Team Name: Troyboy.com

Team Members: Divya Bachina, Kyra Jeckering, Chloe Jepson, Ayah Tharwat, Jialin Yu

ITWS 4500 Web Science Systems Development

Term Project Proposal

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Project Summary

College students know how expensive campus life can get. The costs of textbooks, electronics, clothes, and many other essentials constantly build on each other and can leave students feeling overwhelmed. While balancing a busy life between school, athletics, and other extracurriculars, the last thing that students need to be worrying about is the climbing costs of living. Even textbooks that are resold online are upwards of $100, and if students don't know any upperclassmen who have taken the same courses they will, students have no choice but to pay outrageous bookstore prices. Another challenge that many will run into is furnishing apartments on campus. The room and board bills are already extremely expensive for students to cover, so adding furniture and appliances to their new living space can be overwhelming once the cost of all of it adds up. This is why we have created an application called Troyboy. Troyboy allows students to post items they would like to put up for sale, as well as purchase others. Troyboy can help students relieve the stress of overspending, so they can focus on other aspects of campus life, and it is a cheaper and safer option for students to buy and resell items as opposed to other websites.

Troyboy features a Google OA authentication system that ensures only those who are students or staff of the university can create an account through third-party verification. Once the user has signed up, they can access the main feed where items are posted for sale. Each item will have an image, description, and a claiming option that will allow the interested user to contact the seller and set up an agreed-upon monetary transaction and a way to exchange the item. Once the users have contacted each other, they will be allowed to share locations if desired, so they can easily complete the arrangement. However, if the user decides that they would like to keep their

location private for security reasons, they will be suggested common meeting places around their campus instead. Furthermore, the team could confirm a user's address by pulling their last confirmed living location with SIS. To ensure that Troyboy is easily accessible and simple to navigate, there will be filtering and search options so users don't have to scroll through a congested feed of items. This way, all students can browse for items they need without paying full prices. Troyboy also gives students the opportunity to make money by selling their gently owned items. Introducing an application like Troyboy to a college campus benefits students as a resource that can help them manage their expenditures and stay safe.

User & Stakeholders

Our target users will be RPI students and staff. Some potential stakeholders are parents, environmentalists, and students themselves. Parents are usually the ones who financially support their children's education. A platform that we students can buy and sell used goods can help parents to save up money by cutting down their yearly spending. Shopping for second-hand goods is not only about saving money but also about saving the environment. Second-Hand shopping reduces the number of natural resources being used and pollution that's being emitted. In addition, this is a market that is unique to RPI and other students will probably have cheaper prices on things such as iClickers that are used in many classes. As a result, Troyboy prices may swing lower than the general market, which would incentivize students to join this homegrown market. In addition, should the puckcoin system be implemented properly, students would get even more discounted purchases. All parties stand to gain from significant Troyboy usage.

Technologies

Troyboy requires a variety of technologies to work. The technology we plan to use is Angular for the front end, and express.js and node.js for the backend. We also plan to use MongoDB as our database that will store all the users. Troyboy will allow students to be able to create an account and chat with other users as well. To accomplish this, we expect to use an open-source chat API that we could easily use to maintain a proper connection. In addition, users will be required to sign into Troyboy using a Google OA Authentication system that will be completed with third-party verification. We expect the general tech stack to stay relatively mundane for the course of the semester unless exposed to specific caveats.

Monetization

Troyboy is easily monetizable. A marketplace double the size of RPI (each user would be both a buyer and a seller) would easily benefit from a standard tax (either will be noted as “Troyboy Tax”, “RPI Tax”, “Shirley Tax”, or “pucktax”) on every purchase through Troyboy. For every x amount of dollars spent on a transaction, a user would receive y amount of “puckcoins”, a version of store credit. A z amount of “puckcoins” would lead up to a set value discount on purchases through Troyboy and Troyboy would cover said cost. For example, if a $100 textbook were to be bought through Troyboy, a pucktax of 8% would be levied on the cost, leaving a grand total of $108. The amount of pucktax added, rounded up to the nearest whole amount, then becomes puckcoin. In this case, the user has received 8 puckcoins from this particular transaction and it will be stored as an attribute in the user profile. As the user delves into more transactions, the number of puckcoins they receive will accumulate. After reaching a determined number, users will find that they will be able to convert the puckcoin into a certain

amount of cash off a transaction-- this amount will be covered by Troyboy. Users may feel even more incentivized to join Troyboy through this significant additional discount that may seem oddly like tax returns. Through creating a live virtual marketplace for RPI and its own currency, we believe that Troyboy will be both profitable and useful.

Functional & Non-Functional Requirements

The functional requirements of Troyboy require the development and use of the API. Specifically, Troyboy's development will include the OA Google authorization and a chat API. Most importantly, Troyboy aims to provide an easily accessible website for all RPI students both while buying and selling goods. The site requires an easily accessible design to facilitate the actions of buyers as well as sellers. Lastly, by requiring a third-party authentication, Troyboy will ensure the safe practice of the site to protect its users.

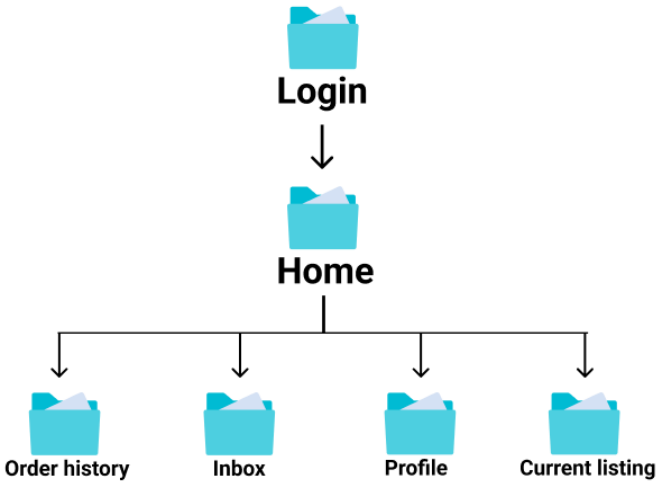
Furthermore, the web application includes several non-functional requirements that include privacy, maintainability, performance, and usability. Troyboy prioritizes its users' privacy. This is why students will be prompted to sign in through their RPI accounts to ensure security using CAS authentication to confirm all users are RPI students. This ensures privacy within the Troyboy community for each user to safely and freely use our services. Payments between users will be outsourced by applications such as Venmo or ApplePay to avoid any conflicts between users and any security threats within the applications. Features such as the products filter and chat inbox will require HTML, CSS, JavaScript, and the use of APIs for the chatbox. Furthermore, we understand the importance of maintaining our high-end application as more and more users join the Troyboy and RPI community. This is why our back-end developers will

ensure neat and scalable code that can be easily adjusted and tweaked as we move forward into the future. With scalability comes performance. Our team is dedicated to providing a unique and enjoyable experience for every user. The application will maintain speed, performance, and design through the use of UX/UI development. By implementing a navigation bar on the home page using JQuery, the users can quickly direct to other pages like the homepage, products page, and messages page. Ensuring quick secure and quick access to all pages as well as ease of use through good interface design will be essential for the brand and the user's experience.

Estimated Project Schedule

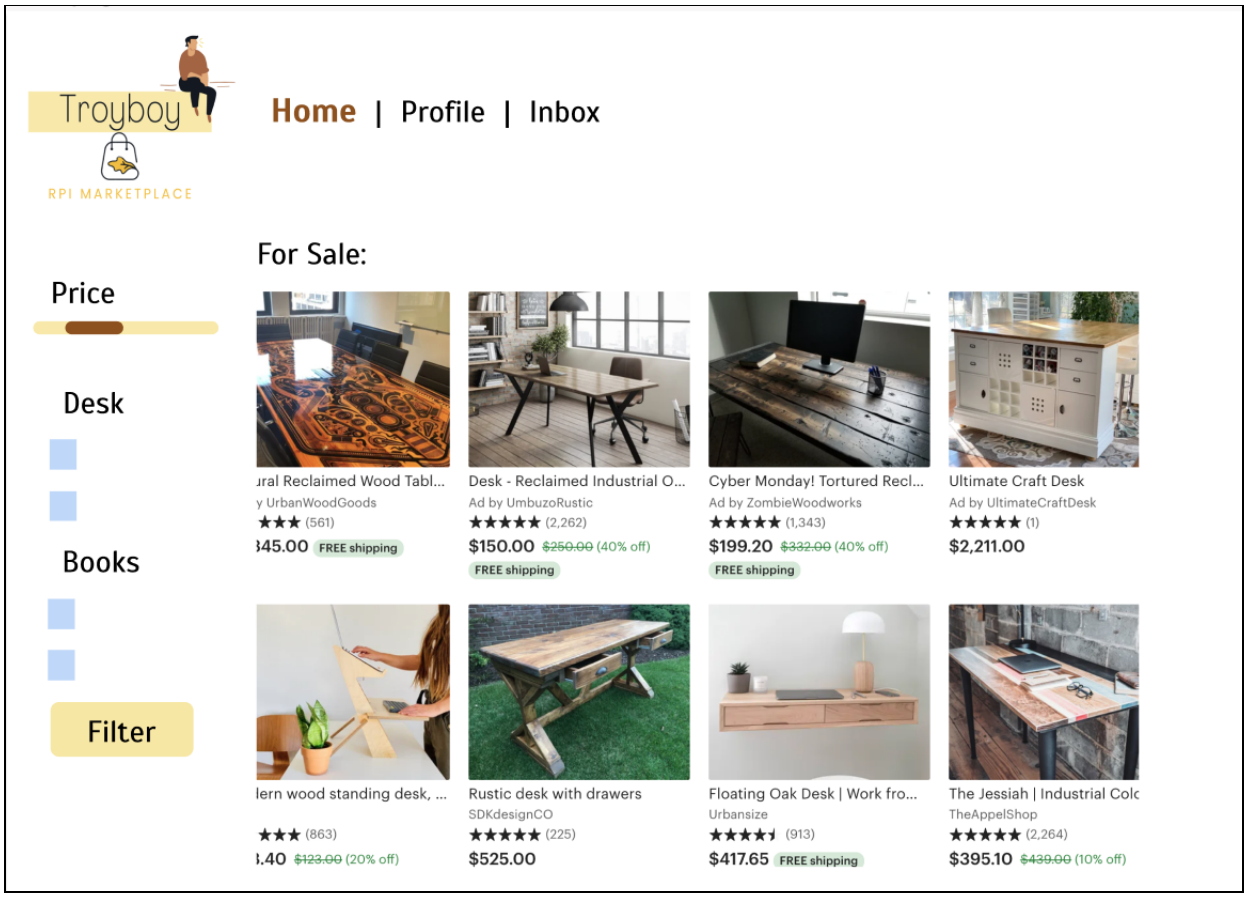
Deliverables	Estimated deadline
Project proposal & presentation	January 25th
Design interface using Figma	January 25th
HTML & CSS	February 15th
JavaScript for functional requirement	February 29th
Midterm presentation	March 4th
Setup Database using MariaDB	March 29th
Finalize project deliverables	April 15th
Project preview	April 18th
Final presentation	April 22rd

Site Map

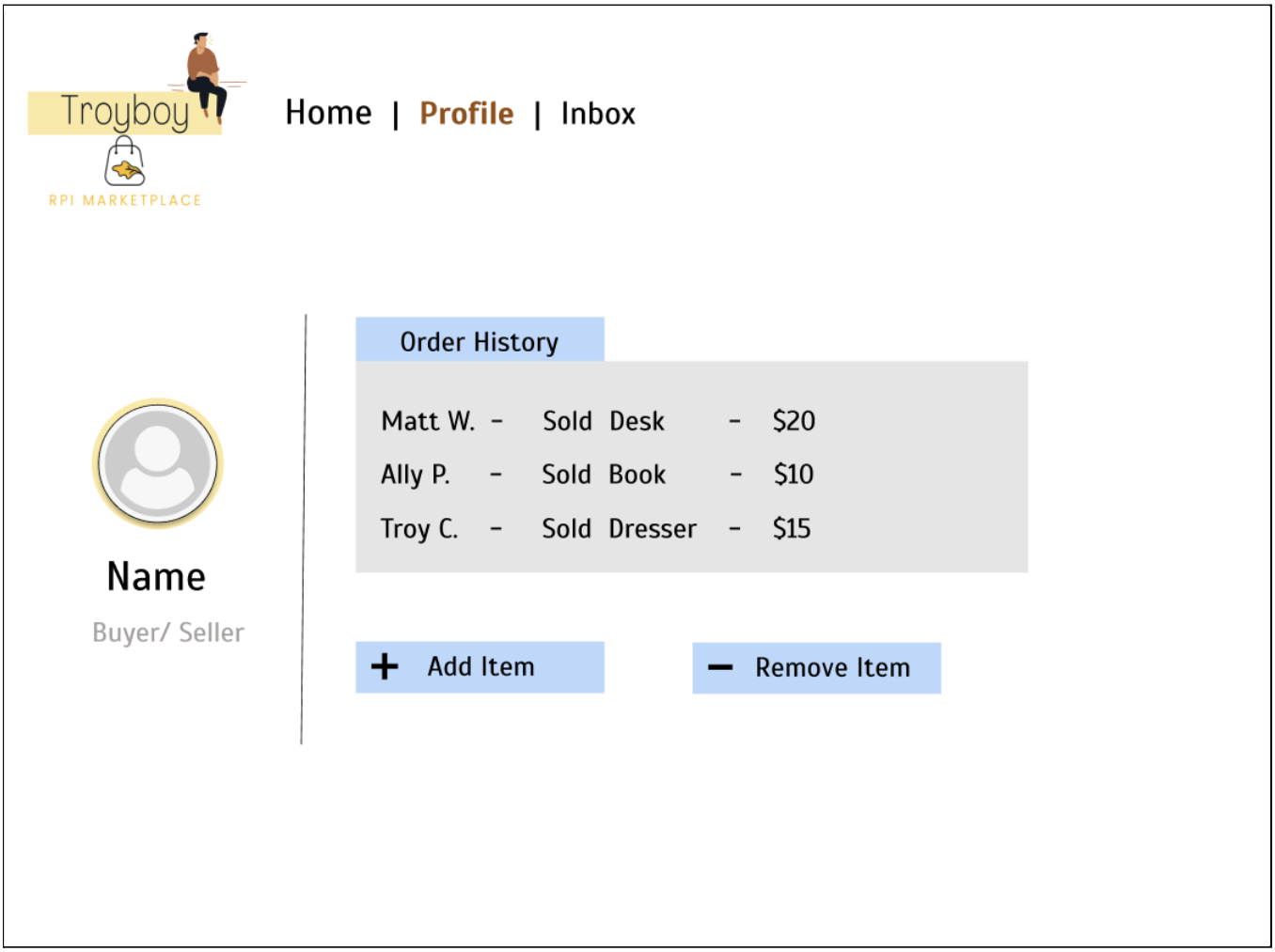


Wire Frames

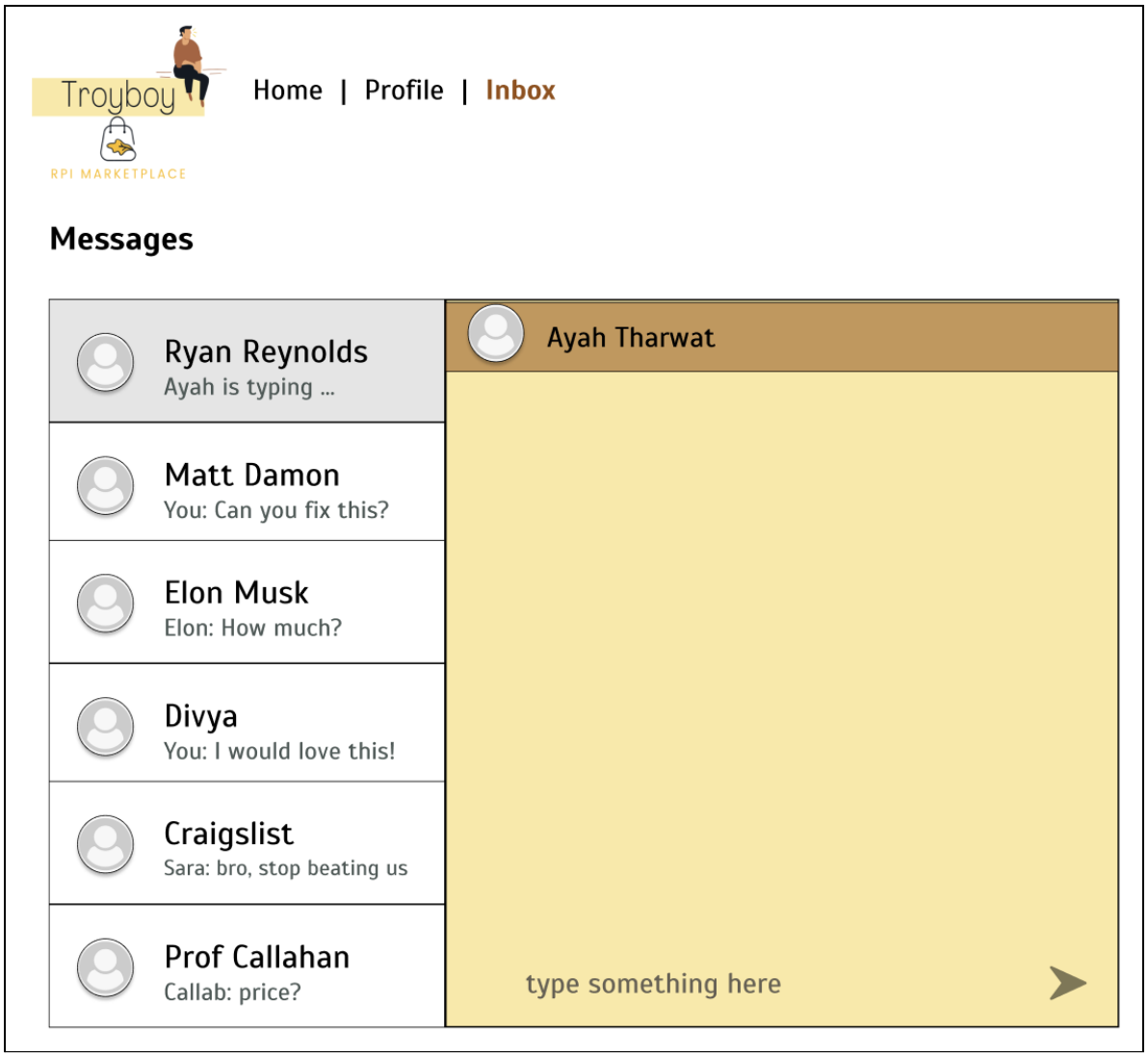
Homepage



Profile


Troyboy
RPI MARKETPLACE
Home | Profile | Inbox
Name
Buyer/ Seller
Order History
Matt W. - Sold Desk - $20
Ally P. - Sold Book - $10
Troy C. - Sold Dresser - $15
+ Add Item
– Remove Item

Inbox/ Chat


Troyboy
RPI MARKETPLACE
Home | Profile | Inbox
Messages
Ryan Reynolds
Ayah is typing ...
Matt Damon
You: Can you fix this?
Elon Musk
Elon: How much?
Divya
You: I would love this!
Craigslist
Sara: bro, stop beating us
Prof Callahan
Callab: price?
Ayah Tharwat
type something here