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Beginner's Tutorial on Globalization and Localization in ASP.NET MVC

Rahul Rajat Singh, 26 May 2014

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In this article we will try to understand and implement Globalization and Localization in ASP.NET MVC.

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Introduction

In this article we will try to understand and implement Globalization and Localization in ASP.NET MVC.

Background

Sometime back, I saw a TV commercial that said that "Even the smallest business can go multinational". This is very true specially in case of software business where guys operating from their store room provide services to users on the other side of the globe.
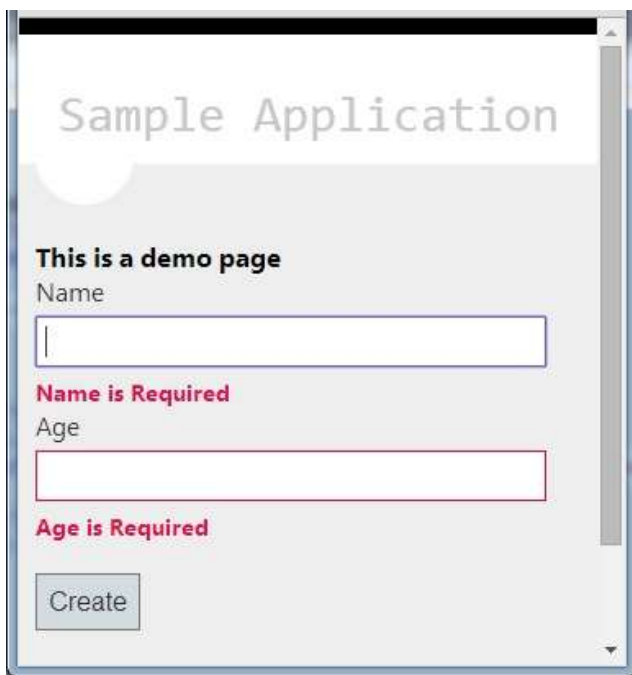
If we need our website to be designed in such a way that it caters to the need of users from across the planet, then perhaps it is a good idea to understand and implement Globalization and Localization in our application. In this article we will try to see what needs to be done to implement globalization and localization in an ASP.NET MVC application.

Before starting, let's get these two terms straight. Globalization is the process of designing the application in such a way that it can be used by users from across the globe (multiple cultures). Localization, on the other hand, is the process of customization that we do to have our application behave as per current culture and locale. These two things go together.

Note: This article will focus on globalization and localization in ASP.NET MVC. To know about localization and globalization in ASP.NET webforms please refer: Using Globalization and Localization in ASP.NET[^]

Using the code

Let us try to see how globalization and localization can be implemented in an ASP.NET MVC application by trying to develop a small sample application. This application will contain few static strings, few textboxes, Buttons and some validation error message strings.

Let us first implement this application without any localization and globalization support. Then we will see how we can implement localization and globalization. Let us start by creating a Demo model for this application.

Hide   Copy Code

```csharp
public class Demo
{
    public string Name { get; set; }
    public int Age { get; set; }
}
```

Now let us add some **DataAnnotation** attributes to specify **DisplayName** and **ErrorMessage**.

Hide   Copy Code

```csharp
public class Demo
{
    [DisplayName("Name")]
    [Required(ErrorMessage="Name is Required")]
    public string Name { get; set; }

    [DisplayName("Age")]
    [Required(ErrorMessage = "Age is Required")]
    public int Age { get; set; }
}
```

Now let us create a simple controller which will have a simple create method which will let us save the model data into an in memory collection

Hide   Copy Code

```csharp
public class HomeController : Controller
{
    private static List<Demo> list = new List<Demo>();

    public ActionResult Index()
    {
        return View(list);
    }

    [HttpGet]
    public ActionResult Create()
    {
        return View();
    }

    [HttpPost]
    public ActionResult Create(Demo model)
    {
        if (ModelState.IsValid)
        {
            list.Add(model);
            return RedirectToAction("Index");
        }

        return View();
```

```
        }
}
```

And finally the View page for this:

```razor
@model localizationNGlobalizationSample.Models.Demo

@{
    ViewBag.Title = "Create";
}

<h3>This is a demo page</h3>

@using (Html.BeginForm()) {
    @Html.ValidationSummary(true)

    <fieldset>

        <div class="editor-label">
            @Html.LabelFor(model => model.Name)
        </div>
        <div class="editor-field">
            @Html.EditorFor(model => model.Name)
            @Html.ValidationMessageFor(model => model.Name)
        </div>

        <div class="editor-label">
            @Html.LabelFor(model => model.Age)
        </div>
        <div class="editor-field">
            @Html.EditorFor(model => model.Age)
            @Html.ValidationMessageFor(model => model.Age)
        </div>

        <p>
            <input type="submit" value="Create" />
        </p>
    </fieldset>
}

<div>
    @Html.ActionLink("Back to List", "Index")
</div>
```
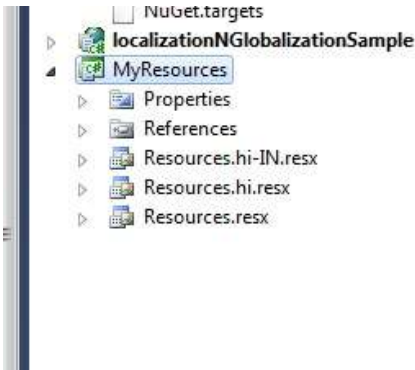
Now if we run the application, we can see that the view is adding the Demo model in an in memory collection.

Now let is see what needs to be done to implement the globalization and localization in this application. Let us start by identifying what all needs to be changed with the user culture.

Now let us try to implement the globalization and localization in this application. The problem currently in this application is that all the display strings are hard coded in the application. So to implement the globalization, we first need to externalize them in form of resources and then using the appropriate version of resources based on selected culture.

To do this, Let us first create a simple class library that will contain the resource files.

Let us put all the hard coded string in the resource files inside this class library.

If we want to have these resources in multiple languages, we need to have the separate resource files corresponding to each version. To have the resources in hindi-Indian, we need a resource file `Resource.hi-in.resx`. The "hi" specifies the language and "in" specifies the locale. We can also create a resource file only for a specific language i.e. the locale specification is not needed `Resource.hi.resx.`

Now what we need to do is to change our application to use this resource files instead of hard coded values. For that, let us add a reference to this class library and the start using the resource files for strings. So our Model will now look like:

Hide   Copy Code

```
public class Demo
{
    [DisplayName(MyResources.Resources.Name)]
    [Required(ErrorMessage=MyResources.Resources.NameRequiredError)]
    public string Name { get; set; }

    [DisplayName(MyResources.Resources.Age)]
    [Required(ErrorMessage = MyResources.Resources.AgeRequiredError)]
    public int Age { get; set; }
}
```

Also, let us change the hard coded strings in the view also.

```
<h3>@MyResources.Resources.DisplayString</h3>
@using (Html.BeginForm()) {
    @Html.ValidationSummary(true)

    <fieldset>

        <div class="editor-label">
            @Html.LabelFor(model => model.Name)
        </div>
        <div class="editor-field">
            @Html.EditorFor(model => model.Name)
            @Html.ValidationMessageFor(model => model.Name)
        </div>

        <div class="editor-label">
            @Html.LabelFor(model => model.Age)
        </div>
        <div class="editor-field">
            @Html.EditorFor(model => model.Age)
            @Html.ValidationMessageFor(model => model.Age)
        </div>

        <p>
            <input type="submit" value="@MyResources.Resources.Submit" />
        </p>
    </fieldset>
}

<div>
    @Html.ActionLink("Back to List", "Index")
</div>
```
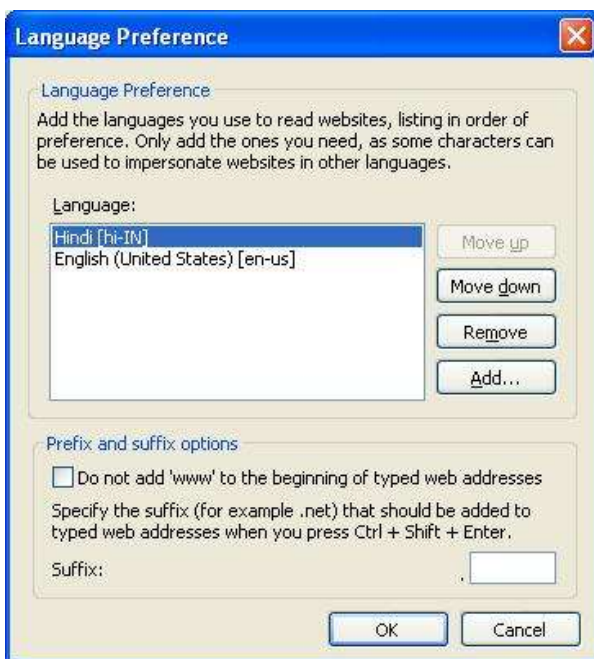
To test the changes, we need to set the default language of our browser to Hindi-Indian. Since the application will check the browser language preferences and then try to load the language and culture accordingly. let change the language preference for IE.

To test the changes, we need to set the default language of our browser to Hindi-Indian. Since the application will check the browser language preferences and then try to load the language and culture accordingly. let change the language preference for IE.

Now our browser is configured to use Hi-IN as the default language. One last thing we need to do in our application is to intercept the browser language settings and set the current threads CUlture and UICulture value to the preferred language. This can be done in number of places of request life cycle, lets do this in Application_BeginRequest for this example.

Hide   Copy Code

```
private void Application_BeginRequest(Object source, EventArgs e)
{
    HttpApplication application = (HttpApplication)source;
    HttpContext context = application.Context;

    string culture = null;
    if (context.Request.UserLanguages != null && Request.UserLanguages.Length > 0)
```

```
    {
        culture = Request.UserLanguages[0];
        Thread.CurrentThread.CurrentCulture = new System.Globalization.CultureInfo(culture);
        Thread.CurrentThread.CurrentUICulture = Thread.CurrentThread.CurrentCulture;
    }
}
```

Note: Most applications have an application-wide BaseController for various reasons. The above code can also be put in the `BaseController's` constructor and will have the same effect. There is also a declarative way of achieving the same results by specifying `globalization` element in `System.web` element of `web.config`.

Hide   Copy Code

```
<globalization culture="auto" uiCulture="auto" enableClientBasedCulture="true"></globalization>
```

Let us now run the application and see the results.

नमूना अनुप्रयोग

यह एक डेमो पृष्ठ है
नाम

आयु

प्रस्तुत

Back to List

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यह एक डेमो पृष्ठ है
नाम

नाम आवश्यक है
आयु

आयु आवश्यक है
प्रस्तुत

Back to List

Note: The text is exact translated using an online tool. So hindi knowing readers will find them rather out of context for few UI elements.

Now we have a sample MVC web application that is capable of being displayed in English and Hindi. To sum up, it is important to understand that Resource file is the key to have globalization and localization. it is always a good practice to put all the internationalization related resource files in a separate class library. Also, We need separate resource file for each supported culture.

Finally, we should never trust users browser settings and system settings to get the culture specific information. It is always a good idea to provide the user an option to change the language and culture for the website and perhaps track them using cookies so that user doesn't have to select the preferred language every time.

Point of interest

There are few important things to be understood when we are targeting our website to multiple cultures. When we are targeting multiple cultures, we cannot assume anything about the structure and layout of web page. The reason these things are important is because translation for even small text in English could be very lengthy in other languages. So it is always a good idea to follow the standard guidelines when we implement globalization.

- No absolute positioning of controls
- Use fluid layout with forms
- No absolute size of controls
- Try to arrange controls in a table

History

- **16 May 2014:** First version

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About the Author

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Software Developer (Senior)

India

I Started my Programming career with C++. Later got a chance to develop Windows Form applications using C#. Currently using C#, ASP.NET & ASP.NET MVC to create Information Systems, e-commerce/e-governance Portals and Data driven websites.

My interests involves Programming, Website development and Learning/Teaching subjects related to Computer Science/Information Systems. IMO, C# is the best programming language and I love working with C# and other Microsoft Technologies.

- Microsoft Certified Technology Specialist (MCTS): Web Applications Development with Microsoft .NET Framework 4
- Microsoft Certified Technology Specialist (MCTS): Accessing Data with Microsoft .NET Framework 4
- Microsoft Certified Technology Specialist (MCTS): Windows Communication Foundation Development with Microsoft .NET Framework 4

If you like my articles, please visit my website for more: www.rahulrajatsingh.com[^]

- Microsoft MVP 2015

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GetString
 Member 12625779   30-Mar-17 9:39

Hi I tried to replicate your example but I can't get it to work. Would you be kind to have a look at this project and to tell me what I did not do or did wrong? I placed the project here: https://1drv.ms/f/s!At-m4EoTfFlSniiPyAUqrZEISXMN

I see two problems. 1) In the Home/Index it does not recognized the MyResources projet, and 2) I can't get the GetString working ethier (HomeController/Index).

Would you have a clue? 🙂

I use VS2013 if this makes a difference.

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Multi language
 Member 12380885   9-Mar-16 8:24

Hey, nice article I really enjoy it because I am new with asp, I am starting with mvc, so I would like to know how can I made it for all the page, I mean all views no just one.

Please help, I really apreciate it.

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Multilingual website without Resource file handling
 Member 12223186   23-Dec-15 2:07

How can I handle Multilingual website without Resource file?
I want to use using Database. Is it possible to handle this way?

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My vote of 5

DVL Patel   **6-Sep-15 2:47**

nice 😊

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Great Explanations
MCY   26-Aug-15 23:10

This helped me big time; thanks!

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This doesn't work
Member 11420707   11-Aug-15 6:00

You must have changed the accessibility from intenal static string to public static string for the Resources fields, you didn't tell about it

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Re: This doesn't work
Jean Ferre   17-Aug-15 23:47

I totally agree, I can't make this example work either.   ⌃

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Re: This doesn't work
Member 11420707   17-Aug-15 23:49

check this: http://afana.me/post/aspnet-mvc-internationalization.aspx[^]   ⌃

and this: http://stackoverflow.com/questions/31964177/globalization-unable-to-find-appropriate-resources[^]

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Nice article
Sander Rossel   4-May-15 3:22

Hi Rahul,
I'll refrain from bringing religion and goats into the conversation (some people...) 😆
And as coincidence has it I needed this today!

Nice article, it left me a little wondering though. What's the difference between Culture and UICulture? And what would be a best practice to have the user change the language at runtime?
Culture and UICulture is pretty easy, but the latter is not 😊

Still, nice basics, so I'll give you a 4 👍

Visit my blog at Sander's bits - Writing the code you need.
Or read my articles at my CodeProject profile.

> Simplicity is prerequisite for reliability.
> — Edsger W. Dijkstra

Regards,
Sander

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Multilanguage support in Database
harshal999   26-Mar-15 20:27

Hi Rajat,

It's been very nice reading your article about multi-language concept.

My question is what about actual data? I Mean we type in Hindi language, in text box, it should be stored in database in Hindi language.

How to implement this?

Waiting for your kind response. Thanks in advance.

Best regards,
Harshal.
Email : harshal.shah99@gmail.com

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Nice article
saineshwar   19-Feb-15 22:32

You have nice article.

Sir here is example on button click for changing culture.

http://www.c-sharpcorner.com/UploadFile/4d9083/globalization-and-localization-in-Asp-Net-mvc-4/[^]

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Strongly typed?
Member 5760004   19-Feb-15 5:01

Hi,

In the article there is sample Demo model class that have DisplayName attributes on Name and Age properties.
From that I can see that you're using it in strongly typed manner.

Hide   Copy Code

```
[DisplayName(MyResources.Resources.Name)]
```

In the sample code that can be downloaded, there is no 'strongly typed' usage...

Can you explain that?

Thank you.

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My vote of 5
Debabrata_Das   4-Feb-15 23:39

Excellent article! My vote of 5!

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How to change the language using language provide in drop down list
Apoorv Agrawal   17-Jan-15 8:17

hello rajat,

Can you please tell how to add the feature to change the language,if we provide an option to choose language from drop down list

Sign In · View Thread   🔗 5.00/5 (2 votes)

Good basics !
ultraman69   7-Jan-15 11:48

Very straightforword with sample code. Great job, saved me a lot of time. Thanks !

War does not make one great.

Master Yoda

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I am not able to access MyResources.Resource
Member 11332354   29-Dec-14 19:50

Hi, Thank you for the detailed explanation but i am able to access the Resource key as MyResources.Resource.ResourceKey. I changed the Access Specifier to Public but still i am not able to do this.

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Great Article, however
Baaba Maal   29-Dec-14 10:56

Great article Rahul, but I have an issue. The resource file in the class library is "internal" by default. All its property must be converted to public (along with the class it self) to be able to make it work. Once the change is made however, the class reverts all the changes each time you edit the resource file and recompile the solution! Is there a way around this?

Thank you.

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Re: Great Article, however
Umesh Bhosale   5-Aug-15 21:57

Hi You can set **Copy local** property to **true** so that no need to compile each and every time.
Hope it will help you....   ⌃

Happy coading......

Thanks
Umesh Bhosale

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Simple Language
dev4ever   21-Dec-14 21:23

Simple enough for first timers.

Devang Zala

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Good Article
Mohammad A. Amer   29-Oct-14 4:46

Good Article, My vote of 5

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Great help.
jetendramanpradhan   23-Aug-14 20:29

I started learning localization and in the very beginning you helped me. Thanks.

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Resources are not recognized if in external DLL
Xavier Fischer   2-Jul-14 12:01

Thanks for this article, however I didn't work for me.
I have added the resources files in my class library (with Public as access modifier), but after building and referencing the class library in my MVC app, the resources were'nt accessible in the namespace.

Is there anything more I need to know ?

Thank you

EDIT :
I have found the issues
1) A default resource file named "Resources.resx" must be present in the class library. This file should contain the resources in the default language
2) On all resource files, Custom tool (in property window) must be set to "PublicResXFileCodeGenerator"

modified 3-Jul-14 3:33am.

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Article of the Day on Microsoft's site
Rahul Rajat Singh   17-Jun-14 19:32

This article has been selected as **Article of the Day** on Microsoft's site http://www.asp.net/community/articles[^] on 18 June 2014.

Rahul Rajat Singh
18 June 2014.

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Excellent Article
Suchi Banerjee, Pune   2-Jun-14 2:59

Good job, thanks for sharing.

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