Preconditions

1. You should work on your local machine.
2. You may use Visual Studio 2010 or above.
3. You may use SQL Server 2008 or above (Main or Express edition).

Instructions

- Try to complete as much as possible within given time-frame, even if you do not finish the assignment, your work will be evaluated depending on what and how much you completed.
- Please note that you are expected to work on the assignment independently. Discussing assignment details with colleagues or any indication of outside help will be considered cheating.
- Please do not expect too much hand-holding as this is an evaluation assignment.
- Read the complete assignment before you start. Understand clearly what is required so that your work will be appropriate and easier.

Requirements

Objective

Create a web application and a service to facilitate search in the National Criminals Database.

Functional Specifications

Create a web application:

1. Users could register themselves. Users should be able to log in.
2. Users could submit search along with their email address to receive the results (No immediate online results).
3. Shows errors if parameters fail basic validations at the service call (data type, range, etc.).

Create a web service:

1. The service exposes a method to submit search with the following parameters.

    1. Person search parameters like (names, age range, sex, height range, weight range, nationality, etc.)
    2. Maximum number of results to produce.
    3. Email address of the results recipient.
2. Prepares found criminal profiles as PDF files (one person per file)
3. Email the files to the recipient (maximum 10 files per email, so could be multiple emails).

Technical Specifications

The following list of technical specifications should be adhered to:

1. For the web service
    1. Create a WCF web service.
    2. Create a database with any required tables to keep criminal details. Insert some test data.
    3. Use LINQ to SQL for database queries.
    4. The service exposed method only validates the parameters and immediately returns true/false. After that it launches a background thread to process and mail the results.
    5. For PDF generation use a library like iTextSharp or PdfSharp. Keep the PDF file simple with only one page.
2. For the web application
    1. Create an ASP.NET MVC4+ application.
    2. Choose any authentication provider, even a custom one.
    3. Apply input validations and constraints wherever necessary to create a stable application.
3. Even if you are not able to complete all the tasks, try to achieve a working application.
4. Add missing requirements to the implementation, according to your experience.

Deliverables

Application Demo

Record the video demonstration of the web application using Wink or any other tool. Do not upload the video. Save it to your local machine.

Database script

Create a single SQL script file to create the database, its schema, any stored procedure and any test data you may use.

Readme

Create a txt file with the following information

1. Steps to create and initialize the database
2. Steps to prepare the source code to build properly
3. Any assumptions made and missing requirements that are not covered in the requirements
4. Any feedback you may wish to give about improving the assignment.

Design diagrams

Create a doc file containing the following information and diagrams

1. List of technologies and design patterns used
2. An overall activity diagram
3. A sequence diagram for the search process

To be evaluated

1. The quality of the output (functionality)
2. Code quality and completeness
3. Technologies and design applied
4. Extra validations and assumptions which are not described
5. Proper documentation and demonstration video

Delivery / What to submit

Please, read and follow this section carefully. Any delivery that does not follow this section will score much less or simply won't be evaluated.

Delivery for this assignment should consist of an archive named <your_name> - CSharpAssignment.zip containing the following

1. Source code/project including SQL scripts if any
2. Wink recording, download version 2 from Wink, render the video to swf format
3. Readme.txt containing the instructions to configure and run the application, notes and feedback
4. Design.doc with needed diagrams

Structure of the resulting zip file should be of the following format

- <your_name> - CSharpAssignment.zip
- <your_name> - CSharpAssignment.zip \Readme.txt
- <your_name> - CSharpAssignment.zip \Design.doc

- <your_name> - CSharpAssignment.zip \Wink\ <<< this folder should contain the wink recording
- <your_name> - CSharpAssignment.zip \Source\ <<< this folder should contain the complete source code for the project(s)

ATTENTION! YOUR APPLICATION WILL BE REJECTED IF IT:

- Does not compile
- Does not contain unit tests
- Unit tests are failing