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Developing ASP.NET MVC 4 Web Applications

Microsoft 70-486

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Topic Break Down

Topic	No. of Questions
Topic 1, Case Study 1	14
Topic 2, Case Study 2	16
Topic 3, Case Study 3	10
Topic 4, Mixed Questions	192
Total	232

QUESTION NO: 1

You are developing an ASP.NET MVC application that uses forms authentication. The user database contains a user named LibraryAdmin.

You have the following requirements:

- You must allow all users to access the GetBook method.
- You must restrict access to the EditBook method to the user named LibraryAdmin.

You need to implement the controller to meet the requirements.

Which code segment should you use? (Each correct answer presents a complete solution. Choose all that apply.)

A.

```
[Authorize]
public class LibraryController : Controller
{
    [AllowAnonymous]
    public ActionResult GetBook()
    {
        ...
        return View();
    }
    [Authorize(Users = "LibraryAdmin")]
    public ActionResult EditBook()
    {
        ...
        return View();
    }
}
```

B.

```
[Authorize(Roles = "Anonymous")]
public class LibraryController : Controller
{
    public ActionResult GetBook()
    {
        ...
        return View();
    }

    [Authorize(Users = "LibraryAdmin")]
    public ActionResult EditBook()
    {
        ...
        return View();
    }
}
```

```

C. [Authorize]
public class LibraryController : Controller
{
    [AllowAnonymous]
    public ActionResult GetBook()
    {
        ...
        return View();
    }

    [Authorize]
    public ActionResult EditBook()
    {
        if (this.HttpContext.User.Identity.Name != "LibraryAdmin")
        {
            return RedirectToAction("Login", "Account", new { returnUrl = "/Library/EditBook" });
        }
        else
        {
            ...
            return View();
        }
    }
}

D. [Authorize]
public class LibraryController : Controller
{
    [Authorize(Roles="Anonymous")]
    public ActionResult GetBook()
    {
        ...
        return View();
    }

    [Authorize(Users = "LibraryAdmin")]
    public ActionResult EditBook()
    {
        ...
        return View();
    }
}

```

- A. Option A
- B. Option B
- C. Option C
- D. Option D

ANSWER: A C

QUESTION NO: 2 - (HOTSPOT)

HOTSPOT

You develop an ASP.NET MVC application. The application includes a feature that allows users to reset their passwords. The feature is enabled by a ForgotPassword controller method and a corresponding Razor view.

You need to prevent Cross-Site Request Forgery (CSRF) attacks.

How should you complete the relevant code? To answer, select the appropriate code segment from each list in the answer area.

Hot Area:

Answer Area

AccountController.cs

```
[HttpPost]  
[AllowAnonymous]
```

Authorize
ValidateInput(true)
ValidateAntiForgeryToken
Authorize(Users="ValidOnly")

```
public async Task<ActionResult> ForgotPassword(ForgotPasswordViewModel model)  
{  
    if (!ModelState.IsValid) return View(model);  
    var user = await UserManager.FindByNameAsync(model.Email);  
    if (user == null || !(await UserManager.IsEmailConfirmedAsync(user.Id)))  
    {  
        return View("ForgotPasswordConfirmation");  
    }  
    return View(model);  
}
```

ForgotPassword.cshtml

```
@model AntiForgeryToken.Models.ForgotPasswordViewModel  
@using (Html.BeginForm("ForgotPassword", "Account", FormMethod.Post, new { role = "form" }))
```

@Html.Encode(this)
@Html.AntiForgeryToken()
@Html.AttributeEncode(this)
@Html.Hidden("AntiForgeryToken")

```
@Html.ValidationSummary()  
<div>  
    @Html.LabelFor(m => m.Email)  
    <div>@Html.TextBoxFor(m => m.Email)</div>  
</div>  
<div><input type="submit" value="Email Link" /></div>  
}  
@section Scripts {  
    @Scripts.Render("~/bundles/jqueryval")  
}
```

ANSWER:

Answer Area

AccountController.cs

```
[HttpPost]
[AllowAnonymous]
```

Authorize
ValidateInput(true)
ValidateAntiForgeryToken
Authorize(Users="ValidOnly")

```
public async Task<ActionResult> ForgotPassword(ForgotPasswordViewModel model)
{
    if (!ModelState.IsValid) return View(model);
    var user = await UserManager.FindByNameAsync(model.Email);
    if (user == null || !(await UserManager.IsEmailConfirmedAsync(user.Id)))
    {
        return View("ForgotPasswordConfirmation");
    }
    return View(model);
}
```

ForgotPassword.cshtml

```
@model AntiForgeryToken.Models.ForgotPasswordViewModel
@using (Html.BeginForm("ForgotPassword", "Account", FormMethod.Post, new { role = "form" }))
{
```

@Html.Encode(this)
@Html.AntiForgeryToken()
@Html.AttributeEncode(this)
@Html.Hidden("AntiForgeryToken")

```
@Html.ValidationSummary()
<div>
    @Html.LabelFor(m => m.Email)
    <div>@Html.TextBoxFor(m => m.Email)</div>
</div>
<div><input type="submit" value="Email Link" /></div>
}
@section Scripts {
    @Scripts.Render("~/bundles/jqueryval")
}
```

Explanation:

Example:

* At the top of the action that we created to handle the posted form, the one with the [HttpPost] attribute added, we'll add another attribute named [ValidateAntiForgeryToken]. This makes the start of our action now look like the following:

```
[HttpPost]
```

```
[ValidateAntiForgeryToken]
```

```
public ActionResult ChangeEmail(ChangeEmailModel model)
```

```
{
```

```
string username = WebSecurity.CurrentUserName;
```

rest of function omitted

* we must add the unique token to the form to change the user's email when we display it. Update the form in the ChangeEmail.aspx view under /Account/ChangeForm:<% using(Html.BeginForm()) { %>

```
<%: Html.AntiForgeryToken() %>
```

```
<%: Html.TextBoxFor(t=>t.NewEmail) %>
```

```
[Change Email] <% } %>
```

QUESTION NO: 3

You need to display the "miles" unit description after the distance in the GetLog view.

Which line of code should you use to replace line GL21? (Each correct answer presents a complete solution. Choose all that apply.)

- A. @log.Distance miles
- B. @Html.DisplayFor(model =>log.Distance) miles
- C. @log.Distance.ToString() @Html.TextArea("miles")
- D. @Html.DisplayFor(model => log.Distance.ToString() + " miles")

ANSWER: A B

QUESTION NO: 4 - (DRAG DROP)

DRAG DROP

You are developing an ASP.NET MVC application in a web farm. The application has a page that accepts a customer's order, processes it, and then redirects the browser to a page where the order is displayed along with the shipping information.

The order information should be available only to the page where the order is displayed.

You need to store state and configure the application.

What should you do? To answer, drag the appropriate item to the correct location. Each item may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

Select and Place:

Items

- TempData
- ViewData
- InProc
- SqlServer

Answer area

Store state in and set the mode attribute of the sessionState element in the web.config file to

ANSWER:

Items

- TempData
-
-
- SqlServer

Answer area

Store state in and set the mode attribute of the sessionState element in the web.config file to

Explanation:

Target 1: InProc

Target 2: ViewData

InProc mode, which stores session state in memory on the Web server. This is the default.

Reference: Understanding ViewData, ViewBag And TempData <http://www.binaryintellect.net/articles/36941654-8bd4-4535-9226-ddf47841892f.aspx>

QUESTION NO: 5 - (DRAG DROP)

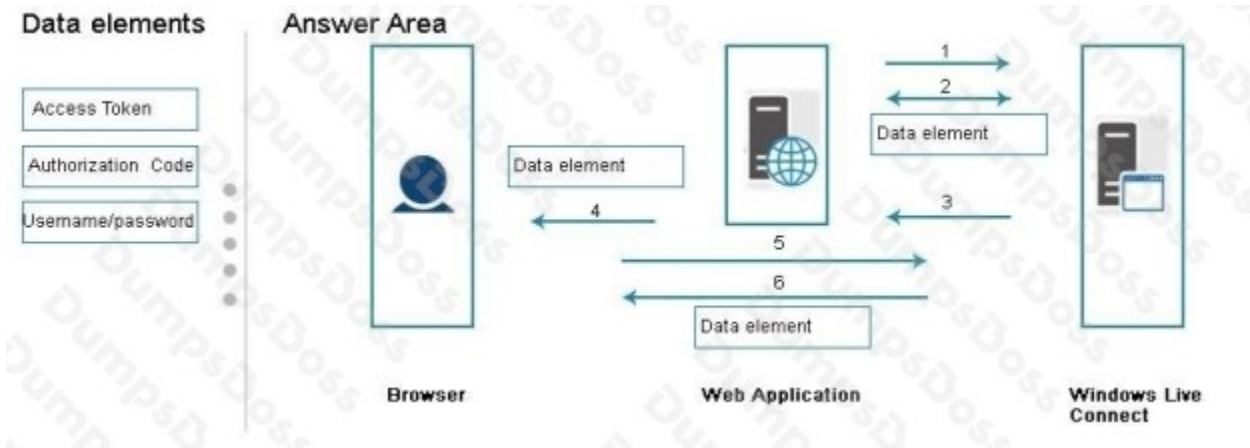
DRAG DROP

You are developing an ASP.NET MVC application. You plan to use OAuth to authenticate users to the application.

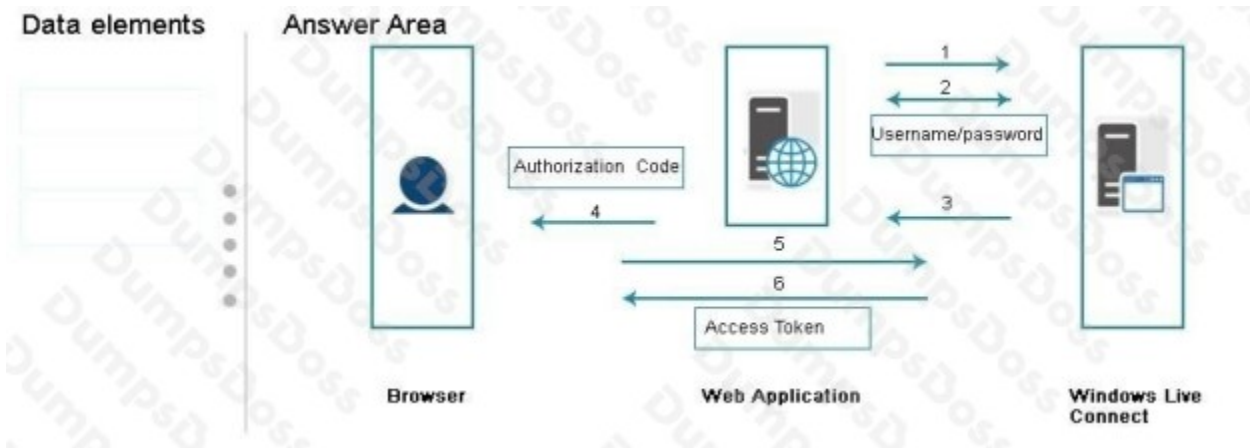
You need to use the correct authentication data in the application.

What should you do? To answer, drag the appropriate data element to the correct location or locations. Each data element may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

Select and Place:



ANSWER:

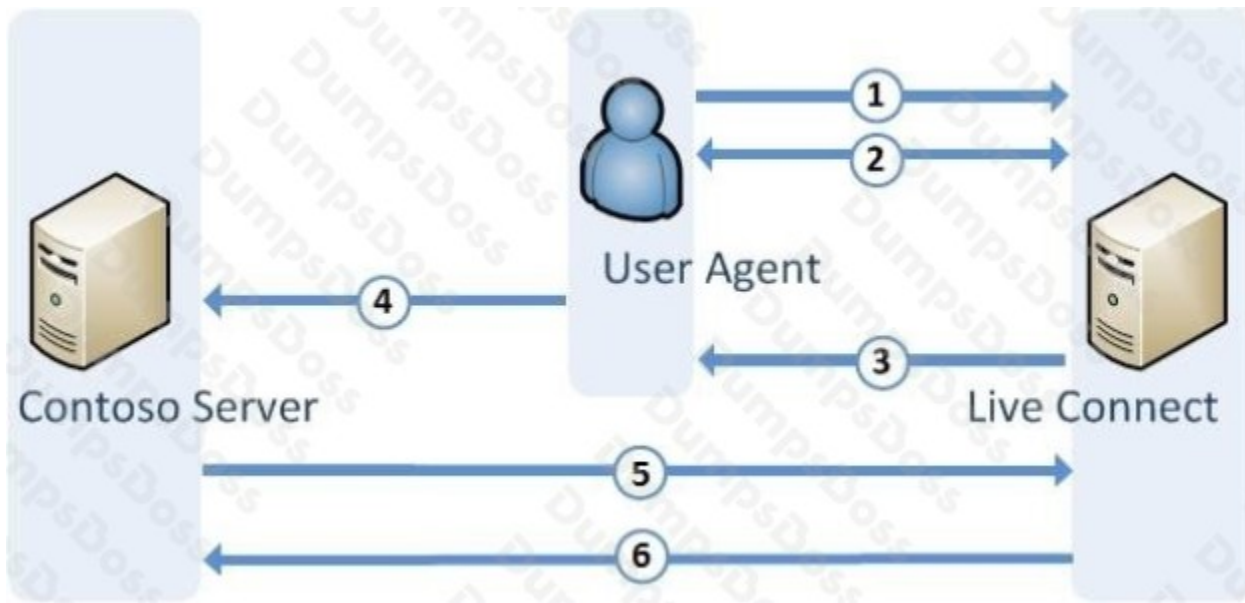


Explanation:

Live Connect implements the OAuth 2.0 protocol to authenticate users.

In the authorization code grant flow, the client makes authorization requests by using `request_type=code`.

The following diagram illustrates how the authorization code grant flow works.



1. The client starts the flow by directing the resource owner's user agent to the Live Connect authorization endpoint, by using a URL in the following format.

https://login.live.com/oauth20_authorize.srf?client_id=CLIENT_ID&scope=SCOPES&response_type=code&redirect_uri=REDIRECT_URI

2. The authorization server authenticates the resource owner via the user agent, and establishes whether the resource owner grants or denies the client's access request.

3. Assuming that the resource owner has granted access, the Live Connect authorization server redirects the user agent to the client by using the redirection URI that was provided in the initial request.

4. The user agent calls the client with the redirection URI, which includes an authorization code and any local state that was provided by the client. For example: http://contoso.com/Callback.htm?code=AUTHORIZATION_CODE.

5. The client requests an access token from the authorization server's token endpoint by using its client credentials for authentication, and includes the authorization code that was received in the previous step.

6. If the credentials are valid, the authorization server responds by returning an access token. References:

<https://msdn.microsoft.com/en-us/library/hh243647.aspx>

QUESTION NO: 6

You are developing an application that uses ASP.NET Core Identity for authorization. The application must use an existing Microsoft Azure Table Storage instance to store user information. You create a custom UserStore class.

You need to register the class as a dependency.

Which two interfaces should you implement? Each correct answer presents part of the solution.

NOTE: Each correct selection is worth one point.

A. IUserSecurityStampStore

B. IUserLoginStore

- C. IQueryableUserStore
- D. IUserStore
- E. IUserPasswordStore

ANSWER: B D

Explanation:

D: Create a UserStore class that provides the methods for all data operations on the user. This class is equivalent to the UserStore class. In your UserStore class, implement IUserStore and the optional interfaces required. You select which optional interfaces to implement based on the functionality provided in your app.

Interfaces to implement when customizing user store

- IUserStore

The IUserStore interface is the only interface you must implement in the user store. It defines methods for creating, updating, deleting, and retrieving users.

- IUserLoginStore

The IUserLoginStore defines the methods you must implement in your user store to enable external authentication providers. It contains methods for adding, removing and retrieving user logins, and a method for retrieving a user based on the login information.

References: <https://docs.microsoft.com/en-us/aspnet/core/security/authentication/identity-custom-storageQQ-providers?view=aspnetcore-2.1>

QUESTION NO: 7

You are developing an ASP.NET MVC application.

The application provides a RESTful API for third-party applications. This API updates the information for a contact by embedding the information in the URL of an HTTP POST.

You need to save the Contact type when third-party applications use the EditContact method.

Which code segment should you use? {Each correct answer presents a complete solution. Choose all that apply.}

- A.

```
public ActionResult EditContact(FormCollection values)
{
    var c = new Contact()
    {
        FirstName = values["FirstName"],
        LastName = values["LastName"]
    };
    SaveContact(c);
    return View(c);
}
```
- B.

```
public ActionResult EditContact(Contact c)
{
    SaveContact(c);
    return View(c);
}
```
- C.

```
public ActionResult EditContact()
{
    var c = new Contact()
    {
        FirstName = Request.QueryString["FirstName"],
        LastName = Request.QueryString["LastName"]
    };
    SaveContact(c);
    return View(c);
}
```
- D.

```
public ActionResult EditContact(QueryStringValueProvider values)
{
    var c = new Contact()
    {
        FirstName = values.GetValue["FirstName"],
        LastName = values.GetValue["LastName"]
    };
    SaveContact(c);
    return View(c);
}
```

A. Option A

- B. Option B
- C. Option C
- D. Option D

ANSWER: B C

Explanation:

Basics of RESTful services:

REST stands for Representational State Transfer, it is a simple stateless architecture that runs over HTTP where each unique URL is representation of some resource. There are four basic design principles which should be followed when creating RESTful service:

- Use HTTP methods (verbs) explicitly and in consistent way to interact with resources (Uniform Interface), i.e. to retrieve a resource use GET, to create a resource use POST, to update a resource use PUT/PATCH, and to remove a resource use DELETE.

Etc.

QUESTION NO: 8

You develop an ASP.NET MVC application. The application has several Razor views.

The application must execute different server-side code for desktop and mobile devices.

You need to choose an approach to support mobile devices.

Which two approaches can you use? Each correct answer presents a complete solution.

- A. Use different controllers and view for both desktop and mobile browsers, but render the views using Bootstrap framework.
- B. Create separate areas for desktop and mobile browsers, implementing independent controllers and views for each.
- C. Use the same controllers for both desktop and mobile browsers, but render different views depending on the device type.
- D. Use different controllers and views for both desktop and mobile browsers, but render the views with the same Razor layout depending on the device type.

ANSWER: B D

Explanation:

How ASP.NET MVC applications can present mobile-specific pages

Since the Model-View-Controller pattern decouples application logic (in controllers) from presentation logic (in views), you can choose from any of the following approaches to handling mobile support in server-side code:

1. Create separate areas for desktop and mobile browsers, implementing independent controllers and views for each. This option works best if you're displaying very different screens, containing different information and leading the user through

different workflows optimized for their device type. It may mean some repetition of code, but you can minimize that by factoring out common logic into an underlying layer or service.

2. Use the same controllers for both desktop and mobile browsers, but render different views depending on the device type. This option works best if you're displaying roughly the same data and providing the same workflows for end users, but want to render very different HTML markup to suit the device being used.

3. Use the same controllers and views for both desktop and mobile browsers, but render the views with different Razor layouts depending on the device type. This option works best if you're displaying identical data on all devices, but simply want to supply different CSS stylesheets or change a few top-level HTML elements for mobiles.

References: <https://docs.microsoft.com/en-us/aspnet/whitepapers/add-mobile-pages-to-your-aspnet-web-forms-mvc-application>

QUESTION NO: 9

You are developing an ASP.NET MVC application that uses forms authentication against a third-party database.

You need to authenticate the users.

Which code segment should you use?

- A.

```
public class SAMembershipProvider : SqlMembershipProvider
{
    ...
}
```
- B.

```
public class SAMembershipProvider : ClientFormsMembershipProvider
{
    ...
}
```
- C.

```
public class SAMembershipProvider : ProviderBase
{
    ...
}
```
- D.

```
public class SAMembershipProvider : MembershipProvider
{
    ...
}
```

A. Option A

B. Option B

C. Option C

D. Option D

ANSWER: D

Explanation:

ASP.NET membership is designed to enable you to easily use a number of different membership providers for your ASP.NET applications.

There are two primary reasons for creating a custom membership provider.

- You need to store membership information in a data source that is not supported by the membership providers included with the .NET Framework, such as a FoxPro database, an Oracle database, or other data sources.
- You need to manage membership information using a database schema that is different from the database schema used by the providers that ship with the .NET Framework.

To implement a membership provider, you create a class that inherits the MembershipProvider abstract class from the System.Web.Security namespace.

Incorrect:

Not C: Class ProviderBase

The provider model is intended to encapsulate all or part of the functionality of multiple ASP.NET features, such as membership, profiles, and protected configuration. References: <https://msdn.microsoft.com/en-us/library/f1kyba5e.aspx>

QUESTION NO: 10 - (HOTSPOT)

HOTSPOT

Your team is developing an ASP.NET Core web application. You add the RequireHttpsAttribute attribute to all controller actions.

You observe that images and style sheets are currently served over HTTP.

You need to ensure that the web application only serves content over HTTPS.

How should you complete the code? To answer, configure the appropriate options in the dialog box in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

```
using System.Web.Security;  
using Microsoft.AspNetCore.Rewrite;  
using Microsoft.AspNetCore.Authorization;  
using System.Web.Security.AntiXss;
```

```
using Microsoft.AspNetCore.Mvc;  
namespace MyWebApplication  
{  
    public class Startup  
    {  
        public Startup(IConfiguration configuration)  
        {  
            Configuration = configuration;  
        }  
        public IConfiguration Configuration { get; }  
        public void ConfigureServices(IServiceCollection services)  
        {  
            services.Configure<MvcOptions>(options =>  
            {
```

```
options.Filters.Add(new RequireHttpsAttribute());  
options.Filters.Add(typeof(AuthorizeAttribute));
```

```
});  
services.AddMvc();  
}  
public void Configure(IApplicationBuilder app, IHostingEnvironment env, ILoggerFactory loggerFactory)  
{  
    loggerFactory.AddConsole(Configuration.GetSection("Logging"));  
    loggerFactory.AddDebug();
```

```
var options = new RewriteOptions();  
var options = new RewriteOptions().AddRedirectToHttps();
```

```
app.UseRewriter(options);  
}  
}
```

ANSWER:

Answer Area

```
using System.Web.Security;  
using Microsoft.AspNetCore.Rewrite;  
using Microsoft.AspNetCore.Authorization;  
using System.Web.Security.AntiXss;
```

```
using Microsoft.AspNetCore.Mvc;  
namespace MyWebApplication  
{  
    public class Startup  
    {  
        public Startup(IConfiguration configuration)  
        {  
            Configuration = configuration;  
        }  
        public IConfiguration Configuration { get; }  
        public void ConfigureServices(IServiceCollection services)  
        {  
            services.Configure<MvcOptions>(options =>  
            {
```

```
                options.Filters.Add(new RequireHttpsAttribute());  
                options.Filters.Add(typeof(AuthorizeAttribute));
```

```
            });  
            services.AddMvc();  
        }  
        public void Configure(IApplicationBuilder app, IHostingEnvironment env, ILoggerFactory loggerFactory)  
        {  
            loggerFactory.AddConsole(Configuration.GetSection("Logging"));  
            loggerFactory.AddDebug();
```

```
                var options = new RewriteOptions();  
                var options = new RewriteOptions().AddRedirectToHttps();
```

```
            app.UseRewriter(options);  
        }  
    }  
}
```

Explanation:

References:

<https://stackoverflow.com/questions/49266924/requirehttpsattribute-with-asp-net-core-mvc-err-too-many-redirects>
<https://www.learnrazorpages.com/configuration/https>

QUESTION NO: 11

You are developing an ASP.NET Core web application. The web application requires sensitive configuration data.

The web application will be tested in an Acceptance Test environment. The Acceptance Test environment must be identical to the production environment.

You need to protect the configuration data.

What should you use?

- A. Secret Manager tool
- B. Configuration API
- C. Microsoft Azure Key Vault configuration provider
- D. environment variables

ANSWER: D

Explanation:

References: <https://docs.microsoft.com/en-us/aspnet/core/security/app-secrets?view=aspnetcore-2.2&tabs=windows>

QUESTION NO: 12

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some questions sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You develop an ASP.NET Core MVC web application. You have a legacy business system that sends data to the web application by using Web API. The legacy business system uses proprietary data formats.

You need to handle the proprietary data format.

Solution: Add a custom formatter class to the Web API and implement the IOutputFormatter interface.

Does the solution meet the goal?

- A. Yes
- B. No

ANSWER: A

Explanation:

References: <https://www.c-sharpcorner.com/article/custom-formatters-in-asp-net-core-mvc-web-api/>

QUESTION NO: 13

You are developing the landing page for an ASP.NET Core MVC web application that will be used to host blogs. You are implementing a View component to show text links for common application operations.

Users must be able to customize the HTML for landing pages.

You need to ensure that the links for common operations reflect the desired layout of the application when links are embedded into customized views.

Which CSS measurement unit should you use for the links?

- A. vh
- B. em
- C. rem
- D. px

ANSWER: B

QUESTION NO: 14

You need to ensure that all the MVC controllers are secure.

Which code segment should you use as the body for the CreateController method in AdminVerifierFactory.cs?

- A.

```
var controller = base.CreateController(requestContext, controllerName) as Controller;
var attributes = controller.GetType().Attributes.ToString();
if (!attributes.Contains("VideoAdminAttribute"))
    throw new Exception("Not an Administrator");
return controller;
```
- B.

```
if (requestContext.HttpContext.Items["Administrator"] == null)
    throw new Exception("Not an Administrator");
return base.CreateController(requestContext, controllerName) as Controller;
```
- C.

```
var controller = base.CreateController(requestContext, controllerName) as Controller;
var hasFilter = controller.GetType().CustomAttributes.Any
(x => x.AttributeType.Name == "VideoAdminAttribute");
if (hasFilter == null)
    throw new Exception("Not an Administrator");
return controller;
```
- D.

```
if (requestContext.RouteData.Values["Administrator"] == null)
    throw new Exception("Not an Administrator");
return base.CreateController(requestContext, controllerName) as Controller;
```

A. Option A

- B. Option B
- C. Option C
- D. Option D

ANSWER: C

Explanation:

The MemberInfo.CustomAttributes property gets a collection that contains this member's custom attributes.

The Any() statement will either return null or a collection of matched custom attributes. If it matches one or more, the controller is secure, otherwise an exception is thrown.

From scenario: The application contains a header that is visible on every page.

If the logged-on user is an administrator, then the header will contain links to administrative functions. This information is read from a cookie that is set on the server. The administrative links must not be present if an error condition is present.

Incorrect:

Not A: controller.GetType().Attributes will not return custom attributes.

References: [https://msdn.microsoft.com/en-us/library/system.reflection.memberinfo.customattributes\(v=vs.110\).aspx](https://msdn.microsoft.com/en-us/library/system.reflection.memberinfo.customattributes(v=vs.110).aspx)

QUESTION NO: 15

The transcode.exe utility activates its license online when it is installed.

You need to ensure that the registration of the transcode utility is handled as specified in its license.

Which method should you add to the TranscodeWorkerRole class?

- A.

```
public override void OnStop()
{
    RoleEnvironment.Stopping += (sender, args) =>
    {
        var task = Process.Start("transcode.exe", "unregister");
        if (task.HasExited)
            base.OnStop();
    };
}
```
- B.

```
public override void OnStop()
{
    RoleEnvironment.Stopping += (sender, args) =>
    {
        Process.Start("transcode.exe", "unregister").WaitForExit();
        base.OnStop();
    };
}
```
- C.

```
public override void OnStop()
{
    Process.Start("transcode.exe", "unregister");
    base.OnStop();
}
```
- D.

```
public override void OnStop()
{
    Process.Start("transcode.exe", "unregister").WaitForExit();
    base.OnStop();
}
```

- A. Option A
B. Option B
C. Option C
D. Option D

ANSWER: D