Monash University

FIT5192 Enterprise and Internet Applications Development – S2B 2019

Assignment 2: Website Development Using ASP.NET

This assignment is worth 25% of the final mark of this unit, and it is a group assignment of maximum **two** students for each group. You can also choose to do this assignment on your own as an individual work, although working in pairs is recommended.

All parts of the assignment are due on **Tuesday, 27th August 2019 by 11:55pm**. In this assignment, you are asked to construct a websites for a business or organisation, using ASP.NET technologies based on **either** the Web Forms-based **or** ASP.NET MVC approach. The business or organisation may be real or imaginary. However, if you choose a real business, you must ensure that you do not break copyright.

The ASP.Net development project is worth up to **20%** of the final mark available for this unit (marked out of 80) and the presentation part is worth up to **5% (**marked out of 20).

In this compressed format double unit, most of the lecture and tutorial topics focus on the form-based approach as this provides a rich set of controls which can provide a good introduction to ASP.Net. The *advantages* of the ASP.NET Web Forms approach include that it is a mature technology and you can build dynamic websites using a familiar drag-and-drop, event-driven model. A design surface and hundreds of controls and components let you rapidly build sophisticated, powerful UI-driven sites with data access. We will use use a more programmatic approach in this unit however.

Some *disadvantages* with Web Forms however is that the developer has little control over exactly what HTML is actually produced on the page and how changes in one part may necessitate updates to others due to the monolithic (single layered) architecture used. This can become a major issue for modern web development as it makes it difficult for developers to easily design "responsive" websites which evolve over time.

The Model-View-Controller (MVC) architectural pattern overcomes such limitations by separating an application into three main groups of components; Models, Views, and Controllers. This architectural pattern helps to achieve *separation of concerns* since the Model is independent of the View or Controller and the View is independent of the Controller (thus changes to the UI Controller will not affect the View, Model or ViewModel instances.) MVC has played an important role in most UI frameworks in terms of thinking of UI design.With the addition of frontend frameworks such as Razor, greater responsiveness and user experience (UX) can be achieved. The full technology stack comprises the following four layers:

ASP.Net Technology Stack

1	Frontend Technology (e.g. Razor, AngularJS)
2	.NET Framework (ASP.Net Web Forms or MVC)
3	Internet Information Services (IIS) - This is the server on which the web application runs
4	Microsoft SQL Server or other Database

In total there are three main development approaches to ASP.Net as summarised below:

Framework	Development Style	Expertise
Web Forms	Rapid Development using a rich library of controls that encapsulate HTML markup.	Mid-Level to Advanced RAD(*)
MVC	Full control over HTML markup, code and markup separated, and easy to write test cases.	Mid-Level to Advanced
Web Pages	HTML Markup and your code together in the same file.	Beginner to Mid-Level

(*) Rapid application development (RAD) describes a method of software development which heavily emphasizes rapid prototyping and iterative delivery. The RAD model is, therefore, a sharp alternative to the typical waterfall development model, which often focuses largely on planning and sequential design practices.

Whether you choose **Option A**: Web Forms or **Option B**: ASP.Net MVC and/or Razor frontend for **Task 1**, the functions to be provided are quite similar although the second option offers more freedom and design choices. Although there are relative strengths and weaknesses, neither approach is considered better than the other within the context of this assignment.

Task 1 Option A – Develop an ASP.NET Classic Web Forms-based Website (80 marks)

The site will be made up from XHTML and ASPX (using C#) documents as indicated below:

Please note the following requirements:

- Make up your own company name, graphics and colour scheme.
- The site is to use a master page. The master page contains the material across the top, down the sides and along the bottom.
- Use a skin and a style sheet to set display features.
- Use a fly out menu (using a site map) in the master page for site navigation. The menu items must be set out as shown: a *Home page*, *Registration* page, *About Us* page with two sub-pages (*Our history* and *Frequently asked questions*), a *Site map* page and a *Documentation* page. Set tooltips for menu items.
- Add breadcrumbs. Use either a small graphic or conventional arrow (-->).
- Add a calendar control to simply display a calendar.
- Use at least three images as part of the layout. Make sure the images are copyright free.

NOTE: ONLY THE MASTER PAGE, HOME PAGE AND REGISTRATION PAGE WILL BE VIEWABLE UNTIL THE USER HAS LOGGED IN (SEE LOGIN SECTION BELOW)

1. Master Page

It is recommended to use only one ASP.NET Master Page in this assignment. The menu must be contained within the Master Page. Use a skin and a style sheet to set display features.

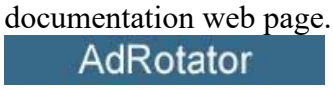
The menu must be provided via an ASP.NET menu navigation control and provide links to

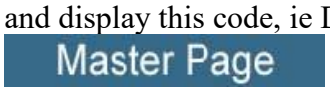
five other pages, which are displayed in the main screen area. The order of pages in the menu must be the same as the order of pages given below. The five other pages will be as follows:

2. Home Page

This is the home or title page. It will have a graphic and some display text to introduce the topic of the website. It will clearly indicate what the site is about and will contain an AdRotator control to display three banner advertisements appropriate to your website.

At the bottom of this page include the following:

- A link to the standard Monash course disclaimer: http://users.monash.edu.au/~sgrose/msh/disclaimer.htm
- Email links to the page author and the server webmaster (use your own Monash email address for both).
- A copyright notice. The notice must only refer to the material to which you, the author, own copyright. This will include all the text and your original graphics.
- Acknowledgements. Acknowledge the sources of any material which is not owned by you, and which is either copyright free or for which you have permission to use: e.g. clipart. However, original sources of all images used in your site need to be put in your documentation web page.
- 

Place an image similar to this at the bottom of this page. Make the image clickable to open up a new tab in the browser, in which is displayed the full page code for this page and its associated XML file. Use ASP.NET to dynamically read and display this code, ie DO NOT copy and paste the code into a file for display.
- 

Place an image similar to this at the bottom of the page. Make the image clickable to open up a new tab in the browser, in which is displayed the code used for the Master Page as described above.

3. Registration

On this page present an information gathering form for the user to register with the site. The form must include at least eight data entry fields, and include at least one of each of the following: dropdown list, listbox, textbox, radio buttons list and checkbox. Use a RequiredFieldValidator validation control to ensure that every text input field is entered by the user. Also include at least one of the following for each text input field: CompareValidator control, CustomValidator control, RangeValidator control and RegularExpressionValidator control. Make sure you use each of these controls at least once. DO NOT use a ValidationSummary control for this. Please make one of the fields contain a valid URL (any URL will do, it does not have to be relevant to your site topic).

In addition to displaying the user-entered data as required above, this page must also provide for the contents of the form to be written to an Access database. Just use one table in the database, which will include all the fields of the form. Make sure that the database has a key field, e.g. a customer ID, which is unique for every record and which the user does not have to enter themselves and that each record contains an email field.

Place an image similar to this at the bottom of the page. Make the image clickable to open up a new tab in the browser, in which is displayed the code used for this page as described above.

Add a button or link to the page, with suitable formatting attributes. The text on the button/link will be: "Click here to see all the xxx", where "xxx" is replaced with a term, like "customers",

appropriate to the website. When the user clicks this button/link a new tab is opened in the browser, and all of the records in the database are displayed, with suitable heading and formatting. Use a GridView to display the records. Use the formatting features of the GridView control, including BoundField, HyperlinkField (for the URL field of the database), and a ButtonField.

The ButtonField is used to display the data of a selected row of the GridView, under the GridView using label controls contained within a Panel control (Format via a CSS to create attractive output). Again, please make one of the fields contain a valid URL.

Use an Access DataSource Control for this page. Marks will be deducted if you do not use a GridView and/or do not use BoundFields and at least one ButtonField and HyperlinkField.

Underneath the output place an image similar to this, which, when clicked opens a new tab in the browser and displays the code, as indicated above. Add another button/link to this page, which when clicked, will open a new tab in the browser and allow the user to select a single record and have it displayed. The user can enter part of the contents of any of three suitable fields (e.g. customer ID, customer name or customer address field) and have the whole record displayed, with suitable formatting. If there is no record that matches the user input, then a suitable message is displayed to the user.

Underneath the output place an image similar to this, which, when clicked opens a new tab in the browser and displays the code, as indicated above.

4. About Us

The About Us page, has 2 subpages -Our History and Frequently Asked Questions. Make up some information for each of these 3 pages, which is relevant to your site (around 15-20 lines).

Place an image similar to this at the bottom of the page. Make the image clickable to open up a new tab in the browser, in which is displayed the code used for the About Us, Our History and Frequently Asked Questions pages.

5. Site Map

The site map page shows a site map of the site, using a TreeView control and the Web.sitemap file.

Underneath the output place an image similar to this, which, when clicked opens a new tab in the browser and displays the code, as indicated above.

6. Documentation

This page will provide assignment documentation.

- Details of the author: name, student ID, this unit's name, unit provider (Monash University, Faculty of Information Technology), assignment number, date of submission, lecturer/tutor's name, an email link to the author, a link to this assignment specification.
- It is important to outline a detailed task allocation of the two members in a separate '**Task Allocation**' section in this page.
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Place an image similar to this at the bottom of the page. Make the image clickable to open up a new tab in the browser, in which is displayed the code for the Cascading Stylesheet.

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Place an image similar to this at the bottom of the page. Make the image clickable to open up a new tab in the browser, in which is displayed the code for the skin file.

7. Other Features

Construct a login system for your site. Any user may load the title page, but to go to any of the subsidiary pages, the user is first diverted to a login page. This login page will have two text boxes (one for a username and one for a password), and a button. Both boxes need to be checked that the user does not leave either empty before clicking the button.

When the user enters a username and password, these are checked against a set of usernames and passwords in an Access database. If the user logs on correctly, then the user is taken to the page originally intended, if not then they are required to try to login again.

In the database, please set up an administrator account as the following, where the username and password are the same: "admin".

Use an image similar to this to display the code for your login page, and the web.config file. Note: in implementing your login system, place all the pages that require a login challenge, in one sub-directory, called "locked" for example. Then place the two web.config files given below in the appropriate directories.

Place the following web.config file in the root directory of your application: i.e. in your root directory, above the "ass2" sub directory. Also place the login page in your root directory.

```
<?xml version="1.0" encoding="utf-8" ?>
<configuration>
      <system.web>
        <customErrors mode="Off"/>
        <authentication mode="Forms">
            <forms name = "ass2"
            path="/"
            loginUrl="login.aspx"
            protection = "All"
            timeout = "10" />
        </authentication>
      </system.web>
</configuration>
```

Create a directory called "locked" inside your "ass2" directory. Place this web.config file in the "locked" sub-directory.

```
<?xml version="1.0" encoding="utf-8" ?>
<configuration>
      <system.web>
        <authorization>
            <deny users="?" />
```

```
        </authorization>
      </system.web>
</configuration>
```

Optional Requirements for Extra Credit

Completing the requirements stated above may earn you up to a **Distinction** grade for this assignment. In order to earn up to a **High Distinction** grade you must complete the following optional requirement.

8. Email

This page will be reached by a separate menu item and will display a list of customer, clients, registered users (or whatever you have called them) from your database. Display the name, email address and a checkbox for each record. The user will be able to select one or more clients, enter a subject and email and send the message.

Place an image similar to this at the bottom of the page. Make the image clickable to open up a new tab in the browser, in which is displayed the code used for the Email page.

9. Calendar

You will need a table in your database, which holds information regarding events. There needs to be an EventDate, EventTime and an EventDescription.

When the page loads the database should be checked to determine if there any events scheduled for today. If so, today's date should be highlighted in the calendar control by using a different background colour and a label below the calendar should display the event description and the event time. If there are no events for the current date, the label should display appropriate text such as "No Events Scheduled for Today".

NOTE: Events can be manually entered into the database. The only requirement is to display events. It is not necessary to be able to add/edit/delete events from this table.
HINTS:

- A Calendar control cannot be bound directly to a DataSource control. You will need to specify an *onDayRender* event handler for the Calendar control. The method signature for this is: `void dayRender (object sender, DayRenderEventArgs e)`
- You can use a DataSource control to connect to the database and then populate a DataView object with the results of the SQL SELECT statement:
  ```
  DataView dv = (DataView) dsEvent.Select
     (DataSourceSelectArguments.Empty);
  ```
  The DataView object is contained within the System.Data Namesapce.
  In this example the AccessDataSource has an ID of dsEvent.
  The DataView.Count method can be used to determine if any rows have been returned.
- Dates in Access are delimited with the # character. So a valid SQL statement would be
  `SELECT * from Event WHERE EventDate = #10/8/2017#;`

NOTE: Feel free to implement this using a method of your choice but the functionality must be as described.

Task 1 Option B – Develop an ASP.NET MVC Website (80 marks)

In this major variation, you or your group are asked to construct an ASP.NET MVC application for a real or imaginary business or organisation (as with Option A, if you choose a real business, you must ensure to cite sources properly and not break copyright.)

As a basic requirement, the application must connect to a data store, which contains at least two related tables/entities, such as Customers and Orders, Students and Classes, Car Manufacturers and Cars or similar.

The application must contain the following web pages and features:

1. Master Page

The site must contain a Master Page, which contains a site banner and menu links. See requirements for Option A for further details.

2. Home Page

The Home Page will contain some text describing the site and an appropriate logo/image. See requirements for Option A for further details.

3. Content Pages

These pages must provide full CRUD functionality for the database tables to which they refer. The following detailed requirements must be met:

- The initial view should be an alphabetically sorted list.
- This view will also provide an option to allow the user to add a new record.
- The user can "drill-down" from the initial view for further details of a record.
- The details view will allow for editing and deleting of the particular record.
- When adding or editing a record, the built in MVC jQuery validation script library should be used to display appropriate error messages.

4. Documentation – Reached via the Main Menu

Construct a web page that will provide assignment documentation as the following:

- Details of the author: Name, student ID
- This unit's name, unit provider (Monash University, The Faculty of Information Technology), assignment number, date of submission.
- A link to this assignment specification.
- Lecturer/tutor's name, an email link to the author

It is important to outline a detailed task allocation of the two members in a separate '**Task Allocation**' section in this page.

It is also mandatory to outline all of your referred or utilised external resources, including content of business introduction, company history, FAQ, product or service details, icons or images etc., in a separate '**References & External Resources**' section in this page.

Image details. You must include the source of all images used in your assignment. This should take the form of a table with 2 columns (Image and Author). The Image column should contain the original image and the Author column should contain the organisation, website address or the person who own the copyright to the image. If you have received permission to use an image from the owner, this should be included here.

Details of any additional MVC functionality you have included, including:

- Page which contains the functionality
- Description of the functionality
- Details of any jQuery functionality contained within your application. This should include:
    - Page which contains the jQuery functionality
    - Description of the functionality
    - A link to the source of the jQuery library or libraries you have used

5. Search Function

A search function for the database tables to which the content pages refer should be developed using an MVC Custom Template. The search function should be implemented via a textbox, which allows the user to enter a search term and display any records that match this term (or part thereof).

The following jQuery functionality can also be used to implement the search section:

- row highlighting
- alternating row colouring
- date-picker for entering dates

6. Other Features

Marks will be awarded for the use of any other appropriate jQuery, Razor UI or MVC functionality, up to a limit of 5 additional features. As a guideline, the complexity of these should be comparable to standard and optional requirements detailed for the Web Forms based approach set out in **Option A**. Mark allocation will also vary depending on complexity and quality and full marks are available with less than 5 additional features.

Task Two – Class Presentation of Website

In the second part of the assignment 2, you are asked to present your ASP.NET website to the rest of the class. This will take place the day following submission date for the assignment (on **Wednesday, 22nd August 2018**).

A short slide presentation must be prepared and submitted either in PPT (PowerPoint) or PDF format. The total length including title page should not exceed 8 slides. Assessment of presentations will be based equally on **slide quality** and **presentation quality** for each speaker, with additional credit awarded for overall structure of the talk.

The content of the presentation is left open to each group, however it should consider the **technical**, **business**, **usability** and **design** aspects of the implemented ASP.NET website.

Each presentation should be approximately 10 minutes in duration including time for set-up and answering of any questions from the audience (Q&A). So for a two person assignment presentations should be **5 minutes each**.

Submitting Assignment 2

The site you develop must conform to all copyright requirements. **Failure to observe copyright will cause the assignment to gain a maximum of 50%.**

To ensure that workload within each team is reasonably balanced, individual author's

names must be included within comment fields for each part of the website source-code. If less than One Third (1/3) of the combined source code is not directly attributed to a particular member of the team, a deduction of 20% of the maximum mark available for the assignment will be applied *for that student.* Note that this equates to 5% of the subject. You may also be asked to explain your individual contribution during the presentation Q&A.

Ensure that all ASP.NET Server Controls are formatted via CSS - there must be NO formatting contained within the control specifications. Design your web pages to be viewed with 1024 x 768 screen resolution and higher resolutions. The assignment may be corrected at any screen resolution of 1024 x 768 or higher.

You are required to submit your assignment as a **".zip"** file named with your team name. For example, if your team name is **NoIdea** then you should submit a file named **FIT5192A2_NoIdea.zip - marks will be deducted if this requirement is not strictly complied with.** The softcopy of your assignment submission is to be submitted via the Assignments link provided on the FIT5192 unit's Moodle site by the deadline specified in this document. The only exceptions will be in cases of sickness or other serious cause, for which documentary evidence (e.g. a doctor's certificate) must be provided. **Students must request an extension prior to the submission date.**

Your submission must include the following:

1. Include an electronic copy of your assignment marking sheet (an Excel spreadsheet), which can be downloaded from the unit's Moodle site. The spreadsheet has three worksheets. The first is a cover sheet for the assignment. Read this carefully and then fill in your details in the boxes at the top of the worksheet. The second and the third worksheets are for staff to enter your marks. **DO NOT make any changes to the second and the third worksheets.** Do not rename the assessment sheet file name under any circumstances. After correction, your marks will be added to the assessment sheet. Please note: 20% marks will be deducted for failing to fill out and submit the assessment sheet. Go through the assessment sheet carefully and check that you have done everything for which marks will be awarded. Remember, marks will be awarded for the assignment that has been set, not the assignment you might like to do. Make sure that the various features are on the pages as detailed above. If you place a feature on the wrong page you will be given zero marks for that feature.

2. Include all application files for the website. Please setup the IIS server on the lab machine that you use for development. The IIS server is required to run ASP.NET v4.0 or v4.5. Please deploy your website onto this IIS server, test it thoroughly, and ensure that all files to be submitted will work under these versions. Do not assume that just because the assignment works properly from the Visual Studio IDE, that it will also work properly from the IIS server you setup. For example, if you have spaces in the names of your files, they may not work properly from the IIS server, but may work from your IDE. To view the website after the application has been deployed, point your browser to (Note: insert your ID number in place of "12345678".): http://localhost/12345678/index.aspx (ASP.NET Web form-based website).

3. Presentation slides (either in PPT or PDF format) must be submitted as part of the assignment. **If you plan to demonstrate your live website to the rest of the class then it is strongly recommended that you test if you can access the site prior to the**

presentation! Note:

4. The author (or the two authors in case of a group task) must write all submitted web pages. **Please ensure that individual author's names are included within the source files – this will assist in determining contributions by each member of a team. Failure to comply with this will result in significant mark deductions for each team member.**

5. Where there is evidence of similarity with other assignments (in source code or any other artefact) students will be severely penalised. Note also that automatic tools such as Turnitin and MOSS are regularly used to automatically determine degrees of code similarity.

Plagiarism

Before submitting your assignment, please make sure that you have not breached the University's plagiarism and cheating policy. It is the student's responsibility to familiarize themselves with the contents of these documents.

Plagiarism and cheating are regarded as very serious offences. In cases where cheating has been confirmed, students would be severely penalized, from losing some or all marks for an assignment, to facing disciplinary action at the Faculty level. While we would wish that all our students adhere to sound ethical conduct and honesty, please acquaint yourself with the following policy from the Plagiarism Procedures of Monash, available at:

http://www.policy.monash.edu/policy-bank/academic/education/conduct/student-academic-integrity-managing-plagiarism-collusion-procedures.html