CET3049 - Modern Full Stack Development with Java - Capstone

Topics Covered:

Learning Objectives:

- Whole software development process

Deliverables:

- Submit a zipped file containing the necessary documents as `CET3049_CAP_MS0X_<Your_Name>.zip` (e.g. `CET3049_CAP_MS01_John_Doe.zip` for Milestone 1).

Background

For this final practicum, trainees will undertake the developing of a web application of their own choice. This practicum shall be delivered in 4 milestones as detailed in the Milestones section below. Milestones should be seen as an "early draft" of the final implementation and will serve as a "checkpoint" to evaluate the practicum, the general methodology to be employed and work that has been accomplished so far.

Trainees are free to choose and create any kind of web application which they are interested but shall adhere to the following requirements:

1. Front-end to be done using **React JS**.

2. Backend to be done using **Spring / Spring boot (Java)**. RESTful web service.

3. A database with at least **3 tables** is to be constructed from scratch. Access to the database are through 3rd party libraries such as Spring Data (JDBC or JPA). At least 3 standard CRUD operations must be implemented in your application. All 3 CRUD operations **cannot** be the same. **Using of sample databases from any source is not allowed.**

    For example, 3 standard CRUD operations can consist of 2 `SELECT`s, 1 `UPDATE` or 1 `SELECT`, 1 `INSERT`, 1 `UPDATE`. Any combination of CRUD operations except 3 `SELECT`s, 3 `INSERT`s, 3 `UPDATE`s or 3 `DELETE`s

4. Proper **OOP concepts** must be applied.

5. Your program has to be divided into several parts stored in **different** folders, each with an appropriate name to describe their contents.

6. **Prevent** potential SQL injections.

7. Comments are **required** to justify your way of implementation.

8. Include a `ReadMe` text file with the Start up procedures of both your frontend and backend applications. The priority is for your applications to run locally.

9. You are **not allowed** to choose projects that are similar in functionality or topic to any applications used in the lectures. **Past personal projects are also not allowed**.

Milestones

Milestone 1 Deliverables (deadline: 6th June)

- Trainees shall come up with **a proposal** (pdf document, max 5 pages) regarding the web application which they intend to build. The proposal shall be as descriptive and detailed as possible.
- Include **a wireframe** of the website.
- Submit **Use cases** and **Activity diagrams** describing the whole process from front-end through to the backend functionalities.

Milestone 2 Deliverables (deadline: 3rd July)

- Backend implementation shall be done using Spring. **Submit Class diagrams of the functionalities.**
- MariaDB is used to store your database. **Submit your ER diagram.**
- No raw SQL statements are allowed. Trainees are to use either Spring Data or JPA for interfacing with the database.
- Backend shall be implemented as a **RESTful web service**. All responses are to be returned as **JSON strings**.
- If you have changes to the documents from the previous milestones, submit them as well with clear justification of your changes.

Milestone 3 Deliverables (deadline: 8th August)

- Submission of the implementation (source code and all accompanying resources)
- If you have changes to the documents from the previous milestones, submit them as well with clear justification of your changes.
- **Code changes are still allowed after the submission of this Milestone.**

Milestone 4 Deliverables (deadline: 15th August to 19 August)

- Individual presentation of your web application
- Each presentation shall be approximately 15 mins long, including a Q & A session.

Important notes

- Time management is very important for this practicum. You will need time to experiment and learn how to implement your web application from the design phase to the test phase.
- Make sure you test thoroughly before submission of your codes.