**North Alabama Souvenir & Gift**

**Ecommerce Database & Website System**

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**IS 412 Dr. Mok**

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Table of Contents

[Project Overview 3](#_Toc89717385)

[System Analysis Overview: Use Case Diagram 5](#_Toc89717386)

[System Analysis Overview: Domain Model Class Diagram 6](#_Toc89717387)

[System Analysis Overview: Activity Diagram 7](#_Toc89717388)

[System Analysis Overview: System Sequence Diagram 8](#_Toc89717389)

[Development Technical Overview Source Control Methods 10](#_Toc89717390)

[**Code** 10](#_Toc89717391)

[**Issues** 10](#_Toc89717392)

[**Pull Requests** 11](#_Toc89717393)

[**Actions** 11](#_Toc89717394)

[**Projects** 12](#_Toc89717395)

[**Wiki** 12](#_Toc89717396)

[**Security** 12](#_Toc89717397)

[**Insights** 13](#_Toc89717398)

[**Settings** 13](#_Toc89717399)

[Development Technical Overview: The Admin Panel 14](#_Toc89717400)

[Objective 1: Managing the items in the database 14](#_Toc89717401)

[Objective 2: Manage all active orders 15](#_Toc89717402)

[Objective 3: Managing user creation and setting specific variables 16](#_Toc89717403)

# Project Overview

1. **Project Synopsis**

This project was spearhead by Austin C. Gomez. Austin is a Senior at the University of Alabama in Huntsville (UAH). He is currently studying and anticipating earning a Bachelor of Science in Business Administration in Information Systems /w a concentration in Cyber Security.

Austin decided to create a full system analysis and software development project for a fictional company that is given the name of ‘North Alabama Souvenirs and Gifts’. In this project, Austin was tasked with creating an industry level system analysis of the project at scope. Furthermore, he also had to use his skills in software development, cyber security, and software configuration in order to complete the project.

In the fictional company namely called ‘North Alabama Souvenirs and Gifts’, we theorize that the business is a small and family-owned business with a physical storefront in South Huntsville. Moreover, this company wants to step into the world of ecommerce due to a decline in storefront sales. As a small company, the client is worried if it can afford the fees that an established ecommerce platform might incur such Amazon Marketplace. The company would ask for a small ecommerce project that can be easily managed and run by the owner and fellow staff members.

The idea behind the ecommerce site is so that the customer can easily access it and add items to the inventory along with creating sales, giveaways, and managing giveaways. Using an existing platform such as Amazon Marketplace or Wix would incur fees that the small business could not afford. Moreover, the customer would need a simple ecommerce project that they can pay an monthly fee to a webhost for.

1. **Team Members**

* Austin Gomez

Austin Gomez is the full-stack developer and system analyst for this project. He is a Senior at the University of Alabama in Huntsville (UAH) and studies Information Systems with a concentration in Cyber Security. Austin will use his skillset in software development, technical writing, and system analysis to successfully complete this project for the customer.

1. **Technical Stack**

The following technology shall be used to develop and run this project for the customer:

* + Django CMS

The Django CMS is a powerful development tool used to create web applications from scratch. We chose to use Django for several reasons.

Reason #1:

It is an open-source project that features frequent updates and fixes to security vulnerabilities. This makes patches from a system administrative viewpoint to be extremely streamlined, and it helps to ensure that the customer will not have to worry as much about hacking attempts from outdated and vulnerable software.

Reason #2:

The Django software features a powerful administrative area for the customer built-in and ready to deploy. The developer can then tailor the design of the administrative area to the needs of the customers.

Reason #3:

The developer of the project has familiarity with the Python programming language. In addition, hosting services, such as Amazon AWS, support and provide inexpensive hosting solutions for the customer.

**VII. Deployment**

The development team plans to use the service, PythonAnywhere, to host the ecommerce platform for the customer. For the sake of the semester project, we will be using the ‘free tier’. However, if this project was to go ‘live’ for an actual customer then we would recommend the ‘$12’ tier. The reasons that we chose to use PythonAnywhere as opposed to AWS are detailed below:

* + Low Cost.
  + Dedicated Server Technical Support for Python Projects.
  + Ease of use for system administration support.

All the source code and relevant documentation will be under Version Control will be available in a Github page at the link listed below. For the sake of the semester project, the final project source code will be open source. We use ‘Git’ as our version control measures due to the popularity and helpful resources for it. In addition, we use Github due to it being one of the top platforms for version control management and the overall security that the company provides to its software project.

**Source Code:**

<https://github.com/AustinCGomez/UAH-IS412-FInal-Project>

# System Analysis Overview: Use Case Diagram

Our use case diagram helps to illustrate how we envision the application to run in the long run. We have two actors in this use-case diagram. The first actor is the ‘Site Customer’. These individuals are potential customers that have come across the website. These type of users will be able to do the following:

1. Create a user account.
2. See items for sale.
3. Add items to their cart.
4. Make payments.

The second actor in our use-case diagram is the ‘Web owner. This person will need to do the following:

1. Add and delete items
2. Rename Items
3. Remove Items
4. Add Employees.

Diagram

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# System Analysis Overview: Domain Model Class Diagram

Through the Domain Model Class Diagram, we hope to illustrate how we plan for the web project to work through a more technical viewpoint. Moreover, we carefully detail how all the components work together to make a successful and functioning project.

Diagram

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# System Analysis Overview: Activity Diagram

We use the Activity Diagram to give a clearer technical and nontechnical overview of how we plan to design the system for the customer. The Activity diagram essentially gives a step-by-step overview of everything that must be done by the application when it is production ready.

Diagram

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# System Analysis Overview: System Sequence Diagram

In the System Sequence Diagram, we show all the features that we expect the program to do. We start with a user typing in his username and password. This then interacts with the core backend and finally the database. Furthermore, as seen in the diagram we have many different elements to test from the moment that a customer or staff members enters the website.

Table

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Diagram

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# Development Technical Overview Source Control Methods

The source control for this project can be found here on our Github: <https://github.com/AustinCGomez/UAH-IS412-FInal-Project>

It is always important that you have several non-production backups of your source-code and documentation when working on a large project. If a developer’s hardware were to fail, then all the work that went into the project could simply cease to exist. However, if a developer uses source control in the cloud or through the intranet at their business then you will always have a second backup to retrieve that data. Moreover, source-code makes it easier to work on a collaborative project and it allows future developers to dive into your documentation and make the necessary changes that they want to make.

For the ‘North Alabama Souvenir & Gifts’ project. We utilized Git and Github as a second backup of the software code. There were several benefits of using Github and we will label them below now.

* 100% free to use.
* The ability to make a Git repository public or private.
* Safe and secure.
* Many resources and tools available completely or almost completely free to the end-user.
* The ability to work collaboratively on the project in the future with open-source contributors.

The tools provided for all Github Repositories

## **Code**

This is the main area of your Github repository. In our project, we have the programming language code and our documentation for consumers to read.

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## **Issues**

The Issues tab allows for other developers and users to submit any bugs that they might find in your code. Github was designed mainly for open-source projects and this is a way for developers and users to help out and make software better each day!

A screenshot of a computer screen

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## **Pull Requests**

Pull requests are designed so that developers can create patches and improvements to your program. In a open source project, anyone can work on a pull request and submit it to be added. The software maintainers will then decide if the request should be implemented or not. In our project, since we just have one developer, the ‘pull request’ system will not be utilized much.

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## **Actions**

The Actions tab contains a bunch of different add-ons provided by Github and its 3rd party partners. The goal is to help new projects set-up a good workflow.

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## **Projects**

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The ‘Projects’ tab is an amazing tool that lets you create flowcharts to help with your development process. We utilized this actively during the development of our project to ensure that we were developing everything that we hoped and planned to achieve in the development cycle.

## **Wiki**

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The Wiki is a powerful tool for documentation. It is utilized more for larger projects that contain thousands of lines of code and need specific and intense levels of documentation.

## **Security**

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The Security lets you create the ‘Policy’ for your project. This allows individuals within your organization or even to open-source contributions to pen-test your application and then send you all errors that they discover that require a patch. The ‘Security Policy’ tab lets you define to your end-users the legal avenues that they must take to submit a vulnerability find.

In addition, Github provides some automation such as code scanning and a bot that checks all your software dependencies for vulnerabilities.

## **Insights**

Graphical user interface, application

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The ‘Insights’ tab gives the development team an in-scope view of everything going on in the Git repository. This includes the traffic of people visiting and more! It helps for projects that are going to production and observing if people are taking interest in the project or not.

## **Settings**

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The settings tab lets you make some slight changes to Git repository. You can make it public or private along with other administrative duties.

# Development Technical Overview: Source-Code Overview

# Development Technical Overview: The Admin Panel

There are three main objectives of the administrative panel:

1. Manage the items in the database
2. Manage all the active orders put in
3. Manage users including setting additional staff members.

## Objective 1: Managing the items in the database

Our administrative panel directly communicates with the database and shows every single item that is currently for sale. This saves time and training for the owner as they do not have to worry about trying to write SQL queries. In addition, we allow for the user to delete items and change prices to anything that they determine is necessary.

**Showcase 1: Shown below is all the items that are currently in the database:**

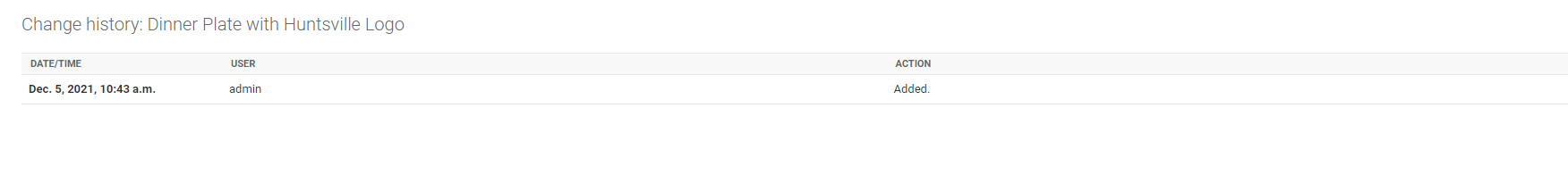
Graphical user interface, application

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**Showcase 2: Here is listed all the fields that the administrator can view and change at-will.**

Graphical user interface, application

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**Showcase 3: We also have a history panel that shows all the changes that have been made to this item in the database. This allows for the owner to ensure quality assurance and to help figure out anything that happen to an item in the database.**



**Showcase 4: At the main panel of the web application. We have all of the ‘recent actions’ that were made.**

Graphical user interface, application

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## Objective 2: Manage all active orders

The administrative panel allows for the site management to view orders that are put in by customers. This allows for the site management to prepare orders for shipment and fulfil the delivery requests that come in.

Graphical user interface, text, application, email

Description automatically generated

## Objective 3: Managing user creation and setting specific variables

We have set up a form on the website that allows for the creation of users so that they can save the items that they purchase in future updates of the application. Any customer simply has to navigate over to our signup page shown below:

Graphical user interface, application

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After the user signs up the data will then be sent to our secure database as shown below:

Graphical user interface, text, application

Description automatically generated

The user will now be able to log into the backend of the application. However, the user will only have a limited view of what they can do. The site owner is given control to give the user more controls and also help with resetting the password.

Graphical user interface, application

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The administrative panel is one of the most sophisticated parts of our web application and the main reason that it was chosen compared to other platforms such as Node.JS and PHP. The customer will be able to manage the site completely without having to touch the database code or the Python back-end scripting. In conclusion, this information system allows for the customer to worry less about the website and more about selling the inventory.

# Development Technical Overview: The Front-End

The front-end of the application is built using a combination of bootstrap, html5, CSS, and the Python templating language provided by Django. We designed the front-end using a visual GUI tool known as Bootstrap Studio. This software assists with building beautiful graphical interfaces that also will expand in size to any platform that the website is being built on.

We had a total of five graphical interfaces that we designed and implemented with the backend code. These graphical interfaces are now shown below:

## Homepage/Catalog

Graphical user interface, application, Teams

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## Checkout Panel

Graphical user interface, text, application, email

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## Login Panel

Graphical user interface, application, Teams

Description automatically generated

## Signup Panel

Graphical user interface, application

Description automatically generated

All the views have full functionality with our backend database and are linked to the administrative panel.

# Development Technical Overview: The Database

We utilize SQlite to create our database for this project. SQLite is a standard database application program however what makes it unique is that the developer uses Python code to develop all the different database procedures and Django will then develop the SQL code automatically to be applied when it is done. Django also comes equipped with a specialized shell which can be used to write queries and test out the functionality. Shown below are our two databases developed for this project.

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This is the code that we used to create our Items database. Just six lines of Python scripting does a lot of work in the background. It creates all the fields for each item that we want to add to the project.

Text

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This is the code that we use to create our Checkout database. The Checkout database will log all of the orders that were put in by the customer along with collecting payment to be used later.

# Development Technical Overview: Deploying Application to PythonAnywhere server.

A demo of the application on a live production server can be found here: <http://austincgomez.pythonanywhere.com/>

**NOTE: The demo will expire on December 18th, 2021, at 11:59pm and will go offline.**

PythonAnywhere is a very powerful hosting platform for Python webhosting projects. Python is still new in web development and thus many dedicated hosts are still set up just for older technologies such as PHP and Perl. What makes PythonAnywhere unique is that the host is dedicated to python projects including support for any issues that might arise.

**PythonAnywhere Dashboard:**

Graphical user interface, text, application

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The dashboard is another graphical user interface (GUI) that provides the system administrator of the information system with many different tools that they might need to utilize. One of the most notable tools is the ‘Console’ tool. This tool lets you remote access the server for Maintance and configuration purposes.

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In conclusion, PythonAnywhere was our top choice for a web hosting partner for this project and one that we believe would match all the needs of a customer that would want this project.

# Conclusion:

Designing a medium size ecommerce project was a challenge to complete. However, we believe that this project would have everything needed for a customer wanted to launch a small ecommerce platform.