

# INFO I-300

## App Design Portfolio

Devyansh Bhatnagar, Sabrina Blumberg, Natalie Burke, Thomas Atkins



# Outline

Over the course of this semester, as a group of four design students, we designed, modeled, tested, examined, experimented, questioned, interviewed, investigated and developed a design prototype that we are very proud of.

This project is a phone application designed to make public transportation easy. In this portfolio, a complete design process and progress is described step by step with visuals demonstrating that change.



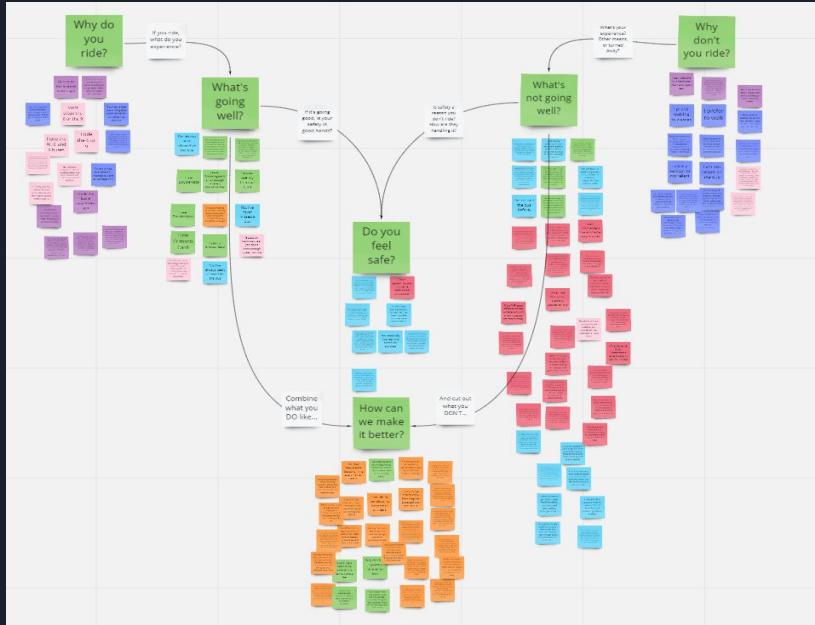
## Problem Statement:

The current app infrastructure for IU bus systems is insufficient in many areas, making travelling more difficult and much less safe.



Images From © Gorodenkoff / Adobe Stock

# Research Stage



MIRO TO AFFINITY DIAGRAM

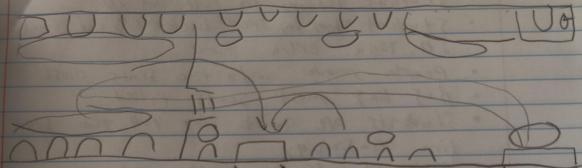
Our team learned a lot from our research. When we conducted our secondary research, we found information on competitor models.

- PTV Group - How they managed safety and people
- DoubleMaps - How bus tracking was performed
- Uber - Destination Mapping and Management

In our primary research, we learned more directly from our target group, IU students, about what can be done better and from their provided insight we located the fall throughs and concerns these individuals have.

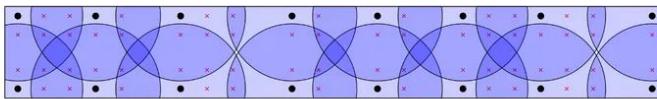
# Design Progress Showcase

## Observation: Spatio-temporal Mapping

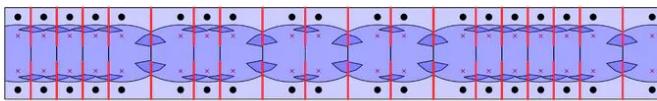


- Students:
    - Entered and showed ID. Entered back into the bus.
    - Sat either in the front seats or back seats, but all sat down.
    - Spent time on the loading bay

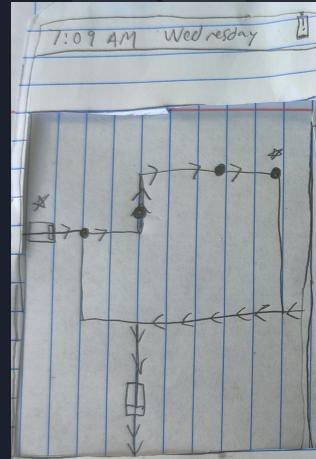
**Available seats with social distancing measures**  
Capacity of 1 train carriage is 16 passengers with social distancing.



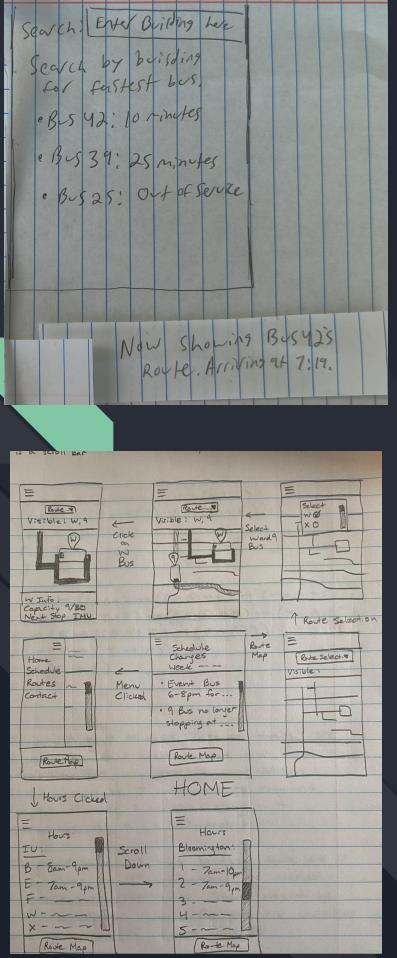
**Available seats with social distancing measures and shielding**  
Capacity of 1 train carriage is 38 passengers with shielding.



# Turning our research into preliminary designs



- Update. Your bus will arrive at 7:21 AM



# Conceptualization Stage

As we began to conceptualize our project, the difficult question was which media to use. Settling on a phone application, we were able to begin identifying what features would be best suited for our target audience.

- More robust tracking, displaying information of the bus capacity
- Better route planning and tracking for users
- Announcements, alerts, and notifications as well as schedule building

By designing features that our target audience directly asked for, we knew we would be successful in getting their use.

Our persona designs capitalize on our understanding of our user group, and demonstrate who we are aiming to improve and develop as our user base.

[LINK TO LOW FIDELITY FIGMA](#)

### Meet Jacob!



A 21 year old Photography major at IU

Jacob relies on the bus to get to his classes from his off-campus apartment and usually rides the bus 3-5 times a day. The bus is his main mode of transportation, so Jacob usually stresses about getting to class on time.

"The times on DoubleMaps are never accurate. It may say 10-15 minutes but come a half hour later."

"I use my Crimson Card for bus access, but it doesn't matter what I use if I can't get on."

### Reflecting on Past Experiences



Buses are super crowded. People are pressed together and there is no Covid safety precaution. There have been bus rides where so many people are packed together that social distancing is out the window.

Angela Jones



Age: 19  
Year: Freshman  
Major: Informatics  
University: IUB

Angela typically walks to class, but likes to use the bus when nearby and not full.

"I have a car so I usually like to use that unless I have to. But I also walk a lot of the time."

### Experiences with DoubleMaps



"DoubleMaps has too many transit options where it's overwhelming and hard to figure out where to start."

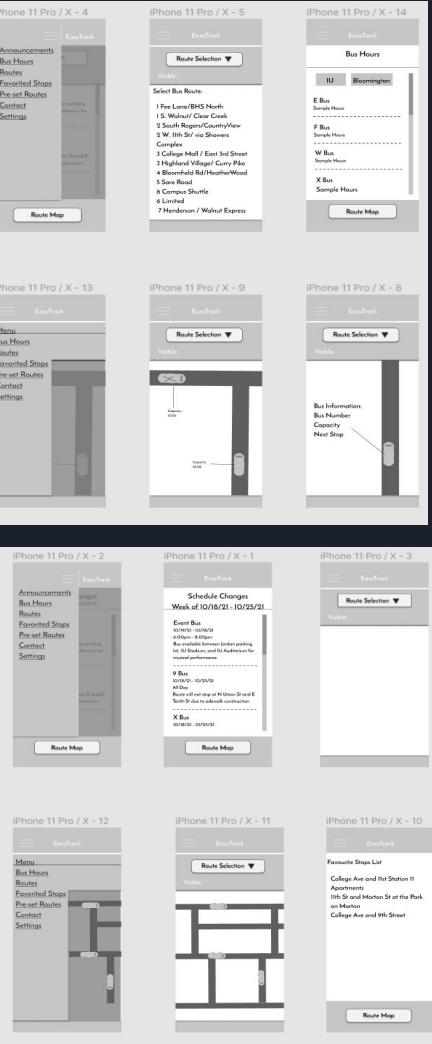
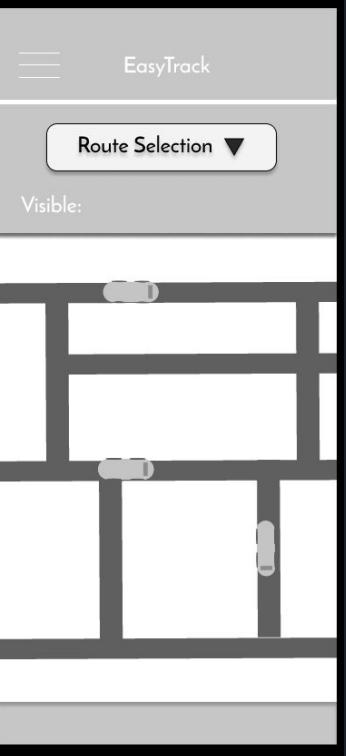
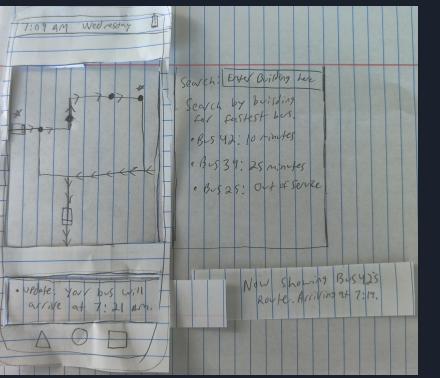
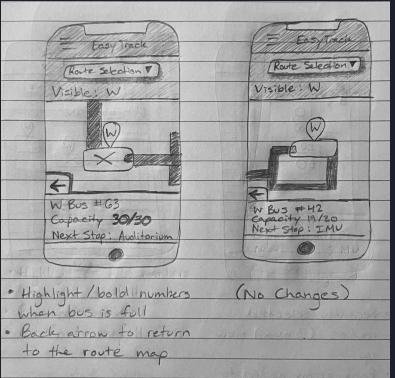
"Sometimes it doesn't work because of WiFi. It doesn't show the exact time the buses show up and difficult to use, so you have to figure out how to use the app first."



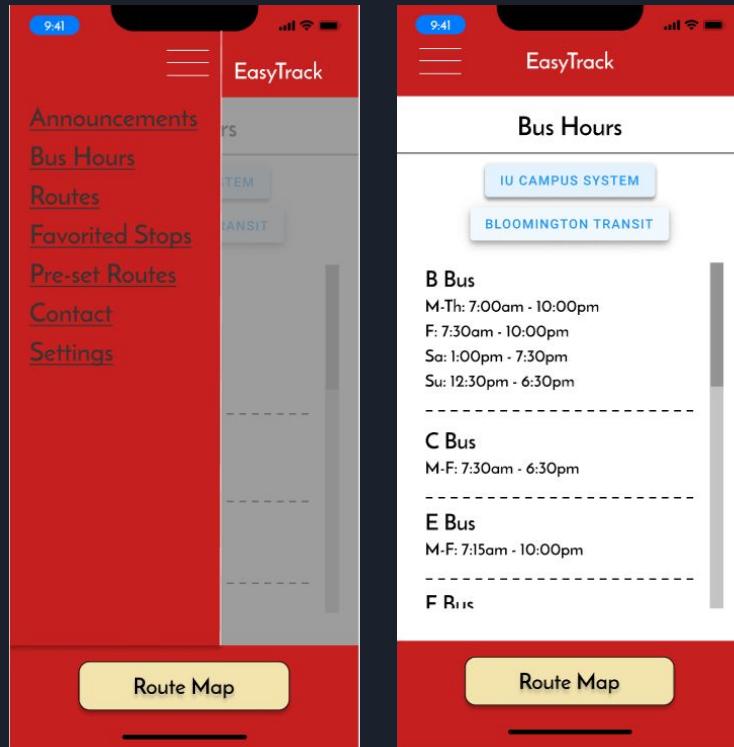
"It makes me uncomfortable being sandwiched between people. When I'm shoulder-to-should and leg-to-leg against strangers it makes me uneasy."

# Design Progress Showcase

## Developing low fidelity prototypes from our designs



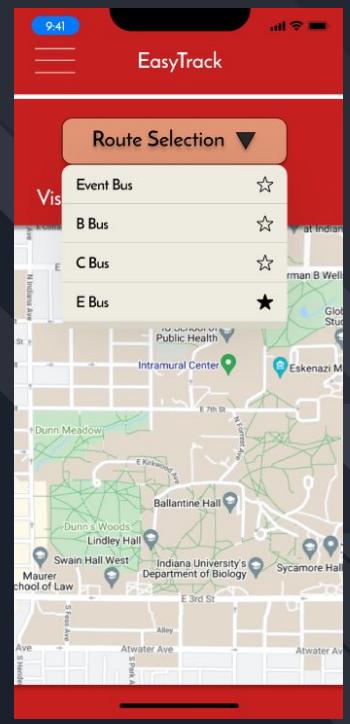
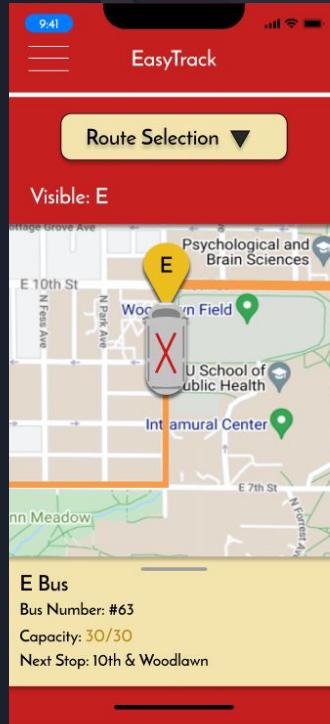
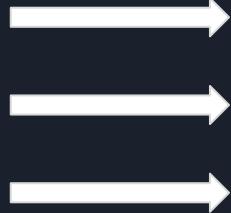
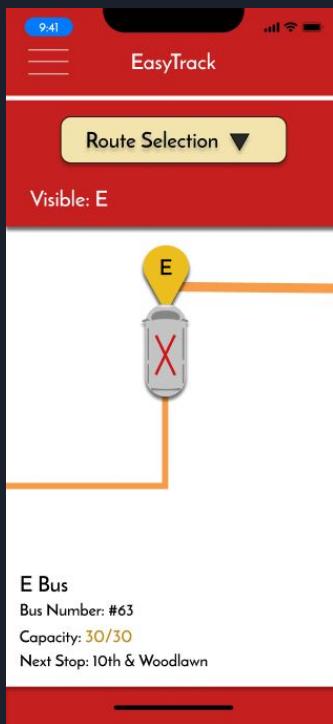
# High Fidelity Design Stage



As we entered the design stages, we made sure to have robust, heuristic designs that maintain the expected mental mapping of users who have experience with these types of applications. By choosing an Indiana University color scheme, a user will be able to understand this application is for IU students; By having easy to navigate menus with clear selection menus, the user will be able to immediately use the application; and with more detailed features in a menu it keeps the clutter away from the casual user. By opening to a splash page, the user will immediately see any updates or notices that are relevant to their travels.

# Design Progress Showcase

Developing high quality models and examples for user testing



# Design Progress Showcase

# EasyTrack

Devyansh, Natalie, Sabrina, Thomas

## What is this?

EasyTrack is a mobile app that communicates important information about the IU Bloomington bus systems to users.

It reports the capacities of buses, indicates if a bus on the map is easily accessible, tells any important updates or changes to the bus system, and displays the hours for IU Campus and Bloomington Transit buses.

### Act 1

A person needs to get to class from their dorm room (Experiment Hall) to their classroom (Hillman Hall). There are lots of students traveling to class.

### Act 2

Getting to class on time is important to students. If they miss a bus because it has full capacity, an unexpected direction, then knowing how to get to class is important. In case the bus track can help.

### Act 3

Since EasyTrack provides the capacity and wait times, the worry disappears. Starting the map fresh and choosing the routes allows a person to have an easy to navigate interface.

## Why?

Students care about getting to class and home on time. Limited parking on campus means no cars, walking can take way too long, and relying on scooters can be expensive. Leaving the bus as the best option.

Our app provides stress relief from bus uncertainties. Find out when and where busses will be by getting a route plan that adjusts.

## How:

By learning from real students how best to improve the bus network, our team adapted and updated all the best features from competitor models.

The people who would use this application mean the most. So taking in every 'I wish' statement and finding what can be done better allows EasyTrack to provide an excellent experience for our users.

# TrackEZ

Devyansh, Natalie, Sabrina, Thomas

## What is this?

EasyTrack is a mobile app that communicates important information about the IU Bloomington bus systems to users.

It reports the capacities of buses, indicates if a bus on the map is easily accessible, tells any important updates or changes to the bus system, and displays the hours for IU Campus and Bloomington Transit buses.

### Gathering Info

- A student wants to go to class by taking the E bus and needs to get to class on time.
- There are scheduled changes to the E bus, but current apps do not notify the users.

### Delays

- Bus delays such as unexpected direction changes and full buses make planning uncertain.
- TrackEZ helps to eliminate confusion and stress for students

### Features

- TrackEZ lets users see the capacity, next stop, and live bus locations.
- Our app provides bus hours and notifies any unexpected changes

## Why?

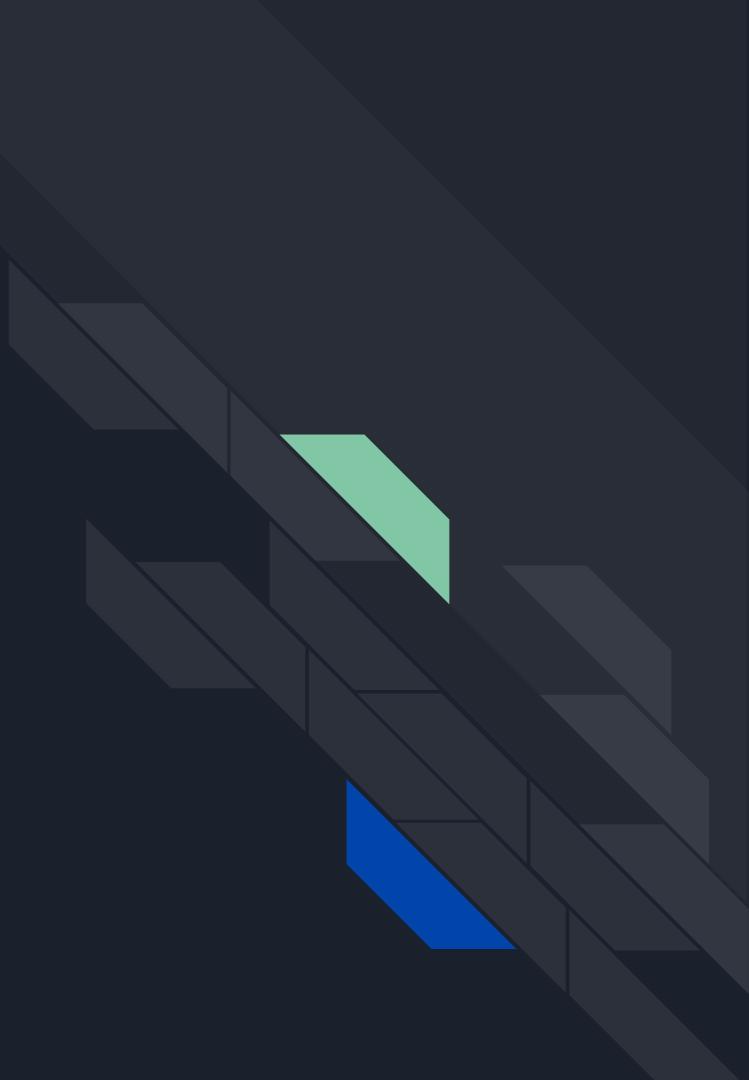
Students face difficulty with other modes of transportation, leaving the bus as the best option. But with the uncertainties of arrival, capacity, and hours, a way to communicate information easily and quickly is vital.

## How?

By learning from real students how best to improve the bus network, our team adapted and updated all the best features from competitor models.

The people who would use this application mean the most. So taking in every 'I wish' statement and finding what can be done better allows EasyTrack to provide an excellent experience for our users.

# User Study Category



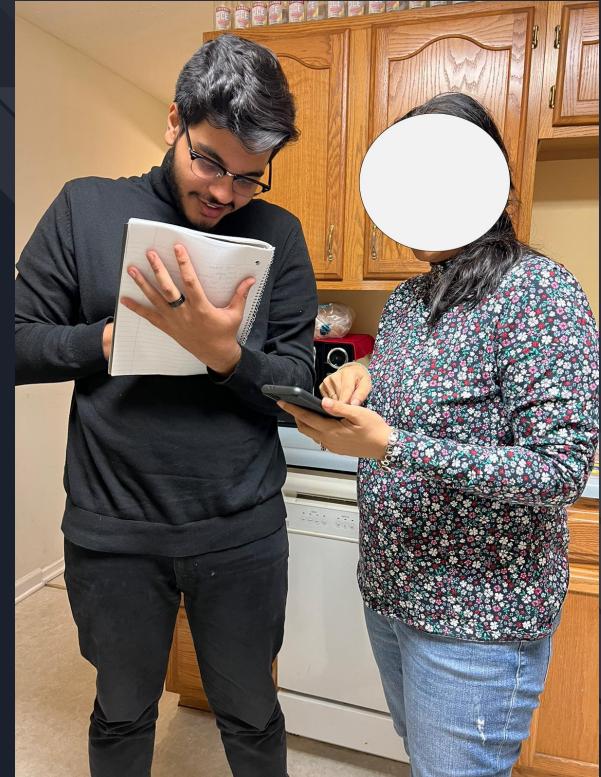
# User Study Methods

Twelve user studies were conducted by the team. We talked to the participants and gave them four tasks to perform on the prototype.

The team member outlined the task to the participant and noted down what the user did. However the team member doing the user study , did not respond to any of the questions.

Changes to the design were based on the confusion and hang ups that were faced by the user and if they were not able to perform the task that was assigned to them.

The users were not given any guidance by the team; users were free to interpret the task and interact with the prototype as they wished.

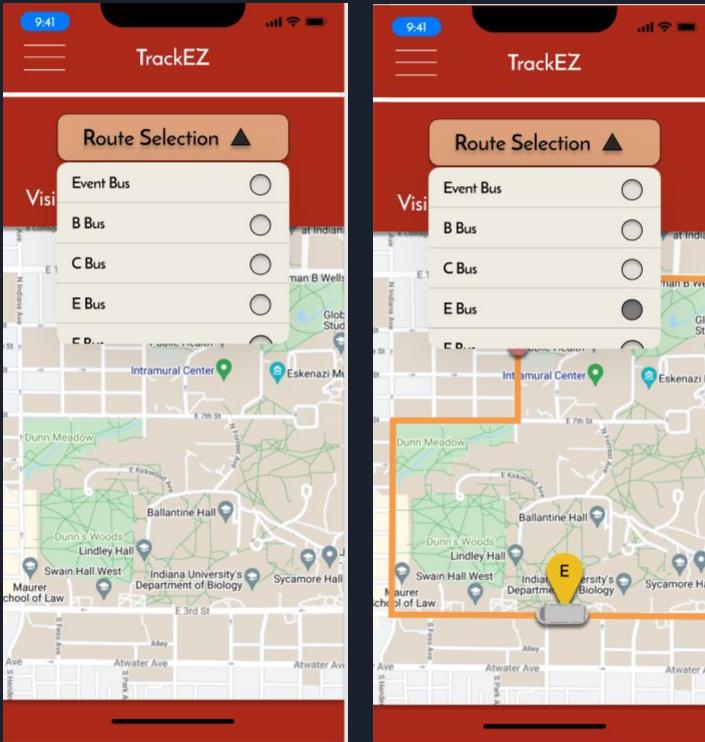


# User studies - What We Learned

We started to conduct our user studies by showing prototype in Figma. We gave them five minutes to navigate through our application and helped explain whatever they may be having trouble with. We performed a user study to understand the the strengths and weaknesses about our design. With all of the feedback we received, it was very clear where our faults and strength were. Many people complained about our buttons being too complex at first and not being able to access Bloomington transit so we were able to update those fairly easily. With all of this information, we can confidently state that we believe our application has real world use and would be simple for all walks of life to use.

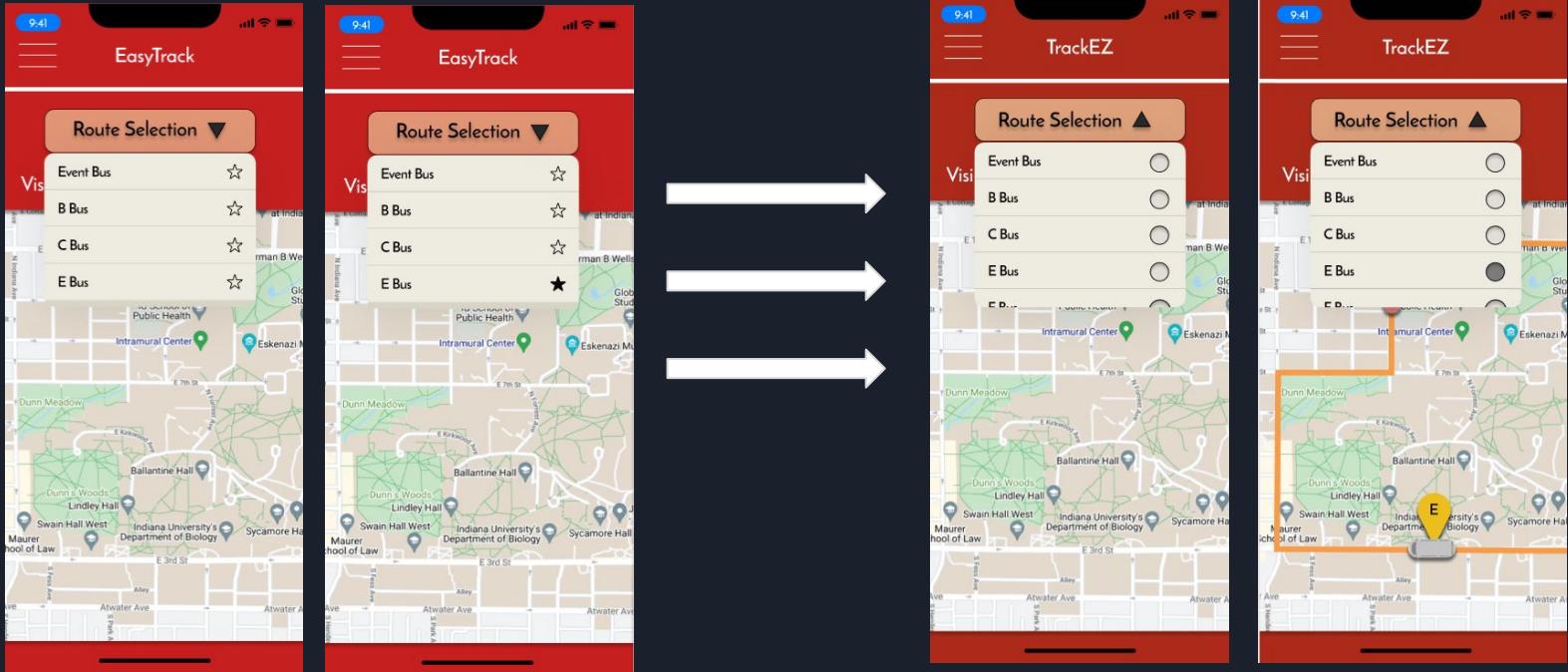


# Final Incrementation Stage Part 1



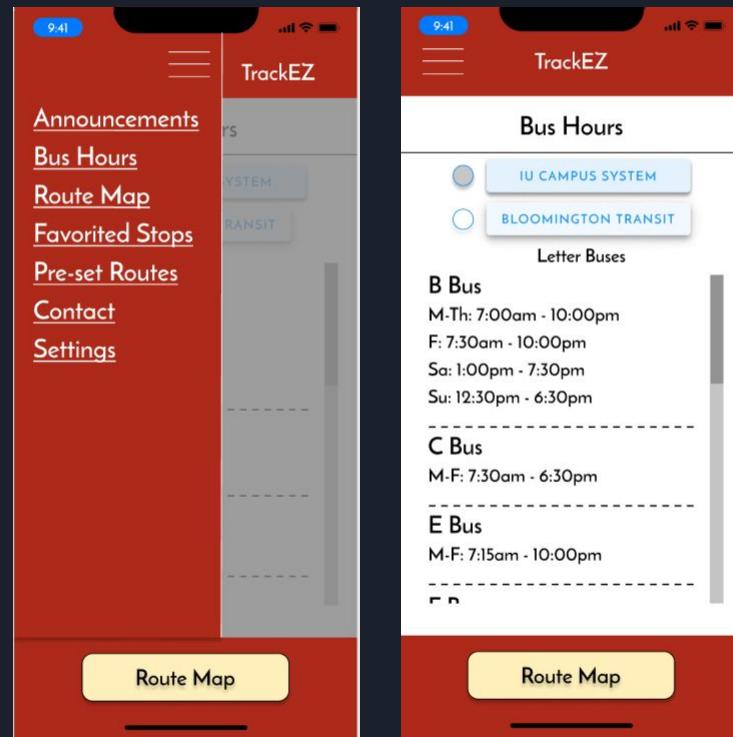
After the final user testing, we found that participants did not realize that the route selection was not scrollable with more options. In order to do this, another half preview of the next chronologically listed bus was added to hint the user into scrolling for increased options. Users also mentioned that stars as a selection were more thought of as favoriting the bus instead of selecting it, so the star shapes were made into circles. A final piece added to the route selection screen was that a user was not sure if they correctly selected a bus because the map behind the menu did not change, so the selected bus' map was added behind once the user chose it in the menu.

# Design Progress Showcase Part 1

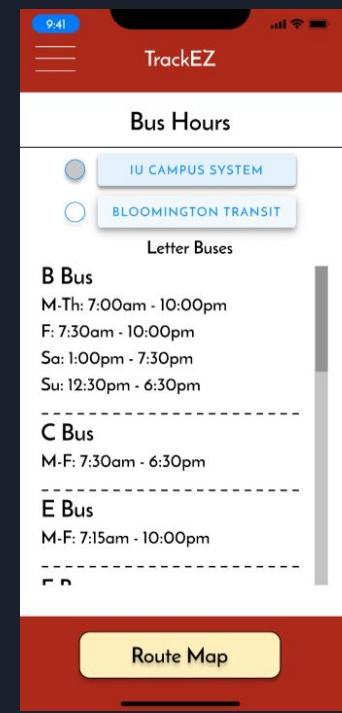
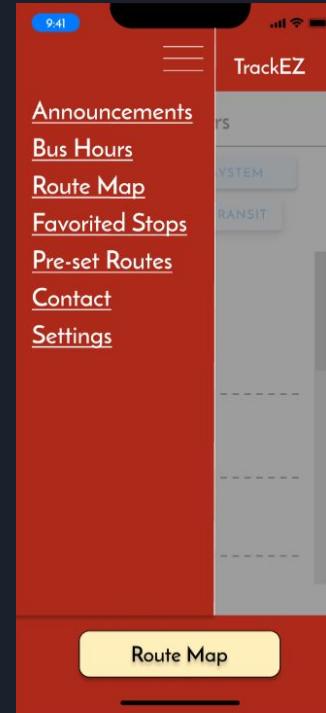
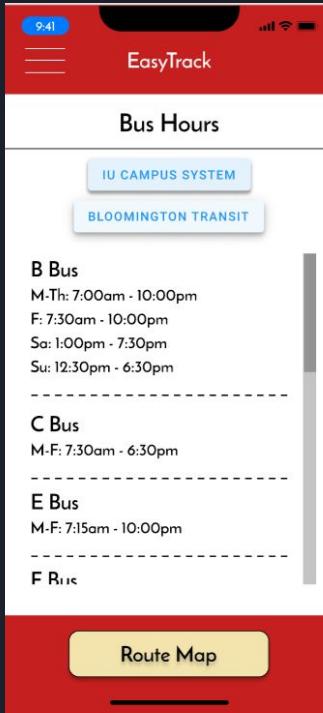
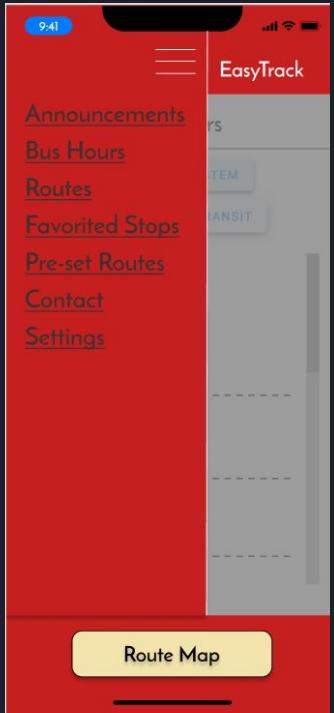


# Final Incrementation Stage Part 2

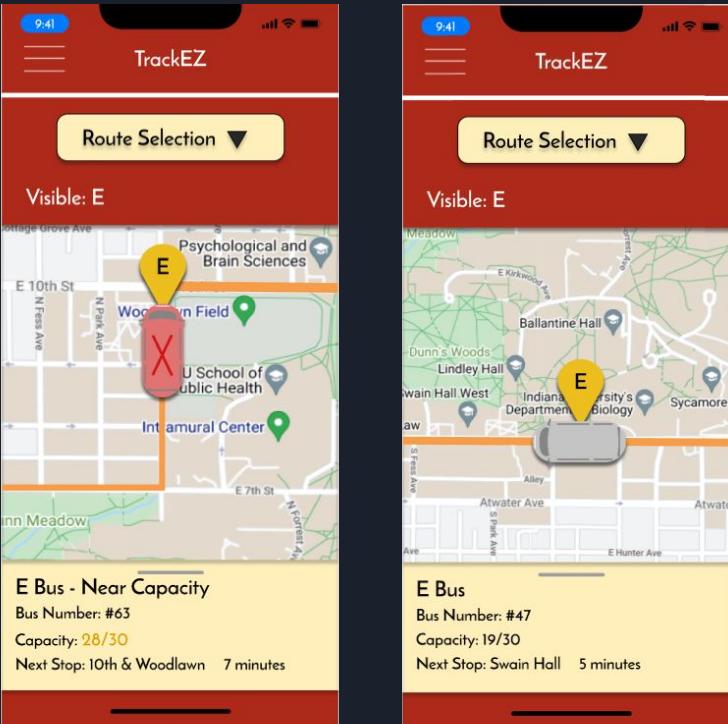
A quick addition made to the menu is that "Routes" was changed to "Route Map" to match the button at the bottom since users were unclear on what "Routes" referred to. On the bus hours screen, users did not realize that the light blue buttons were selectable, so circle selection indicators were added beside the tab, which made it much clearer. Since freshman did not know the system distinction between lettered and numbered buses, a small description was added to help inform new IU students. For better readability on menus and the rest of the app, we altered all the app colors to a darker shade of red with white text. Finally, the text sizes of the bus and its hours was increased for easier readability.



# Design Progress Showcase Part 2

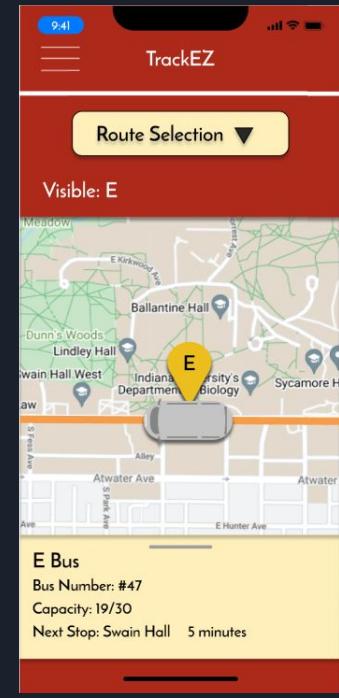
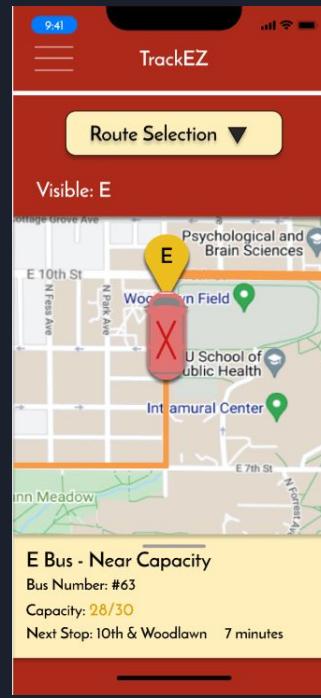
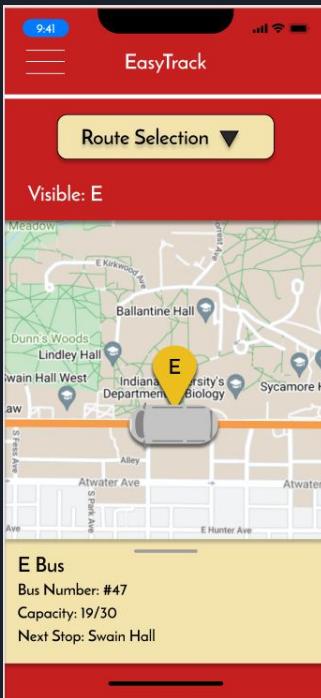
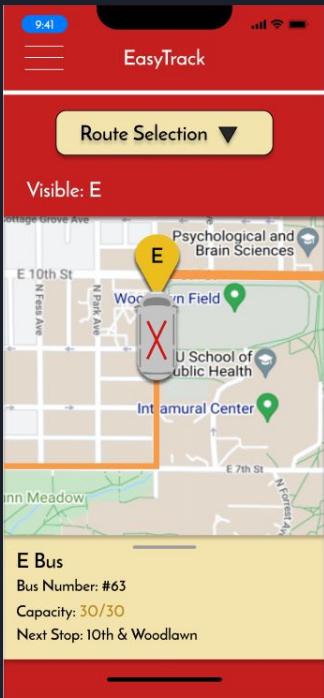


# Final Incrementation Stage Part 3

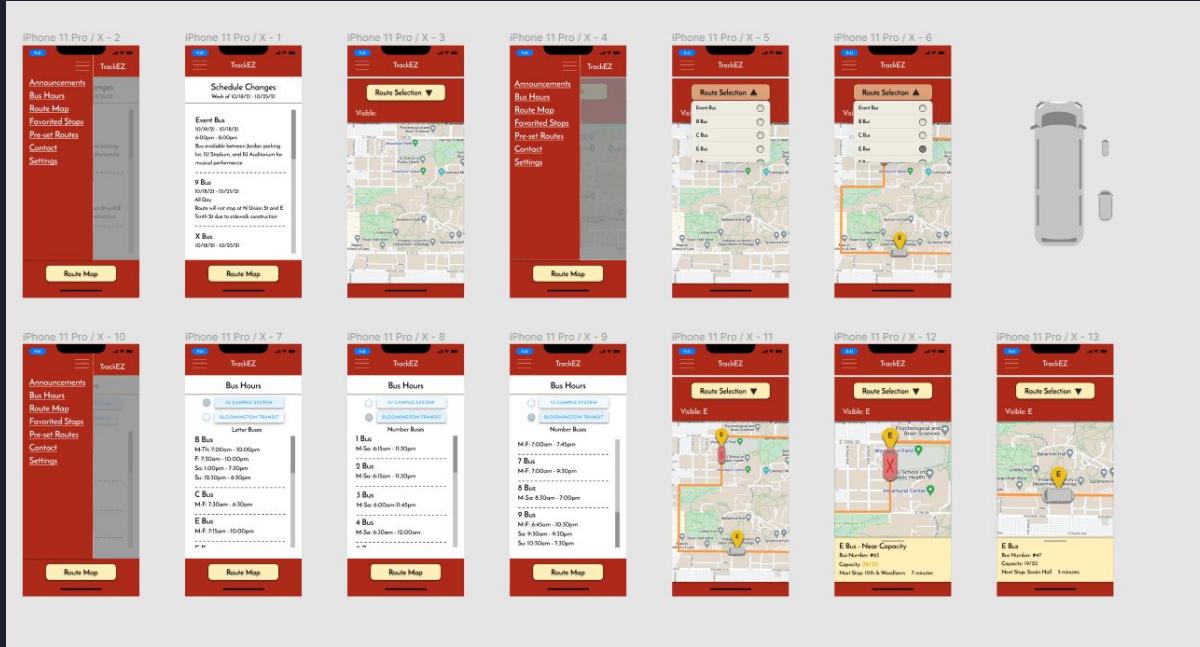


The last screens to change in our final iterations were the zoomed in buses with description. Since the bus could also be red with an "X" besides full capacity (such as out of service or on break), some text was added for the specific reason it is highlighted. Users also suggested adding how much time it would take until the bus arrived at its next stop, so minutes until the destination was put beside the next stop location.

# Design Progress Showcase Part 3



# High Fidelity Prototype





# Works Cited

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[https://www.figma.com/file/mHosXbzqJuztQ9PIWukhiz/iOS-15-UI-Kit-for-Figma-\(Community\)?node-id=5%3A54](https://www.figma.com/file/mHosXbzqJuztQ9PIWukhiz/iOS-15-UI-Kit-for-Figma-(Community)?node-id=5%3A54)

Slidesgo Google Slides and PowerPoint Templates. Slidesgo Common Licensing Distributed. Accessed Nov 3 2021. <https://slidesgo.com/>

# Appendix

Composium of work for all previous deliverables, research, and collected data:

<https://drive.google.com/drive/folders/1bMtiPgLyWB-2755dtAsRDPy9uTo0JWO?usp=sharing>

The image displays a grid of 10 cards, each representing a different project deliverable or document. The cards are arranged in two rows of five. The first row contains five cards: 1. "INFO I-300 App Design" by Devyansh Bhatnagar, Natalie Burke, and Sabrina Blumberg. 2. "INFO-I300 (17385) Term Project Concept" by Devyansh, Natalie, Sabrina, Thomas. 3. "I300 High Fidelity Consult..." by Devyansh, Natalie, Sabrina, Thomas. 4. "I300 High Fidelity Critique" by Devyansh, Natalie, Sabrina, Thomas. 5. "I300 Interview Questions" by Devyansh, Natalie, Sabrina, Thomas. The second row contains five cards: 1. "I300 Side Poster". 2. "I300 Term Project Concept". 3. "I300 W9 Consult Term Pr..." by Devyansh Bhatnagar, Natalie Burke, Sabrina Blumberg, and Thomas. 4. "Info I-300: Term Project: ..." by Devyansh, Natalie, Sabrina, Thomas. 5. "Info I-300: Term Project: ..." by Devyansh, Natalie, Sabrina, Thomas.



# Appendix

Miro Boards:

[https://miro.com/app/board/o9J\\_lueEA1M=/](https://miro.com/app/board/o9J_lueEA1M=/)

[https://miro.com/app/board/o9J\\_lipXcd4=/?invite\\_link\\_id=864393801109](https://miro.com/app/board/o9J_lipXcd4=/?invite_link_id=864393801109)

Figma:

<https://www.figma.com/file/pK1T487u4LtxBhqUBHXWJw/TrackEZ-High-Fidelity-Prototype?node-id=0%3A1>

# Appendix

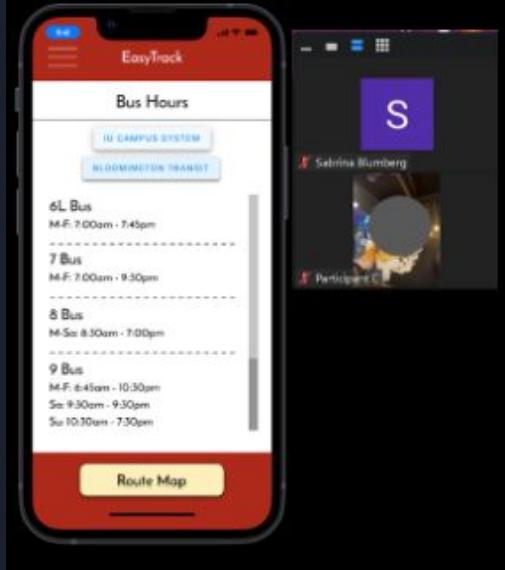
## Observation Protocol:

1. Introduce Yourself: "Hello, my name is \_\_\_\_."
2. Describe goals for the observation: "The goal of this observation is to find out how users interact with our product and if there are any areas that need improvement or adjustment to help better a user's experience."
3. Let them know mistakes and trouble areas are helpful: "If you do not understand how to complete a task or navigate through the app, then that is perfectly fine. It helps us find what we need to improve for the app. Making mistakes is an important aspect of us developing and improving the design of our app."
4. Let them know it is okay to quit at any time: "You are welcome to quit at any time during this session without consequence, and you are free to leave whenever you like. Know that if you are not able to do a task it is a problem in the design and not yours."
5. Give them the product: "This is the app we designed. You can navigate through by clicking on certain areas."
6. Encourage them to think aloud: "We encourage you to walk us through your thought process by saying what you are thinking aloud, and tell us if you are having any trouble understanding the application."
7. Inform the user we cannot assist them: "We unfortunately cannot assist you with any difficulties or questions. However, as we have previously mentioned, if you are not able to perform a task, it is the fault of our design and in no way a reflection of your abilities."
8. (If virtual) go over zoom settings: "Since this a virtual interaction, we would like for you to turn off your camera and only keep your microphone on. We would also like you to change your name to 'participant' and not use your real name to maintain anonymity"
9. Ask if they have any questions: "Before we give you the task are there any questions you would like to ask about the process or anything else ?"
10. Deliver Task 1: "For your first task we would like for you to find the hours of operation for the 9 Bus."
11. Deliver Task 2: "For your second task, we would like you to check which E bus is available to ride."
12. Reflect: "From our interaction with you, we understand what we need to make user experience with the app easier. We will be taking everything that you've said while reevaluating our design."
13. Conclude : "Thank you for your time and feedback, it will be integral in the development of the app."

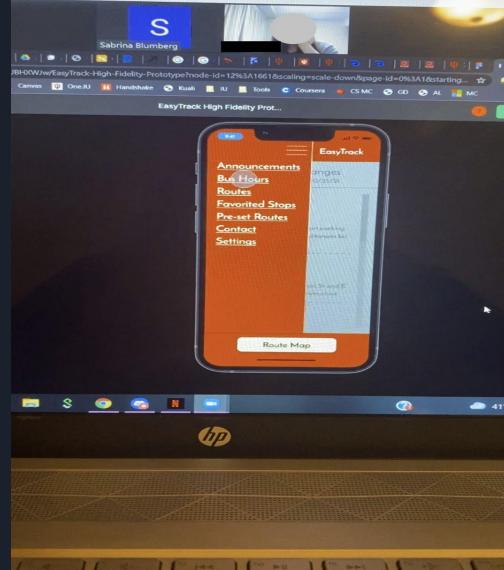
## Questions to Answer:

- Will the user easily distinguish between available buses?
- How will we measure the amount of people on a bus?
- How can the user develop a usability pattern?
- Will the user understand how to open the menu?
- Can the user tell which menu options lead to the bus hours and route map?

# Appendix



Participant A

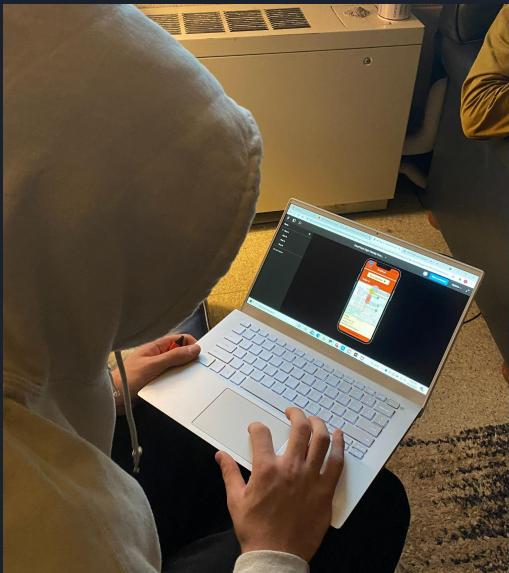


Participant B

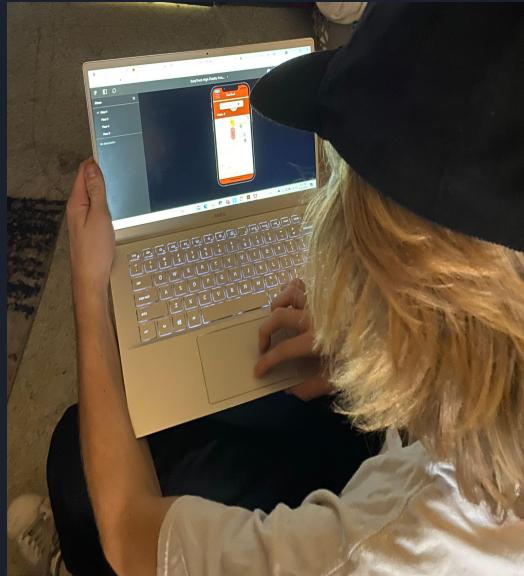


Participant C

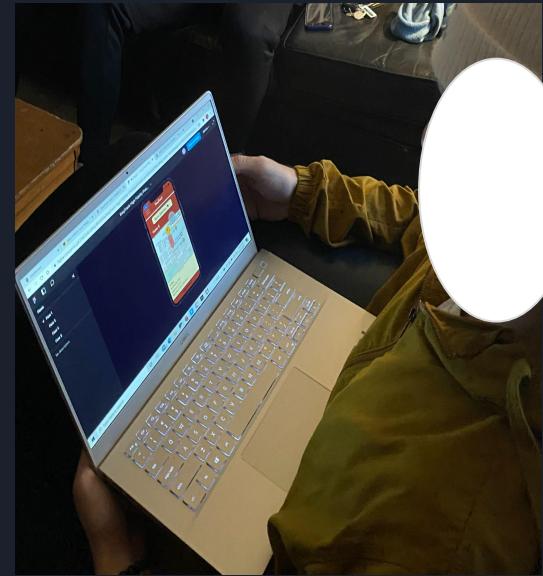
# Appendix



Participant D

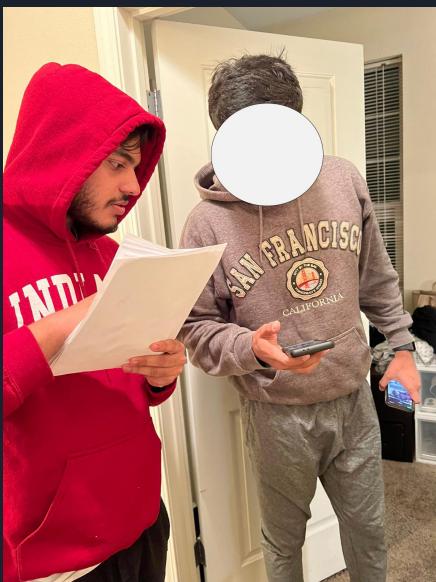


Participant E



Participant F

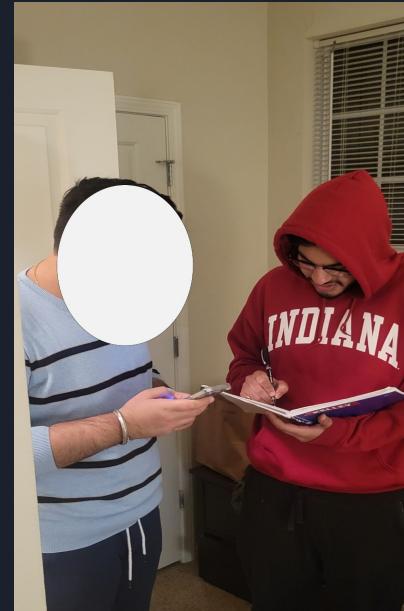
# Appendix



Participant J

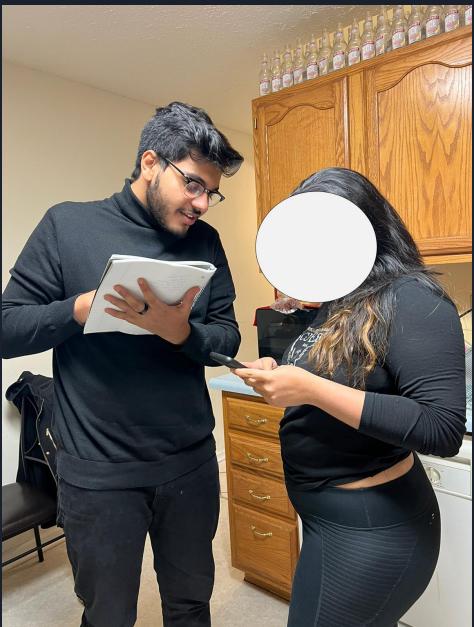


Participant K



Participant L

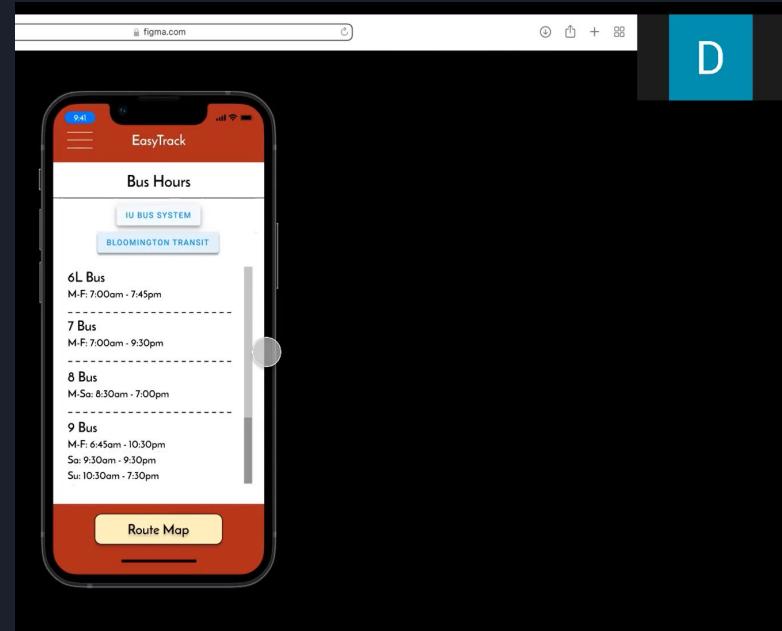
# Appendix



Participant M



Participant N



Participant O