Requirements Elicitation Process
Elicitation Techniques

Questionnaire: The first elicitation technique we've decided on is a google forms questionnaire. The primary reason for this is the ease of gathering a healthy amount of responses. Since a google form can be sent around by text and is relatively low commitment for potential respondents, we hope to gather a decent sample of UVA students to more accurately measure quantitative information. Our plan to administer the questionnaire is simple; we first will meet on discord to discuss and build a list of questions. Then, each of us will send a link to the google form to our friends who go to UVA, trying to cover many different classes and majors. Once the data is gathered we will meet together to analyse it and extract relevant information.

Interviews: The second elicitation technique we've decided on is a series of interviews. This compliments the questionnaire nicely, because while the questionnaire is good at measuring quantitative data with a high number of responses, interviews can help us get more specific/qualitative information from our sample. Because of this, a lot of the free response questions from the questionnaire are repeated in the interviews. We expect that some respondents of the questionnaire will not answer free response questions, or answer them with minimal effort. Since the people we interview will be making a slightly bigger initial commitment we expect that we'll be able to get more useful information from those questions this way. Our plan to administer the interviews is as follows. Each team member is responsible for interviewing two UVA students not enrolled in CS 3240 to interview. They must record their interviews and send the results to the requirements manager. Once the data is gathered, we will meet together to analyze the interviews and extract relevant information.

Questionnaire Question List:

Question	What we hope to learn/gain
What year are you at UVA?	We want to know the age of the students that responded to our form so that we can better understand where the data is coming from, as well as verify that we have sampled a fair representation of UVA.
What is your major?	Knowing the majors of the students can help us to better frame the data, and possibly understand what different specific types of potential users might want from this app.
Roughly how much do you spend on textbooks and school supplies each year?	This question helps judge if we might see demand for an app like ours. If people are spending a lot of money on their textbooks and school supplies they might search for an alternative.
On a scale of 1 to 10, how fair do you think the price of school supplies and textbooks are?	Like the previous question this helps us judge how much demand there might be for our app. If our sample is unhappy with how much they spend on these things it could mean that UVA students would look for a way to save their money.
Would you be interested in lending your textbooks and school supplies to other people?	When compared with our questions about major and age we might be able to determine what kinds of items are advantageous to focus on. Ex: if computer science majors don't want to lend

	items we can shy away from laptops, chargers, etc. This also helps validate the legitimacy of our idea, if nobody wants to lend their items, our app doesn't work.
Would you be interested in borrowing textbooks and school supplies from other people?	This is for the same reasons as the question above. If nobody wants to borrow items, our app doesn't work. You can also find interesting data from comparing responses to age and major.
How long would you typically need to borrow an item for?	This is important for many reasons. First of all, frequency of exchanges can change a lot about how the app operates. For example, if most people borrow items for an entire semester we could host 2 or 3 specific meeting days for exchanges to improve safety of meetups for our users. If more people would be exchanging items at random times throughout the semester, that indicates we need to flesh out some useful features to make meetups safe and convenient.
Which types of school supplies would you most likely borrow and lend?	This helps us to decide which types of items to focus on. Focus on meaning have specific tags so they're easy to find with filters, maybe build features around them, and list them in built-in guides for supplies people need for specific classes.
How do you currently borrow and lend school supplies?	This is a very important question, knowing what people currently use if they borrow and lend school supplies can help us decide what apps to take inspiration from, what we need to get a leg up on, and what methods just don't work.
If you were to choose another app over one of these services what aspects of the other app would make this most likely?	This is a free response question to aid us in gathering useful data from the previous one. If respondents have any issues with their current method, or ideas to make it better, those are crucial to know so we can consider building them into our own app.
What concerns would you have about lending your school supplies to another UVA student?	Knowing what would stop students from lending their supplies can help us build the proper features to make people more willing to do so.
What can the app do to make the process of selecting an item in the app and meeting the lender/borrower in person feel safe?	Since people need to meet up to exchange items, this free response question can help us gauge how safe our sample would feel doing this, and what would make them feel safer.
Please list 1-3 features that you would like to see in an app like this	A final free response question for interested respondents to give their own ideas. This could potentially deliver us some great ideas.

A-28 Requirements Elicitation

Our CS 3140 project team is developing a borrowing and lending web app for textbooks and other school supplies. Our names are Rory Kretzer (vdt8mv), Zaid Contractor (kna6rp), Dev Patel (zqh6jp), Aidan Szilag (uqk6ah), and Surya Vemulapalli (jrn2kf). Please fill out the form to help us decide how to best move forward with development.

1. What year are you at UVA?

   Mark only one oval.

   ⬭ 1st

   ⬭ 2nd

   ⬭ 3rd

   ⬭ 4th

2. What is your name and computing id

   _____

3. What is your major?

   _____

4. Roughly how much money do you spend on textbooks and other school supplies each year? (i hundreds)

Mark only one oval.

	0	1	2	3	4	5	6	7	8	9	10	
$0	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	$1000+

5. On a scale of 1 to 10, how fair do you think the price of school supplies is?

Mark only one oval.

1	2	3	4	5	6	7	8	9	10
◯	◯	◯	◯	◯	◯	◯	◯	◯	◯

6. Would you be interested in lending your textbooks or school supplies to other students?

Mark only one oval.

◯ Yes

◯ No

◯ Maybe

7. Would you be interested in borrowing textbooks or school supplies from other students?

    Mark only one oval.

    ( ) Yes

    ( ) No

    ( ) Maybe

8. How long would you typically need to borrow an Item for?

    Mark only one oval.

    ( ) A semester

    ( ) A week or two

    ( ) A day

    ( ) Depends on the item

9. What types of school supplies would you most likely borrow and lend?

    Check all that apply.

    [ ] Textbooks

    [ ] Lab coats/equipment

    [ ] Computers/chargers

    [ ] Other: _____

10.   How do you currently borrow and lend school supplies?

Check all that apply.

☐ I don't
☐ Facebook marketplace
☐ YikYak
☐ GroupMe
☐ Friends/Family

☐ Other: _____

11.   If you were to choose another app over one of these services what aspects of the other app would make this most likely?

Check all that apply.

☐ Borrowers pay a refundable security deposit to lenders
☐ App users are verified UVA students only
☐ Reviews and ratings for both borrowers and lenders
☐ Reminder notifications for due dates
☐ Built in messaging system
☐ Filters for course type and item type

☐ Other: _____

12.   What concerns would you have about lending your school supplies to another UVA student?

Check all that apply.

☐ Damage/Loss
☐ Late returns

☐ Other: _____

13. What can the app do to make the process of selecting an item in the app and meeting the lender/borrower in person feel safe?

14. Please list 1-3 features that you would like to see in an app like this

15. Other helpful comments?

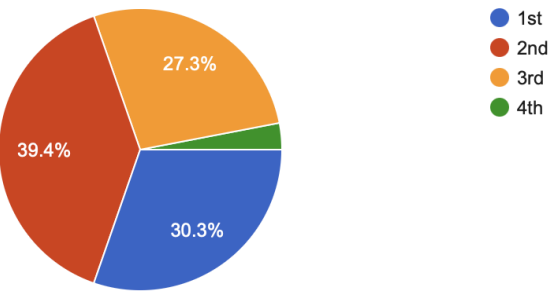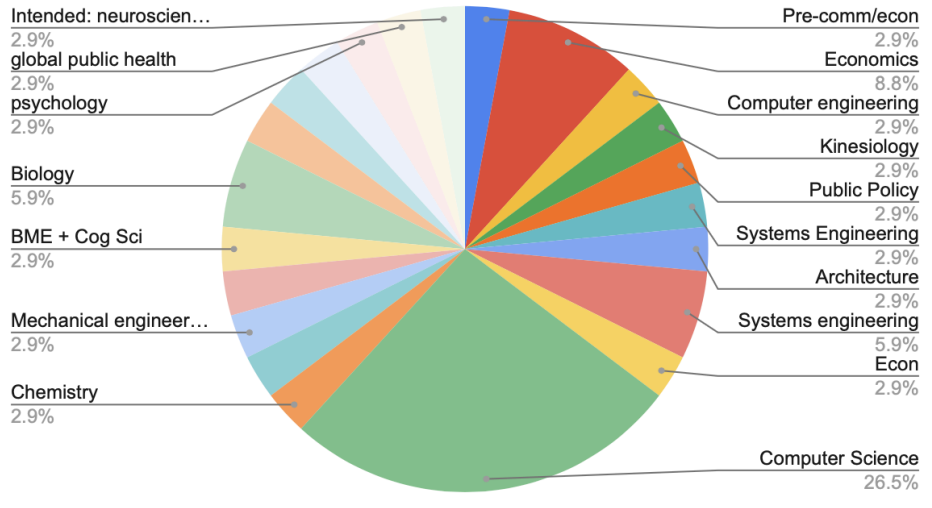This content is neither created nor endorsed by Google.

Google Forms

| Question	What we hope to learn/gain
Would meeting with a stranger in person to exchange an item that you are borrowing or lending make you feel uncomfortable or unsafe? If so, what might alleviate that feeling? (we discussed a couple ideas that we might mention to get them started if necessary)	This is a big concern of ours with an app like this. Having to meet up with a stranger in person creates many safety issues for this app/service. It's important to discover how our sample of UVA students feels about this safety issue, as well as what we can do to make these meetups as safe as possible.
If lending one of your items to another student would bother you, what specifically are you worried about, and what would make you feel less worried?	Finding the reasons why a user would feel uncomfortable lending items that they don't need for a certain amount of time can give us a list of problems to fix with our app. This answers the question, what do people need to see in order to lend their items on our app?
If you think you would lend items in an app like this, how long would you typically be willing to part with your items? If it depends on the type of item, which items would fit into which amounts of time, and with what frequency would you expect to lend each kind of item?	In our questionnaire we ask a similar question but more simple, this dives deeper into what we actually want to know. If most items are lent on a per semester basis (like for the duration of a class) we can solve the safety issue with scheduled/hosted meetup days at the beginning and end of semesters for exchanges. If there is a wide range of times based on items people are actually interested in borrowing and lending we have to ditch that idea as well as have a feature that tells a user how long they are able to borrow an item for. Even besides those specific issues this is important information to know.
How do you currently borrow and lend school supplies? Do you have any issues with your current method that could be fixed, or any ideas that might improve it?	By pursuing this conversation topic we hope to find out two things. One, what we're up against, do people like the method they currently use? What do we need to be better than? Two, what specific things are people interested in that can give us an advantage against our competition?

Requirements Elicitation Results

Questionnaire results

The administration of our questionnaire was a success, with 33 responses. A summary of the responses to each question is below.
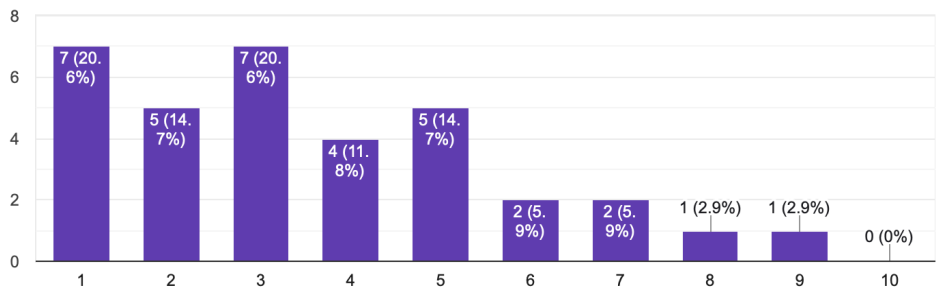
Question	Results Summary
What year are you at UVA?	**What year are you at UVA?** 33 responses As you can see from the graph, our sample included a very good distribution of 1st, 2nd, and 3rd years. Unfortunately, we were only able to gather one fourth year response. We believe this is because nobody on our team is a fourth year. It's important to keep in mind that our data does not represent the oldest class at UVA.
What is your major?	**Count of What is your major?** I'm personally happy with this chart, we have a good spread of majors that is representative of the general UVA population.
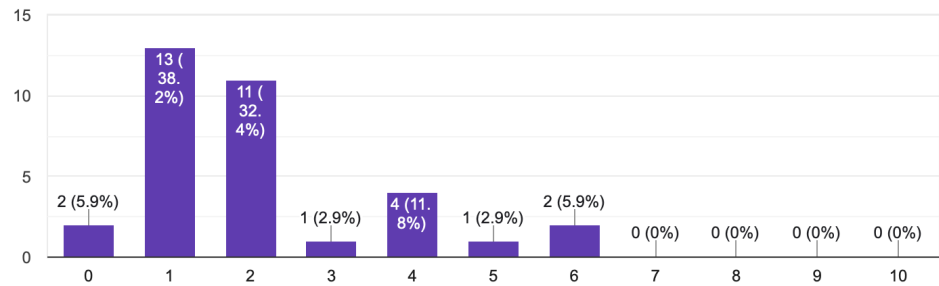
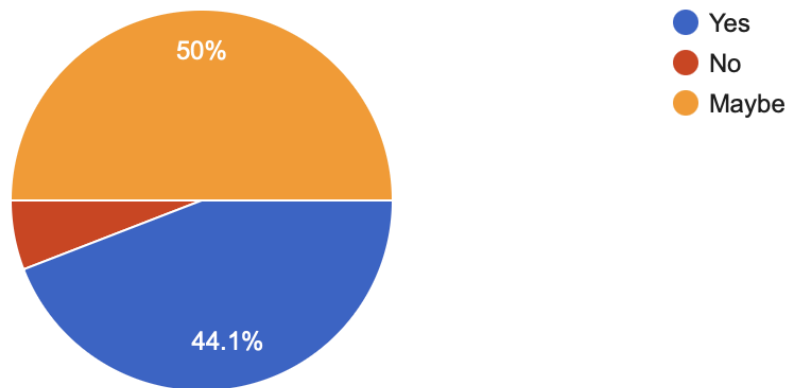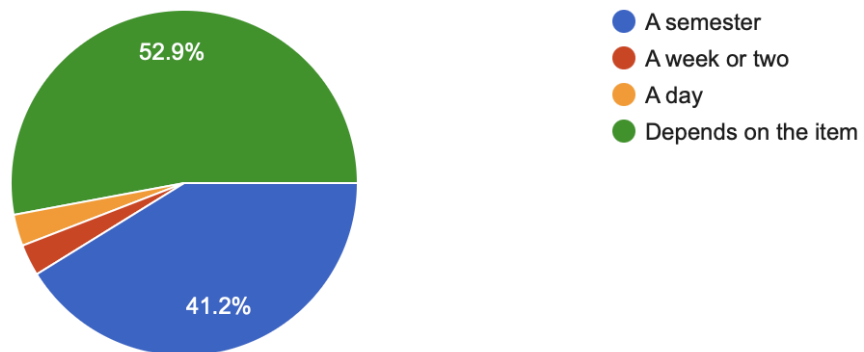| Roughly how much do you spend on textbooks and school supplies each year?	 This chart shows the rough estimation our respondents gave of how much money they spend on school supplies each year in hundreds. The mean of these responses is $208. We believe that that is a considerable amount of money that our sample stands to save should they use our app.
On a scale of 1 to 10, how fair do you think the price of school supplies and textbooks are?	 Just visually, it's obvious that the responses tend towards the unfair half of the chart. The mean response here is 3.58, which indicates that our sample thinks the price of school supplies is unfair. This is good for us, and could mean that we have a high potential demand.
Would you be interested in lending your textbooks and school supplies to other people?	 While the amount of maybe here is a little concerning, a positive result here is that only 5.9% of our respondents (2 people) felt that they definitely would not lend their items. Much of our elicitation process focuses on what would make people say no or maybe instead of yes, so with the ideas generated from this process, we believe that this chart can look much more blue.
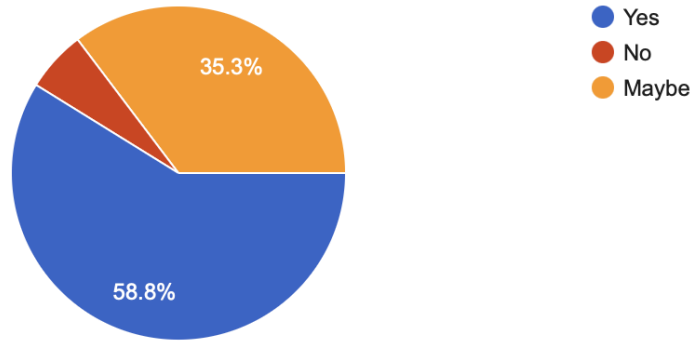
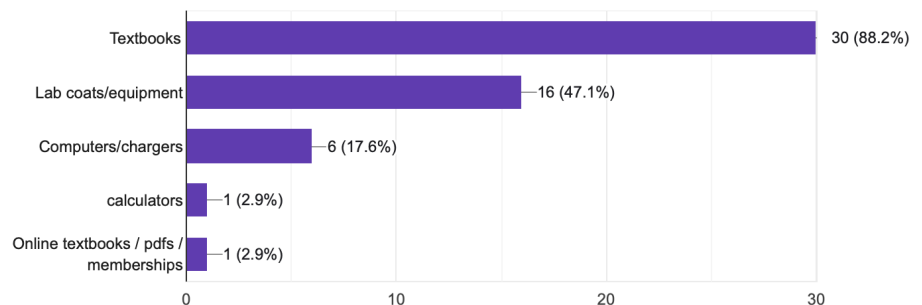|	
Would you be interested in borrowing textbooks and school supplies from other people?	 Naturally, more people are willing to take than to give. Unfortunately for us this indicates that there might not be enough lendable items to satisfy demand, which isn't something we had thought about before. This is useful data. Ultimately in both this chart and the previous, blue is good, and again only 2 responses are sure that they wouldn't borrow items. As some people might guess, one of these is a person that responded no to both questions, and is likely just uninterested in an app like this in general, which we have to expect some of.
How long would you typically need to borrow an item for?	 Here we can see a big divide between "a semester" and "depends on the item." Although in my opinion the real interesting part is that almost nobody responded "A day" or "A week or two." This might mean that "Depends on the item" seems logical to most people, when in reality the items they would be borrowing and lending are for an entire semester.
Which types of school supplies would you most likely borrow and lend?	 Note that while the last two options look pretty desolate, those were written in

How do you currently borrow and lend school supplies?	
	I don't — 24 (70.6%) **Facebook marketplace** — 0 (0%) **YikYak** — 0 (0%) **GroupMe** — 2 (5.9%) **Friends/Family** — 11 (32.4%) (axis: 0, 5, 10, 15, 20, 25)
	This question did have an "other" option but the only selected responses were our suggestions. It turns out our app has much less competition than we originally anticipated with the only other app anyone in our sample has used being GroupMe. It's worth noting that a lot of people borrow and lend items to their friends and family, and a friends system would be a great feature for our app. Potentially even connecting to instagram to suggest friends in the app.
If you were to choose another app over one of these services what aspects of the other app would make this most likely?	
	Borrowers pay a refundable security deposit to lenders — 20 (58.8%) **App users are verified UVA students only** — 27 (79.4%) **Reviews and ratings for both borrowers and lenders** — 24 (70.6%) **Reminder notifications for due dates** — 24 (70.6%) **Built in messaging system** — 25 (73.5%) **Filters for course type and item type** — 23 (67.6%) (axis: 0, 10, 20, 30)
	Again, no respondents opted to write in their own responses here. Every suggestion we were originally thinking about seems to be well received by our sample, and it's obvious that all six ideas are worth pursuing further.
What concerns would you have about lending your school supplies to another UVA student?	We suggested "Damage/Loss" and "Late returns" which got 100% and 67% of respondents respectively, since nobody used the "other" option to write in their own we believe that these are the two most important issues to people, especially damage/loss, which is the only 100% consensus on any of the form questions. We know that we need to find a way to reduce the risk of damage/loss when people lend their items on our app.
What can the app do to make the process of selecting an item in the app and meeting the lender/borrower in person feel safe?	These responses fell into a couple distinct categories. 1. Verify UVA students/have some sort of verification process. 2. Recommend safe meetup spots in the app. 3. Have a ratings and reviews system for user accounts. 4. Allow lenders to enforce a mandatory and refundable security deposit payment from their borrowers. Since almost every respondent said one of those 4 things all of them are worth looking into.
Please list 1-3 features	We got many diverse responses to this question so to summarize I will pick out

that you would like to see in an app like this | our team's favorites to list here.
- Profile pictures for borrowers/lenders
- Incentives for being a lender, selling items
- Lists of materials for each course (I personally really like this one, suggest materials by exact course and help users find them in the app)
- Pictures of items before and after borrowing
- Reminders for returns

Interview Results:

Question	Results Summary
Would meeting with a stranger in person to exchange an item that you are borrowing or lending make you feel uncomfortable or unsafe? If so, what might alleviate that feeling? (we discussed a couple ideas that we might mention to get them started if necessary)	In our interviews we found that many people felt unsafe about meeting up with strangers. The interviews resulted in much of the same information we gathered from the questionnaire. Everyone wants to see features like recommended meetup spots, and account verification which we will most certainly implement.
If lending one of your items to another student would bother you, what specifically are you worried about, and what would make you feel less worried?	Our interviews resulted in much more in depth information here. One student explained that he would feel uncomfortable lending items that cost more than $80, and that since he loves his textbook collection, he would be uncomfortable about the state they return in. He said that he'd be much more willing to lend/give his notes out, which is an interesting idea. More than one interviewee mentioned that lenders should have some incentive to lend their items, whatever that might look like. This could solve the issue the questionnaire showed us where more people are willing to borrow than to lend. Additionally, one interviewee mentioned that a refundable security deposit would definitely give him more peace of mind lending items. Most interviewees expressed the same concerns about damage, loss, and late returns. But now we know that incentive, and security deposits, are potential answers to those concerns.
If you think you would lend items in an app like this, how long would you typically be willing to part with your items? If it depends on the type of item, which items would fit into which amounts of time, and with what frequency would you expect to lend each kind of item?	Most people say that textbooks they would borrow/lend for the duration of a semester. One interviewee said something interesting though, if they're studying for a test they may need to borrow some items for a time period of about a week. This gave us the idea of possibly recommending items when we know exams in big classes are coming up, similar to the idea of suggesting items based on a user's class schedule. Overall, our interviews helped us to conclude that most people are interested in borrowing/lending on a semester by semester basis, with some exceptions.
How do you currently borrow and lend school supplies? Do you have any issues	Our interviews confirmed what the questionnaire led us to believe, we have very little competition besides friends and

with your current method that could be fixed, or any ideas that might improve it?	family. This further reinforces our idea that a friends system or even a friends recommendation system within our app could help users feel more safe meeting up with each other since they aren't strangers, as well as alleviate some concerns about lending items. The same interviewee that said he wouldn't lend an item worth more than $80, said that that only applies to students he doesn't know.

User Stories:

#	As a/an	I want to/the system shall	So that…
1	user	Allow logins through existing google accounts	Login is streamlined and I don't have to memorize new information
2	user	Have option for donating items	If I want to list my items that I don't need back I should be able to
3	user	Be able to say how long im willing to lend my item at a time when listing it	Communication about how long the item is borrowable for is clear and built in
4	user	Receive refundable security deposits for items I lend, and choose how much money that should be (can make this an optional choice for the user lending an item, and/or can connect borrower account to their SIS account so that refund is done automatically)	So that I don't need to be concerned about damage/loss and late returns
5	user	Have a .virginia.edu email verification process for new users so that only uva students may use the app	Increases safety when meeting with borrowers/lenders
6	user	Have a reviews and ratings system for lenders and borrowers alike	So I know what other users of the app thought of the people I may be borrowing from or lending to, if they returned late, damaged an item, etc
7	user	Have a simple built in messaging system	So I can go through the entire process of finding an item I need, borrowing, and returning it. Or alternatively listing an item id lent, and getting it back, without leaving the app. This also increases safety because the accounts in the app are verified through email

8	user	Recommend safe meetup spots on grounds	Improve safety and security
9	user	Require borrowers to submit picture of item on day of return to compare with day of lending	Protect against damage/loss
10	user	Require lenders to submit picture of item when listing it	So that the pictures can be used for customer evaluation
11	user	Include a navbar to move between different features of the app (messaging, borrowing, lending, etc) as well as a dashboard to see what items you have checked out and which of your items are checked out.	So that I can easily discover features and keep track of the most important things I need to know (borrowed/lended items)
12	user	Track and store user history for borrows and lends	So that I can see how often a user borrows and lends items to get a better idea of how trustworthy they are and better contextualize their reviews.
13	user	Have an item tag system that makes searching easier with filters. For example, classes, majors, types of items/ (a lab coat might have like chem 1410, chemistry, lab equipment, as its tags)	So that it's easier to find the items you're looking for
14	user	Sends notifications to remind borrowers about due dates/timings for when to meet the lender	So that the user experience is more streamlined and so that the users can trust this app to lend/borrow items
15	user	Allow lenders and borrowers to add a profile picture of themselves	So that both parties can verify if it is the correct person they are meeting during the item exchange
16	user	Have a complaints page for item damage/no return	So that the borrower can be held accountable if they are to damage the item or not return it by the due date
17	user	Allow both borrowers and lenders to confirm in the app that the item has been exchanged	So that the system officially updates the status of the item and gives confirmation about the transaction
18	user	Have a page that lists the required materials for most courses at UVA	So that the borrowers can easily know what they need to buy/borrow and can easily filter out lenders for a class

19	user	Have a friends system + friends suggestion system that connects to instagram.	So that users can see which of their friends use the app and be encouraged to interact with those they already know and trust.
20	user	Host a meetup at the beginning and end of each semester for exchanges	So that items that are borrowed by the semester (most items) can be exchanged as safely and conveniently as possible.