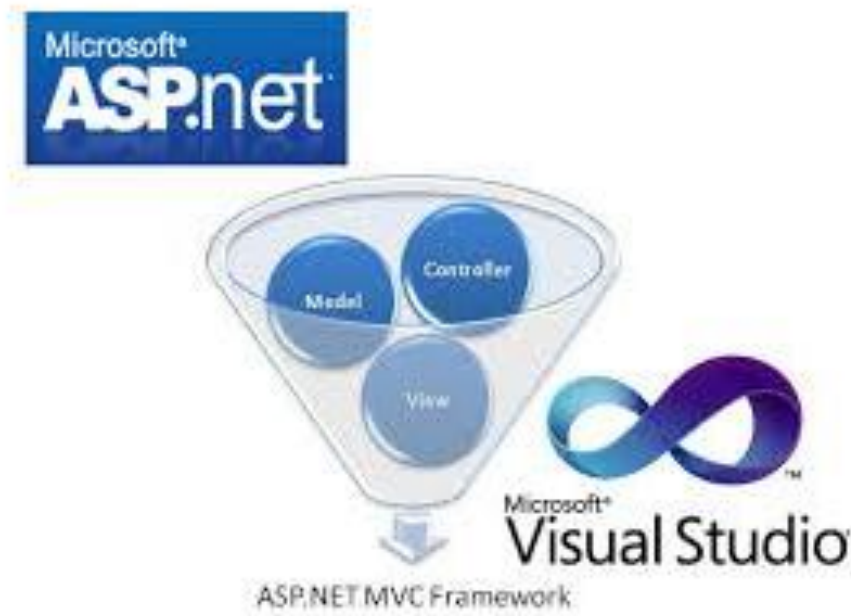


C#



10. MVC4

New Features in ASP.NET MVC4

- ASP.NET WEB API
- Enhancements to Default Project Templates
- Mobile Project Template
- Display Modes
- jQuery Mobile, the View Switcher and Browser Overriding
- Task Support for Asynchronous Controllers
- Azure SDK
- Database Migrations
- Empty Project Template
- Add Controller to any project folder
- Building and Minification

System.Web.Optimization

- Bundling of script and style files
- Minification of script and style files
- Decrease page load times

- Use NuGet

- `install-package Microsoft.AspNet.Web.Optimization`

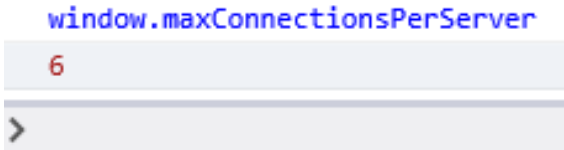
Microsoft ASP.NET Web Optimization Framework 1.0.0-beta2

ASP.NET Optimization introduces a way to bundle and optimize css/js files.

To install Microsoft ASP.NET Web Optimization Framework, run the following command in the [Package Manager Console](#)

```
PM> Install-Package Microsoft.AspNet.Web.Optimization -  
Version 1.0.0-beta2 -Pre
```

Bundling and Minification

- Bundling and minification are two techniques you can use in ASP.NET 4.5 to improve request load time.
- Bundling and minification improves load time by reducing the number of requests to the server and reducing the size of requested assets (such as CSS and JavaScript.)
- Most of the current browsers limit the number of simultaneous connections per each hostname to **SIX**


```
window.maxConnectionsPerServer  
6  
>
```
- **Additional requests for assets on a host will be queued by the browser.**

Minification

- Minification performs a variety of different code optimizations to scripts or css, such as removing unnecessary white space and comments and shortening variable names to one character.

Bundling

<http://www.asp.net/mvc/overview/performance/bundling-and-minification>

- Bundling is a new feature in ASP.NET 4.5 that makes it easy to combine or bundle multiple files into a single file
- You can create CSS, JavaScript and other bundles, fewer files means fewer HTTP requests and that can improve first page load performance.

Bundling configuration

- Script bundles and style bundles
 - Add bundles to the global Bundle Table object
 - Specify a virtual path for the bundle
 - Include files you need in the bundle
 - Works with wildcards-conventions applied for ignoring doc and debug files

```
bundles.Add(new StyleBundle("~/bundles/css")
    .Include("~/Content/styles.css")
    .Include("~/Content/bootstrap.css"));

bundles.Add(new ScriptBundle("~/bundles/js")
    .Include("~/Scripts/jquery-1.*"));
```

Rendering Bundles

- Use the scripts or styles helpers
- Use `ResolveBundleUrl` for fine-grained control

```
@Styles.Render("~/bundles/css")

<link href="@BundleTable.Bundles.ResolveBundleUrl("~/bundles/css")"
      rel="stylesheet" type="text/css" />

@Scripts.Render("~/bundles/modernizr")
```


WebGrease- Command Line Tool

<https://webgrease.codeplex.com/>

- WebGrease is a suit of tools that helps is optimizing the static files (like JavaScript, CSS) in a web application.
- This tool is developed by a performance team in MSN division of Microsoft
- WebGrease capabilities are
 - Minification of JS files
 - Validation of JS files
 - Minification of CSS files
 - Bundling of JS and CSS files
 - Image Sprites
 - AutoVersion naming of the files(version stamp)

Image Sprites

- An **image sprite** is a collection of **images** put into a single **image**.
- A web page with many **images** can take a long time to load and generates multiple server requests.
- Using **image sprites** will reduce the number of server requests and save bandwidth.

Wg.exe <operation switch> -in: <inputfile/folder> -out :<outputfile/folder>

	-m	Used for minification of files given in the set
	-v	Used to validate the content/code of the JavaScript file(s) and output is displayed on the console
	-s	Used to sprite the image files given in the css files
	-a	Give autaname to the output file based on the content hash
	-b	Bundles all the input files in a single file
	-type	Specific a config file name that is used for the settings
	-c	Provides us the ability to provide a config file

```
wg -m -in:.\jquery-1.8.2.js -out:.\jquery-1.8.2.minified.js
```