Session 15
Advanced Concepts in MVC

Session Overview

- Explain advanced features of ASP.NET (bundling and minification)

- Describe areas in ASP.NET MVC

Bundling and Minification in MVC (1-2)

- A **bundle** is defined as a logically grouped set of files having a unique name

- Loaded with only one HTTP request

- Can be created for both JavaScript and CSS files

- **Minification** removes redundant whitespaces, line breaks, and comments from code thus, reducing its size

- This approach improves loading time for code

ScriptBundle	StyleBundle	DynamicFolderBundle
Bundles that help in minification of one or more JavaScript files	Bundles that help in minification of single or multiple CSS style sheet files	Bundle object created by ASP.NET from a folder having same type of files

ScriptBundle (1-2)

1. From the **MVC** folder, go to **App_Start\BundleConfig.cs** file

- By default, the `BundleConfig.cs` file is generated by MVC.

2. Write the customized bundling code in the `BundleConfig.RegisterBundles()` method

- Instead of using the `BundleConfig` class, developers can create custom classes. However, it is a good practice to follow standard procedures.

ScriptBundle (2-2)

1
- Generate an instance of `ScriptBundle` class by including the bundle name as a constructor parameter.

2
- The bundle name serves as a virtual path and starts with the symbol ' **~/**'.

3
- With the help of Include method, add multiple **'JS'** files into a bundle. This is achieved by following the root path with the relative path identified by the symbol "~".

4
- Include the bundle into the `BundleCollection` instance. This is a parameter in the `RegisterBundle()` method.

5
- Set **BundleTable.EnableOptimizations=True**. This allows for bundling and minification in the Debug mode.

When wildcards are used, appropriate versions of the files are automatically included.

Using CDN

Content Delivery Network (CDN) also helps to load the script files.
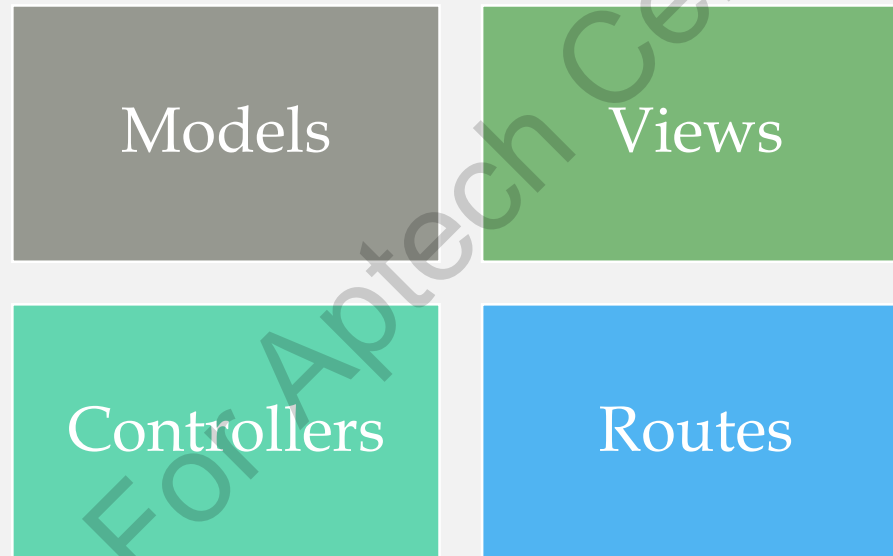The jquery library can be loaded from the CDN.

StyleBundle

- StyleBundle procedures are similar to ScriptBundle.

- The method of adding a virtual path and file names/patterns in ScriptBundle is followed in StyleBundle as well.

Minification is a procedure used to decrease the size of CSS and JavaScript files, thus reducing the time required for downloading.

- Logical groupings of Controllers, Views, Models, and related files for a module in MVC applications.

- Assist in writing better maintainable code for an application by segregating it as per the modules.

Models	Views
Controllers	Routes

Student Area	Professor Area	Administrator Area
In this functional area, a student can create his or her profile, check, and upload assessments.	In this functional area, a professor can generate and upload assignments, and also check student's performance.	In this functional area, an administrator is given control to configure and manage the application.

Areas in ASP.NET MVC (3-4)

1	In the **Solution Explorer** view, right-click the project name.
2	Select **Add → Area**.
3	Name the area, for example, **'Student'** and then click **Add**. The **Areas** folder with a sub-folder for Student Area is created.
4	Follow steps 1 to 3 and create Areas for Professor and Administrator.
5	Go to **Global.asax.cs** file and observe the `Application_Start()` method.
6	Add '**HomeController**' to the areas as listed: o Professor o Administrator o Student o Main Area
7	To all the Areas, insert 'Index' views by copying and pasting the following in their respective views: **Main Area**: `<h1>Main Area Index View</h1>` **Student Area**: `<h1>Student Area Index View</h1>` **Professor Area**: `<h1>Professor Area Index View</h1>` **Admin Area**: `<h1>Admin Area Index View</h1>`

8	Create the application and go to **/MVCDemo**. At this point, an error is displayed. To rectify the error, include `RegisterRoutes()` method in the **RouteConfig.cs** file available in the **App_Start** folder. Code Snippet 16 shows how to route the namespace in the `HomeController` to the Main area using the namespace parameter.
9	Now, **/MVCDemo/Student** displays an error which states **"Resource cannot be found"**. To rectify the error, **RegisterArea()** area method in **StudentAreaRegistration.cs** file under the Student folder needs to be modified as shown in Code Snippet 17.
10	Open **http://location/MVCDemoStudent**, which could result in a compilation error linked to `System.Web.Optimization`. To rectify the error, perform the following: In the Visual Studio application, click **Tools →Library Package Manager →Package Manager Console**. In the window that appears, enter the command: **Install-Package Microsoft.Web.Optimization -Pre** and press **Enter**.

Summary

- Bundling and minification are two advanced features in ASP.NET MVC. They help in reducing the code sizes and improving download times.

- Bundling involves merging of logically close files into a single folder. There are three methods of Bundling: Script, Style, and Dynamic Folder Bundling.

- Minification is the process of removing unwanted whitespaces and blanks in the code to reduce the size of CSS and JavaScript files.

- Areas in ASP.NET MVC consist of grouping of Controllers, Views, and Models files for better organization and handling.

- ActionLink HTML Helper could be used to move between various areas of the ASP.NET application.