

Web Development Project Phase 1

QU Student Management Application

1. Description of the project:

The CSE department of Qatar University has tasked you with building a web application for the management of its students and courses. The following is a simplified description of the application needed:

- There are three types of users:
 - **Students:** They have a name, ID, list of completed courses along with their grades.
 - **Instructors:** They have a name, and expertise areas.
 - **Department Administrators:** They are responsible for creating courses and classes.
- The application has the following functionalities (i.e. use-cases):
 - **Use Case 1: Login**
 - It allows users to login to use the app using their username and password. Login should be verified using the users data in a JSON file (*users.json*) – you must create that file on your own and add users to it.
 - To keep the app simple, there is no need for the users to register to create an account to use the app.
 - Once a user is logged in, they will be redirected to the main page.
 - **Use Case 2: Search and display available courses**
 - On the main page, the student can search available courses by their names (e.g. JavaScript, OOP, etc.) or category (e.g. Databases, Programming, etc.).
 - By default, the main page displays all offered courses. When the user searches courses by *name* or *category*, only relevant courses should be displayed.
 - To keep the application simple, you can create and use a JSON file for available courses, i.e. *courses.json*.
 - **Use Case 3: Register in a course**
 - The student must be logged in to be able to register for courses.
 - The student can register for a new course only if they have passed successfully all prerequisite courses and if the course is open for registration.
 - If the conditions above are met, the student can register for the course with the desired instructor (if the instructor still has places available in their classes). The application should display an appropriate message if the student cannot register.
 - If the registration is successful, the courses / classes information are updated accordingly (to include the newcomer).
 - The registration will not be effective until the class is approved officially by the administrator.

- **Use Case 4: View their learning path**
 - The student should be able to view the list of all courses they have completed successfully (along with their grades), courses that are in progress and those that are still pending (i.e. the registration is still open, and the course has not started yet).
- **Use Case 5: Creating / validating courses and classes**
 - The administrator when they log on, they should see all courses that are currently in progress and those open for registration.
 - Displayed courses should be distinguished based on their *status* and *category*. If a course has several simultaneous classes, these should be displayed as well.
 - The administrator can officially validate the courses / classes that have received a sufficient number of registrations and cancel those that have not – a class is the materialization of a course with an instructor.
 - A course / class cannot start if not validated by the administrator.
 - The administrator should also be capable of creating new courses and classes.
- **Use Case 6: Grades submission**

The instructors should be able to view their current classes and to submit the students' final grades.

Additional use cases (optional):

- **Use Case 7: Course-instructor assignments**

Classes are assigned to instructors as follows. The administrator should publish the list of courses to be open. The instructors should be able to express their interests in courses. Once the deadline of submitting interests / preferences, the administrator should be able to select the instructors for the courses / classes to be open for registration.
- **Use Case 8: Courses schedule**

This functionality allows the administrator to display the schedule of the week for all the courses / classes that are in progress.

You are required to submit a project report by the deadline. While preparing the report, make sure to include information about (and respect) the following points:

- I. **Design the App Web UI and navigation:** Design the app navigation to allow the user to navigate from one page to another in an intuitive and user-friendly way to achieve the app use cases. You may design the UI wireframe (sketch) to decide the UI components and the layout either on paper or use a design tool such as <https://www.figma.com>
- II. For each use case, implement the app UI and navigation using HTML, CSS and JavaScript. The pages should comply with Web user interface design best practices. Also remember that '*there is elegance in simplicity*'. **Each page should be responsive to support at least 2 layouts one for mobile and another for PC.**
- III. For each use case, design and implement the Web API and the server-side data access repositories to read/write the app data from/to the data store. For phase 1, you can read/write to simple JSON files that you need to create and initialize with some sample data. **Note that**

this phase will be focused only on a fully working client-side and server-side implementation that read/write data in JSON files.

- IV. Application design documentation should include the Entities, Repositories and Web API class diagrams.
- V. Document the app testing using screen shots illustrating the results of testing. You must test the functionality of your applications as well as the non-functional properties such as the user experience, the performance, etc. **It is your duty to define the non-functional properties that apply to your application.**