Laboratory # 3 ECE:4880,
Principles of ECE/CSE Design Fall 2025

Introduction

The primary purpose of this lab is to get preliminary experience in establishing a website and to highlight the importance of well-structured and intuitive user interface (UI) and user experience (UX) design. Since the UI is typically the primary portal via which users interact with a system, the success or failure of a system design is often dictated by the nature of the user experience provided by the interface. Poor interface design may compromise otherwise soundly designed systems. Undoubtedly, you may have had unpleasant experiences with poorly designed interfaces in the past.

Here are some basic qualities of well-designed user interfaces.

- Intuitive: The layout and functional flow are natural and easy to understand. Ideally, a user can figure out how to use it with little or no instructions.
- Efficient: The functional flow is simple and does not require an excessive number of user interactions to accomplish a given task. It should also be responsive i.e. no long delays or "hourglasses". This also means that your code should not have excessive CPU, memory, or network usage.
- Attractive: The UI is aesthetically pleasing and presents an appearance that is appropriate for the nature and function of the system.
- Informative: The interface provides essential information regarding the state and status of the system without overwhelming the user with extraneous information.
- Robust: The user interface is tolerant of user errors and provides easy recovery paths. It is not possible for a user to damage the system accidentally or maliciously via the interface.

Problem Statement

Don't know what to present at a job/internship interview? Your task is to design and implement a portfolio website for your project that includes profiles for each team member to present their interests, achievements etc.

Your objective is to create a portfolio website that includes a contact form and some content that is password protected, and is intuitive, easy-to-use, and informative. Ideally, any visitor should be able to figure out what this website is intended to present without reading any instructions.

Note that the lab specifications have been chosen so that it is possible to build a basic version of a website that satisfies all requirements using only html, css and javascript. Furthermore, it is possible to publish your website on the university's website hosting service for students, faculty and staff which you can find here: https://its.uiowa.edu/services/myweb. You can also choose another web hosting service (e.g. Square

Space, Wordpress or Google Sites) if it has a static IP address or URL that can be accessed from the public web. You may also choose to utilize any programming languages and tools, e.g. databases/backend tools. However, please note that web applications requiring server-side tools may not be supported by the university's hosting service. See here for details: https://its.uiowa.edu/services/myweb/what-are-publishing-capabilities-server.

Lab Requirements

Your portfolio website must meet the following requirements.
- The website should be hosted publicly.
  - Will lose points if hosted only locally.
- A homepage for the team with links to individual pages for each team member. Each team member's page should contain some embedded graphics (photos, AI generated images etc.). Make sure that there is no unauthorized copyrighted content on your website.
- **Password protected content** (Default Password: Fall2025Lab3).
  - Main homepage lists a link to protected content, that when clicked presents a dialog asking for a password. Upon password verification, the webpage will navigate to a page showing a list of available protected content.
  - Navigation of the protected content should be possible without being repeatedly prompted for the password.
- **Security.**
  - You should take reasonable measures to make sure that the protected content on the website is secured against unauthorized access. Specifically, it should not be possible to gain access to this content without the password simply by viewing the html code of your main webpage. Thus, you should not list the plain-text password anywhere in your html. Similarly, you should not list the URL of unencrypted pages containing protected content in your html.
  - There must be no mechanism to change the password for the website from the website itself. However, there will be a mechanism to change the password offline. This mechanism should be automated to the extent possible. A shell script or Python program that creates a new set of protected content files that can then be uploaded onto the web server would be a reasonable solution for this requirement.
- **Contact Form.** Each team member's portfolio page should include a contact form that allows the user to send a text message. Messages sent using this form, along with a timestamp, should be saved as web pages that can be viewed as part of protected website content.
- **Black & Gold color scheme.** The website's background color, font and other visual elements should follow the University's ("Black & Gold") standards as much as possible. Details are at: https://brand.uiowa.edu/fonts. However, please note that your site is NOT an official university website and should not present itself as an official site. Thus, it should NOT include university logos and trademarks. You can, of course, link to official university sites.

Some Design Considerations

Since the UI design is central to the success of this lab, it would be a good idea to carefully storyboard the display layout and page flow before beginning any design, layout, and programming. Please include your storyboard, the website URL and Git Commit Contributors as parts of your lab report.

Think carefully about tradeoffs between security and usability. Note that the specification is deliberately vague about how frequently the user should be prompted for the password to access protected content. Both extremes – asking for the password for every single page requested and allowing indefinite and unlimited access after one successful password verification – are undesirable and you want to find a happy medium.

Figma is a free online whiteboard and design tool for teams/groups to brainstorm together. You can use this tool to design the UI/UX for Lab3. The professional account is free for educational use. You can verify your student status using your University of Iowa email address.