**ASP.NET Core – June 2021**

**Individual Project Assignment  
21-August-2021**

**General Requirements**

Your Web application should use the following technologies, frameworks and development techniques:

* The application must be implemented using **ASP.NET Core** Framework (**latest**).
* The application must have at least **10** web pages (views)
* The application must have at least 5 **entity models**
* The application must have at least 5 **controllers**
* Use **Visual Studio 2019 / JetBrains Project Rider**.
* Use the **Razor** template engine for generating the UI
* Use **sections** and **partial views**.
* Use **display** and **editor templates**.
* Optionally, you could also use Web API to create a RESTful service and use JavaScript / TypeScript for the **Front-End**
* Use **Microsoft SQL Server** as Database Service
* Optionally, use multiple storages, e.g. files, other Web services, databases (e.g. MySQL / MongoDB / Cassandra / etc.)
* Use **Entity Framework Core** to access your database
* If you need additional connectors to other databases, feel free to use them
* Use **MVC Areas** to separate different parts of your application (e.g. area for administration)
* Adapt the default **ASP.NET Core site template** or get another free theme
* Use responsive design based on **Twitter Bootstrap / Google Material design**
* Or just design your own
* Use the standard **ASP.NET Identity System** for managing **Users** and **Roles**
* Your registered users should have at least one of these roles: **User** and **Administrator**
* If you need, implement your own user management system
* Optionally, use **AJAX** request to asynchronously load and display datasomewhere in your application
* Write **Unit Tests** for your logic, controllers, actions, helpers, etc.
* You should **cover** at least **65%** of your business logic.
* Implement **error handling** and **data validation** to avoid crashes when invalid data is entered
* Both **client-side** and **server-side**, even at the database(s)
* Handle correctly the special **HTML characters** and tags like **<br />** and **<script>** (escape special characters)
* Use **Dependency Injection**
* The built-in one in ASP.NET Core is perfectly fine
* Optionally, use **AutoМapping**
* **Prevent** from **security** **vulnerabilities** like **SQL Injection**, **XSS**, **CSRF**, parameter tampering, etc.
* **DO NOT** use the project developed during the lectures by the lecturer. Try to do something different.

**Additional Requirements**

Your Project **MUST** have a well-structured **Architecture** and a well-configured **Control Flow**.

* Follow the best practices for Object Oriented design and **high-quality code** for the Web application:
* Use the OOP principles properly: data encapsulation, inheritance, abstraction and polymorphism
* Use exception handling properly
* Follow the principles of strong cohesion and loose coupling
* Correctly format and structure your code, name your identifiers and make the code readable
* Make the user interface (UI) good-looking and easy to use
* If you provide a broken design, your Functionality Points will be sanctioned
* Support all major modern Web browsers
* Optionally, make the site as responsive as possible – think about tablets and smartphones
* Use Caching where appropriate

**Source Control**

Use a **source control system** by choice, e.g. **GitHub**, **BitBucket**

* Submit a link to your public source code repository
* You should have **commits** in at least **5 DIFFERENT** days
* You should have at least **20 commits**
* You should **not commit** any changes after **23:59** on the **18-Aug-2021** (**Submission Deadline**)

**IMPORTANT:** The **Source Control Requirements** are **ABSOLUTELY MANDATORY**.   
**IMPORTANT: NOT** following the **Source Control Requirements** will result in your **DIRECT DISQUALIFICATION** from the **Project Defenses**.

**Submission Deadline**

* You **must** submit your project before **23:59** on the **13-Aug-2021** using a survey that will show up on the **11-Aug-2021**.
* A presentation schedule will be available on the **19-Aug-2021** and will include only the projects that were **submitted beforehand**. Non-submitted projects will **NOT** be evaluated.

**Online Project Defense**

Each student will have to deliver an online **defense** of its work in front of a trainer.   
Students will have **only 10-15 minutes** for the following:

* **Demonstrate** how the application works (very shortly)
* Show the **source code** and explain how it works
* Answer questions related to the project (and best practices in general)

Please be **strict in timing**! On the 15th minute you **will be interrupted**! It is good idea to leave **the last 2-3 minutes for questions** from the trainers.

Be **well prepared** for presenting maximum of your work for minimum time. Open the project assets beforehand to save time.

**Bonuses**

* Anything that is not described in the assignment is a bonus if it has some practical use
* Examples
* Use **SignalR** communication somewhere in your application.
* T q
* Host the application in a **cloud environment**, e.g. in **AppHarbor** or **Azure**
* Use a **file storage cloud API**, e.g. **Dropbox**, **Google Drive** or other for storing the files
* Use of features of HTML5 like **Geolocation**, **Local Storage**, **SVG**, **Canvas**, etc.

**Assessment Criteria**

* **Functionality** – **0…20**
* **Implementing controllers correctly** (controllers should do only their work) **– 0...5**
* **Implementing views correctly** (using display and editor templates) **– 0…5**
* **Unit tests** (unit test for some of the controllers using mocking) **– 0…10**
* **Security** (prevent SQL injection, XSS, CSRF, parameter tampering, etc.) **– 0…5**
* **Data validation** (validation in the models and input models) **– 0…10**
* **Using inversion of control – 0…5**
* **Using areas with multiple layouts – 0…10**
* **Code quality** (well-structured code, following the MVC pattern, following SOLID principles, etc.) – **0w**
* **Bonus** (bonus points are given for exceptional project) – **0…25**