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COMP.4120 - Software Engineering 2

2/21/2024

Linked Listing

Motivation

Selling on an online marketplace has become much more commonplace in recent years. There are platforms such as Ebay, Mercari, Facebook Marketplace, Poshmark, and Etsy that get over 2 billion transactions per platform per day. With such a high volume of sales, there also needs to be a high volume of listings going up on each website. Listings can take a long time to make, so it becomes apparent fairly quickly that if a seller wants to utilize multiple platforms to help their listings gain more traction, there needs to be a tool to help. Not only does that tool need to be able to cross post to multiple platforms, but it would also need to help the user avoid selling the same product in two or more locations.

Currently, there are some tools that already somewhat fill the needs of sellers trying to crosspost, but they all come with their own drawbacks. Platforms like ListPerfectly, Vendoo, and Crosslist are some of the most notable competitors, offering plans that are priced in relation to the number of posts you want to make. Vendoo has the cheapest starter plan where for \$8.99 per month a user will be able to crosspost 25 items. While that price is fairly low, most reselling platforms allow users to make ~250 posts for free, and thus cheap plans won't do the trick for most sellers. Some of these platforms also throw in the gimmick of better analytics in order to try and justify their pricing. It can be hard getting started selling on platforms like eBay, so having a large entry fee can deter people. Along with this, not everybody wants to work from a computer,

and may prefer the simplicity of working from their phone. Thus, the need for a free to use platform like Linked Listing is born.

Objectives

Providing a platform that allows sellers to easily post items for sale on multiple marketplaces at once is one of the focal points for Linked Listing. Being able to post a listing to marketplaces like eBay, Mercari, Etsy, and Facebook Marketplace using a single dashboard saves time and reduces the need to manage the listings between platforms. Having messages sent to one unified inbox and posts being taken down on each platform is crucial to streamlining the selling process. Some features that could be implemented for more ease of use are posting multiple variations of a post if a user is selling similar items.

The goal is to produce an Android application that provides the user with three different features. The first feature is an inventory manager that allows the user to keep track of their packaging supplies as well as any unlisted items. For busy sellers, it is helpful to have an easy way to keep track of their supplies, so there's no question as to when they need to order more. The second feature is a listings manager that shows all active listings and which platforms they have been posted to. After logging into the desired marketplace platforms, the user will be able to not only manage and view listings, but also create them. Due to different platforms supporting different forms of input for information, it makes it easier on the seller to be able to fill out a singular form which the application then takes and breaks it apart into the needed information for each platform.

Risks

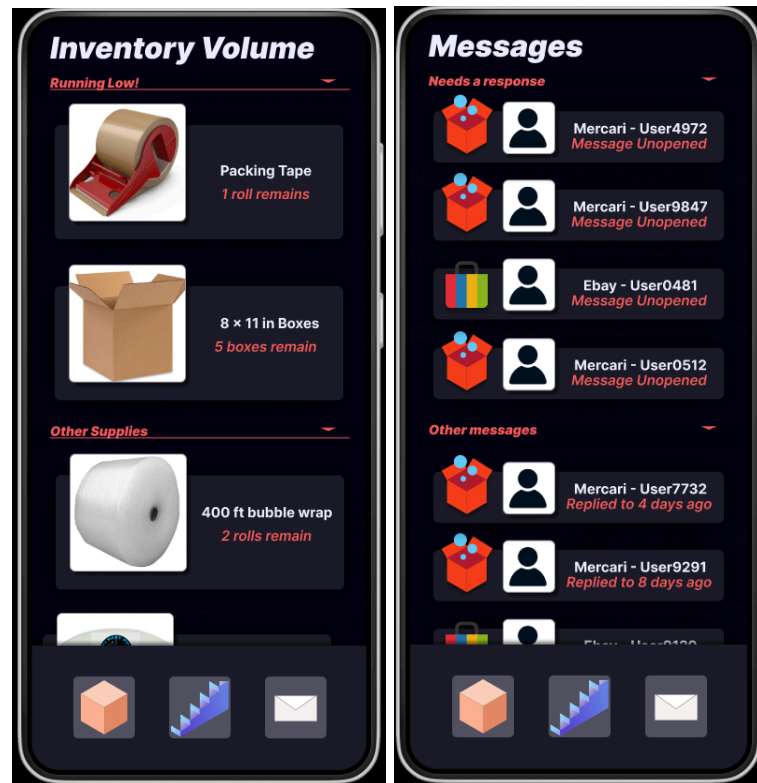
One of the main risks that come with this project will be working with the APIs that are provided from the different marketplace platforms. The difficulty level fully depends on whether there are many platforms that are accepting of different applications creating and posting listings. If there aren't available APIs for the website, we may have to find a work around to this. Workarounds may take the shape of, but are not limited to, things like web scrapers. There are also possible issues with breaking terms of service of some of the platforms if they do not provide the APIs that are needed, so we would need to be aware of that.

Figures - All of our figures were made inside of Figma, a prototyping tool to help design UIs.



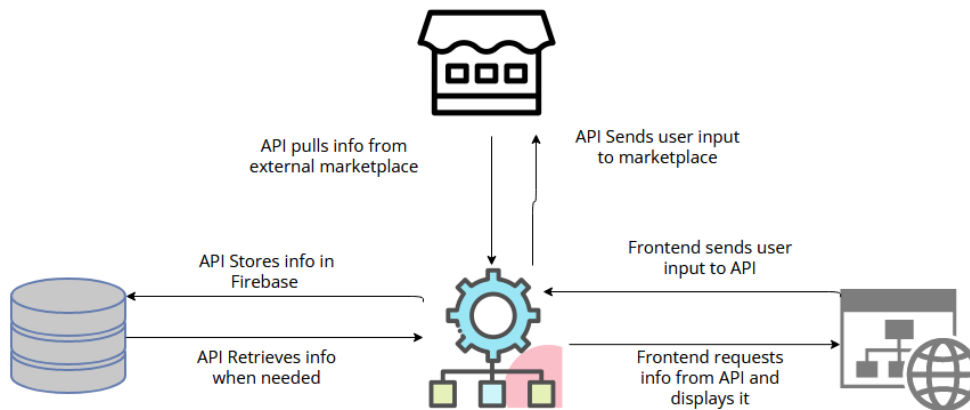
The above three designs are the prototype UIs that show what our splash screen and listings page may look like. On the left is our splash screen, with a simplistic logo. In the middle, you see all of your different listings, and it displays their title, genre, price, and the logos of the websites you've listed them on. The image on the far right corresponds to when you've tapped

into a specific item. It again shows some information on the item and gives the option to delete the listing.



In these two above UI prototype designs, you can see our inventory volume and messages pages. On the left you will see our proposed inventory volume page. On this page, you will add items that you'd like to keep track of your supply for, such as packing tape, boxes, bubble wrap, and more. On the right you will see our proposed messages page. This page gives a combination of the different supported platforms messages, so you can easily stay on top of your customer support.

Architecture



In the photo above is a very high level view of the system's architecture. Starting from the left side, you see our database which will be made using Firebase. In the middle you see our APIs, which connect all the components together through functions we write. We will gather information for the listings through methods like forms which will then be sent to our database. Before it reaches the storage state, the information that was gathered must be formatted and sanitized, only then it can be stored in the database. Once the user decides they would like to upload a product and have chosen their platforms to list on, we will format the information that was stored in our database to how the website's API needs it. Once done, we will update the user if their item was listed, or if it failed.

As of now, we are planning on working with eBay and Mercari as our supported platforms, and may expand in the future. Both of these platforms have abundant APIs for developers to utilize which is why we have picked them. In specific, both platforms have an API that is directly made to send information to the platforms in order to upload a listing. For eBay, they have an API we can use titled "AddItem". Which is where we will provide them the text and images the user would want displayed for their item, and it will create a listing. And for

Mercari, they have an API we can use titled “createProduct”, which serves the same purpose as eBay’s API.

Now you may be asking, how will we be doing this all? Well, as described previously, we will be starting with the user inputting the desired information into a template for their listings. From there, we will be processing the information into what each of the APIs require, as the different websites have slightly different formats for listings. Once the user decides to post these items, we will use the API calls to send out the information, and inform the user that we have uploaded or failed to upload their items.

Tools

There are a lot of tools that go into developing full stack applications, so we will be specifying the tools that we will utilize to reach our end product here. Currently, we are planning on using firebase to have an easily setup database that will store our information for the user. We will be processing the data stored inside of here, gathered from our front end, using the python programming language. Python is a very extensive language that will offer virtually anything we will need for our front and back end.

Tentative Schedule.

Just to note, Daniel and Aidan will be primarily working on the front end, while Dylan and Kristina will work on the backend. Since there is limited knowledge on developing this style of software, team members may work on other parts as help is needed.

| Start Date of Each Week | Goals | Deadlines |
|-------------------------|--|-----------|
| 2/12/24 | Research APIs and Android Development, | |

| | | |
|---------|--|---------------------------------|
| | create GitHub Repo | |
| 2/19/24 | Project Architecture -Address feedback on proposal -Decide on technologies -Designate Tasks -Setup GIT Repo -Design architecture diagram -Decide on UI Design -Meet once or more a week | Project Architecture - 2/21/24 |
| 2/26/24 | Begin developing the UI - Skeleton of all 3 sections (Inventory, Listings, Messages) - Stub for linking accounts | |
| 3/4/24 | Continue developing the UI | |
| 3/11/24 | Practice presenting, Begin development on the backend - Firebase - Draft templates for various platforms - Account linking (eBay, Facebook, etc) | Midterm presentations - 3/13/24 |
| 3/18/24 | Continue backend development - removes listings when an item has sold on a platform | |
| 3/25/24 | Finalize Backend, meaning: - polished UI - all 3 sections are complete - user can create listing - user account information is linkable/manageable | |
| 4/1/24 | Continue completing UI & Backend, Begin stress/edgecase testing | |
| 4/8/24 | Final Product, Final report & Presentation | |

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