CS-570 INTRODUCTION TO HUMAN-COMPUTER INTERACTION
FALL 2022

PROJECT 1: WEB-BASED SERVICES

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SIMPLYSCHED

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INTRODUCTION

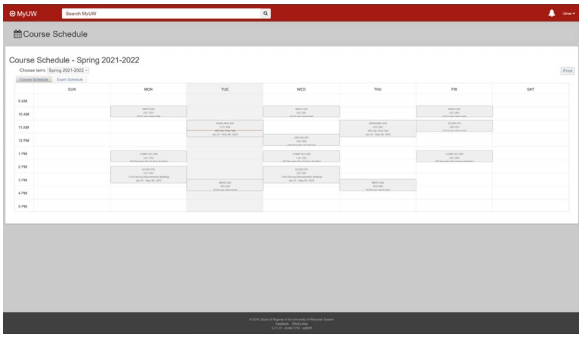
Students maintain busy lives. Amongst their already grueling academic schedules, they also engage in extracurriculars activities including student organizations, fraternities and sororities, and athletics. These activities too come before the job and internship search.

Given these immense time commitments, one would expect university systems to provide some form of technology that takes the busy work out of some of these tasks and allows students to focus on their academics. Rather, current solutions offered by university systems are built on outdated technologies, having neither the functionality nor the appealing design to attract Gen Z users. This has led to a fragmented ecosystem where students are using dozens upon dozens of different applications, some university sponsored, others not, to complete their day-to-day tasks. This leads to extreme inefficiencies, costing students time and money.

In our analysis, we found that these efficiencies can be solved through the consolidation of feature sets. Though the feature sets that we are presenting are not fundamentally new, they have never been used in the scope that we are presenting them. Additionally, we are introducing new UI that has not been seen in the education space before. Before we introduce our own platform, it will be helpful to understand the current state-of-the-art tools in the space.

UW-Madison Schedule Tool

Below is a screenshot of the closest thing the University of Wisconsin-Madison has to a scheduling tool. There are a couple of important notes to make here. Firstly, at face value, we can see that the platform is very bland; the UI is not captivating in any sense. Considering that the demographic in college has shifted entirely, and is almost completely comprised of Gen Z, we can further see that this platform provides no motivation for students to seek out and use it.



Secondly, a quick look at the platform reveals that it is very static; it is not dynamic in the sense that there is not much that can be added to it. Users crave customizability, and for a platform to limit them to only one of their many use cases means quite plainly that the platform in question is not very effective and does not hold a significant grasp over the value chain. With this schedule platform, the user is limited to viewing only their course schedule. AS we discussed earlier, students have many things outside of their courses that they must keep track of. This platform, clearly, does not encompass that use case.

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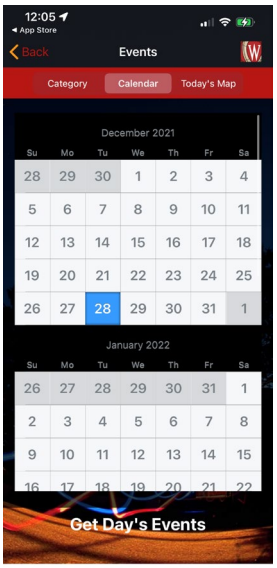
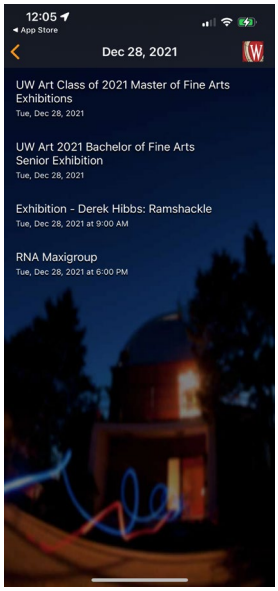
Piazza: Online Discussion Platform

Another widely used platform in the higher education space is Piazza. Piazza's goal is to serve as a digital discussion board, where students can pose questions and professors, or even other students can answer those questions. While Piazza is used widely amongst educational institutions, we find the recurring theme of technology not being built with the student in mind. Here we again notice that the UI is not optimized for the interest and liking of the college student demographic. Rather, Piazza is simply a legacy platform being utilized. This does not provide any utility to users that they can't find elsewhere or even with free services.

UW Mobile App

Lastly, we will take a brief look at the closest thing that the University of Wisconsin-Madison has to a mobile app. This app is the UW App. Again, we find the same theme. Yes, the application houses certain things of interest to students such as a calendar and upcoming events. But the issue here remains as it did before. This app, though a valiant effort, does not capture the interest of its target market. We find that due to its outdated interface, it is difficult to take advantage of the resources that exist on the application. This shows us the power of a well designed and intentional UI. In terms of content, an application can have near everything that may be important to its userbase, but if the UI is in distress, the application will not be successful.





Design Opportunities

With the above considerations and the plethora of data we received through our customer/user discovery process, we have come to three main conclusions. First, current EdTech platforms do not consider the functionality that students need. Second, UI is not built to be easy and attractive to students. And third, students are turning away from using university sponsored software, and are instead using free platforms available to the public. There is no more apparent of a sign than this.

Though we find the EdTech industry at a point of failure as it relates to the tech stacks available, we also find that this presents significant opportunities for growth and novel designs to dominate the space. As such, we have chosen to focus on the highlighted mentioned in this section, using those as guiding principles for the design of our app. SimplySched.

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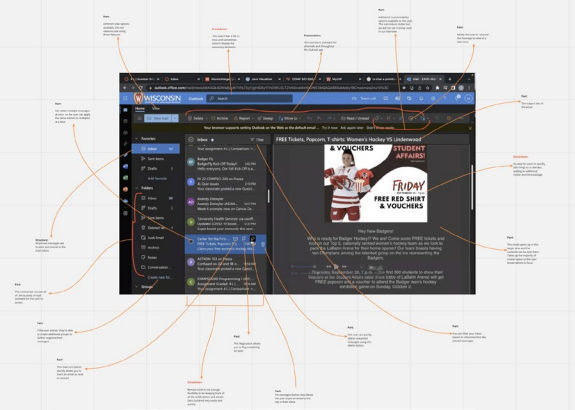
UNDERSTANDING

To better understand the problem we intended on solving, we conducted contextual inquiries. Our CI process involved very in-depth observations of relevant users. To our interviewers, we posed the question, “How do university students keep track of what is going on in their daily lives?”

Before formally beginning our Contextual Inquiry process, we had to first determine which individuals would be best to scope and monitor. Given our question revolves around college students and their usage of technology to organize their lives, we chose 3 different variations of college students. One of our participants was a Senior involved at an executive level with many student organizations on campus. They are veterans when it comes to understanding the internal workings of student organizations. Another one of our participants was a freshman, still adopting to campus and getting into the groove of what the university has to offer. They are looking for ways to get involved on campus. Our last participant is a junior at UW. They are focused more on their academics and are engaged in a couple of organizations, but don’t tend to get too involved at the executive level.

This varying level of personas was critical in providing us a range of ideas, and therefore a well-versed understanding of the problem for which we were trying to design a solution.

The CI was conducted with at least two interviewers present at a time and the participant , equipped with of their standard equipment that they would normally have on campus. The interviews were conducted privately, independent of any other external variables or distractions, so as to note influence the participants reactions or responses in the slightest. Both interviewers were involved in the questioning, though one interviewer primarily recorded the conversation. We also wanted to capture the interview while the participant had been actively using their technology. This would subconsciously encourage them to freely utilize their technology as they might usually, pointing to gaps and use cases for our own designs.



We began by posing our question mentioned earlier in this section. We encouraged the participant to show us as they talked to us. This allowed us to tailor our questions, forming more useful questions to gauge our participants’ usage of their respective platforms. This sequential series of questions continued for about 10 minutes. During the interview, we frequently took notes and highlighted any important design breakdowns or gaps.

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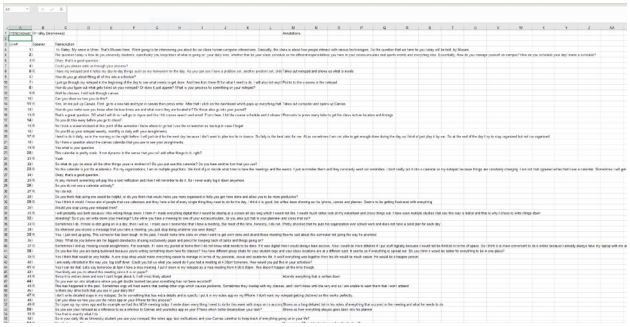
UNDERSTANDING

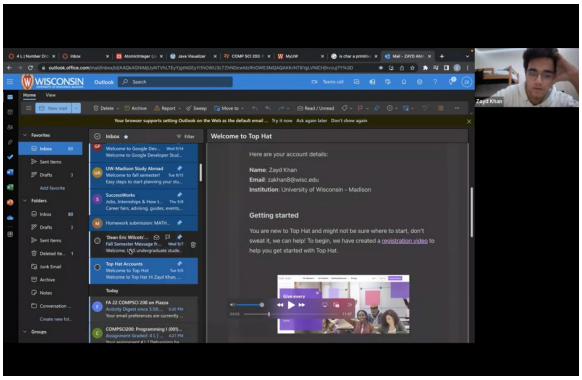


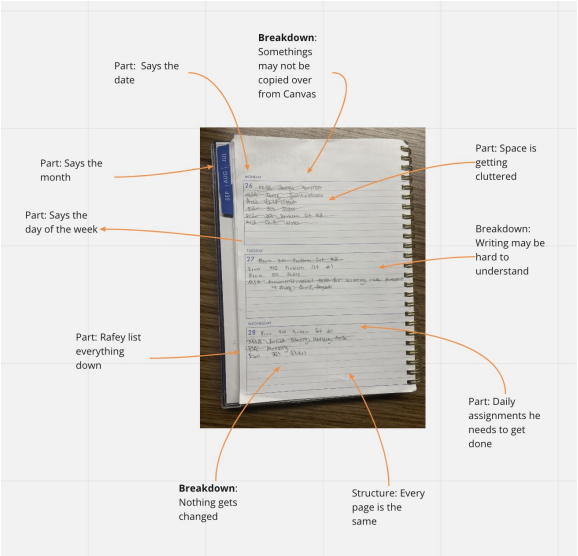
At the end of the interview, we compiled our interview recordings and transcribed each. We then went through each interview and notated line by line any key/important points mentioned by the participants. This allowed us to conduct a deeper dive on the information provided by the participants. In our annotations, we were sure to note down any interesting physical interactions our participants made with the interface. We also looked out for any visible signs that would be telling as to how they felt about the platform.

With all of these factors in conjunction, we were able to fully understand what technology is currently circulating among students on campus looking to organize their lives. We identified the following core issues:

1) **There is no centralization: resources and technology used is not specific to one student. Rather, it varies from student to student, and there is no continuity.**

During the interview process, we found that none of our participants utilized the same technologies. This is very problematic. If we are under the umbrella of one institution and are involved in similar things in terms of their structure, it only makes sense for there to be some semblance of universal connectivity. While some of our participants were utilizing Outlook to pin events, others were simply using their physical planners, with no influence of digital mediums. The disparity was shocking and turned into one of our core issues to address.

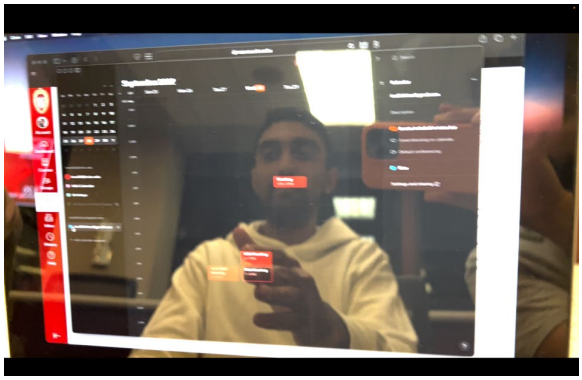




2) **It is difficult to find things to be a part of on campus.**

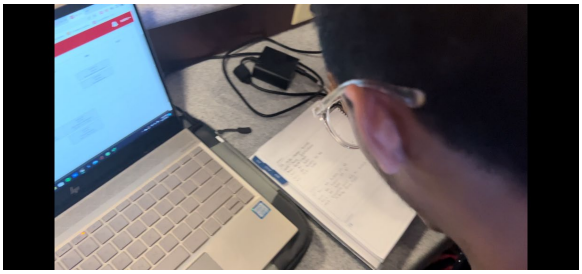
Our participants are looking for ways to get involved on campus as well as finding events to attend. A similar theme was found here. We had some

participants who had been relying solely on word of mouth. This results in a closed community while being on a campus with over 30,000 students. Our other participants were utilizing all of their social media apps, individually following each of their student organizations, tracking events as they were posted. They would then take those events and add them to their digital calendars, filling in all details manually. We also had one participant who simply relied on their outlook communications regarding events and organizations, pinning anything that seemed interesting. This proved difficult as we asked them to show this process further, and we found that they had already missed many of the things they had said they were interested in.



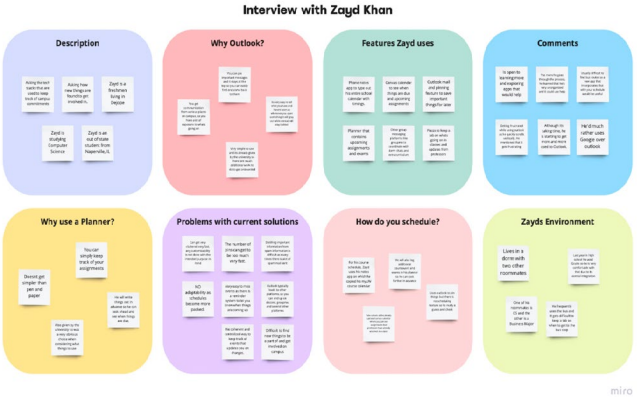
3) Current university technology offerings are not attractive and thus not used.

Finally, we also found that our participants completely stayed away from any university sponsored tech offerings. They preferred external communication platforms over WIN and Outlook, they utilized their own calendaring tools, and there was very limited interaction with any university technology.



These core findings steered the direction of our design process, and we centered any novel ideas around first solving for the above core issues. Thus, we proposed the following design statement:

After conducting these interviews, we learned many things about the way students interact with technology as it relates to organizing their busy lives. One recurring theme we found is that the abundance of technology paired with the lack of centralizations creates for a disjointed tech ecosystem. This leads to excessive redundancy and a disorganized tech stack, and ultimately frustration. We also found that there was no continuity between our interviewees. Rather, they had their own individual tools which they bounced around. Through these interviews, we have decided to narrow our focus on scheduling platforms that also allow for easy engagement and resource discovery on campus. Our aim will be to build a tool that centralizes the most important features, providing students with a robust one-stop-shop platform. In this environment, their academic, professional, and social activities can all be bundled into one app.



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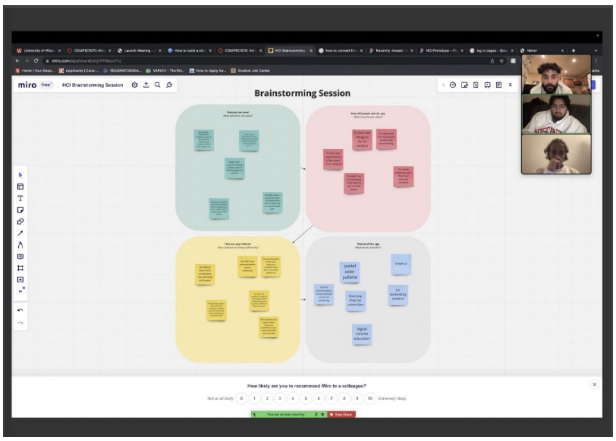
IDEATION

The brainstorming part that gave us many ideas and helped us break down what we needed to achieve in our application was very crucial and helped us simplify things into a couple ideas. We came up with a couple of ideas that help solve problems that users might experience. Even looking at it from a personal perspective of each one of us, we were able to come up with ideas that would not only help our participants but help us and others too. First, we will provide a screenshot of our brainstorming phase that helped us gather these ideas through many different lenses. And later on, we will mention the opportunities that we were provided with from our Contextual Inquiry part.



This part of our brainstorming session we came up with points that would help us figure out what we needed in the application and what matters the most that would have the biggest impact on all its users. We figured that if we figured out the most important aspects of what the app needs, then we could come up with ideas that involve them all. Some of the ideas that we came up with included the type of features that we needed to use and targeting what will help attract users in our group with similar issues. Another topic we needed to cover was to look for a version of this app that could help us with many different uses. One of the last two topics we brainstormed was the themes of our app and what people will see it as. This is important to us because it can be very easy for people to see this app and not know exactly what it consists of or can help with. The themes part of our app didn't really matter to us that much because we wanted to get our main points across before editing and seeing what the presentation was going to be like. And lastly, we revised over our last point of how our app is different from others and what we could do differently about it. We think that it is easy for people to look at our design and idea and categorize it with other apps, so we wanted to make sure ours stood out. After coming up with these topics and goals we started working together to jot down ideas below these topics and revise them until we came up with some great ideas and all-around good thoughts for this app. This is what we wrote for our design focus:

After conducting these interviews, we learned many things about the way students interact with technology as it relates to organizing their busy lives. One recurring theme we found is that the abundance of technology paired with the lack of centralizations creates for a disjointed tech ecosystem. This leads to excessive redundancy and a disorganized tech stack, and ultimately frustration. We also found that there was no continuity between our interviewees. Rather, they had their own individual tools which they bounced around. Through these interviews, we have decided to narrow our focus on scheduling platforms that also allow for easy engagement and resource discovery on campus. Our aim will be to build a tool that centralizes the most important features, providing students with a robust

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IDEATION

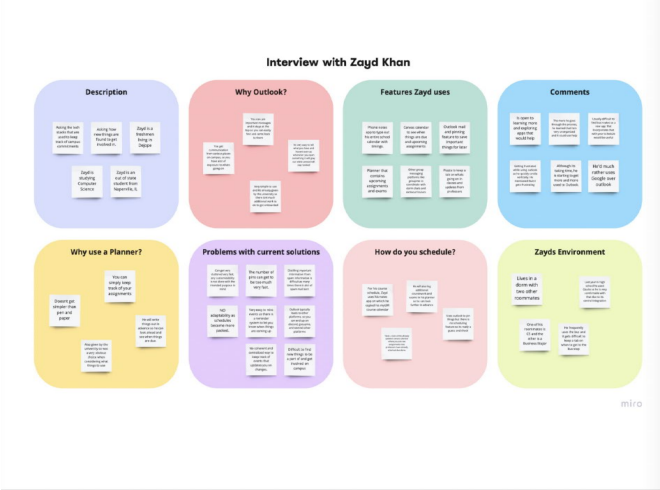
one-stop-shop platform. In this environment, their academic, professional, and social activities can all be bundled into one app.

After some time of brainstorming and designing this app we put together a final version of our ideas in an affinity diagram. This diagram is presented below and has all of the contributed thoughts under each of the topics presented.

After filling in 5-6 thoughts per goal of what we want in our design, we knew what we wanted included in our app. An inclusive app that could keep track of all aspects of a student's life whether it is extracurricular activities or school.

One very important thing about our process was also the information that we collected from our participants. Using the models to gather information about how the participants worked through their problems with different mobile interfaces was interesting and provided us opportunities to create a better app.

Doing a little thinking and writing down problems and different ideas about the interviews that we held with the participants was very helpful when designing the app. We divided the work and had each member create a source of the information that we gathered and used it all. Below I have provided one of the ways that we identified what we wanted and needed through our Contextual Inquiry.



Along with the information we gathered from our participants we were able to put together a few short stories describing their experiences and the problems they run into. One short scenario from this set of information in the picture above states:

Josh is very to himself when he walks around campus and doesn't reach out and get to know people. Even on social media he isn't very connected with the things around him and isn't in the loop usually. Josh is sitting in class one day when he

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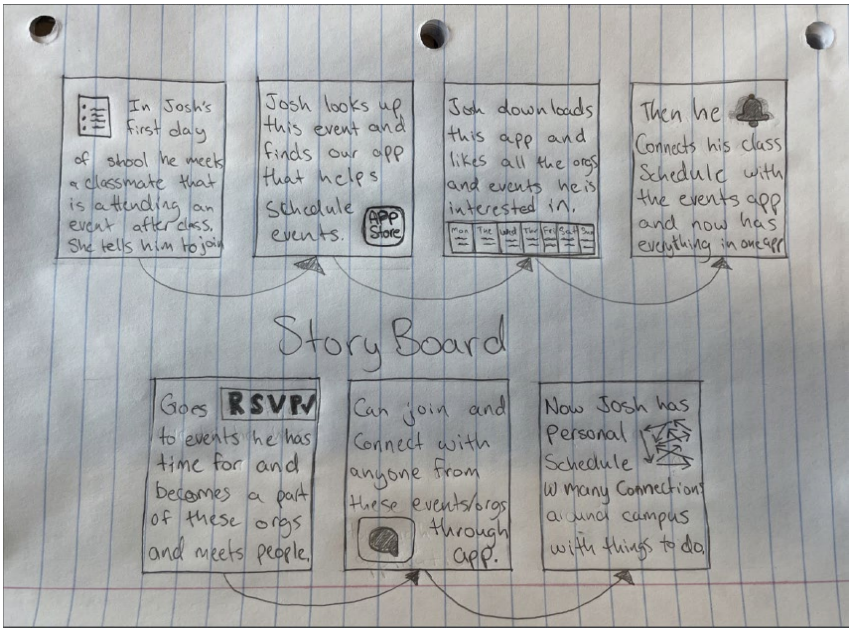
decides to talk to his classmate and finds that she is attending an event after class, and she asks him to join. Looking up this event, Josh finds our app and is guided to all the orgs he wants to be a part of. This scenario is one of our sketches shown below.



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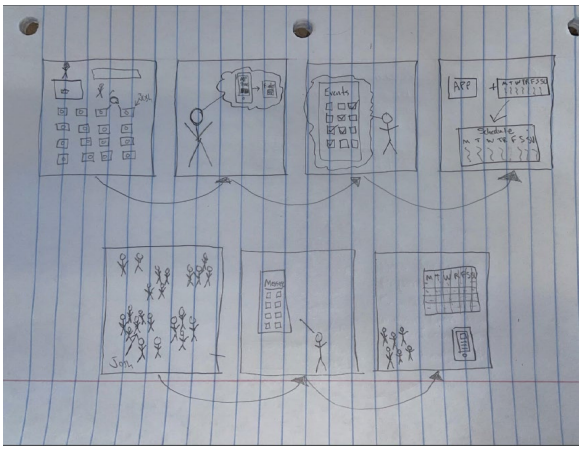
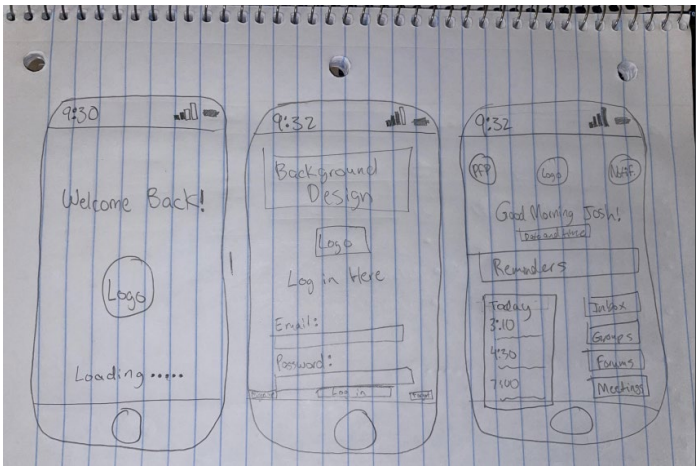
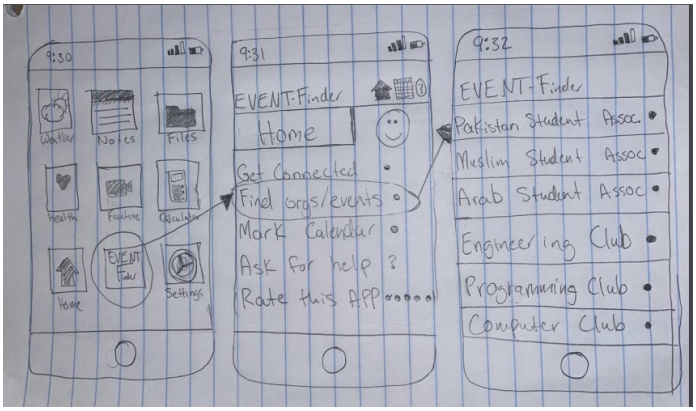
PROTOTYPING

Our early stage of prototyping began with some sketching and creating our low-Fidelity Prototypes. These sketches show what our app would look like sketched and how to navigate through some of it. Some of these prototypes even include some scenarios and reasons why you would need the app that we developed. The first stage was just a lot of drawing and sketching out scenarios and faces of the app as shown in the couple of pictures below that we will explain our thought process.



This is a sketch that we made on the story about Josh who was disconnected with his surroundings and somehow found a way to our app through one of his classmates in one of his classes. Josh now uses our app every day and it has helped him with organizing his time and connected him with organizations of his interest without making him do too much work.





These two images were two of our low-fidelity prototypes that helped us create a visual of what we want the starting layout to look like with our app. As you can tell there is an app like structure on a phone portrayed and a welcome screen on the prototype to the left. On the right side we showed one of the features that would help users find events around campus and get involved. This ties to the scenario that we had with Josh not being able to find any events because he's antisocial. Below are more prototypes that we used to sketch the layout and theme of what we want the application to look like:

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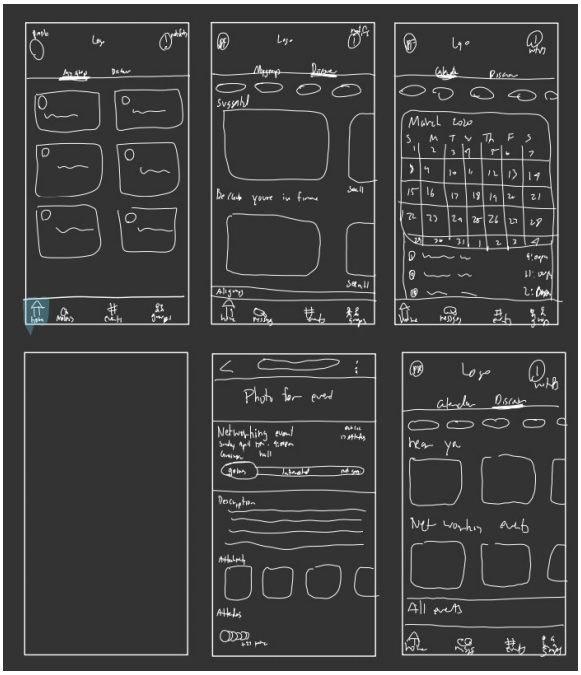
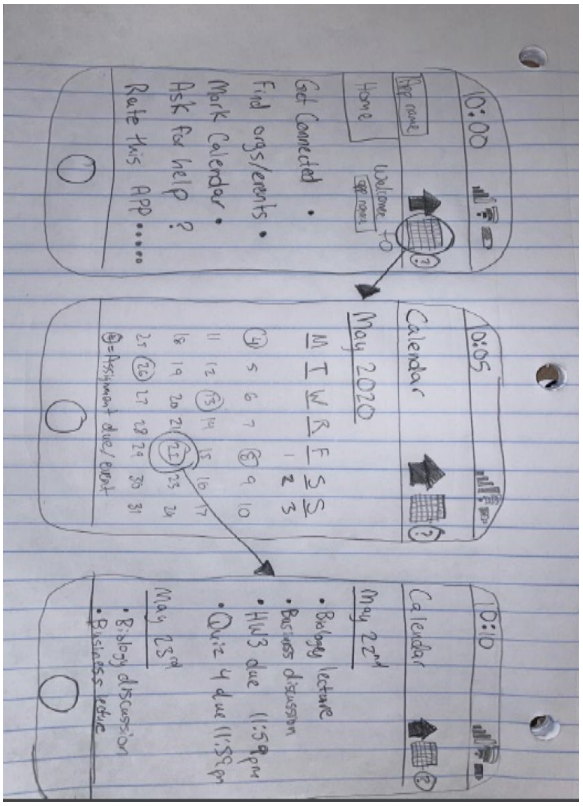
PROTOTYPING





These two low-fidelity prototypes above helped us show the layout of the idea that we were thinking of doing for our application. You could see on the right it shows a prototype of a phone with buttons and prompts that users could use to navigate throughout the application and find their desired need. And on the left you could see we have another prototype that does a bit of the same thing but in a little less detail than the one provided on the right. Moving on to prototypes with more detail, next we created our next level prototypes which turned out really well and have a very similar layout to the prototypes above with just a little bit more detail. Below are our first version Hi-fi prototypes.

These prototypes give all of the detail that we need to finish up and show the users exactly what we will be providing. As you can see all the way to the top left is the first prompt given when the app is opened. After unlocking the app there are many different tabs to search through to find the different uses that come with this app. Now we have a very detailed and put together application that can help users with time management and organization.

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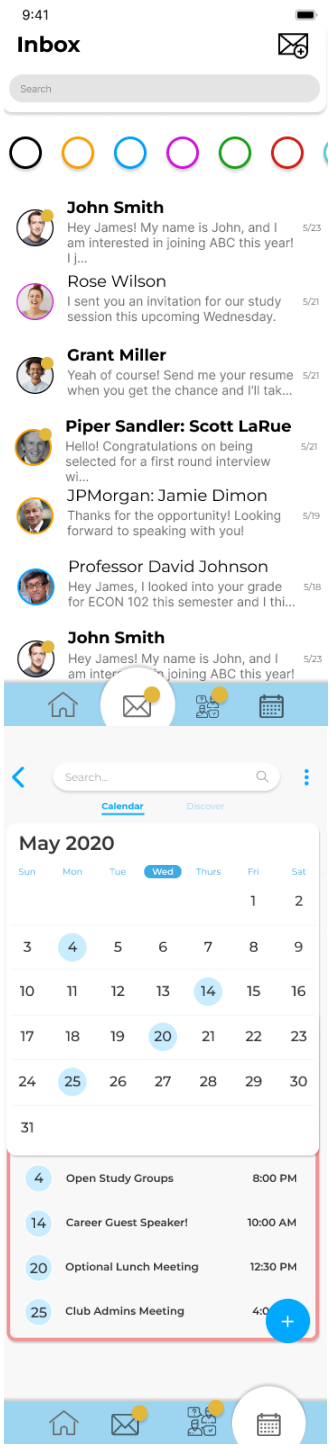
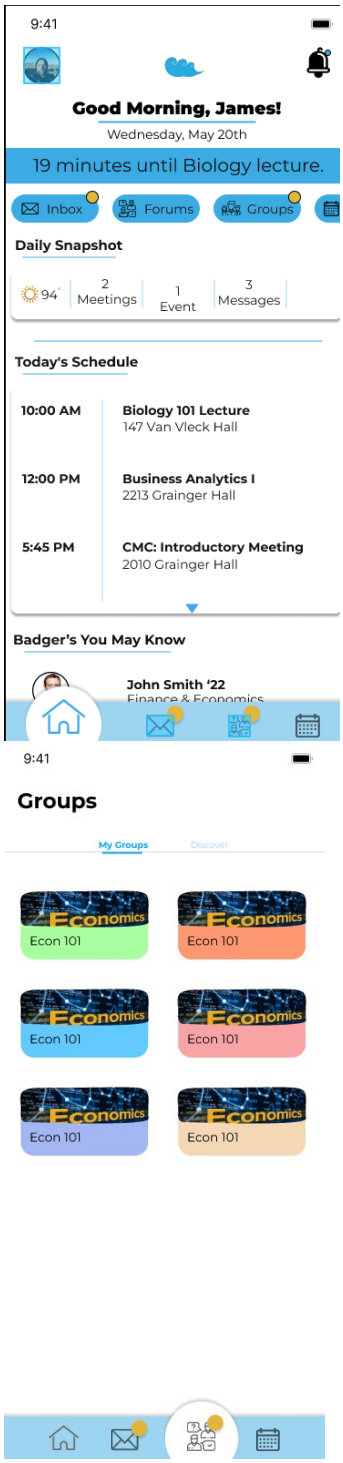
PROTOTYPING





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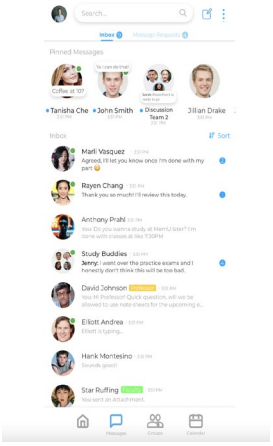
EVALUATION

After conducting all our interviews and analyzing all of our data, we were able to make low and high-fidelity prototypes of how we wanted the application to look. Many students complained to us about how there isn't a one-stop shop for all of their school necessities. The constant switching between Canvas, Instagram, Google Calendar, and other websites was just too much for one college student to handle. Keeping all of that in mind, we started to lay out the foundation of the application. We started off by making the homepage of the application. Our goal with the homepage was to give users a quick insight into what their upcoming day looks like such as classes they need to attend and any extracurricular meetings that day. We purposefully included locations underneath class names because many students told us that they took pictures of their schedule and it was hidden somewhere in their photos app. Additionally, we included interactive buttons on the top of the screen so users can quickly check their inboxes for potential messages from other classmates or check their groups. All in all the homepage served as a quick way to open the application and get a quick overview of everything that is going on for the rest of the day. We hoped this would help declutter students' lives and ensure fewer classes were missed.

Our second main feature was the inbox. We wanted to create a central hub for all students to be able to contact instructors or fellow students in the class. Many of our users told us how they don’t like using outlook because of the constant messages from the school. Also, we were told how important messages can get buried from all the other spam students receive. With the inbox feature, we hope to attack that issue head-on and allow students to see anything relevant to them while cutting out all the extra emails. Additionally, we hoped this feature would help create a more collaborative environment within classrooms which would help kids thrive in their perspective classes by finding study groups and discussing concepts with each other.

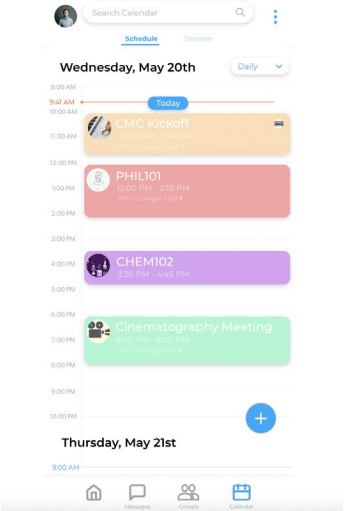


Our third main feature was the in-house Canvas lookalike. This allowed us to implement and put classes into our

EVALUATION

application. This results in users not needing to use Canvas anymore because all their class information is conveniently put into our application.

Our fourth and most important feature was the calendar. Throughout our preliminary design phases, we had the unique opportunity to interview freshmen as well as club leaders. Both groups of people concluded that the University does not do an adequate job of showing all the events going around



campus. The freshman we interviewed said his only reference to what was going on around campus was to look at Instagram and follow multiple clubs'. We as a group believe that our open calendar application will take that worry away. By clicking on any date of the week, you can immediately see what clubs are hosting events and what guest speakers the university has speaking on that day. In addition to this, other users who you are friends with on our app can put in open study sessions which will overall build one's daily schedule.

All in all, we listened to our interviewees and wanted to build an application that suits all their needs. We knew our demographic would adjust better to a social media like application that allows them to text other students, look at their classes, build out their daily schedules and show everything that is going around campus. We believe this one-stop shop will make it super easy for students' daily lives while also giving them a better college experience. With everything built, we decided to conduct usability testing to see how users react to this new one-stop shop in education.

We recruited the same three individuals that we interviewed at the beginning of the project to see how we took their data and made it into a fully functioning app. The main reason we wanted to conduct usability testing is to test the 5 basic components learnability, efficiency, memorability, errors, and satisfaction. We also wanted to know what could be improved for our final prototype. To conduct this test, we assigned each user 3 tasks. The first task was to find the message box, the second task was to find the calendar and the third task was to find groups. Each step of the way, we wanted our users to think out loud and show us what should be improved. On our end, we were observing, taking notes, and hoping our users would give us honest feedback which would allow us to create a better prototype.

When all three users were asked about the message's app, they were all able to find it quickly. However, none of them liked how we had buttons for messages on the top and the bottom of the screen. They felt as if that was

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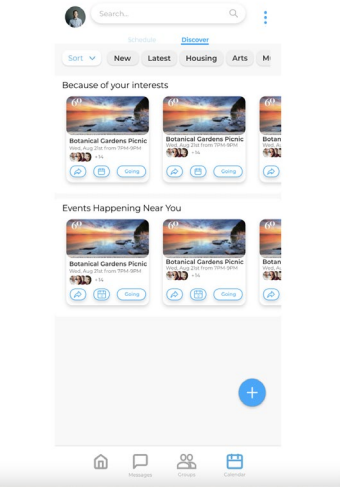
EVALUATION

overkill on the design of the application. They also did not like how users were not able to pin important messages. They were scared about how they could miss something super important if it was not pinned on the top of the screen. Additionally hearing them think out loud showed us that having multiple buttons was not the smartest allocation of screen space for future prototypes. The positive criticism we were able to take away from this first task was that all 3 users said they would love to use text messages to contact students and professors instead of outlook. They also stated that they believe a feature like this could lead to faster response times which would be perfect during group projects or when you must ask for something urgent from your TA.

The second task was to find the calendar application. Again all 3 users were able to navigate to the calendar section of the app quickly. However, they did not like how the calendar application did not show what they had scheduled for the day. Instead, it just focused on things they can find around campus. They believed having a schedule that shows their daily lives broken up by the hour and then a button to discover other events would be most optimal in ensuring that they can keep track of their daily lives while also looking for other things to do. They all loved how the calendar was dynamic and they could adjust on the go if anything were to change. For example, if they wanted to attend the CMC kickoff that day, that meeting could automatically be added to their schedule. Most particularly, the freshman interviewee was super excited that he could finally find clubs that cater to the things he likes without searching all over Reddit and Google. The other two users said that having a calendar application like this would be beneficial in increasing user attendance in their clubs.



The third task was to find the groups portion of our application. This was the part of our application that received the most negative backlash. Users did not like how there weren't multiple discovery options. They also did not like how there was no way to differentiate between class groups and extracurricular groups which now looking back at it is a key distinction we should've made in our earlier prototypes. In addition to this, we made the group feature so members of student organizations could all communicate through one platform instead of having separate GroupMe and message threads. This was not clear to our users in our usability testing, so we had to explain to them why the group section exists. Overall hearing

them think out loud, we were able to see lots of confusion in the groups' portion.

Overall, by hosting usability testing, we were able to get a deep dive into our users' brains. We realized what they liked about our application and what they disliked. In addition to this, we realized many key discoveries that would have to be changed in our final prototype such as getting rid of the messages button on the top of the screen, adding a personal calendar and a discovery calendar, and most importantly making a better groups section of our app. Users were also confused that we never made a reminder or a task list although this was mentioned a lot during our interviews.

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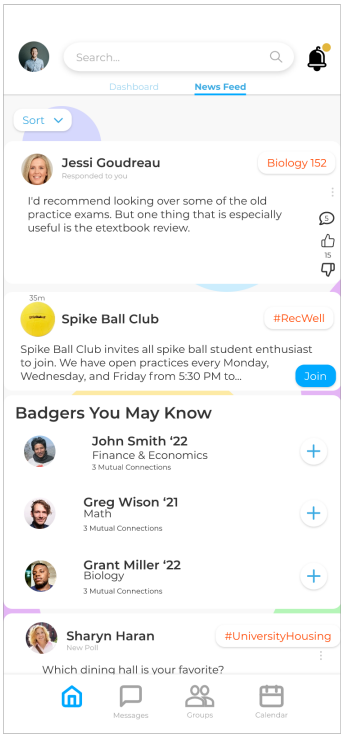
FINAL SOLUTION

Our final designs can be found here.

After our usability testing was over, we received an immense of feedback about how we can improve the application further. We decided to implement these changes in our final prototype. First, we decided to scrap the inbox, forums, and groups buttons on top because it was redundant and didn't make our design look neat. We also added a to-do list to make it easier for students to accomplish and keep track of their daily goals. Now students do not need a physical planner instead they can use our one-stop shop to figure out their daily tasks. In addition to this, we added a highlighted tab on today's schedule to users can see what part of the day it is and how soon their next class is starting. This will help students plan out their day and help them live a more productive life. In addition to this, we wanted to add a news feed section to help students get updates about things going on in the university such as Becky Blank switching schools, the badgers' football team losing to the fighting Illini, and much more! All these upgrades were a big step up from our initial prototype and we would have not been able to make such monumental improvements without our 3 interviewees.

A scenario that occurs common as a student is that you wake up, but don't know what time your class is or what it is taking place in. This a common recurring theme in the beginning of the semester. This student can simply open our application and easily see what time classes are and where he needs to go. On his way there, we could also plan out



the rest of the day in the daily task section. Maybe he has to attend the Men's basketball game later at night or prep for his upcoming interview with Google, both of these tasks can be listed in the task section to ensure he can attend to them.

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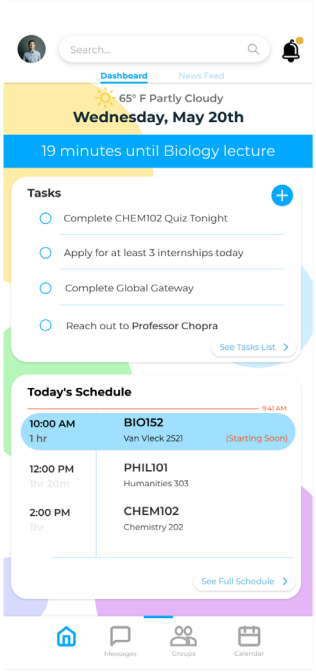
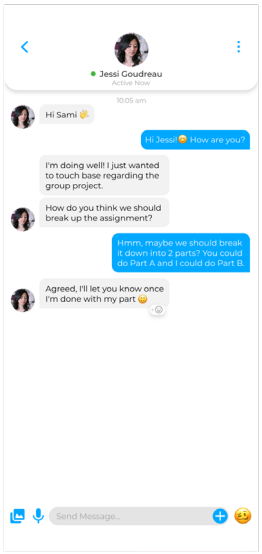


The second major design update is the messages section of the application. After listening to our users, we were able to add a pinned messages section. This will allow students to be able to pin messages to ensure that nothing is cluttered in their inboxes. Additionally, we had another section for message requests. We believed this would be smart for when new classmates are trying to reach out to a student, and they haven't talked previously. This is another function we believe will be key, so students' inboxes aren't cluttered. We hope by adding these features to our prototype, users enjoy using our application and don't get flustered with anything.

A common situation that occurs is that many students must email their professors or need clarification upon a certain thing that was set in class. With the messaging feature, they can immediately send our messages or even better yet message one of their friends in the class to gain a better understanding of the material while also making a new friend!



The third major design update was the group section of the application. During our usability testing all 3 users were confused about this section. They complained about how there wasn't a discovery option. Because of this, we added a special discovery page that is curated toward what individuals like. For example, if someone loves finance, we can recommend them groups on club that teach others about finance. This allows us to create a more personal experience for all students, we also addressed student concerns about distinguishing between academics and extracurriculars. We created a sub sections on the my groups page with headers that state “Classes:, “Student Organizations” and “Communities”. Again, this is another effort to make the application less cluttered and allow students quick access to anything they

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need to open. All in all, groups were made to ensure that student organization, classes and communities didn't need separate message threads and after all our interviews we feel as if we have attacked the problem head on and created a sustainable solution.

A common situation that occurs is students have multiple group chats on IMessage, GroupMe and a dozen other applications. Handling all these different applications can become a daunting task for students. Because of this, we created different sections for everything a student is involved in so they can easily keep track of what is going on in all their group chats.

Our last update to our final prototype was revamping the calendar application. Our original application had one full-screen calendar that showed multiple events other organizations were hosting. Many of the users during our usability test complained that we wanted a calendar that is unique to them and shows what is going on in their day. We decided that in our final prototype we would split the calendar application into a discovery portion and a personal portion. In the personal portion, a user's day to day would be broken up by showing what time classes are and what time their extracurricular activities are. The discovery portion would allow students to find different events and speakers that are on campus. Additionally, we ensured this calendar would be synced to the groups a student was involved in, so if CMC was hosting a meeting it would automatically pop up on their calendar. This would help students break down their day-to-day and show what events they need to attend. The discovery portion would allow them to find other events to take part in. Our end goal was to again minimize the clutter in students' lives and ensure that they don't need to go to several different websites to find information. Our app eliminates this and ensures everything is in one place to give our students an easy and stress-free life.