Version: 9.0

Case Study: 1 Olympic Marathon Background

You are developing an ASP.NET MVC application in Visual Studio 2012 that will be used by Olympic marathon runners to log data about training runs.

Business Requirements

The application stores date, distance, and duration information about a user's training runs. The user can view, insert, edit, and delete records.

The application must be optimized for accessibility.

All times must be displayed in the user's local time.

Technical Requirements

Data Access:

Database access is handled by a public class named RunnerLog.DataAccess.RunnerLogDb.

All data retrieval must be done by HTTP GET and all data updates must be done by HTTP POST.

Layout:

All pages in the application use a master layout file named \Views\Shared\ Layout.cshtml.

Models:

The application uses the \Models\LogModel.cs model.

Views:

All views in the application use the Razor view engine.

Four views located in \Views\RunLog are named:

- CalculatePace.cshtml
- EditLog.cshtml
- GetLog.cshtml
- InsertLog.cshtml

The application also contains a \Views\Home\Index.cshtml view.

Controllers:

The application contains a \Controllers\RunLogController.cs controller.

Images:

A stopwatch.png image is located in the \Images folder.

Videos:

A map of a runner's path is available when a user views a run log. The map is implemented as an Adobe Flash application and video. The browser should display the video natively if possible, using H264, Ogg, or WebM formats, in that order. If the video cannot be displayed, then the Flash application should be used.

Security:

You have the following security requirements:

- The application is configured to use forms authentication.
- Users must be logged on to insert runner data.
- Users must be members of the Admin role to edit or delete runner data.
- There are no security requirements for viewing runner data.
- You need to protect the application against cross-site request forgery.
- Passwords are hashed by using the SHA1 algorithm.

RunnerLog.Providers.RunLogRoleProvider.cs contains a custom role provider.

Relevant portions of the application files follow. (Line numbers are included for reference only.)

Application Structure

Controllers\RunLogController.cs

```
RC01
      public class RunLogController : Controller
RC02
RC03
       public ActionResult GetLog()
RC04
RC05
          List<LogModel> log = RunnerLogDb.GetLogsFromDatabase();
RC06
          return View(log);
RC07
        }
RC08
RC09
       public ActionResult InsertLog()
RC10
RC11
          LogModel log = new LogModel();
RC12
          log.RunDate = DateTime.Now;
RC13
          return View(log);
RC14
        ¥
RC15
RC16
        [HttpPost]
RC17
        public ActionResult InsertLog(LogModel log)
RC18
RC19
          RunnerLogDb.InsertLog(log);
RC20
          return RedirectToAction("GetLog");
RC21
        }
RC22
RC23
        public ActionResult DeleteLog(int id)
RC24
        Į.
RC25
          RunnerLogDb.DeleteLog(id);
RC26
          return RedirectToAction("GetLog");
RC27
        }
RC28
RC29
        public ActionResult EditLog(int id)
RC30
RC31
          LogModel log = RunnerLogDb.GetRunnerLog(id);
RC32
          return View(log);
RC33
        3
RC34 }
```

Models\LogModel.cs

```
LM01
     public class LogModel
LM02
LM03
       [Required]
LM04
       public int Id { get; set; }
LM05
LM06
       [Required]
LM07
       public DateTime RunDate { get; set; }
LM08
LM09
       [Required]
       [Range (0.01, 1000.00)]
LM10
       public double Distance { get; set; }
LM11
LM12
LM13
       [Required]
LM14
       public TimeSpan Time { get; set; }
LM15
LM16
      public string ShortDate
LM17
       -{
LM18
          get
LM19
          1
            return RunDate.ToLocalTime().ToShortDateString();
LM20
LM21
LM22
        }
LM23 }
```

Views\RunLog_CalculatePace.cshtml

```
CP01 @model RunnerLog.Models.LogModel
CP02 @(Convert.ToInt32(Model.Time.TotalMinutes / Model.Distance)) Min
CP03 @(Convert.ToInt32(Model.Time.TotalSeconds % 60 / Model.Distance)) Seconds
```

Views\RunLog\EditLog.cshtml

```
EL01 @model RunnerLog.Models.LogModel
ELO2 <h2>Edit Log Item</h2>
ELO3 <script src="@Url.Content("~/Scripts/jquery.validate.min.js")"></script>
EL04 <script src="@Url.Content("~/Scripts/jquery.validate.unobtrusive.min.js")"></
script>
EL05 @using (Html.BeginForm()) {
EL06
        @Html.AntiForgeryToken()
        @Html.ValidationSummary(true)
EL07
EL08
       <fieldset>
EL09
         <legend>LogModel</legend>
EL10
         <h3>
           Log Id: @Model.Id
EL11
EL12
         </h3>
EL13
         <div>
EL14
           @Html.LabelFor(model => model.Distance)
EL15
        </div>
EL16
         <div>
EL17
           @Html.EditorFor(model => model.Distance)
EL18
           Html.ValidationMessageFor(model => model.Distance)
         </div>
EL19
EL20
         <div>
EL21
           @Html.LabelFor(model => model.Time)
EL22
         </div>
EL23
         <div>
EL24
           @Html.EditorFor(model => model.Time)
EL25
           @Html.ValidationMessageFor(model => model.Time)
EL26
        </div>
EL27
         >
           <input type="submit" value="Save" />
EL28
         EL29
EL30
       </fieldset>
EL31 }
```

Views\RunLog\GetLog.cshtml

```
GL01 @model List<RunnerLog.Models.LogModel>
GL02
    <h2>View Runs </h2>
GL03 
GL04
     Id 
GL05
GL06
       Date 
GL07
       Distance 
GL08
       Duration 
GL09
       Avg Mile Pace 
GL10
     GL11
      @foreach (RunnerLog.Models.LogModel log in Model)
GL12
GL13
       GL14
         GL15
           GHtml.DisplayFor(model => log.Id)
GL16
         GL17
         GL18
GL19
         GL20
         GL21
           @Html.DisplayFor(model => log.Distance)
GL22
         GL23
         GL24
           @Html.DisplayFor(model => log.Time)
GL25
         GL26
         GL27
         GL28
GL29
         GL30
           @Html.ActionLink("Edit", "EditLog", new { id = log.Id })
GL31
         GL32
         @Html.ActionLink("Delete", "DeleteLog", new { id = log.Id })
GL33
GL34
GL35
GL36
     - }
GL37
```

Views\RunLog\InsertLog.cshtml

```
IL01 @model RunnerLog.Models.LogModel
ILO2 <script src="@Url.Content("~/Scripts/jquery.validate.min.js")"></script>
ILO3 <script src="@Url.Content("~/Scripts/jquery.validate.unobtrusive.min.js")"></
script>
IL04 @using (Html.BeginForm())
IL05
IL06
        @Html.ValidationSummary(true)
IL07
        <fieldset>
IL08
         <legend>LogModel</legend>
IL09
IL10
         <div>
IL11
            @Html.LabelFor(model => model.RunDate)
         </div>
IL12
IL13
         <div>
            GHtml.EditorFor(model => model.RunDate)
IL14
IL15
            GHtml.ValidationMessageFor(model => model.RunDate)
II.16
         </div>
II.17
        <div>
IL18
            @Html.LabelFor(model => model.Distance)
IL19
         </div>
IL20
         <div>
IL21
            @Html.EditorFor(model => model.Distance)
IL22
           @Html.ValidationMessageFor(model => model.Distance)
        </div>
TT-23
IL24
         <div>
IL25
            @Html.LabelFor(model => model.Time) HH:MM:SS
IL26
         </div>
IL27
         <div>
           @Html.EditorFor(model => model.Time)
IL28
IL29
           @Html.ValidationMessageFor(model => model.Time)
IL30
        </div>
IL31
        < 0>
           <input type="submit" value="Create" />
IL32
IL33
         IL34
       </fieldset>
IL35 }
```

Views\Shared_Layout.cshtml

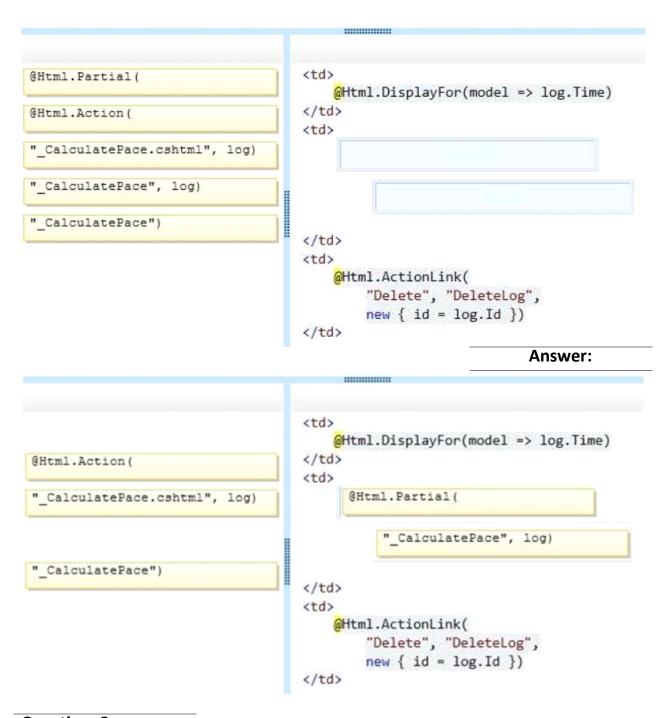
```
LOO1 <! DOCTYPE html>
L002
      <html lang="en">
L003
      <head>
L004
        . . .
L005
     </head>
L006
      <body>
L007
      . . .
L008
       <footer>
L009
L010
         <script type="text/javascript">
L011
           var c = document.getElementById('myCanvas');
L012
           var ctx = c.getContext('2d');
            ctx.font = '30pt Calibri';
L013
L014
            ctx.strokeStyle = 'gray';
            ctx.lineWidth = 3;
L015
L016
            ctx.strokeText('London 2012', 80, 30);
L017
          </script>
L018
        </footer>
L019
      </body>
LO20
     </html>
```

Question: 1

DRAG DROP

You need to implement the Views\RunLog_CalculatePace.cshtml partial view from Views\Runlog \GetLog.cshtml to display the runner's average mile pace.

How should you implement the view? (To answer, drag the appropriate code segments to the correct location or locations. Each code segment 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.)



DRAG DROP

You need to implement security according to the business requirements.

How should you modify RunLogController? (To answer, drag the appropriate code segment to the correct location or locations. Each code segment 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.)

```
[Authorize(Roles = "Admin")]

[Authorize(Users = "Admin")]

[AllowAnonymous]

[Authorize(Users = "*")]

[Authorize(Users = "*")]

public ActionResult GetLog()
...

public ActionResult InsertLog()
...

public ActionResult DeleteLog(int id)
...

Answer:
```

```
[Authorize(Roles = "Admin")]

[Authorize(Users = "Admin")]

[Authorize(Users = "Admin")]

[Authorize(Users = "*")]

[Authorize(Users = "*")]

[Authorize(Roles = "Admin")]

public ActionResult InsertLog()
...

[Authorize(Roles = "Admin")]

public ActionResult DeleteLog(int id)

[Authorize(Roles = "Admin")]

public ActionResult EditLog(int id)
...
}
```

You need to make the "Distance" header of the table bold in the Views/RunLog/GetLog.cshtml view. Which code segment should you use?

- A. table>tr{ font-weight: bold; }
- B. table>th:last-child{ font-weight: bold; }
- C. table+first-child{ font-weight: bold; }
- D. table>tr>th:nth-child (2) { font-weight: bold; }

Answer: D

Question: 4

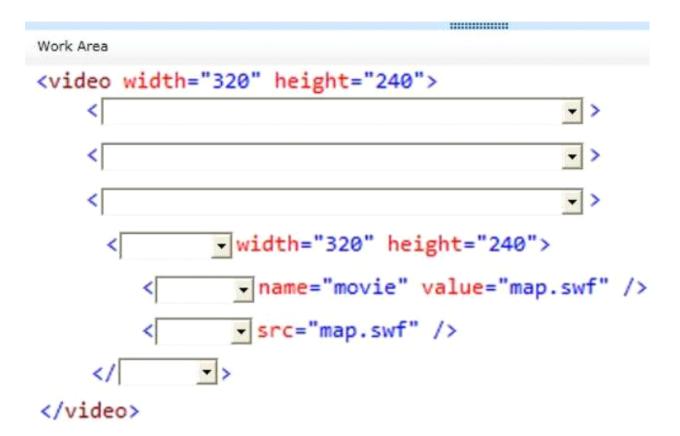
You need to extend the edit functionality of RunLogController. Which code segment should you use?

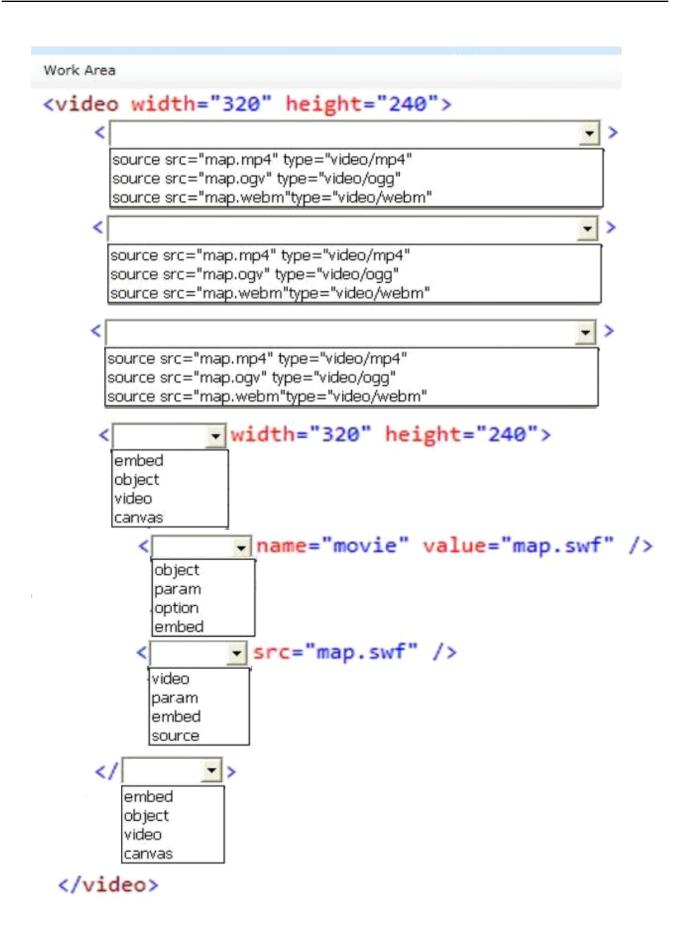
```
CA. [HttpGet]
       [ActionName("EditLog")]
       [ValidateAntiForgeryToken]
      public ActionResult EditLog(LogModel log)
       }
C B.
     [HttpPost]
       [ActionName ("EditLog")]
      public ActionResult EditLogValidated(LogModel log)
       1
C C. [HttpPost]
       [ActionName ("EditLog")]
       [ValidateAntiForgeryToken]
      public ActionResult EditLogValidated(LogModel log)
       }
C D. [HttpPost]
       [ActionName ("EditLog")]
       [RequireHttps]
       public ActionResult EditLogValidated(LogModel log)
       1
A. Option A
B. Option B
C. Option C
D. Option D
                                                         Answer: C
```

HOTSPOT

You need to implement the map of the runners' paths.

How should you build the video viewer? (To answer, select the appropriate options in the answer area.)





		 Answer:

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```
Work Area
<video width="320" height="240">
       source src="map.mp4" type="video/mp4"
       source src="map.oqv" type="video/oqq"
       source src="map.webm"type="video/webm"
       source src="map.mp4" type="video/mp4"
       source src="map.ogv" type="video/ogg"
       |source src="map.webm"type="video/webm"
       source src="map.mp4" type="video/mp4"
       source src="map.oav" type="video/oaa"
       source src="map.webm"type="video/webm"
                  width="320" height="240">
       embed
       object
       video
       canvas
                     name="movie" value="map.swf" />
            object
           param
            option
            embed
                     src="map.swf" />
            video
            param
            embed
            source
                  T >
        embed
         object
         video
 </video>
```

HOTSPOT

You need to ensure that only valid parameters are passed to the EditLog action. How should you build the route? (To answer, select the appropriate options in the answer area.)

```
Work Area
routes.MapRoute(
   name: "EditLog",
   id = @"\d+"
   url: "RunLog/EditLog/{id}",
   action = "EditLog",
   defaults: new
   constraints: new
   id = @"\d+"
   url: "RunLog/EditLog/{id}",
   action = "EditLog",
   defaults: new
   constraints: new
         controller = "RunLog",
          id = @"\d+"
          url: "RunLog/EditLog/{id}-",
          action = "EditLog",
          defaults: new
          constraints: new
   },
   id = @"\d+"
   url: "RunLog/EditLog/{id}",
   action = "EditLog",
   defaults: new
   constraints: new
          id = @"\d+"
          url: "RunLog/EditLog/{id}",
          action = "EditLog",
          defaults: new
         constraints: new
```

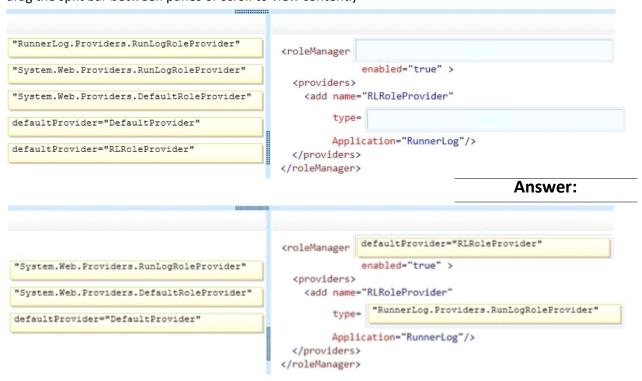
Answer:

```
Work Area
routes.MapRoute(
   name: "EditLog",
   id = @"\d+"
   url: "RunLog/EditLog/{id}",
   action = "EditLog",
   defaults: new
   constraints: new
   id = @"\d+"
   url: "RunLog/EditLog/{id}",
   action = "Editt og",
   defaults: new
   constraints: new
         controller = "RunLog",
          id = @"\d+"
         lurl: "RunLoa/EditLog/{id}",
         action = "EditLog",
         aerauits: new
         constraints: new
   id = @"\d+"
   url: "RunLog/EditLog/{id}",
   action = "EditLog",
   defaults: new
  constraints: new
         id = @"\d+"
         url: "RunLog/EditLog/{id}",
          action = "EditLog",
         defaults: new
         constraints: new
```

DRAG DROP

You need to ensure that the application uses RunLogRoleProvider custom role provider.

How should you modify the web.config file? (To answer, drag the appropriate line of code to the correct location or locations. Each line of code 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.)

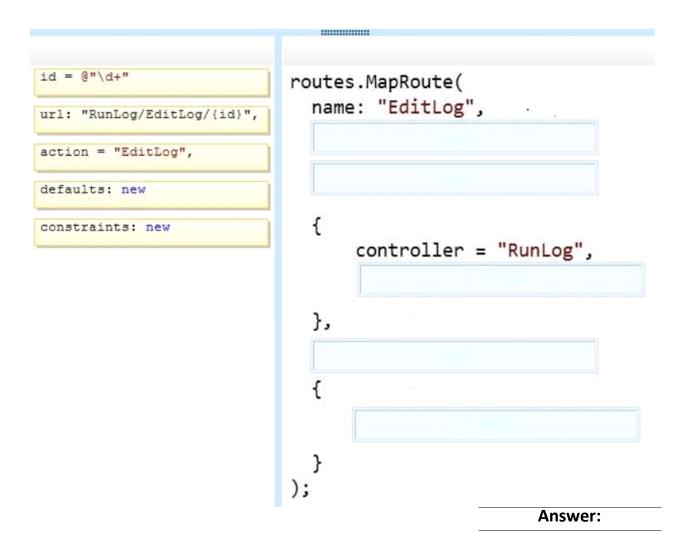


Question: 8

DRAG DROP

You need to ensure that only valid parameters are passed to the EditLog action.

How should you build the route? (To answer, drag the appropriate code segments to the correct location or locations. Each code segment 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.)



```
routes.MapRoute(
   name: "EditLog",
   url: "RunLog/EditLog/{id}",

   defaults: new

{
      controller = "RunLog",
      action = "EditLog",
   },
   constraints: new

{
      id = @"\d+"
      }
   );
```

If the canvas element is supported by the client browser, the application must display "London 2012" in the footer as text formatted by JavaScript at the end of the _Layout.cshtml file.

You need to modify the layout to ensure that "London 2012" is displayed as either formatted text or as plain text, depending on what the client browser supports.

Which code segment should you add?

```
A. <canvas id="myFooter">
```

@(Request, Browser. Java Applets~?~new~Html String("London~2012"):null)

</canvas>

B. <canvas id="myFooter">London 2012</canvas>

C. <canvas id="myCanvas">London 2012</canvas>

D. <canvas id="myCanvas"></canvas>

London 2012

Answer: C

Question: 10

You need to add an action to RunLogController to validate the users' passwords. Which code segment should you use?

```
C A public ActionResult Login(string username, string password)
        byte[] buffer = Encoding.UTF8.GetBytes(password + username);
        byte[] hash = MD5.Create().ComputeHash(buffer);
        ComparePassword(username, hash);
        return ContextDependentView();
       }
C B. [RequireHttps]
      public ActionResult Login(string username, string password)
        byte[] buffer = Encoding.UTF8.GetBytes(password + username);
        byte[] hash = SHA1.Create().ComputeHash(buffer);
        ComparePassword(username, hash);
        return ContextDependentView();
      }
C.C. public ActionResult Login(string username, string password)
        byte[] buffer = Encoding.UTF8.GetBytes(password + username);
        byte[] hash = SHA1.Create().ComputeHash(buffer);
        ComparePassword(username, hash);
        return ContextDependentView();
      }
C D. [RequireHttps]
      public ActionResult Login(string username, string password)
        byte[] buffer = Encoding.UTF8.GetBytes(password + username);
        byte[] hash = MD5.Create().ComputeHash(buffer);
        ComparePassword(username, hash);
        return ContextDependentView();
      3
A. Option A
B. Option B
C. Option C
D. Option D
                                                         Answer: B
```

Question: 11

You need to make all of the rows in the table bold in the Views/RunLog/GetLog.cshtml view. Which code segment should you use?

- A. Table > th:last-child { font-weight: bold; }
- B. Table+first-child{ font-weight: bold; }
- C. Table>tr>th:nth-child{2}{font-weight: bold; }
- D. Table > tr {font-weight: bold;}

Answer: D

Question: 12

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

Answer: A, B

Question: 13

DRAG DROP

You need to implement security according to the business requirements.

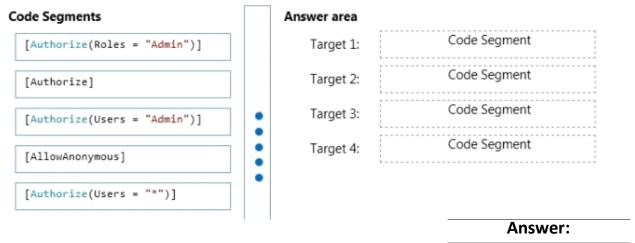
You have the following code:

```
Target 1
public class RunLogController : Controller
{
    Target 2
    public ActionResult GetLog()
    ...
    public ActionResult InsertLog()
    ...
    Target 3
    public ActionResult DeleteLog(int id)
    Target 4
    public ActionResult EditLog(int id)
    ...
}
```

Which code segments should you include in Target 1, Target 2, Target 3 and Target 4 to modify

RunLogController? To answer, drag the appropriate code segment to the correct targets. Each code segment 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.

0 0 0 0 0



Target 1: [Authorize]

Target 2: [AllowAnonymous]

Target 3: [Authorize(Roles = "Admin")]
Target 4: [Authorize(Roles = "Admin")]

Question: 14

The RunLog/Views/InsertLog.cshtml view must display the /Images/stopwatch.png image and the "Insert Run Data" header text below the image. The view should resemble the exhibit. (Click the Exhibit button.)



The application must display the image above the field set.

You need to add the HTML code to /Runlog/Views/InsertLog.cshtml to display the image and header text.

Which code segment should you use?

```
C A. <h2>
         Insert Run Data
        </h2>
        <div>
          <img src="../Images/StopWatch.png"/>
        </div>
 C B <div style="background: url('../Images/StopWatch.png');">
          <h2>Insert Run Data</h2>
       </div>
 C <div style="width: 130px; height: 100px;">
         <a href="../Images/StopWatch.png"></a>
        </div>
        <h2>
          Insert Run Data
        </h2>
 C D. <div style="width: 130px; height: 100px; background: url
        ('../Images/StopWatch.png');">
        </div>
        <h2>
          Insert Run Data
        </h2>
A. Option A
B. Option B
C. Option C
```

Explanation:

D. Option D

Example:

<div style="background-image: url(../images/test-background.gif); height: 200px; width: 400px; border:
1px solid black;">Example of a DIV element with a background image:</div>

Answer: D

<div style="background-image: url(../images/test-background.gif); height: 200px; width: 400px; border:
1px solid black;"> </div>

Example of a DIV element with a background image:



Explanation:

Reference:

DIV BACKGROUND-IMAGE in the STYLE element

http://www.w3.org/WAI/UA/TS/html401/cp0301/0301-CSS-DIV-BACKGROUND-IMAGE.html

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