

# IS448 Entrepreneurial Web Application Development Project

Students are expected to work in groups to develop a web application with real-life, practical use. The project will be viewed from an entrepreneurial perspective, i.e., student teams will be treated as start-up companies that are designing and developing an innovative idea! The web application should be complex enough to incorporate forms, interaction with database, client-side interaction with JavaScript and Ajax and server-side interaction with PHP.

For deliverables D4 to D7, peer-review forms will be collected each time and used to determine a student's grade for that deliverable. **It is important to remember that it is possible for students on the same team to receive different grades for a deliverable.** Especially in D4, D5, D6 and D7, students' grade will contain an individual component (80%) which is based on the code they wrote for their use case and a group component (20%) which is based on the ability of the team to get together before the deadline and integrate the individual use cases' code written by the individual team members to create a complete web application. **So, it is very important to realize that each member in the group is expected to write the code for their own use case and that not all members of a group will get the same grade for a deliverable.**

**Also, remember the academic integrity policy of this class outlined in the syllabus surrounding the use of generative AI like chat GPT: Your work must be your own.** Only original student code/work may be submitted. **You should not be using AI/ChatGPT to give you code or text for any of the course work.** Any assignments, submissions that are determined to be artificially generated, copied or duplicate code will be reported as an academic integrity violation and a suitable penalty will be applied.

## Due dates

There are several deliverables in the project. See Google document of course schedule for due dates.

## Deliverables

D1: Team charter

D2: Proposal with three ideas

D3: Initial design document

D4: part 1: HTML and CSS code, part2: mid-semester demo

D5: MySQL code,

D6: PHP and MySQL code

D7: part 1: JavaScript and Ajax code, part2: final demo

See the following pages for detailed descriptions of the deliverables

### D1: Team charter (6 points)

Team composition is an essential component to a successful entrepreneurial venture. Dr. Sampath will create teams for the project.

Each team should form a company with a name (and optionally, a logo). Each team should also identify duties of each team member. Typical roles can be:

- **Project lead** who will lead the team through all the phases of the software development,
- **Lead Analyst(s)** whose primary responsibility will be to guide the team through the process of identifying the system's requirements in the analysis and design phase
- **Lead Programmer(s)** whose primary goal will be to lead the implementation effort and ensure all the requirements are successfully implemented by the team
- **Test lead(s)** whose primary role will be to lead the team in the testing effort to test the software for correctness and robustness.

These roles are like those observed in the real-world during software development. Since you are a small team, each team member will have to be an analyst, programmer and tester during the project, but these **roles** serve to assign **primary responsibilities as the lead on each of these tasks**. **Each person on the team will need to write code and test their own use case's code.**

#### What to submit:

1. Create a Google Doc file on Google drive. You will keep adding to this DOC file as your project progresses through the various deliverables.
2. Create a cover page with project name and team member names
3. Create a new section called 'Team Charter'. In this new section,
4. Follow team charter outline shown in **Blackboard** under **Projects** tab and create your own team charter wherein you will define the dynamics of team operations. You will add the team charter text to the Google doc file you created above. Specifically, you should identify a policy for fair share of workload and how to deal with disparity in workload distribution and how the team will evolve in case problems arise, such as team member's lack of following proper decorum and respect during team communications, inability by team member or team to meet deadlines in a timely manner, workload shift in case of an indisposed team member etc.

## D2: Proposal with two ideas (14 points)

Each team should submit **two idea proposals** for the two web application that your company would like to develop. Each proposed web application idea should be complex enough to incorporate HTML forms, server-side interaction with PHP, interaction with database, client-side interactions/animations with JavaScript and Ajax. The instructor will select the one idea that the team should work on after assessing the given ideas.

### What to submit:

Add a new section to your Google doc file which will say 'Project proposal'

In the new section, **for each project idea**, you

- should take up about  $\frac{3}{4}$  to 1 single-spaced page.
- should have a paragraph describing the need for the proposed application and especially should comment on the innovation and creativity aspects of the proposed idea
- should comment on how the project will incorporate the technologies that we will study in class, namely HTML, CSS, JavaScript, PHP, MySQL, Ajax
- **should contain four/five use-cases of the application (number of use cases depends on the team size, you need one use case per team member):** A use case is representative of a unique/different way in which the application will be used by users. Eventually, each team member will take ownership of the complete code development of one use case each. Write it as follows:
  - **For each use case, write in terms of (1) what is the input you need from the user through a form, and (2) what will your system do with that input (this must include some interaction with database). Both (1) and (2) together will constitute a use case.**

Submit a link to the google doc file

### Grading:

Each idea will be evaluated based on the following criteria and the professor will select one that the team must then work on:

- Subjective assessment of innovation and creativity
- Demonstrated need for the proposed web application
- How the project incorporates all technologies that we study in class, namely, HTML, CSS, JavaScript, PHP, MySQL, Ajax
- Completeness of use cases presented

### **D3: Initial design document (10 points)**

For the selected idea, the team should create a mock-up website using Power Point or static HTML or wireframes as to what they envision for their web application, with specific emphasis on the use cases the team has identified. Students should identify which language will be used for the different parts of their application. Students should clearly identify what parts would be implemented in JavaScript, which parts of the application will need PHP, MySQL etc.

#### **What to submit:**

To the google doc file, add a new section called 'Initial design'.

In this section, either add screenshots and detailed explanations of each page of your initial design. Or, if you are using an external software to create your design, like in PowerPoint, add a link to the power point document in the google doc file in this section.

Submit a link to the google doc file

## D4 - Part 1: HTML and CSS code (30 points)

The team will also implement the presentation details in CSS and create static HTML pages that constitute their web application for this deliverable. All feedback given on the initial design must be incorporated in this deliverable.

### What to submit:

1. A zip file of your actual HTML and CSS files/code (make sure that in each HTML/CSS file, you include a comment in the file about who is the author of the that file, i.e., who wrote the code in that file)
2. A link to the main homepage of your web application on swe.umbc.edu GL
3. A link to the google doc file containing the following new content:  
To the google doc file, create a new section called 'HTML and CSS code'. In this section, add the following content:
  - a. Create a table like below that includes a list of your use cases, which team member oversaw it, and which HTML/CSS files correspond to that use-case

Use case name	Team member name	HTML and CSS files that belong to use case

- b. Create a table like below that includes all HTML/CSS files written for project and which team member wrote the program. Roughly this should match to the use cases that you each took on.

Team member name who wrote program	HTML/CSS file name

### Grading for D4 Part 1:

- Individual use case implementation: 18 points
- Peer evaluation submitted: 2 point
- Implementation of application as a group is complete: 6 points
- File submitted has all required information described above: 4 points

## D4 - Part 2: Mid-semester demos (20 points)

Each team will also give a 10-15minute presentation where they will present their use cases and also demo the implemented HTML and CSS parts of their web.

Each team will prepare a small PowerPoint presentation and then demo your actual HTML/CSS code. In the PowerPoint presentation, you should have:

- Slide with team name, project members' names
- Slide with high-level description of project, intended audience for website and need for the system that you are developing (reuse from your proposal document)
- Slide with all four/five use cases that were originally proposed and most importantly, the proposed work breakdown. Specifically, you must identify which student is responsible for the coding of which use case. Being responsible for only the HTML code or for only making the presentation will not get you full credit on the project. For the use case they are assigned, each student on the team must have coded right from the HTML/CSS code to the PHP/MySQL code to finally the JavaScript/Ajax code.
- Slide with how many database tables you will have in your web application and what information will you be storing in these tables. You can provide a list of tables and the columns you envision for each table on this slide.
- Demo your web application with the HTML/CSS code. While doing the demo, tie it back to the use cases you presented earlier.

Please also note:

- Each team should plan to talk for **about 11 minutes**. Plan to spend about 5 minutes on your slides and 5 minutes demonstrating your HTML and CSS code in the browser, 1 minute for questions. Teams will be cut off at this time-mark so all teams get to present their work to the class. Practice and make sure you cover everything asked within the time.
- For now, since you don't have PHP code implemented, you can just send your HTML forms to static HTML pages (instead of .php files).
- Make sure you address all the instructor comments/feedback on the initial design document.
- Whole team is expected to be in class for the demo and speak about their own use case.

### What to submit

- PowerPoint/PDF slides of demo

### Grading for D4 part 2:

- High-level description: 2 point
- Use cases description and breakdown between students: 4 points
- Database tables: 4 points
- Actual demo of code—complete and working: 10 points

## D5

### MySQL code submission (20 points)

Each team will incorporate PHP for server-side processing and MySQL for database processing and incorporate into their website.

For this deliverable, each team should implement the following:

1. Database queries to create all the tables that you will be using in your application
2. Feedback on previous deliverable must be incorporated for the HTML and CSS portions.

#### What to submit:

1. A zip file of
  - a. a file with all MySQL queries you wrote to create the tables,
  - b. HTML and CSS files/code
  - c. Screenshots showing all the database tables you have created
2. Submit a link to the google doc file. To the google doc file, add a new section called 'MySQL code' and add the following content:
  - a. Create a table like below that includes a list of your use cases, which team member oversaw it, and which database tables correspond to that use-case.

Use case name	Team member name	Database tables that the use case will use

#### Grading for D5:

- Individual use case table implementation: 12 points
- Peer evaluation submitted: 2 point
- Implementation of application components as a group is complete: 4 points
- File submitted has all required information described above: 2 points

## D6

### PHP, MySQL code submission (30 points)

Each team will incorporate PHP for server-side processing and MySQL for database processing and incorporate into their website.

All use cases **must incorporate session variables correctly**. What this means is that the “Registration and login” use-case owner should create the session variable and all other use case owners should use the session variable and allow a user access to their page’s content only if the user is successfully authenticated with the session variable. Otherwise, the user should be redirected to the login page.

#### What to submit:

1. A zip file of your actual PHP, MySQL, HTML and CSS files/code (make sure that in each PHP file, you include a comment in the file about who is the author of the that file, i.e., who wrote that piece of code)
2. A link to the main homepage of your web application on swe.umbc.edu **along with login credentials of an example user** of your system.
3. Submit a link to the google doc file. To the google doc file, add a new section called ‘PHP Part 2’ and add the following content:
  - a. Create a table like below that includes a list of your use cases, which team member oversaw it, and which PHP files correspond to that use-case.

Use case name	Team member name	PHP files that belong to use case

- b. Create a table like below that has a list of each PHP program/file written for project and which team member wrote the program. Roughly this should match to the use cases that you each took on.

Team member name who wrote program	PHP file name

#### Grading for D6:

- Individual use case implementation: 20 points
- Peer evaluation submitted: 2 point
- Implementation of application as a group is complete: 6 points
- File submitted has all required information described above: 2 points



## D7 - part 1

### Final code submission with JavaScript and Ajax (40 points)

For this deliverable, each team will write the JavaScript and Ajax parts of the application and incorporate it with the code developed in the previous deliverables. Professor's on each prior deliverable must be addressed in the final code.

#### Minimum JavaScript/Ajax expectations that should be met by your project:

1. All your form data should be validated in the JavaScript, even if you have validations implemented in the PHP in each use case. **If your use case does not have forms, then, you should implement an additional Ajax aspect.**
2. At least one *aspect* of your application implemented with Ajax **in each use case**. It could be inspired from the examples in class: e.g., fetching definitions, updating the contents of a select box, suggesting options as the user types in a text box, showing a username is taken or available etc., or some other examples that you have seen as you look at other applications. What you implement must be relevant to your web application's forms, data and features.

This is the **minimum** expectation. Please also note the above expectations are per use case, so each team member should be implementing it for their own use case. **Each team member should implement different features in Ajax—please talk to me if you are unclear on this requirement.** If you want to implement other/different things also using JavaScript/Ajax, please feel free to do so.

#### What to submit:

1. A zip file of your actual PHP, MySQL, HTML, JavaScript and CSS files/code
  - a. include a comment in each of the files that states who is the author of the that file, i.e., who wrote the code in that file
  - b. include some data in your database tables so pages are not blank when graded
2. A link to the main homepage of your web application on swe.umbc.edu **and credentials (username/password) to login to the site**
3. Submit a link to the google doc file. To the google doc file, add a new section called 'JavaScript/Ajax' and add the following content:
  - a. Create a table like below that includes for each use case the name of team member who developed code; the PHP, JavaScript, HTML and CSS files correspond to the use-case; and explain how the JavaScript minimum expectations are addressed in the code.

Use case name	Team member name	HTML, CSS, PHP and JavaScript files that belong to use case	Minimum JavaScript expectation
			<b>Validate Form Data:</b> YES/NO <b>Ajax implementation 1:</b> describe what Ajax was implemented, what code does <b>Ajax implementation 2:</b> (to be implemented, if there were no form validation opportunities in the use case)

- b. Create a table like below that has a list of each PHP and JavaScript program/file written for project and which team member wrote the program (roughly this should match to the use cases that you each took on)

Team member name	PHP/JavaScript file name

### **Grading Rubric for D7 part 1:**

#### **For each use case**

- Form data is being validated in JavaScript: 16 points
- One feature implemented using Ajax: 16 points
- Peer evaluation submitted: 2 point
- File submitted has all information described above: 6 points

## D7 - Part 2: Final demos (30 points)

Each team will also give final demos of the features of their web application. Each team should make a business case (a light version of a business plan) to the entire class. Each team should imagine they are making a case to a venture capitalist (VC) firm. The final demo should include a demo of the completed web application.

Remember, you are presenting a new, entrepreneurial idea and implementation for a web application that addresses a need in society that was previously not being met. Present your work as if you were speaking to a venture capitalist firm whom you need to convince to fund your company! Plus, speaking to your professor, of course!

Following are the expectations for the demo:

- One slide with team name, project members' names
- One slide with project main idea, the four/five use cases that were originally proposed and name of team member responsible for implementing them (re-use from mid-semester demos)
- One slide with any changes to the original plan, if you did not implement all the original use cases or if you swapped one out for the other (this should generally not be the case, unless you have discussed the changes with me beforehand)
- One slide with your database schema (tables, columns, relationship between tables)
- Demo your web application. During the demo, **each student should present their own use case**. While doing the demo, tie the pages back to the use case you presented earlier
- **Specifically mention what parts of the use case are coded in PHP. Also mention what feedback you received from instructor on the PHP/MySQL deliverable and how you addressed instructor feedback for the final code submission and demo.**
- **Specifically go over what parts are implemented in JavaScript and Ajax, and mention each of the required items that I have asked to be implemented**
- Highlight any new features/technologies you learned during your project development (e.g., if you used any CSS or JavaScript frameworks, or if you used a collaborative development platform like GitHub, or if you used some unique PHP functions for a feature etc.)
- Spend a couple of minutes describing one problem/feature that was difficult to implement and how you went about solving the problem

Please note:

- Each team should plan to talk for **25 minutes** (approximately, 5 minutes on slides + 20 minutes to demo your code + 3 minutes for questions). Teams will be cut off at this time-mark so all teams get to present their work to the class. Practice and make sure you cover everything asked within the time.
- All team members must be present in class during the demo and must speak during the demo.
- **Each team member should present their own use case**
- Each team member should be prepared to show code and explain exactly what they implemented in the project when asked.

- Teams should be prepared to pull up code and show it to the instructor during the demo, so keep all your HTML, CSS, PHP, MySQL, JavaScript code in one place on the laptop, or on Google Drive or Box, etc.
- **Extra credit** of 2 points for this deliverable, for students who ask questions in class

**What to submit:**

- Upload your slides at the appropriate link on Blackboard

**Grading rubric for D7 - part 2:****For each use case:**

- All parts of the application (HTML, CSS, PHP, MySQL, JavaScript) are working correctly and completely (20 points)
- Slides cover all points listed in expectations (2 point)
- Specific mention of how minimum JavaScript expectations were met (4 points)
- Ability to explain how use case works and explain code if asked (4 points)
- Extra credit for asking questions (4 points)

**What next?**

Best teams are encouraged submit their project to the **Entrepreneurship Idea Competition** held yearly at UMBC.