

Web Development Project Overview

CS353: Internet Programming
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Introduction and Purpose

A significant portion of your work and grade for this course will be associated with a major web development project. This project attempts to approximate the development process of a “real world” web application. To that end, it has three overarching purposes.

1. **The project will incorporate several popular web development technologies.**

Much of the time, the tools and programming languages taught in a classroom setting are learned and practiced in isolation from one another. Although this approach has its place, it is not typically representative of how software is developed for applications in industry. The ability to make different technologies “play nicely” with one another effectively, efficiently, and elegantly is a key strength of successful software engineers.

This web development project will give you an opportunity to develop the important skill of integrating various technologies with one another in a single application.

2. **The project will be implemented using an iterative development process.**

The speedy pace of the world we live in is making less feasible the traditional “waterfall” method of software development. Under this model, a project is sequentially designed, developed, and deployed in its entirety over a single long-term pass. Fast-evolving technology and frequently changing business requirements have necessitated the rise of new models of software development to cope with this reality.

One element used in many of today’s “agile” development shops is the concept of *project iterations*. In this approach, a large project is broken down into several smaller tasks and features, each of which is designed, developed, and deployed on its own timeline (sometimes consecutively, sometimes in parallel with one another). This technique of “ship early, ship often” fosters greater confidence and flexibility in each component of the project, as the entire solution is built incrementally over several releases.

This web development project will take an iterative strategy in its implementation. Throughout the course, you will create and launch several **project milestones**, small releases of feature subsets which will gradually lead to the completion of a complex web application.

3. The project will encourage creativity in its development and implementation.

There is an undeniably artistic and creative side to software development. Embracing this aspect of the process makes one's work more enjoyable and meaningful, and raises the quality of the final product. It is also a fundamental way by which we as Christians worship God with our work (see 1 Corinthians 10:31, Colossians 3:20). In this spirit, the requirements for this project will address the basic functionality of the system as well as provide guidance regarding the tools used to build it. However, matters of user experience design (i.e. "look and feel") as well as several features will be left largely to the student's discretion in terms of how they are constructed. This will hopefully afford you the flexibility and freedom to express your creativity in developing this web application.

High Level Project Description

For this project, you will build a web application that allows users to assemble a shopping cart of items to purchase. This system will provide the means to manage data about products and how they relate to each other. It will include features to help users locate stores and to enable usage on mobile devices.

The system will be built using the following technologies

- On the front-end, the user experience will be crafted using HTML, CSS, and JavaScript.
- Data managed by the application will be stored in a SQL Server database.
- The web application itself will be written in C# using MVC.
- Various REST-ful web services will be integrated into the project to enable it to interact with third party services (i.e. Google Maps, etc.)

Milestones

Specifications for each milestone will be provided to you as the project progresses. The following is a listing of each milestone along with its focus and scope.

1. Application responsive home page mock-up using HTML and CSS
2. Responsive page mock-ups for items list, product details page and shopping cart page using HTML and CSS
3. Responsive page mock-ups for admin product edit page using HTML and CSS
4. Database schema diagram and SQL to create and drop the system's tables and constraints in SQL Server.
5. Home page controller, models and views using C#
6. Product Controller, models, and views using C#.
7. User interface enhancements (i.e. promotion timer widget, product upload progress bar) using JavaScript and C#.
8. Login controllers and views, wish list using C#
9. Admin Controller and views using c# (this is a stretch milestone)
10. Displaying maps of stores, using web services

General Guidelines

- You may work on this project individually or in teams of two. If you choose to work as a team, you must inform the professor of your decision before starting the first milestone of the project, and you must complete the entire project as a team. Tasks for each project milestone should be divided up so that each team member does a fair share of the work required.

- On or before the date that each milestone is due, you must submit the files you have created or modified for the milestone along with a detailed explanation of your work to the professor via email. You must also deploy your completed milestone to your project directory on your VM and provide the instructor with a link to this deployment by the milestone due date (this may not be possible, we are still working out the details).
- Each project milestone will be worth 5% of your overall course grade. Once you submit a milestone, the professor will evaluate your work, provide you with written feedback, and assign an initial grade to your submission. You can and should incorporate this feedback into your project, and then alert the professor once this is done. The professor may choose to reevaluate your updated work and adjust your grade for the milestone accordingly.
- The work you do for each milestone should not break features or functionality you have already implemented for the project. You are responsible for running regression tests to ensure your newest changes keep the whole project in good working order. Unit tests are required for the C# milestones and the professor will run all unit tests in the solution as part of the milestone evaluation. The professor may deduct points from individual milestones or your overall project grade if broken features go unresolved after they come to your attention.
- Throughout the course of the project, you may realize that there are corrections or improvements you can make to milestones you have already turned in. This is a natural part of the iterative development process and is to be expected. When this happens, you are encouraged to contact the professor about the changes you are considering, and if the two of you agree that the modifications are warranted, you should add them to your project. Once your changes are in place, alert the professor so that your work may be reviewed and your milestone and overall project grade can potentially be adjusted appropriately.

What to sell?

Your application can sell just about anything (that is appropriate). The items should have characteristics that allow you to group them to make menu categories easier to create. It would be nice if you can have pictures of your products as well. Some ideas:

- Furniture
- Roommate's shoes/clothing (you might need to supplement your supplies with shoes from your friends as well)
- Ideas (not sure how you will get pictures of these, but ...)
- Hair/wigs
- Biblical figures
- Postcards of famous Gordon College buildings
- Animals
- Sand/rocks
- Used textbooks

The type of items you sell on your site will need to be approved by the professor before the first milestone is due.