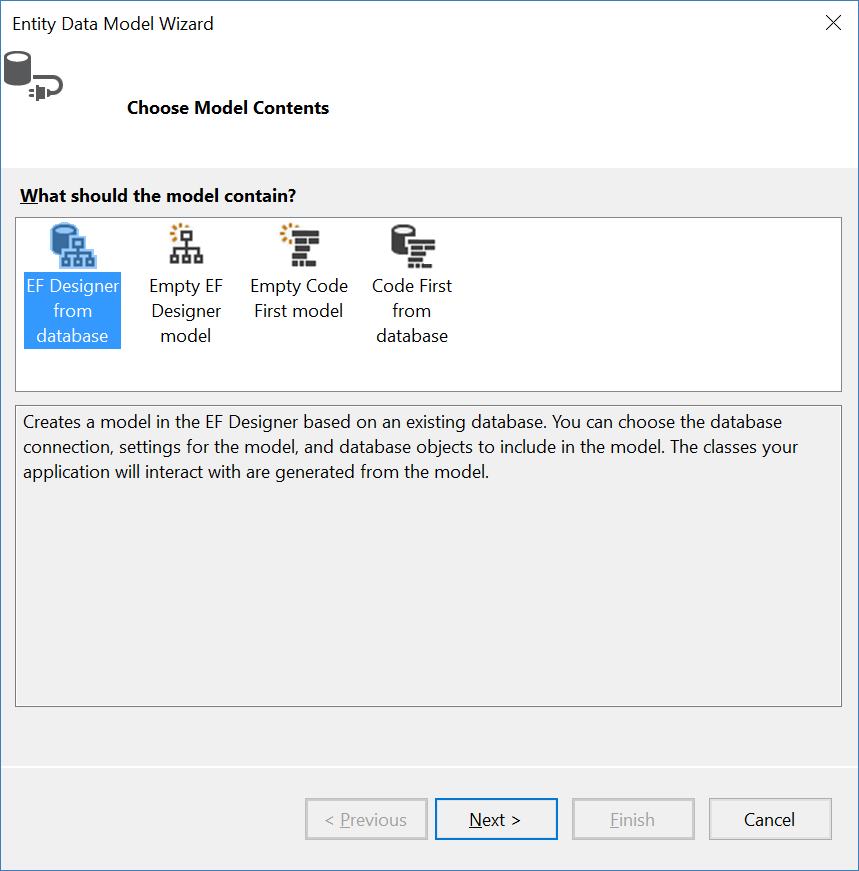
....

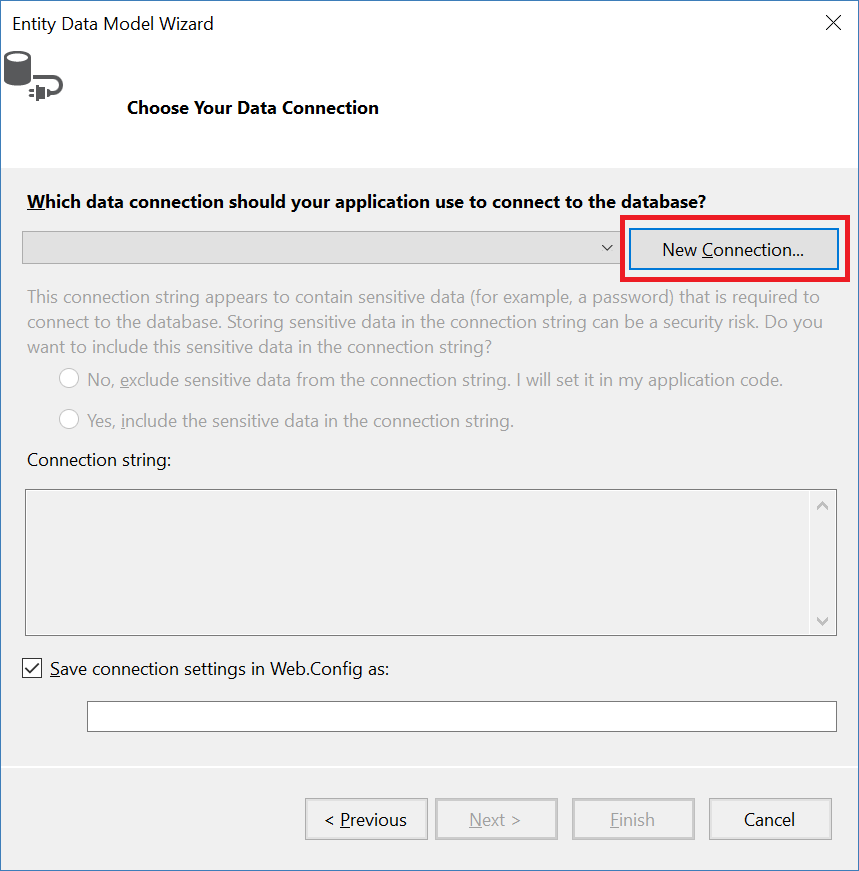
-->

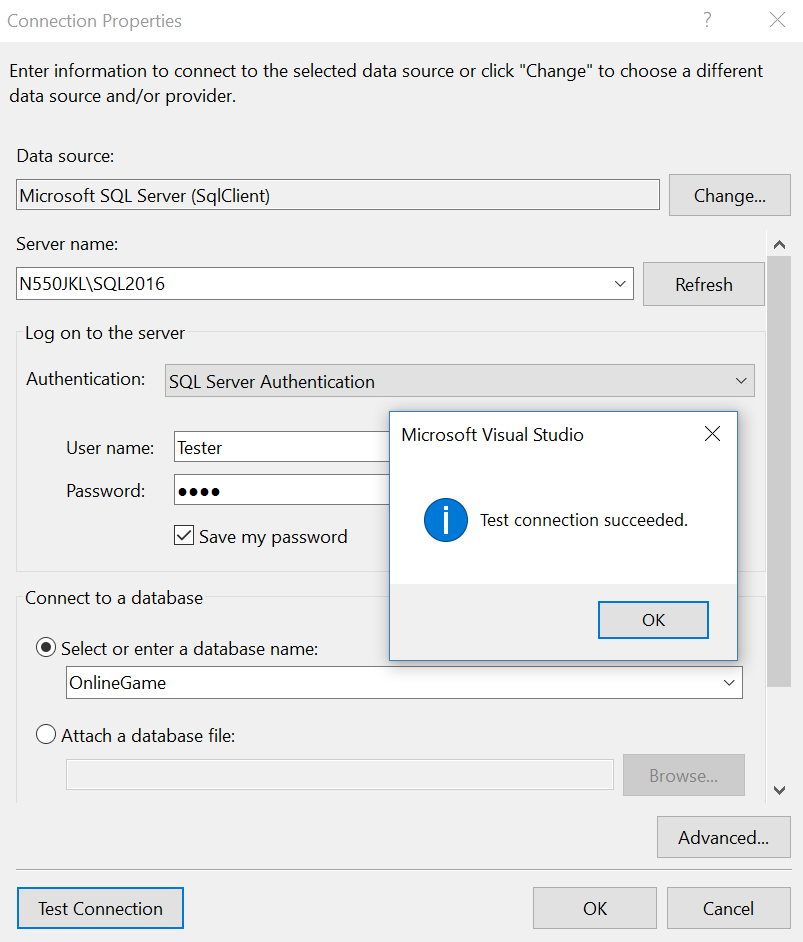
Save Connection settings in Web.Config as:

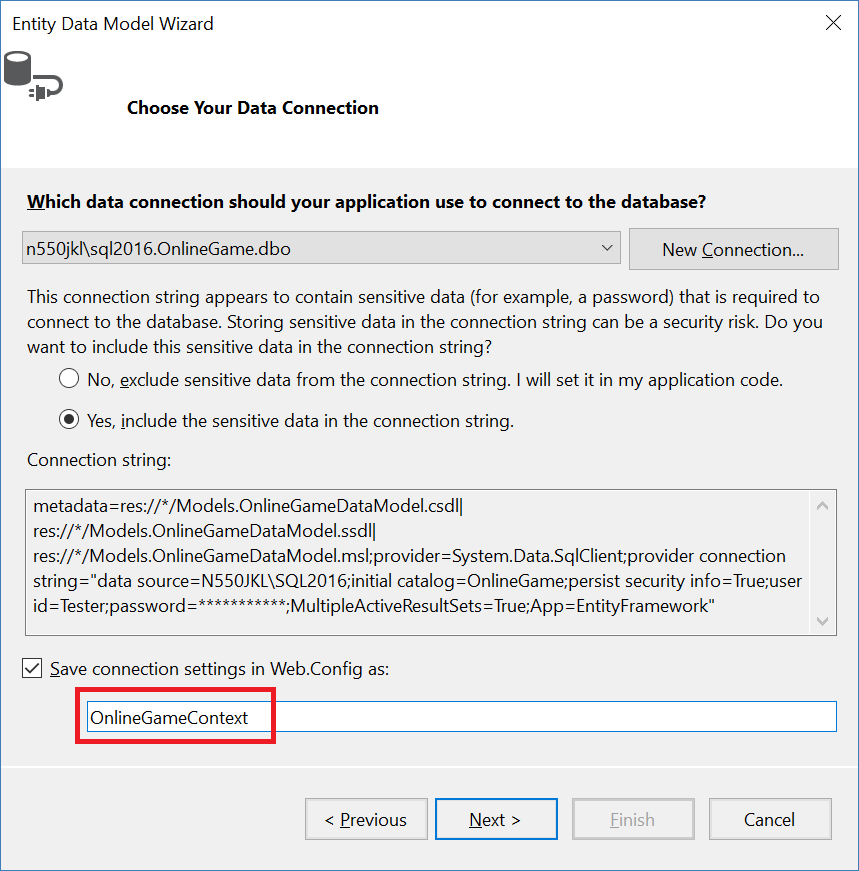
**OnlineGameContext**

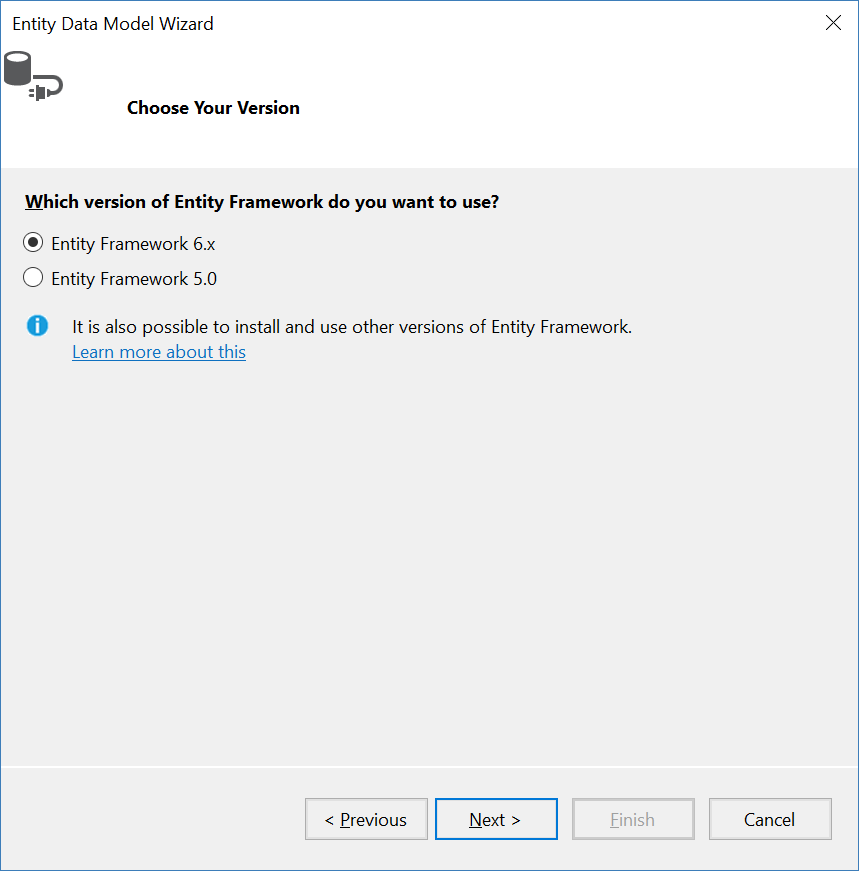


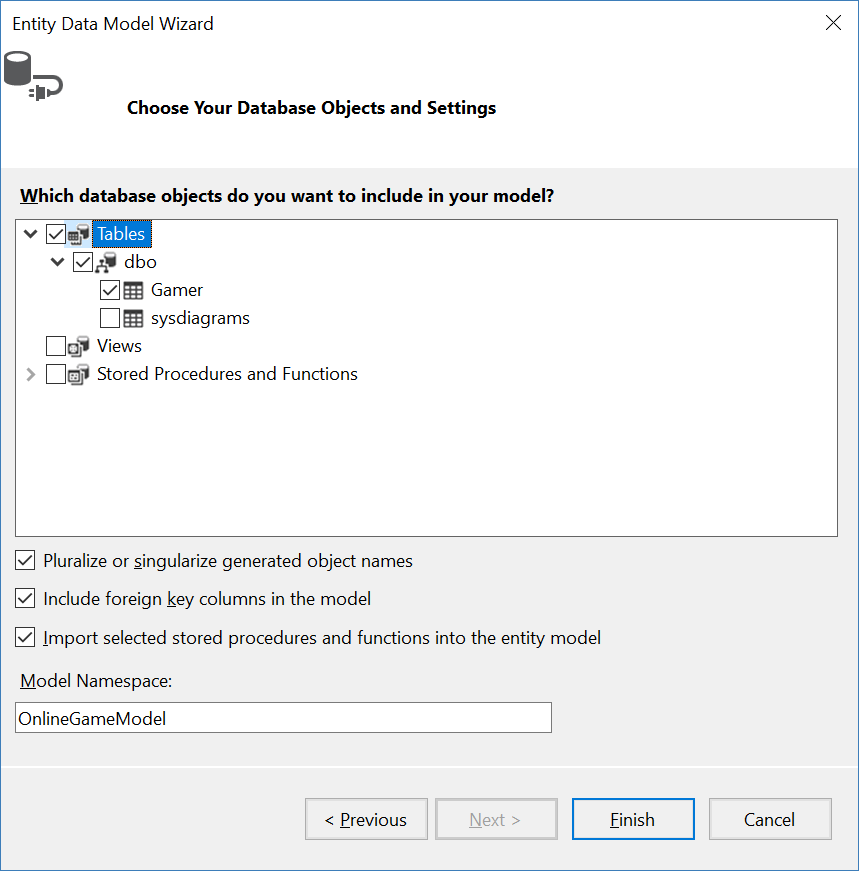


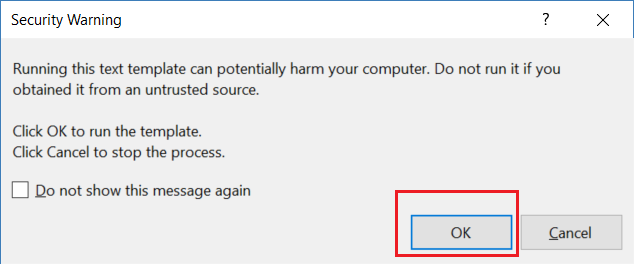












Graphical user interface, application

Description automatically generated

3.2. Controllers/GamersController.cs

Controllers --> Right click --> Add --> Controller

-->

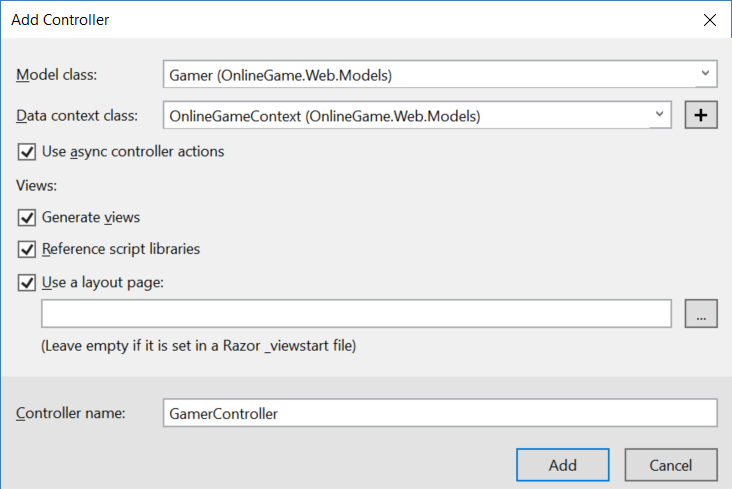
**MVC 5 Controller with views, using Entity Framework**

Graphical user interface, application

Description automatically generated

Graphical user interface, text, application

Description automatically generated



If you see the following error message, then you have to re-build solution before you create the controller.

Graphical user interface, text, application

Description automatically generated with medium confidence

It will automatically generate the controller, views, and several javascript and css files.

Table

Description automatically generated

4. OnlineGame.Web

4.1. Web.config



<system.web>

  <caching>

    <outputCacheSettings>

      <outputCacheProfiles>

        <clear />

        <add name="outputCacheProfile1" duration="60" varyByParam="none" />

      </outputCacheProfiles>

    </outputCacheSettings>

  </caching>

  <customErrors mode="On">

    <error statusCode="401" redirect="Error/UnauthorizedError" />

    <error statusCode="404" redirect="Error/NotFound" />

    <error statusCode="500" redirect="Error/InternalServerError" />

  </customErrors>

  <globalization culture="en-au" />

  <compilation debug="true" targetFramework="4.6.1" />

  <httpRuntime targetFramework="4.6.1" />

</system.web>

4.2. WebShared/CustomizeCacheAttribute.cs

using System.Web.Mvc;

using System.Web.Configuration;

namespace OnlineGame.Web.WebShared

{

    public class CustomizeCacheAttribute : OutputCacheAttribute

    {

        public CustomizeCacheAttribute(string cacheProfileName)

        {

            OutputCacheSettingsSection cacheSettings =

                (OutputCacheSettingsSection)WebConfigurationManager

                .GetSection("system.web/caching/outputCacheSettings");

            OutputCacheProfile cacheProfile = cacheSettings.OutputCacheProfiles[cacheProfileName];

            Duration = cacheProfile.Duration;

            VaryByParam = cacheProfile.VaryByParam;

            VaryByCustom = cacheProfile.VaryByCustom;

        }

    }

}

/\*

In Web.config

//<system.web>

//    <caching>

//        <outputCacheSettings>

//        <outputCacheProfiles>

//            <clear/>

//            <add name="outputCacheProfile1" duration="60" varyByParam="none"/>

//        </outputCacheProfiles>

//        </outputCacheSettings>

//    </caching>

//    <customErrors mode="On">

//        <error statusCode="401" redirect="Error/UnauthorizedError" />

//        <error statusCode="404" redirect="Error/NotFound" />

//        <error statusCode="500" redirect="Error/InternalServerError" />

//    </customErrors>

//    <globalization culture="en-au" />

//    <compilation debug="true" targetFramework="4.6.1" />

//    <httpRuntime targetFramework="4.6.1" />

//</system.web>

\*/

4.3. Controllers/GamerController.cs

using System;

using System.Collections.Generic;

using System.Data.Entity;

using System.Globalization;

using System.Linq;

using System.Threading.Tasks;

using[System.Net](http://system.net/);

using System.Web.Mvc;

using System.Web.UI;

using OnlineGame.Web.Models;

using OnlineGame.Web.WebShared;

using PagedList;

namespace OnlineGame.Web.Controllers

{

    public class GamerController : Controller

    {

        private OnlineGameContext db = new OnlineGameContext();

        // GET: Gamer

        [HttpGet]

        public async Task<ActionResult> Index()

        {

            return View(await db.Gamers.ToListAsync());

        }

        // GET: Gamer

        [HttpGet]

        [OutputCache(Duration = 10)]

        //[OutputCache(Duration = 10, VaryByParam = "None", Location = OutputCacheLocation.ServerAndClient)]

        //[OutputCache(Duration = 10, VaryByParam = "None", Location = OutputCacheLocation.Client)]

        public async Task<ActionResult> Index2()

        {

            System.Threading.Thread.Sleep(3000);

            ViewBag.ServerTime = DateTime.Now.ToString(CultureInfo.InvariantCulture);

            return View(await db.Gamers.ToListAsync());

        }

        // GET: Gamer

        [HttpGet]

        public async Task<ActionResult> Index3()

        {

            ViewBag.ServerTime = DateTime.Now.ToString(CultureInfo.InvariantCulture);

            return View(await db.Gamers.ToListAsync());

        }

        // GET: Gamer

        [HttpGet]

        public async Task<ActionResult> Index3V2()

        {

            ViewBag.ServerTime = DateTime.Now.ToString(CultureInfo.InvariantCulture);

            return View(await db.Gamers.ToListAsync());

        }

       //[ChildActionOnly] make the action to be accessible only by a child request,

        //so no one can make a direct URL request to this action.

        [ChildActionOnly]

        [HttpGet]

        [OutputCache(Duration = 10)]

        public string GetGamerCount()

        {

            System.Threading.Thread.Sleep(3000);

            return $"Gamer Count = {db.Gamers.Count()} At {DateTime.Now}";

        }

        [HttpGet]

        //[OutputCache(Duration = 60)]

        [OutputCache(CacheProfile = "outputCacheProfile1")]

        public async Task<ActionResult> Index4()

        {

            ViewBag.ServerTime = DateTime.Now.ToString(CultureInfo.InvariantCulture);

            return View(await db.Gamers.ToListAsync());

        }

        //[ChildActionOnly] make the action to be accessible only by a child request,

        //so no one can make a direct URL request to this action.

        [ChildActionOnly]

        [HttpGet]

        //[OutputCache(Duration = 60)]

        //[OutputCache(CacheProfile = "outputCacheProfile1")]   //This will thrwo exception

        [CustomizeCache("outputCacheProfile1")]

        public string GetGamerCount2()

        {

            System.Threading.Thread.Sleep(3000);

            return $"Gamer Count = {db.Gamers.Count()} At {DateTime.Now}";

        }

        //[OutputCache(Duration = 5, VaryByParam = "none")]

        [OutputCache(Duration = 60, VaryByParam = "gamerName")]

        public ActionResult Index5(string gamerName)

        {

            ViewBag.GamerName = gamerName ?? string.Empty;

            ViewBag.ServerTime = DateTime.Now.ToString(CultureInfo.InvariantCulture);

            return View();

        }

        //From T013

        // GET: Gamer

        [HttpGet]

        ////1.

        //[OutputCache(Duration = 5, VaryByParam = "none")]

        ////It means always cache the same contents.

        ////2.

        //[OutputCache(Duration = 60, VaryByParam = "\*")]

        ////It means for cache for every parameters,

        ////this is dangerous becuase of the view might have too many parameters.

        ////3.

        [OutputCache(Duration = 60, VaryByParam = "searchBy;searchText;pageNumber;sortBy")]

        public async Task<ActionResult> Index6(string searchBy, string searchText, int? pageNumber, string sortBy)

        {

            ViewBag.NameSort = String.IsNullOrEmpty(sortBy) ? "Name desc" : "";

            ViewBag.GenderSort = sortBy == "Gender" ? "Gender desc" : "Gender";

            List<Gamer> gamers = await db.Gamers.ToListAsync();

            if (searchBy == "Gender")

            {

                gamers = await db.Gamers

                    .Where(x => x.Gender == searchText || searchText == null)

                    .ToListAsync();

            }

            if (searchBy == "Name")

            {

                gamers = await db.Gamers

                    .Where(x => x.Name.Contains(searchText) || searchText == null)

                    .ToListAsync();

            }

            IOrderedEnumerable<Gamer> gamersOrderedEnumerable;

            switch (sortBy)

            {

                case "Name desc":

                    gamersOrderedEnumerable = gamers.OrderByDescending(x => x.Name);

                    break;

                case "Gender desc":

                    gamersOrderedEnumerable = gamers.OrderByDescending(x => x.Gender);

                    break;

                case "Gender":

                    gamersOrderedEnumerable = gamers.OrderBy(x => x.Gender);

                    break;

                default:

                    gamersOrderedEnumerable = gamers.OrderBy(x => x.Name);

                    break;

            }

            //1.

            //The first parameter is pagenumber

            //pageNumber ?? 1 means if the pageNumber==null, then pageNumber==1

            //2.

            //The 2nd parameter is page size.

            //We set page size is 5.

            //IPagedList<Gamer> gamerPagedList = gamers.ToPagedList(pageNumber ?? 1, 5);

            IPagedList<Gamer> gamerPagedList = gamersOrderedEnumerable.ToPagedList(pageNumber ?? 1, 5);

            ViewBag.ServerTime = DateTime.Now.ToString(CultureInfo.InvariantCulture);

            return View(gamerPagedList);

        }

        //From T013

        [HttpPost]

        public async Task<ActionResult> DeleteMultiple(IEnumerable<int> GamerIdsToDelete, string searchBy, string searchText, int? pageNumber, string sortBy)

        {

            //Delete a list of gamers

            List<Gamer> gamers = await db.Gamers.Where(g => GamerIdsToDelete.Contains(g.Id)).ToListAsync();

            gamers.ForEach(g => db.Gamers.Remove(g));

            await db.SaveChangesAsync();

            //Remove OutputCache

            //Reference:

            //<http://www.c-sharpcorner.com/code/1994/how-to-clear-output-cache-in-asp-net-mvc.aspx>

            //[https://forums.asp.net/t/2077235.aspx?How+to+clear+OutPutCache+Asp+net+Mvc](https://forums.asp.net/t/2077235.aspx?How%2Bto%2Bclear%2BOutPutCache%2BAsp%2Bnet%2BMvc)

            //1. Get the url for the action method:

            string staleItem = Url.Action("Index6", "Gamer");

            //2. Remove the item from cache

            if (staleItem != null) Response.RemoveOutputCacheItem(staleItem);

            return RedirectToAction("Index6", new { searchBy, searchText, pageNumber, sortBy });

        }

        [HttpGet]

        //[OutputCache(Duration = 10, VaryByParam = "None", Location = OutputCacheLocation.None)]

        //[OutputCache(Duration = 10, VaryByParam = "None", Location= OutputCacheLocation.Server)]

        [OutputCache(Duration = 10, VaryByParam = "None", Location = OutputCacheLocation.ServerAndClient)]

        public ActionResult Index7()

        {

            ViewBag.ServerTime = DateTime.Now.ToString(CultureInfo.InvariantCulture);

            return View();

        }

        // GET: Gamer/Details/5

        [HttpGet]

        public async Task<ActionResult> Details(int? id)

        {

            if (id == null)

            {

                return new HttpStatusCodeResult(HttpStatusCode.BadRequest);

            }

            Gamer gamer = await db.Gamers.FindAsync(id);

            if (gamer == null)

            {

                return HttpNotFound();

            }

            return View(gamer);

        }

        // GET: Gamer/Create

        [HttpGet]

        public ActionResult Create()

        {

            return View();

        }

       // POST: Gamer/Create

        // To protect from overposting attacks, please enable the specific properties you want to bind to, for

        // more details see <https://go.microsoft.com/fwlink/?LinkId=317598>.

        [HttpPost]

        [ValidateAntiForgeryToken]

        public async Task<ActionResult> Create([Bind(Include = "Id,Name,Gender,EmailAddress")] Gamer gamer)

        {

            if (ModelState.IsValid)

            {

                db.Gamers.Add(gamer);

                await db.SaveChangesAsync();

                return RedirectToAction("Index");

            }

            return View(gamer);

        }

        // GET: Gamer/Edit/5

        [HttpGet]

        public async Task<ActionResult> Edit(int? id)

        {

            if (id == null)

            {

                return new HttpStatusCodeResult(HttpStatusCode.BadRequest);

            }

            Gamer gamer = await db.Gamers.FindAsync(id);

            if (gamer == null)

            {

                return HttpNotFound();

            }

            return View(gamer);

        }

        // POST: Gamer/Edit/5

        // To protect from overposting attacks, please enable the specific properties you want to bind to, for

        // more details see <https://go.microsoft.com/fwlink/?LinkId=317598>.

        [HttpPost]

        [ValidateAntiForgeryToken]

        public async Task<ActionResult> Edit([Bind(Include = "Id,Name,Gender,EmailAddress")] Gamer gamer)

        {

            if (ModelState.IsValid)

            {

                db.Entry(gamer).State = EntityState.Modified;

                await db.SaveChangesAsync();

                return RedirectToAction("Index");

            }

            return View(gamer);

        }

        // GET: Gamer/Delete/5

        [HttpGet]

        public async Task<ActionResult> Delete(int? id)

        {

            if (id == null)

            {

                return new HttpStatusCodeResult(HttpStatusCode.BadRequest);

            }

            Gamer gamer = await db.Gamers.FindAsync(id);

            if (gamer == null)

            {

                return HttpNotFound();

            }

            return View(gamer);

        }

        // POST: Gamer/Delete/5

        [HttpPost, ActionName("Delete")]

        [ValidateAntiForgeryToken]

        public async Task<ActionResult> DeleteConfirmed(int id)

        {

            Gamer gamer = await db.Gamers.FindAsync(id);

            db.Gamers.Remove(gamer);

            await db.SaveChangesAsync();

            return RedirectToAction("Index");

        }

        protected override void Dispose(bool disposing)

        {

            if (disposing)

            {

                db.Dispose();

            }

            base.Dispose(disposing);

        }

    }

}

/\*

1.

//[HttpGet]

//[OutputCache(Duration = 10)]

//public async Task<ActionResult> Index2()

//{

//    System.Threading.Thread.Sleep(3000);

//    return View(await db.Gamers.ToListAsync());

//}

1.1.

When we first time navigate to /Gamer/Index2,

It will take 3 seconds to retrieve the list of data.

The view output cache will remain for 10 seconds.

If we refresh the view during that 10 seconds,

we will get the data from cached response.

After that 10 seconds, the cache will be expired.

If you navigate to /Gamer/Index2 again,

The view output cache will remain for another 10 seconds again.

------------------------------------------

2.

// GET: Gamer

//[HttpGet]

//public async Task<ActionResult> Index3()

//{

//    return View(await db.Gamers.ToListAsync());

//}

...

//[HttpGet]

//[ChildActionOnly]

//[OutputCache(Duration = 10)]

//public string GetGamerCount()

//{

//    System.Threading.Thread.Sleep(3000);

//    return $"Gamer Count = {db.Gamers.Count()} At {DateTime.Now}";

//}

2.1.

[ChildActionOnly] make the action to be accessible only by a child request,

so no one can make a direct URL request to this action.

2.2.

In the Views/Gamer/Index3.cshtml

//@Html.Action("GetGamerCount")

This action will store the result in the cache for 10 seconds.

If we refresh the view during that 10 seconds,

we will get the data from cached response.

After that 10 seconds, the cache will be expired.

This action will store the result in the cache for another 10 seconds again.

2.3.

In the Views/Gamer/Index3.cshtml

and the In the Views/Gamer/Index3V2.cshtml.

It takes 3 seconds load Gamer/Index3 for the first time.

Now, navigate to Gamer/Index3V2 and notice it loads instantly.

We notice that the server time of the GetGamerCount action in both views is the same.

It proves that both views are sharing the same cached response of the GetGamerCount action.

------------------------------------------

3.

////[OutputCache(Duration = 5, VaryByParam = "none")]

//[OutputCache(Duration = 60, VaryByParam = "gamerName")]

//public ActionResult Index5(string gamerName)

//{

//    ViewBag.GamerName = gamerName ?? string.Empty;

//    return View();

//}

3.1.

When the action has no [HttpGet] or [HttpPost],

that means it can be booth [HttpGet] and [HttpPost] action.

3.2.

In the Views/Gamer/Index3.cshtml

//<b>@ViewBag.GamerName</b>.

//<input type="text" name="gamerName"/>

the ViewBag.GamerName will display whatever you type in the textbox.

3.3.

//[OutputCache(Duration = 5, VaryByParam = "none")]

When we first time navigate to /Gamer/Index5,

The view output cache will remain for 5 seconds.

In the Views/Gamer/Index3.cshtml

//<b>@ViewBag.GamerName</b>.

//<input type="text" name="gamerName"/>

the ViewBag.GamerName will display whatever you type in the textbox for the first time.

During that 5 seconds, no matter what you input to that text textbox,

ViewBag.GamerName will remain the same as you input for the first time.

After that 5 seconds, the cache will be expired.

the ViewBag.GamerName will display whatever you type in the textbox again.

The way to fix this issue is using

//[OutputCache(Duration = 60, VaryByParam = "gamerName")]

3.4.

//[OutputCache(Duration = 60, VaryByParam = "gamerName")]

In the Views/Gamer/Index3.cshtml

//<b>@ViewBag.GamerName</b>.

//<input type="text" name="gamerName"/>

the ViewBag.GamerName will display whatever you type in the textbox.

Since "VaryByParam" is set to "gamerName",

All different responses will be cached for this Web form

------------------------------------------

4.

//[OutputCache(Duration = 10, VaryByParam = "None", Location = OutputCacheLocation.ServerAndClient)]

//public ActionResult Index7()

4.1.

There are 3 locations option can store the cached response, Server, Client, and Proxy server.

4.1.1.

//OutputCacheLocation.Any

By default, cached response is at any available locations.

4.1.2.

//OutputCacheLocation.Client

4.1.3.

OutputCacheLocation.Downstream

Any HTTP 1.1 devices which includes proxy servers.

4.1.4.

//OutputCacheLocation.None

Do not store cache.

4.1.5.

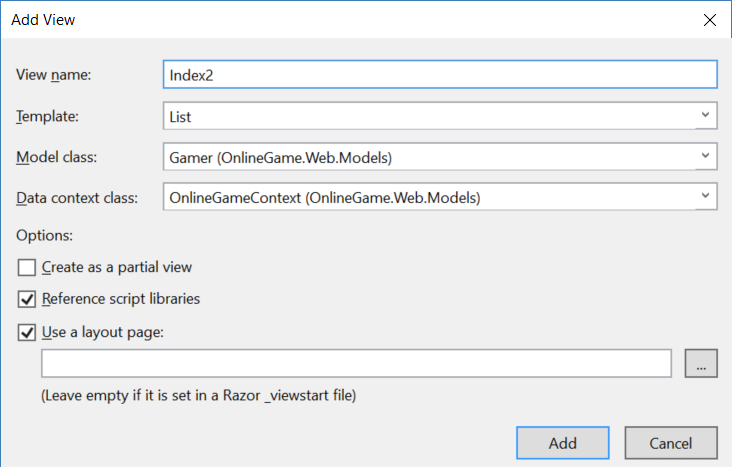
//OutputCacheLocation.Server

4.1.6.

//OutputCacheLocation.ServerAndClient

\*/

4.4. Views/Gamer/Index2.cshtml



@using System.Globalization

@model IEnumerable<OnlineGame.Web.Models.Gamer>

@{

    ViewBag.Title = "Gamer Index2";

}

<h2>Gamer Index2</h2>

<p>

    @Html.ActionLink("Create New", "Create")

</p>

<b>Server side Time : @ViewBag.ServerTime</b><br />

<b>

    <script type="text/javascript">

            document.write("Client Side Time : " + Date());

    </script>

</b>

<p>

    Gamers retrieved At @DateTime.Now.ToString(CultureInfo.InvariantCulture)

</p>

<table class="table">

    <tr>

        <th>

            @Html.DisplayNameFor(model => model.Name)

        </th>

        <th>

            @Html.DisplayNameFor(model => model.Gender)

        </th>

        <th>

            @Html.DisplayNameFor(model => model.EmailAddress)

        </th>

        <th></th>

    </tr>

    @foreach (var item in Model)

    {

        <tr>

            <td>

                @Html.DisplayFor(modelItem => item.Name)

            </td>

            <td>

                @Html.DisplayFor(modelItem => item.Gender)

            </td>

            <td>

                @Html.DisplayFor(modelItem => item.EmailAddress)

            </td>

            <td>

                @Html.ActionLink("Edit", "Edit", new { id = item.Id }) |

                @Html.ActionLink("Details", "Details", new { id = item.Id }) |

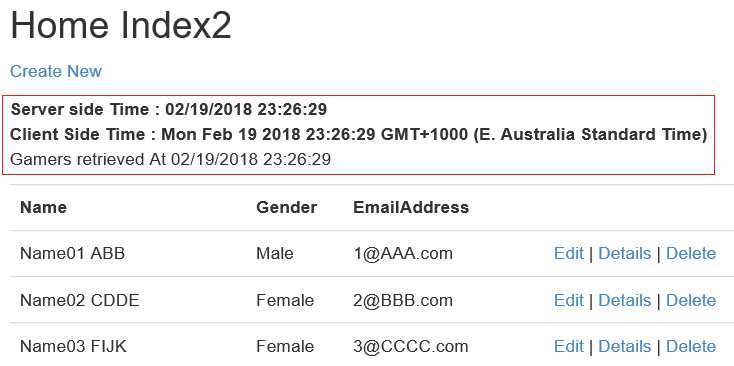
                @Html.ActionLink("Delete", "Delete", new { id = item.Id })

            </td>

        </tr>

    }

</table>



<http://localhost:60116/Gamer/Index2>

Keep Refreshing, and look at the time stamp.

1.

//[HttpGet]

//[OutputCache(Duration = 10)]

//public async Task<ActionResult> Index2()

//{

//    System.Threading.Thread.Sleep(3000);

//    return View(await db.Gamers.ToListAsync());

//}

1.1.

When we first time navigate to /Gamer/Index2,

It will take 3 seconds to retrieve the list of data.

The view output cache will remain for 10 seconds.

If we refresh the view during that 10 seconds,

we will get the data from cached response.

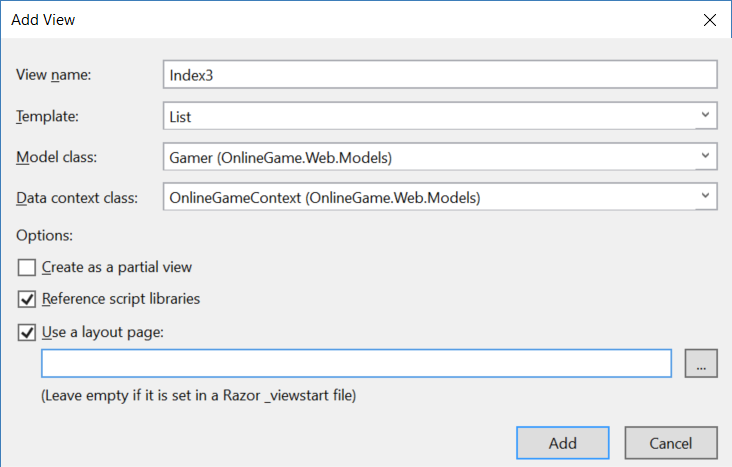
After that 10 seconds, the cache will be expired.

If you navigate to /Gamer/Index2 again,

The view output cache will remain for another 10 seconds again.

4.5. Views/Gamer/Index3.cshtml - The Child Action Cache is shared.

4.5.1. Views/Gamer/Index3.cshtml



@using System.Globalization

@model IEnumerable<OnlineGame.Web.Models.Gamer>

@{

    ViewBag.Title = "Gamer Index3";

}

<h2>Gamer Index3</h2>

<p>

    @Html.ActionLink("Create New", "Create")

</p>

<b>Server side Time : @ViewBag.ServerTime</b><br />

<b>

    <script type="text/javascript">

            document.write("Client Side Time : " + Date());

    </script>

</b>

<p>

    Gamers retrieved At @DateTime.Now.ToString(CultureInfo.InvariantCulture)

</p>

<p>

    @Html.Action("GetGamerCount")

</p>

<table class="table">

    <tr>

        <th>

            @Html.DisplayNameFor(model => model.Name)

        </th>

        <th>

            @Html.DisplayNameFor(model => model.Gender)

        </th>

        <th>

            @Html.DisplayNameFor(model => model.EmailAddress)

        </th>

        <th></th>

    </tr>

    @foreach (var item in Model)

    {

        <tr>

            <td>

                @Html.DisplayFor(modelItem => item.Name)

            </td>

            <td>

                @Html.DisplayFor(modelItem => item.Gender)

            </td>

            <td>

                @Html.DisplayFor(modelItem => item.EmailAddress)

            </td>

            <td>

                @Html.ActionLink("Edit", "Edit", new { id = item.Id }) |

                @Html.ActionLink("Details", "Details", new { id = item.Id }) |

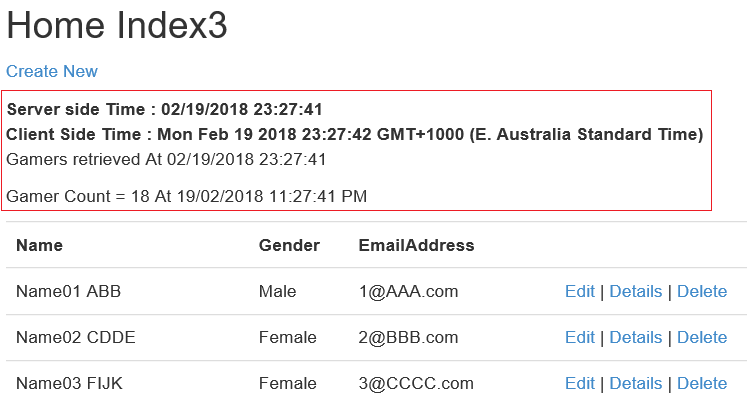
                @Html.ActionLink("Delete", "Delete", new { id = item.Id })

            </td>

        </tr>

    }

</table>



[http://localhost:60116/Gamer/Index3](http://localhost:60116/Gamer/Index2)

Keep Refreshing, and look at the time stamp.

2.

// GET: Gamer

//[HttpGet]

//public async Task<ActionResult> Index3()

//{

//    return View(await db.Gamers.ToListAsync());

//}

...

//[HttpGet]

//[ChildActionOnly]

//[OutputCache(Duration = 10)]

//public string GetGamerCount()

//{

//    System.Threading.Thread.Sleep(3000);

//    return $"Gamer Count = {db.Gamers.Count()} At {DateTime.Now}";

//}

2.1.

[ChildActionOnly] make the action to be accessible only by a child request,

so no one can make a direct URL request to this action.

2.2.

In the Views/Gamer/Index3.cshtml

//@Html.Action("GetGamerCount")

This action will store the result in the cache for 10 seconds.

If we refresh the view during that 10 seconds,

we will get the data from cached response.

After that 10 seconds, the cache will be expired.

This action will store the result in the cache for another 10 seconds again.

2.3.

In the Views/Gamer/Index3.cshtml

and the In the Views/Gamer/Index3V2.cshtml.

It takes 3 seconds load Gamer/Index3 for the first time.

Now, navigate to Gamer/Index3V2 and notice it loads instantly.

We notice that the server time of the GetGamerCount action in both views is the same.

It proves that both views are sharing the same cached response of the GetGamerCount  action.

4.5.2. Views/Gamer/Index3V2.cshtml

@using System.Globalization

@model IEnumerable<OnlineGame.Web.Models.Gamer>

@{

    ViewBag.Title = "Gamer Index3V2";

}

<h2>Gamer Index3V2</h2>

<p>

    @Html.ActionLink("Create New", "Create")

</p>

<b>Server side Time : @ViewBag.ServerTime</b><br />

<b>

    <script type="text/javascript">

            document.write("Client Side Time : " + Date());

    </script>

</b>

<p>

    Gamers retrieved At @DateTime.Now.ToString(CultureInfo.InvariantCulture)

</p>

<p>

    @Html.Action("GetGamerCount")

</p>

<table class="table">

    <tr>

        <th>

            @Html.DisplayNameFor(model => model.Name)

        </th>

        <th>

            @Html.DisplayNameFor(model => model.Gender)

        </th>

        <th>

            @Html.DisplayNameFor(model => model.EmailAddress)

        </th>

        <th></th>

    </tr>

    @foreach (var item in Model)

    {

        <tr>

            <td>

                @Html.DisplayFor(modelItem => item.Name)

            </td>

            <td>

                @Html.DisplayFor(modelItem => item.Gender)

            </td>

            <td>

                @Html.DisplayFor(modelItem => item.EmailAddress)

            </td>

            <td>

                @Html.ActionLink("Edit", "Edit", new { id = item.Id }) |

                @Html.ActionLink("Details", "Details", new { id = item.Id }) |

                @Html.ActionLink("Delete", "Delete", new { id = item.Id })

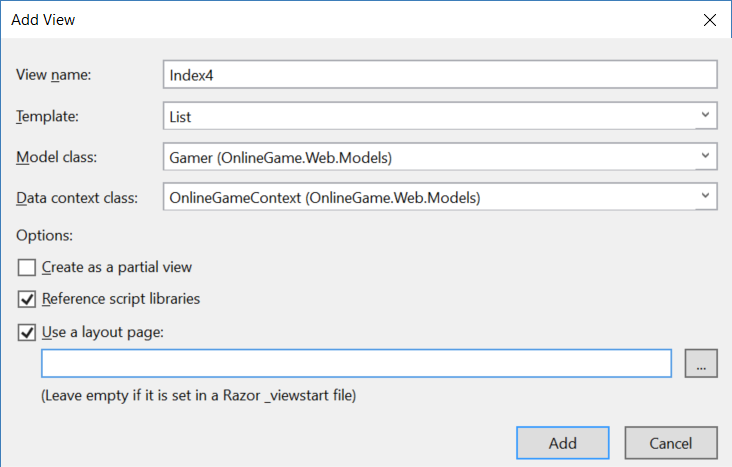
            </td>

        </tr>

    }

</table>

4.6. Views/Gamer/Index4.cshtml



@using System.Globalization

@model IEnumerable<OnlineGame.Web.Models.Gamer>

@{

    ViewBag.Title = "Gamer Index4";

}

<h2>Gamer Index4</h2>

<p>

    @Html.ActionLink("Create New", "Create")

</p>

<b>Server side Time : @ViewBag.ServerTime</b><br />

<b>

    <script type="text/javascript">

            document.write("Client Side Time : " + Date());

    </script>

</b>

<p>

    Gamers retrieved At @DateTime.Now.ToString(CultureInfo.InvariantCulture)

</p>

<p>

    @Html.Action("GetGamerCount2")

</p>

<table class="table">

    <tr>

        <th>

            @Html.DisplayNameFor(model => model.Name)

        </th>

        <th>

            @Html.DisplayNameFor(model => model.Gender)

        </th>

        <th>

            @Html.DisplayNameFor(model => model.EmailAddress)

        </th>

        <th></th>

    </tr>

    @foreach (var item in Model)

    {

        <tr>

            <td>

                @Html.DisplayFor(modelItem => item.Name)

            </td>

            <td>

                @Html.DisplayFor(modelItem => item.Gender)

            </td>

            <td>

                @Html.DisplayFor(modelItem => item.EmailAddress)

            </td>

            <td>

                @Html.ActionLink("Edit", "Edit", new { id = item.Id }) |

                @Html.ActionLink("Details", "Details", new { id = item.Id }) |

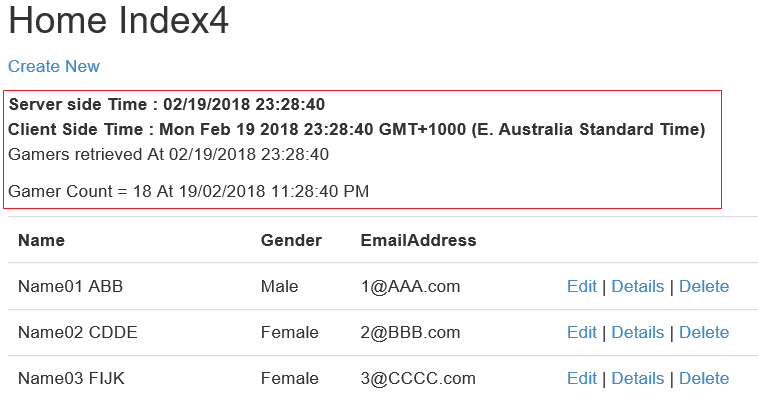
                @Html.ActionLink("Delete", "Delete", new { id = item.Id })

            </td>

        </tr>

    }

</table>



[http://localhost:60116/Gamer/Index3](http://localhost:60116/Gamer/Index2)

Keep Refreshing, and look at the time stamp.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

5. OnlineGame.Web - VaryByParam

5.1. Controllers/GamerController.cs

//[OutputCache(Duration = 5, VaryByParam = "none")]

[OutputCache(Duration = 60, VaryByParam = "gamerName")]

public ActionResult Index5(string gamerName)

{

    ViewBag.GamerName = gamerName ?? string.Empty;

    ViewBag.ServerTime = DateTime.Now.ToString(CultureInfo.InvariantCulture);

    return View();

}

/\*

3.

////[OutputCache(Duration = 5, VaryByParam = "none")]

//[OutputCache(Duration = 60, VaryByParam = "gamerName")]

//public ActionResult Index5(string gamerName)

//{

//    ViewBag.GamerName = gamerName ?? string.Empty;

//    return View();

//}

3.1.

When the action has no [HttpGet] or [HttpPost],

that means it can be booth [HttpGet] and [HttpPost] action.

3.2.

In the Views/Gamer/Index3.cshtml

//<b>@ViewBag.GamerName</b>.

//<input type="text" name="gamerName"/>

the ViewBag.GamerName will display whatever you type in the textbox.

3.3.

//[OutputCache(Duration = 5, VaryByParam = "none")]

When we first time navigate to /Gamer/Index5,

The view output cache will remain for 5 seconds.

In the Views/Gamer/Index3.cshtml

//<b>@ViewBag.GamerName</b>.

//<input type="text" name="gamerName"/>

the ViewBag.GamerName will display whatever you type in the textbox for the first time.

During that 5 seconds, no matter what you input to that text textbox,

ViewBag.GamerName will remain the same as you input for the first time.

After that 5 seconds, the cache will be expired.

the ViewBag.GamerName will display whatever you type in the textbox again.

The way to fix this issue is using

//[OutputCache(Duration = 60, VaryByParam = "gamerName")]

3.4.

//[OutputCache(Duration = 60, VaryByParam = "gamerName")]

In the Views/Gamer/Index3.cshtml

//<b>@ViewBag.GamerName</b>.

//<input type="text" name="gamerName"/>

the ViewBag.GamerName will display whatever you type in the textbox.

Since "VaryByParam" is set to "gamerName",

All different responses will be cached for this Web form

\*/

5.2. Views/Gamer/Index5.cshtml

@using System.Globalization

@{

    ViewBag.Title = "Gamer Index5";

}

<h2>ViewBag.Title</h2>

<p>

    Gamers retrieved At @DateTime.Now.ToString(CultureInfo.InvariantCulture)

</p>

<b>Server side Time : @ViewBag.ServerTime</b><br />

<b>

    <script type="text/javascript">

            document.write("Client Side Time : " + Date());

    </script>

</b>

<b>@ViewBag.GamerName</b>

@using (Html.BeginForm("Index5", "Gamer"))

{

    <input type="text" name="gamerName" />

    <input type="submit" />

}

Text, letter

Description automatically generated

6. OnlineGame.Web : Location= OutputCacheLocation.Any

6.1. Controllers/GamerController.cs

// GET: Gamer

[HttpGet]

[OutputCache(Duration = 10)]

//[OutputCache(Duration = 10, VaryByParam = "None", Location = OutputCacheLocation.ServerAndClient)]

//[OutputCache(Duration = 10, VaryByParam = "None", Location = OutputCacheLocation.Client)]

public async Task<ActionResult> Index2()

{

    System.Threading.Thread.Sleep(3000);

    ViewBag.ServerTime = DateTime.Now.ToString(CultureInfo.InvariantCulture);

    return View(await db.Gamers.ToListAsync());

}

[HttpGet]

//[OutputCache(Duration = 10, VaryByParam = "None", Location = OutputCacheLocation.None)]

//[OutputCache(Duration = 10, VaryByParam = "None", Location= OutputCacheLocation.Server)]

[OutputCache(Duration = 10, VaryByParam = "None", Location = OutputCacheLocation.ServerAndClient)]

public ActionResult Index7()

{

    ViewBag.ServerTime = DateTime.Now.ToString(CultureInfo.InvariantCulture);

    return View();

}

/\*

4.

//[OutputCache(Duration = 10, VaryByParam = "None", Location = OutputCacheLocation.ServerAndClient)]

//public ActionResult Index7()

4.1.

There are 3 locations option can store the cached response, Server, Client, and Proxy server.

4.1.1.

//OutputCacheLocation.Any

By default, cached response is at any available locations.

4.1.2.

//OutputCacheLocation.Client

4.1.3.

OutputCacheLocation.Downstream

Any HTTP 1.1 devices which includes proxy servers.

4.1.4.

//OutputCacheLocation.None

Do not store cache.

4.1.5.

//OutputCacheLocation.Server

4.1.6.

//OutputCacheLocation.ServerAndClient

\*/

6.2. Views/Gamer/Index7.cshtml

@{

    ViewBag.Title = "Gamer Index7";

}

<h2>Gamer Index7</h2>

<b>Server side Time : @ViewBag.ServerTime</b><br/>

<b>

    <script type="text/javascript">

            document.write("Client Side Time : " + Date());

    </script>

</b>

6.3. Views/Gamer/Index2.cshtml

@using System.Globalization

@model IEnumerable<OnlineGame.Web.Models.Gamer>

@{

    ViewBag.Title = "Gamer Index2";

}

<h2>Gamer Index2</h2>

<p>

    @Html.ActionLink("Create New", "Create")

</p>

<b>Server side Time : @ViewBag.ServerTime</b><br />

<b>

    <script type="text/javascript">

            document.write("Client Side Time : " + Date());

    </script>

</b>

<p>

    Gamers retrieved At @DateTime.Now.ToString(CultureInfo.InvariantCulture)

</p>

<table class="table">

    <tr>

        <th>

            @Html.DisplayNameFor(model => model.Name)

        </th>

        <th>

            @Html.DisplayNameFor(model => model.Gender)

        </th>

        <th>

            @Html.DisplayNameFor(model => model.EmailAddress)

        </th>

        <th></th>

    </tr>

    @foreach (var item in Model)

    {

        <tr>

            <td>

                @Html.DisplayFor(modelItem => item.Name)

            </td>

            <td>

                @Html.DisplayFor(modelItem => item.Gender)

            </td>

            <td>

                @Html.DisplayFor(modelItem => item.EmailAddress)

            </td>

            <td>

                @Html.ActionLink("Edit", "Edit", new { id = item.Id }) |

                @Html.ActionLink("Details", "Details", new { id = item.Id }) |

                @Html.ActionLink("Delete", "Delete", new { id = item.Id })

            </td>

        </tr>

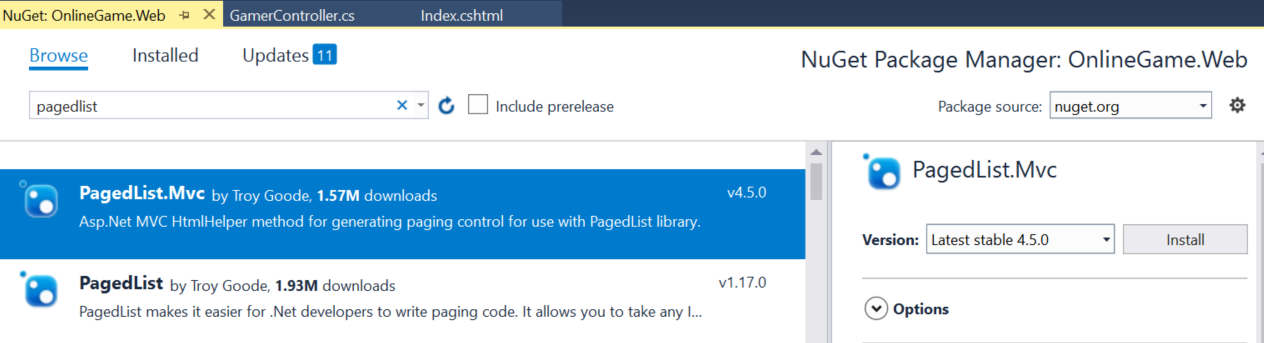
    }

</table>

7. OnlineGame.Web - VaryByParam with GridView

7.1. Install NuGet Package

When we install "**PagedList.Mvc**", it will automatically install "**PagedList**".



7.2. Controllers/GamerController.cs

//From T013

// GET: Gamer

[HttpGet]

////1.

//[OutputCache(Duration = 5, VaryByParam = "none")]

////It means always cache the same contents.

////2.

//[OutputCache(Duration = 60, VaryByParam = "\*")]

////It means for cache for every parameters,

////this is dangerous becuase of the view might have too many parameters.

////3.

[OutputCache(Duration = 60, VaryByParam = "searchBy;searchText;pageNumber;sortBy")]

public async Task<ActionResult> Index6(string searchBy, string searchText, int? pageNumber, string sortBy)

{

    ViewBag.NameSort = String.IsNullOrEmpty(sortBy) ? "Name desc" : "";

    ViewBag.GenderSort = sortBy == "Gender" ? "Gender desc" : "Gender";

    List<Gamer> gamers = await db.Gamers.ToListAsync();

    if (searchBy == "Gender")

    {

        gamers = await db.Gamers

            .Where(x => x.Gender == searchText || searchText == null)

            .ToListAsync();

    }

    if (searchBy == "Name")

    {

        gamers = await db.Gamers

            .Where(x => x.Name.Contains(searchText) || searchText == null)

            .ToListAsync();

    }

    IOrderedEnumerable<Gamer> gamersOrderedEnumerable;

    switch (sortBy)

    {

        case "Name desc":

            gamersOrderedEnumerable = gamers.OrderByDescending(x => x.Name);

            break;

        case "Gender desc":

            gamersOrderedEnumerable = gamers.OrderByDescending(x => x.Gender);

            break;

        case "Gender":

            gamersOrderedEnumerable = gamers.OrderBy(x => x.Gender);

            break;

        default:

            gamersOrderedEnumerable = gamers.OrderBy(x => x.Name);

            break;

    }

    //1.

    //The first parameter is pagenumber

    //pageNumber ?? 1 means if the pageNumber==null, then pageNumber==1

    //2.

    //The 2nd parameter is page size.

    //We set page size is 5.

    //IPagedList<Gamer> gamerPagedList = gamers.ToPagedList(pageNumber ?? 1, 5);

    IPagedList<Gamer> gamerPagedList = gamersOrderedEnumerable.ToPagedList(pageNumber ?? 1, 5);

    ViewBag.ServerTime = DateTime.Now.ToString(CultureInfo.InvariantCulture);

    return View(gamerPagedList);

}

//From T013

[HttpPost]

public async Task<ActionResult> DeleteMultiple(IEnumerable<int> GamerIdsToDelete, string searchBy, string searchText, int? pageNumber, string sortBy)

{

    //Delete a list of gamers

    List<Gamer> gamers = await db.Gamers.Where(g => GamerIdsToDelete.Contains(g.Id)).ToListAsync();

    gamers.ForEach(g => db.Gamers.Remove(g));

    await db.SaveChangesAsync();

    //Remove OutputCache

    //Reference:

    //<http://www.c-sharpcorner.com/code/1994/how-to-clear-output-cache-in-asp-net-mvc.aspx>

    //[https://forums.asp.net/t/2077235.aspx?How+to+clear+OutPutCache+Asp+net+Mvc](https://forums.asp.net/t/2077235.aspx?How%2Bto%2Bclear%2BOutPutCache%2BAsp%2Bnet%2BMvc)

    //1. Get the url for the action method:

    string staleItem = Url.Action("Index6", "Gamer");

    //2. Remove the item from cache

    if (staleItem != null) Response.RemoveOutputCacheItem(staleItem);

    return RedirectToAction("Index6", new { searchBy, searchText, pageNumber, sortBy });

}

7.3. Views/Gamer/Index6.cshtml

@using System.Globalization

@using OnlineGame.Web.Models

@using PagedList

@using PagedList.Mvc

@\*@model IEnumerable<Gamer>\*@

@model IPagedList<Gamer>

@{

    ViewBag.Title = "Gamer Index6";

}

<script src="~/Scripts/jquery-1.10.2.min.js" type="text/javascript"></script>

<script type="text/javascript" language="javascript">

    $(function () {

        $('#SelectAll').click(function () {

            $("input[name='GamerIdsToDelete']").prop("checked", this.checked);

            //1.

            //this.checked means $("#SelectAll").checked

            //if $("#SelectAll").checked==true, then

            //$("input[name='GamerIdsToDelete']").prop("checked", true);

            //if $("#SelectAll").checked==false, then

            //$("input[name='GamerIdsToDelete']").prop("checked", false);

            //2.

            //$("input[name='GamerIdsToDelete']") will select all the elements which name==GamerIdsToDelete.

            //$("input['#GamerIdsToDelete']") will select all only one element which Id==GamerIdsToDelete.

            $("input[name='GamerIdsToDelete']").click(function () {

                if ($("input[name='GamerIdsToDelete']").length === $("input[name='GamerIdsToDelete']:checked").length) {

                    $("#SelectAll").prop("checked", "checked");

                }

                else {

                    $("#SelectAll").removeProp("checked");

                }

            });

            //1.

            //When any of name==GamerIdsToDelete elements has been ckicked,

            //if all input[name='GamerIdsToDelete'] have been checked,

            //then the $("#SelectAll") must be checked.

            //Otherwise, the $("#SelectAll") is un-checked.

        });

        $("#btnDeleteSelected").click(function () {

            var count = $("input[name='GamerIdsToDelete']:checked").length;

            if (count === 0) {

                alert("Please select items to delete.");

                return false;

            }

            else {

                return confirm(count + " row(s) will be deleted. Are you sure to continue.");

            }

        });

    });

</script>

<h2>@ViewBag.Title</h2>

<p>

    Gamers retrieved At @DateTime.Now.ToString(CultureInfo.InvariantCulture)

</p>

<b>Server side Time : @ViewBag.ServerTime</b><br />

<b>

    <script type="text/javascript">

        document.write("Client Side Time : " + Date());

    </script>

</b>

<p>

    @Html.ActionLink("Create New", "Create")

</p>

<p>

    @using (Html.BeginForm("Index6", "Gamer", FormMethod.Get))

    {

        <b>Search By:</b><br />

        @Html.RadioButton("searchBy", "Name", true) <text>Name</text>

        @Html.RadioButton("searchBy", "Gender") <text>Gender</text><br />

        @Html.TextBox("searchText") <br />

        <input type="submit" value="Go" />

    }

</p>

@using (Html.BeginForm("DeleteMultiple", "Gamer", new

{

    searchBy = Request.QueryString["searchBy"],

    searchText = Request.QueryString["searchText"],

    pageNumber = Request.QueryString["pageNumber"],

    sortBy = Request["sortBy"]  //Request from ViewBag

}, FormMethod.Post))

{

    <table class="table">

        <tr>

            <th>

                <input type="checkbox" name="SelectAll" id="SelectAll" />

            </th>

            <th>

                @\*@Html.DisplayNameFor(model => model.Name)\*@

                @\*@Html.DisplayNameFor(model => model.First().Name)\*@

                @Html.ActionLink("Name", "Index6", new

                {

                    sortBy = ViewBag.NameSort,

                    searchBy = Request.QueryString["searchBy"],

                    searchText = Request.QueryString["searchText"],

                })

                @\*<a href="/?sortBy=Name%20desc">Name</a>\*@

            </th>

            <th>

                @\*@Html.DisplayNameFor(model => model.Gender)\*@

                @\*@Html.DisplayNameFor(model => model.First().Gender)\*@

                @Html.ActionLink("Gender", "Index6", new

                {

                    sortBy = ViewBag.GenderSort,

                    searchBy = Request.QueryString["searchBy"],

                    searchText = Request.QueryString["searchText"],

                })

                @\*<a href="/?sortBy=Gender">Gender</a>\*@

            </th>

            <th>

                @\*@Html.DisplayNameFor(model => model.EmailAddress)\*@

                @Html.DisplayNameFor(model => model.First().EmailAddress)

            </th>

            <th>

                Action

            </th>

        </tr>

        @if (!Model.Any())

        {

            <tr>

                <td colspan="5">

                    No matched records.

                </td>

            </tr>

        }

        @foreach (Gamer item in Model)

        {

            <tr>

                <td>

                    <input type="checkbox" name="GamerIdsToDelete" id="GamerIdsToDelete" value="@item.Id" />

                </td>

                <td>

                    @Html.DisplayFor(modelItem => item.Name)

                </td>

                <td>

                    @Html.DisplayFor(modelItem => item.Gender)

                </td>

                <td>

                    @Html.DisplayFor(modelItem => item.EmailAddress)

                </td>

                <td>

                    @Html.ActionLink("Edit", "Edit", new { id = item.Id }) |

                    @Html.ActionLink("Details", "Details", new { id = item.Id }) |

                    @Html.ActionLink("Delete", "Delete", new { id = item.Id })

                </td>

            </tr>

        }

        <tr>

            <td colspan="5">

                <input type="submit" value="Delete Selected" id="btnDeleteSelected" name="btnDeleteSelected" />

            </td>

        </tr>

    </table>

}

@\*@Html.PagedListPager(Model, pageNumber => Url.Action("Index6",

    new

    {

        //pageNumber = pageNumber,

        pageNumber,

        searchBy = Request.QueryString["searchBy"],

        searchText = Request.QueryString["searchText"]

    }))\*@

@\*@Html.PagedListPager(Model, pageNumber => Url.Action("Index6",

    new

    {

        //pageNumber = pageNumber,

        pageNumber,

        searchBy = Request.QueryString["searchBy"],

        searchText = Request.QueryString["searchText"]

    }),

    new PagedListRenderOptions{ Display = PagedListDisplayMode.IfNeeded })\*@

@\*@Html.PagedListPager(Model, pageNumber => Url.Action("Index6",

    new

    {

        //pageNumber = pageNumber,

        pageNumber,

        searchBy = Request.QueryString["searchBy"],

        searchText = Request.QueryString["searchText"]

    }),

    new PagedListRenderOptions

    {

        Display = PagedListDisplayMode.IfNeeded,

        DisplayPageCountAndCurrentLocation = true

    })\*@

@Html.PagedListPager(Model, pageNumber => Url.Action("Index6",

    new

    {

//pageNumber = pageNumber,

pageNumber,

        searchBy = Request.QueryString["searchBy"],

        searchText = Request.QueryString["searchText"],

        sortBy = Request["sortBy"]  //Request from ViewBag

}),

    new PagedListRenderOptions

    {

        Display = PagedListDisplayMode.IfNeeded,

        DisplayPageCountAndCurrentLocation = true,

        DisplayItemSliceAndTotal = true

    })

@\*

1.

//@Html.PagedListPager(Model, pageNumber => Url.Action("Index6",

//    new {

//        //pageNumber = pageNumber,

//        pageNumber,

//        searchBy = Request.QueryString["searchBy"],

//        searchText = Request.QueryString["searchText"] }))

1.1.

The PagedListPager() 1st parameter is IPagedList

which is the collection of gamers of current page.

1.2.

The PagedListPager() 2nd parameter is Func<int,string> generatePageURL

which we use Url.Action() to generate the Func<int,string>.

In this case, Func<int,string> means that

the input parameter is int, and the output is a string.

1.2.1.

The input parameter is the pageNumber which comes from the query string.

1.2.2.

The output is a string which is the generatePageURL.

In this case, it is Url.Action().

1.2.2.1.

The Url.Action() 1st parameter is action name which is "Index6" action.

1.2.2.2.

The Url.Action() 2nd parameter is the route value.

1.2.2.2.1.

searchBy parameter should come from the query string, Request.QueryString["searchBy"].

1.2.2.2.2.

searchText parameter should come from the query string, Request.QueryString["searchText"].

1.3.

It will display the page number even there is only one page.

---------------------------------------

2.

//@Html.PagedListPager(Model, pageNumber => Url.Action("Index6",

//    new

//    {

//        //pageNumber = pageNumber,

//        pageNumber,

//        searchBy = Request.QueryString["searchBy"],

//        searchText = Request.QueryString["searchText"]

//    }),

//    new PagedListRenderOptions{ Display = PagedListDisplayMode.IfNeeded })

2.1.

//Display = PagedListDisplayMode.IfNeeded,

It will hide the page number when there is only one page,

because only one page means no need paging.

---------------------------------------

3.

//@Html.PagedListPager(Model, pageNumber => Url.Action("Index6",

//    new

//    {

//        //pageNumber = pageNumber,

//        pageNumber,

//        searchBy = Request.QueryString["searchBy"],

//        searchText = Request.QueryString["searchText"]

//    }),

//    new PagedListRenderOptions

//    {

//        Display = PagedListDisplayMode.IfNeeded,

//        DisplayPageCountAndCurrentLocation = true

//    })

3.1.

//Display = PagedListDisplayMode.IfNeeded,

It will hide the page number when there is only one page,

because only one page means no need paging.

3.2.

//DisplayPageCountAndCurrentLocation = true

It will display "Page 1 of 3"

---------------------------------------

4.

//@Html.PagedListPager(Model, pageNumber => Url.Action("Index6",

//    new

//    {

//        //pageNumber = pageNumber,

//        pageNumber,

//        searchBy = Request.QueryString["searchBy"],

//        searchText = Request.QueryString["searchText"]

//    }),

//    new PagedListRenderOptions

//    {

//        Display = PagedListDisplayMode.IfNeeded,

//        DisplayPageCountAndCurrentLocation = true,

//        DisplayItemSliceAndTotal = true

//    })

4.1.

//Display = PagedListDisplayMode.IfNeeded,

It will hide the page number when there is only one page,

because only one page means no need paging.

4.2.

//DisplayPageCountAndCurrentLocation = true

It will display "Page 1 of 3"

4.3.

//DisplayItemSliceAndTotal = true

It will display "Showing items 6 through 7 of 7"

---------------------------------------

5.

//@Html.ActionLink("Name", "Index6", new

//    {

//        sortBy = ViewBag.NameSort,

//        searchBy = Request.QueryString["searchBy"],

//        searchText = Request.QueryString["searchText"],

//    })

...

//@Html.ActionLink("Gender", "Index6", new

//    {

//        sortBy = ViewBag.GenderSort,

//        searchBy = Request.QueryString["searchBy"],

//        searchText = Request.QueryString["searchText"],

//    })

5.1.

When <http://localhost:52319/Gamer/Index6>

//<a href="/?sortBy=Name%20desc">Name</a>

//<a href="/?sortBy=Gender">Gender</a>

5.2.

<http://localhost:52319/?searchBy=Gender&searchText=Male>

//<a href="/?sortBy=Name%20desc">Name</a>

//<a href="/?sortBy=Gender">Gender</a>

5.3.

<http://localhost:52319/?sortBy=Name%20desc&searchBy=Gender&searchText=Male>

//<a href="/?searchBy=Gender&amp;searchText=Male">Name</a>

//<a href="/?sortBy=Gender&amp;searchBy=Gender&amp;searchText=Male">Gender</a>

\*@

Table

Description automatically generated

8. Output Cache Settings

1.

VaryByParam

1.1.

Vary by "\*"

//[OutputCache(Duration = 60, VaryByParam = "\*")]

It means for cache for every parameters,

it is dangerous becuase of the view might have too many parameters.

1.2.

Vary by "None"

//[OutputCache(Duration = 5, VaryByParam = "none")]

It means always cache the same contents.

1.3.

Vary by "Name"

//[OutputCache(Duration = 60, VaryByParam = "pageNumber")]

//[OutputCache(Duration = 60, VaryByParam = "searchBy;searchText;pageNumber;sortBy")]

It means for cache for every value of name parameters.

2.

Location

//[OutputCache(Duration = 10, VaryByParam = "None", Location = OutputCacheLocation.ServerAndClient)]

There are 3 locations option can store the cached response, Server, Client, and Proxy server.

2.1.

//OutputCacheLocation.Any

By default, cached response is at any available locations.

2.2.

//OutputCacheLocation.Client

2.3.

OutputCacheLocation.Downstream

Any HTTP 1.1 devices which includes proxy servers.

2.4.

//OutputCacheLocation.None

Do not store cache.

2.5.

//OutputCacheLocation.Server

2.6.

//OutputCacheLocation.ServerAndClient

3.

VaryByHeader

It will cache on an HTTP header.  E.g. Accept-Language.

4.

VaryByCustom

It need the implementation of custom method in global.asax.

5.

SqlDependency

It will cache everything until the data in a Sql server table changes.