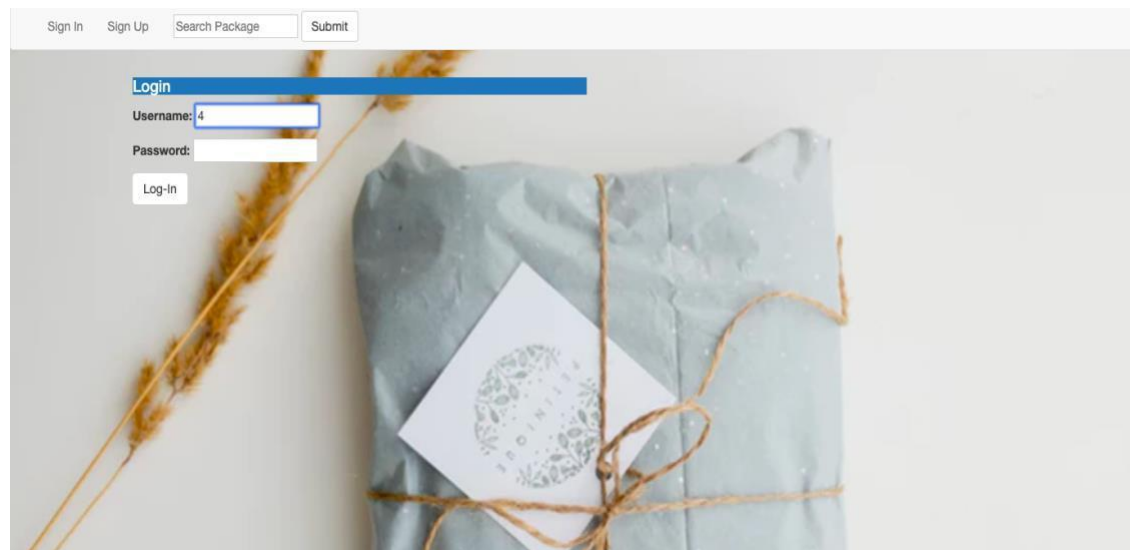


Product Differentiation

The objective of the final project was to create a mini-version of UPS which interacts with a simulated world and an Amazon program for the delivery of products. We were successful in completing the desired objective within the designated time period. The purpose of this document is to highlight a few distinguishing features for our application.

1. The front-end of our app was creating using the Django framework and front-end technologies such as Bootstrap3, Javascript , CSS3 and HTML5. The user interface is light, simple and easy to use.



2. The user can search for package even without logging in by using the tracking number of a package. Once the user logs in, he can view all the packages in the process of being delivered as well as the packages associated with him.
3. For the backend part of our project, we used C++ and Google Protocol Buffer for superior performance. Using multithreading techniques, we were able to achieve better performance than servers developed using Python and Go.
4. We use three threads to handle the necessary tasks in the back-end with C++. The first thread is used to listen to the world, receive response from the world, interact with the database and send response back to Amazon.

5. The second thread is used to listen to Amazon, interact with the database and send response back to the world. The third thread is responsible for interacting with database, determine if there is destination update. If there is a destination update, it sends message a message to Amazon notifying the change in address.
6. We also implemented an email service initially, but due to Docker related issues, we removed the feature.
7. The Django framework provides extensive security. During registration process, length and format of username and password are checked. Usernames already used cannot be reused.
8. When user tries to update or create new accounts, certain information will be popping up to inform the user if the operation succeeds or fails, also there will be details included in the window shown to the user.