Project Milestone 4

Delta Marshallers

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Heuristic Evaluation

How Study Was Conducted

Procedures

For our heuristic evaluation, our team exported our mobile application to our phones, searched for problems within our prototype as evaluators, and then evaluated it in a table similar to that of HW-5. Each evaluator ran the prototype on a simulator, then went through the app, searching for heuristics that may still need to be met. This information was recorded in the table, repeated information was consolidated, and access information was removed. Going forward we acknowledge these heuristics that can be done better and will change these designs as needed.

Evaluator Justification

The four team members are valid evaluators for the system as we know what tasks should be performed by the user, how they should perform these tasks and at what point in using the prototype. Additionally, having sufficient knowledge of human-computer interaction topics qualifies us for this evaluation. Finally, the team's demographics, with two males and two females, are evenly distributed, of different social media usage and specific needs within an event app. Finally, our team falls into Nielsen's 3-5 evaluators range for heuristic evaluations.

Materials

- Mobile device to run our mobile application on
- Device to record information in the table about evaluation

Script

No script was used for this section; each team member followed the procedures to complete this portion.

How Information Was Recorded

Information was recorded in the table below in columns depicting the number, related problems, the problem, the heuristics involved, and ideas on how to fix these problems.

Results (Analysis & Discussion)

#	Related Problems	Priority of the problem	Description of the problem	Heuristic Violated	Potential solutions to the problem
1	none	4	Text at the bottom of the tab view for "Friends" and "Calendar" are a bit small, possibly leading to incorrect usage at quick glance	Flexibility and efficiency of use	Make the text smaller, get rid of the text completely, make the text stand out more with different colors or fonts
2	none	2	Back button after accessing the QR scanner page goes back to the home page, regardless of where the user accesses the page from	Flexibility and efficiency of use	Edit the code so that the QR scanner always takes you back to the page of access, make a single, easy access point for the QR scanner page, relabel the back button to say "home page"
3	none	4	When creating an account, the virtual keyboard hides the birthday field.	Flexibility and efficiency of use	Update the code to allow the birthday field to scroll above the virtual keyboard.
4		2	Duration slider on add event page, requires users to log duration of event in terms of minutes which is not easily transferred into hours	Match between system and the real world	Add another time picker so that the user can indicate the start and end time of an event. Make the durations slider in terms of hours not minutes since users more likely work in hours not minutes.
5	none	3	After clicking "submit" to add an event, there is no system alert/identification that the system has received this event	Visibility of system status	Have a drop down banner that says "Event submitted successfully" after submitting, show confetti on the screen after a successful event addition, show a separate screen that pops up saying event successfully added
6	none	4	You cannot remove people from your suggested friends list, which would be nice to not see recommendations after a certain time	Flexibility and efficiency of use	Allow users to remove people from suggested by adding a small "x" or "-" near their icons, add a swipe functionality to then remove them

7	none	2	Pressing the submit button on the add event form does add the event to calendar but if pressed multiple times it is added multiple times	User Control and Freedom	Have the add event page only allow the user to press submit once. Notify the user there form has been submitted and make the submit button inaccessible so that user cannot submit multiple times
8	2	3	After clicking "submit" to add an event, the user is taken to the home page, rather than the calendar tab to view their new event added	Flexibility and efficiency of use, user control and freedom	Reroute the submit button to take the user back to the calendar page every time they click submit or back button on this page
9	none	4	Application is only appealing when the user is in light mode on iphone. Dark mode changes appearance	Aesthetic and Minimalist Design	Change the background to be permanently set so that the mode of the phone does not matter.Have a second version of the application that account for the color scheme in dark mode
10	none	1	User can continue to next screen when logging in even if information is not filled out	Aesthetic and Minimalist Design	Provide a message to users that they must fill out data before proceeding. Keep users from proceeding if all fields are not filled with information.
11	none	2	When a user is creating an event to add to their calendar, they are not required to enter any of the fields, possibly leading to blank events that can fill up the user's calendar	Error prevention	Make all the fields required, make only certain ones required, if a user leaves a name field blank, warn them about this
12	none	4	When selecting a date on the calendar, today's date is also selected in the same color, leading users to become confused on the date selected	Match between system and the real world, Flexibility and efficiency of use	Change the color of the data selected to not confuse the user between the current data and the date they are selecting.
13	none	3	When a user is scrolling through the events on their page, they have to click on the image of the event to see what the event is	Flexibility and efficiency of use	Add labels to the pictures to show what the event it, change the format of the listed events so that it shows the information

			(they cannot see the name, type, or any other information until they click on the image)		and no pictures, include text that tells the user they should click on the images if they want to see more about the specific event
14	none	3	When selecting a month on the calendar, the only way to choose it is to re-tap the top month at the top after scrolling through the list.	Flexibility and efficiency of use	Allow users to tap anywhere on the screen to accept the current month selection and return to the main calendar view.
15	none	2	There is no documentation on how to use the app specifically, other than the text fields when signing in/up	Help and documentation	Add a preview of how to use the app, add a help menu in an easily accessible place, create a walkthrough for first time users

Predictive Evaluation Using GOMS

How Study Was Conducted

Procedures

For our GOMS evaluation, our team exported our mobile application to our phones and then evaluated it by predicting the time it would take to predict a task and then actually time it. This information was recorded and is shown in the points below. Going forward we acknowledge these evaluations on what can be done better and will change these designs as needed.

Evaluator Justification

The four team members are valid evaluators for the system as we know what tasks should be performed by the user, how they should perform these tasks and at what point in using the prototype. Additionally, having sufficient knowledge of human-computer interaction topics qualifies us for this evaluation. Finally, the team's demographics, with two males and two females, are evenly distributed, of different social media usage and specific needs within an event app.

Materials

- Mobile device to run our mobile application on
- Device to record information about evaluation

Script

No script was used for this section; each team member followed the procedures to complete this portion.

How Information Was Recorded

Information was recorded below in the results showing the predicted time and the actual times.

Descriptions of Tasks

- Login Page Task
  - A new user can sign up for an account using the login page text fields
- Home Page Task
  - A user can scroll through their home page and scroll through listed events
  - A user can change their profile picture using their camera roll photos
  - A user can read the descriptions of listed events on their homepage by clicking on the images shown
  - A user can search their homepage to find specific events using the search bar
  - A user can move from tab to tab using the bottom tab bar
- Profile Page Task
  - A user can view the profile page containing profile information as well as information about rewards
- QR Page Taks
  - A user can view QR page and visit their own QR for scanning using the toolbar on the page
- Friends Page
  - A user can traverse their friend's list and remove a friend from their friend's list
  - A user can traverse their suggested friend's list and add a friend of their liking
  - A user can search for their friends and suggested friends using the search bar
- Calendar Page Task
  - A user can view events on the calendar on the day selected
  - A user can add an event to the calendar
  - A user can select a month and year to events in selected month

Results (Analysis & Discussion)

Below is the evaluation on the tasks presented. Note that all evaluations below except when noted assume the user is logged in and on the homepage. The values used are as follows in seconds: M=1.35, K=0.2, Scrolling=3.96, text field typing=2.32, date picker=6.81, pull-down list=3.04. All values are averages where applicable.

1. Open Application
    a. Subtasks
        i. N/A
    b. Goals
        i. To allow the user to access the application and its features
    c. Operators
        i. Clicking on the 'SeeUThere' icon on the mobile device they are on
    d. Methods
        i. Open the application through clicking on the device icon
    e. Selection Rules
        i. The user is not currently inside the application and it is downloaded
    f. Calculate the time estimates
        i. Initiate the action (M)
        ii. Find the icon (M)
        iii. Press the icon (K)

        Total: 2M + K = 2.9 seconds
2. Sign up for an account
    a. Subtasks:
        i. Opening the create user account page
        ii. Filling in the required fields
        iii. Submitting the form
    b. Goals:
        i. Create an account, so they can login and use the application
    c. Operators:
        i. Clicking on the "Sign up" button
        ii. Clicking on the "I am a User" button to specify a user account
        iii. Clicking on each field
        iv. Typing the data into each field
        v. Hitting the "Create" button
        vi. Selecting desired types of events
        vii. Hitting the "Submit" button
    d. Methods:
        i. Direct Sign Up Form
    e. Apply the Selection Rules:

i. The user has the app downloaded
ii. The user does not already have an account

f. Calculate time estimates:
i. Initiate the action (M)
ii. Find sign up on the screen (M)
iii. Click on “Sign up” button (K)
iv. Click on “I am a User” button (K)
v. Click on fields (6K)
vi. Type in fields (6* 2.32)
vii. Scroll through page (S)
viii. Click on “Create” button (K)
ix. Find event types on the screen (M)
x. Click on interested events (3K avg)
xi. Click on submit (K)

Total: 3M + 13K + 13.98 + S = 24.59 seconds

3. Login to an account
a. Subtasks
i. Open the application
ii. Create an account
b. Goals
i. To be able to login again after creating an account
c. Operators
i. Clicking on the username field
ii. Typing a username
iii. Clicking on the password field
iv. Typing a password
v. Clicking on the “Login” button
d. Methods
e. Selection rules
i. The user already has the application downloaded and has an account
f. Calculate time estimates
i. Initiate the action (M)
ii. Clicking on the username field (K)
iii. Typing a username (9K avg)
iv. Clicking on the password field (K)
v. Typing a password (8K avg)
vi. Clicking on the “Login” button (K)

Total: M + (20K) = 5.35 seconds

4. Viewing current events added by the user

a. Subtasks
    i. Login to the user's page
b. Goals
    i. To be able to view the events added by the user
c. Operators
    i. Scrolling in the bottom part of the user main page
d. Methods
    i. Scrolling
    ii. Searching by keyword
    iii. Filtering
e. Selection Rules
    i. The user is signed in
    ii. The user is already on the homepage/not navigating from another page
f. Calculate time estimates
    i. Initiate the action (M)
    ii. Find events on the page (M)
    iii. Scroll through events (3.96)

    Total: 2M + 3.96 = 6.66 seconds

5. Change the user's profile picture
    a. Subtasks
        i. Login to the user's page
        ii. Open the user's gallery of photos
        iii. Choose a photo from the gallery
    b. Goals
        i. To be able to add a photo of oneself, so that other users can recognize them
    c. Operators
        i. Selecting the profile picture icon
        ii. Scrolling through your gallery
        iii. Tapping on the desired photo
    d. Methods
        i. Select from gallery
        ii. Take real time photo
    e. Selection Rules
        i. The user is signed in
        ii. The user is already on the homepage/not navigating from another page
    f. Calculate time estimates
        i. Initiate the action (M)
        ii. Find the icon on the page (M)
        iii. Tapping on the photo (K)

iv. Scrolling through the camera roll (3.96)
v. Tapping on photo to upload (K)

Total: 2M + 2K + 3.96 = 7.06 seconds

6. Read event descriptions
    a. Subtasks
        i. Login to the user's profile
        ii. Find the desired event
        iii. Investigate information regarding one of those events
    b. Goals
        i. Learn more information about posted events
        ii. Learn about the location of the event
        iii. Learn about the cost of the event
        iv. Learn about the time of the event
    c. Operators
        i. Scrolling through the events
        ii. Choosing the event
        iii. Tapping on the event
    d. Methods
        i. Scan
        ii. Deep read
    e. Selection Rules
        i. The user is signed in
        ii. The user is already on the homepage/not navigating from another page
    f. Calculate time estimates
        i. Initiate the action (M)
        ii. Find the events on the homepage (M)
        iii. Scroll through events (3.96)
        iv. Find particular event (M)
        v. Tap on event (K)

        Total: 3M + K + 3.96 = 8.21 seconds

7. Search for specific events currently added to their homepage
    a. Subtasks
        i. Login to the user's profile
        ii. Be able to filter events by name
    b. Goals
        i. To find current events for a user
        ii. Ensure that a desired event has been added
    c. Operators
        i. Clicking on the search field above the events

   ii. Typing the name of the specific event
d. Methods
   i. Keyword search
   ii. Filter by [type, price, location, date]
e. Selection Rules
   i. The user is signed in
   ii. The user is already on the homepage
f. Calculate time estimates
   i. Initiate the action (M)
   ii. Find the search bar (M)
   iii. Click on search bar (K)
   iv. Begin typing in words (5K)

   Total: 2M + 6K = 3.9 seconds

8. View profile page
   a. Subtasks
      i. Login to the user's profile
      ii. Navigate to the specific profile page
   b. Goals
      i. To see personal information
   c. Operators
      i. Clicking on the profile picture in the top right corner
   d. Methods
      i. Read personal information page
   e. Selection Rules
      i. The user is signed in
      ii. The user is already on the homepage/ not navigating from another page
   f. Calculate time estimates
      i. Initiate the action (M)
      ii. Find the person icon (M)
      iii. Tap on person icon (K)

      Total: 2M + K = 2.9 seconds

9. Navigate to the QR reader
   a. Subtasks
      i. Login to the user's profile
   b. Goals
      i. To allow the user to add other people as friends by scanning their code
   c. Operators
      i. Clicking on the QR code icon
   d. Methods

i. Through home page
ii. Through my friends page
iii. Through profile page

e. Selection Rules
i. The user is already logged in
ii. The user is already at the homepage/ not navigating from another page

f. Calculate time estimates
i. Initiate the action (M)
ii. Find QR icon (M)
iii. Tap on QR icon (K)

Total: 2M + K = 2.9 seconds

10. Navigate to the personal QR code
a. Subtasks
i. Login to the user's profile
ii. Navigate to the QR reader

b. Goals
i. To allow users to connect with other users by scanning the code

c. Operators
i. Clicking on the QR code icon
ii. Clicking on the incomplete square icon

d. Methods
i. Through home page
ii. Through my friends page
iii. Through profile page

e. Selection Rules
i. The user is already logged in
ii. The user is already at the homepage/ not navigating from another page

f. Calculate time estimates
i. Initiate the action (M)
ii. Find QR icon (M)
iii. Tap on QR icon (K)
iv. Find own QR icon (M)
v. Tap on personal QR (K)

Total: 3M + 2K = 4.45 seconds

11. Traverse friends lists
a. Subtasks
i. Login to the user's profile

b. Goals
i. To allow users to connect with other users by scanning the code

c. Operators
    i. Clicking on the friends tab
    ii. Scrolling on the friends lists
d. Methods
    i. Searching by name
    ii. Scrolling through list
e. Selection Rules
    i. The user is already logged in
f. Calculate time estimates
    i. Initiate the action (M)
    ii. Find friends tab (M)
    iii. Tap on friends tab (K)
    iv. Find friends lists (M)
    v. Scroll through friends lists (3.96)

    Total: 3M + K + 3.96 = 8.21 seconds

12. Search for friends
    a. Subtasks
        i. Login to the user's profile page
    b. Goals
        i. To expand the number of friends a user has
        ii. To add new friends from recent events
    c. Operators
        i. Touch the friends icon in the bottom left hand corner
        ii. Select the search field
    d. Methods
        i. Search by first name/last name
        ii. Filter by number of friends
    e. Selection Rules
    f. Calculate time estimates
        i. Initiate the action (M)
        ii. Find friends icon (M)
        iii. Select friend icon (K)
        iv. Find search bar (M)
        v. Type name (13K)

        Total: 3M + 14K = 6.85 seconds

13. View events on a specified day on calendar
    a. Subtasks
        i. Login to the user's profile page
        ii. View the calendar

iii. Select a day

b. Goals
   i. To be able to view
c. Operators
   i. Clicking on the calendar tab in the bottom right hand corner
   ii. Selecting the desired year
   iii. Selecting the desired month
   iv. Selecting the desired day
d. Methods
   i. Scanning
   ii. Reading in detail
e. Selection Rules
   i. The user already signed in
   ii. The user is reading in detail
f. Calculate time estimates
   i. Initiate the action (M)
   ii. Find the calendar icon (M)
   iii. Select the calendar icon (K)
   iv. Datepicker (6.81)
   v. Select the desired day (K)
   vi. Find events on that day (M)

   Total: 3M + 2K + 6.81 = 11.26 seconds

14. Add event to calendar
   a. Subtasks
      i. Login to the user's profile page
      ii. View the calendar
      iii. Fill out the forms for the event
   b. Goals
      i. To add a new event to the public calendar
   c. Operators
      i. Clicking on the calendar icon tab
      ii. Clicking on the plus button in the top right corner
      iii. Selecting the "Event Name" field
      iv. Typing the name
      v. Selecting the "Date"
      vi. Selecting the duration of the event
      vii. Selecting the price
      viii. Selecting the type of event
      ix. Selecting the "Event Location" field
      x. Typing the location information

xi. Selecting the “Additional information” field
xii. Typing the extra information
xiii. Hitting submit

d. Methods
   i. Typing into a form
   ii. Adding an already created event from an Apple Calendar
e. Selection Rules
   i. The user is already logged in
   ii. The user is at the calendar page/ not navigating from another page
f. Calculate time estimates
   i. Initiate the action (M)
   ii. Find the calendar icon (M)
   iii. Select the calendar icon (K)
   iv. Find the add event icon (M)
   v. Select the add event icon (K)
   vi. Find the fields (M)
   vii. Selecting the “Event Name” field (K)
   viii. Typing the name (2.32)
   ix. Selecting the “Date” (6.81)
   x. Selecting the duration of the event (3.96)
   xi. Selecting the price (3.96)
   xii. Selecting the type of event (3.04)
   xiii. Selecting the “Event Location” field (K)
   xiv. Typing the location information (2.32)
   xv. Selecting the “Additional information” field (K)
   xvi. Typing the extra information (2.32)
   xvii. Find submit button (M)
   xviii. Hitting submit (K)

   Total: 4M + 6K + 3(2.32) + 2(3.96) + 3.04 + 6.81 = 32.68 seconds

Usability Evaluation

How Study Was Conducted

Procedures

For the usability study, we, as a group of evaluators, selected five users to complete benchmark tasks on our application and respond to a questionnaire with their feedback about the usability and the design of the interface. Every test that we conducted, we used one of our mobile phones with the application installed and let the user control that application in

that way, instead of trying to get it on their own personal phone. We had at least one evaluator with the user as they worked through the application and completed tasks. We gave them an overview of what our project is about, the course that we are taking, the problem that we are attempting to solve with our application, and a general overview of what our application does to give them a better understanding of what they are getting into (as seen below in our script). As the evaluation was being conducted, the evaluator gave the user tasks to complete. We took note of which steps were harder for users/which steps were easier, and what problems, if any, occurred as they were trying to complete the tasks. Each task was given to the user as they completed the one before; this evaluation was iterative in how we did not layout the overall benchmark tasks they needed to complete beforehand but we gave them each task sequentially to provide a better experience for the user and get a better grasp on how each goal could be completed.

Materials

- Device to run program with simulator on xcode
- Device/notepad to record information about evaluation

Script

"Thank you for participating in our testing of our application. This project is being done through our Human Computer Interaction course which dives deep into the way humans interact with systems and how user interfaces are becoming more like user experiences. You will be completing a usability evaluation of our mobile application prototype that aims to serve as a way to connect people to their local communities through events. During the evaluation you will be testing the various features implemented, such as the friends and calendar pages, as prompted by me, but this does not mean you should rush through these tasks. You will have approximately five minutes to browse the app and you can restart the login process again at any time. I will now read out the tasks you should complete.

Please click on the app and sign up for an account.

Once on the home page, please scroll through the listed events

Please select one of the events on the home page to view more information.

Please use the search bar to search for "ice cream" to view the specific event.

On the same page, please add a profile picture to your account.

Please locate the profile page, and view your personal profile.

Return to home page

Please locate your QR code, and view personal code.

Return to home page

Now please visit the friends page.

Now, please remove a friend from your friends list.

Please add a friend from the suggested list.

Please search for a person in the friends list.

Please search for a person in the suggestions list.

Please add that friend to the suggested friend list.

Now please visit the calendar page

Please create a new event to add to your calendar. Select May 1st for the day.

Once you submit, please check what events you have on May 1, 2024.

Now explore the application however you would like.

This concludes the end of the usability test.

Thank you for taking the time to review and use our application. You will be receiving a short survey to gather information about your testing."

How Information Was Recorded

In this evaluation we gave the user the device, read the script line by line, and waited for the user to complete each task. A third person briefly timed these interactions to later compare to those of the Predictive evaluation above. All of this data was recorded and then the evaluator was asked to fill out our questionnaire.

Descriptions of Tasks

The tasks used in this evaluation are depicted listed above under benchmark tests, as well as reflected in the script we presented to the evaluators. The majority of these tasks had users traverse pages, use features or scroll to see directed information. This will closely reflect full use and functionality of our application.

Benchmark Tasks:

1. A new user is able to sign up for an account with ease, without error, and in a reasonable amount of time (30 seconds - 1 minute)
2. A user is able to scroll through their home page and scroll through listed events with ease, without error, and in a reasonable amount of time (30 seconds)
3. A user is able to change their profile picture with ease, without error, and in a reasonable amount of time (45 seconds)
4. A user is able to read the descriptions of listed events on their homepage with ease, without error, and in a reasonable amount of time (10 seconds)
5. A user is able to search through their homepage to find specific events with ease, without error, and in a reasonable amount of time (30 seconds)
6. A user is able to view the profile page containing profile information as well as information about rewards (15 seconds)
7. A user is able to view QR page and visit there own QR for scanning. (10 seconds)
8. A user is able to move from tab to tab using the bottom tab bar. (5 seconds)
9. A user is able to traverse their friends list and remove a friend with ease, without error, and in a reasonable amount of time (10 seconds)
10. A user is able to traverse their suggested friends list and add a friend with ease, without error, and in a reasonable amount of time (10 seconds)
11. A user is able to search through their friends list with ease, without error, and in a reasonable amount of time (30 seconds)
12. A user is able to search through their suggested friends list with ease, without error, and in a reasonable amount of time (30 seconds)
13. A user is able to view events on the calendar on the day selected. (30 seconds)
14. A user is able to add an event with ease, without error, and in a reasonable amount of time (2 minutes)
15. A user is able to view events on their calendar with ease, without error, and in a reasonable amount of time (30 seconds)

Results (Analysis & Discussion)

The majority of the users were able to complete all of the benchmark tasks, with all 5 users responding with 75%-100% of tasks being able to be completed. While this number is good, proper help and documentation, as presented in our heuristic evaluation, would hopefully get this number to 100%. When a user signs up for an account, it should work so that the user is presented with an overview of the functionality and features of the app. Many users ranked our pages high in usability and high in design, with the calendar page and homepage receiving the worst feedback here. We believe that this is due to the

ample design decisions that we made as a team on these pages. We had a general idea of a suitable layout and did our best to bring this image to life. Additionally, with the calendar page, if a user does not have any events currently scheduled, then the page will look a little blank. In the future, it may be beneficial to add upcoming events below, so that users can see them without having to scroll through the homepage, increasing the heuristic of flexibility and efficiency of use.

Pages that some participants ranked low in design included the login page and the homepage, which was said to have been "not creative." With this, the team plans to possibly reevaluate some of the design decisions made on the homepage to make it more navigable and overall more appealing in terms of design; possibly recoloring some areas and changing icons to meet the needs of the users. Overall the team is very happy with the feedback provided by this evaluation as it confirmed our functionality and design are on the right track and showed us how certain heuristics can be improved.

Thinkaloud Evaluation

How Study Was Conducted

Procedures

Using our devices, we downloaded our application so it could be run from a mobile device then, in a quiet, distraction free environment, we asked users to simply explore the application and talk about the actions they were taking, any issues that they may have had, and any aspects they found to be interesting. The evaluator begins the study by starting a voice recording and reading the user the pre-written script developed by the team of evaluators.

- Begin the voice recording
- Read the script to the user
- Provide around 3 minutes for the user to interact with the application
- Jot down notes while the user interacts with the system

We then asked them to complete our questionnaire after.

Materials

- Device to run program with simulator on xcode
- Device/notepad to record information about evaluation

Script

"Thank you for participating in our testing of our application. You will be completing a thinkaloud evaluation of our mobile application prototype

that aims to serve as a way to connect people to their local communities through events. During the evaluation you will be testing the various features implemented, but more importantly, as this is a thinkaloud evaluation, you will be talking out loud about what you see, what you infer and what you want to do or are currently doing. You will have approximately three minutes to browse the app and you can restart the login process again at any time. In addition, we will be recording audio only of this evaluation to analyze later. Please begin your evaluation."

How Information Was Recorded

- Written down on a document in the Google Cloud
- A back up data was taken via Voice Memos during the process

Descriptions of Tasks

For this particular evaluation, we as observers do not instruct the users to complete specific tasks but instead, they explore the application on their own and inform us via voice their thoughts about what they are currently doing on the application, in an attempt to utilize the full functionality of our application.

Results (Analysis & Discussion)

Overall, our application received good feedback from the evaluators. However, due to the nature of the think aloud evaluation, goals were not laid out to the users, many of them did not use the app for its entire capabilities; some people did not change their profile photo or only looked at the camera roll when it popped up (this may be because it wasn't clear that that was how they could change their profile picture or maybe just because they didn't want to). Additionally, some of the evaluators did not create an event in the calendar page, but saw the calendar and did not notice the plus sign or think that they would be able to use it to complete this task. In the future, this implementation may be fine, but initial documentation or a walkthrough would aid users in this.

Through the questionnaire, the pages that the evaluators like best were the sign-up and login pages. We attribute this primarily to the familiar IOS nature of these pages. With common rounded buttons and familiar green color, users were left with a good impression here. On the other end, evaluators stated the home page was the worst page in terms of usability and design. This matched the feedback we received from the usability evaluation. Similarly, we believe that with subtle tweaks to certain areas of the homepage, we can make it a well received page that enhances the user experience.

Further Analysis

Demographics

The demographics we collected from during our testing milestone stayed around college aged individuals who are full time students. Additionally, the ten evaluators we collected data from were from many different majors, and multiple different ethnicities. It was important to include a wide range of people in our testing as students in different majors have unique experiences with different levels of knowledge on certain topics. However, it is important to note that while the evaluators we collected from were majority students, the mobile application is designed to be used for a wide range of ages and demographics. In our testing we were limited to our nearby vicinity, as the prototype had to be downloaded on the IOS mobile device of the person administering the test, which was going to be someone in our group. We recognize that our testing was limited in quantity, hindering our ability to really expand our demographics. In the future, we would aim to test our prototypes on an older demographic, who may not be as technologically savvy.

Overall Analysis

Overall, our application was well received. Evaluators liked our sign up and login pages the best, most likely because they felt familiar with them and the IOS system. This reinforces our decision to use SwiftUI and makes the user interface seem easier to put together now that we know users lean towards what they know.

While we acknowledge that our application is still very much a prototype, we had a few bugs and complaints that users found during evaluations when using the application on an IOS mobile device in developer mode. They found that text on the home screen would move down when you go into the search bar - we believe that this can be fixed by putting the whole page into a scrollview stack. They said they would like functionality to be able to add events to your calendar. As of now there is a plus sign in the corner of the picture for each event but it has no functionality right now. This would require a database (or at least an array) to hold information and link the date to the calendar date. This would definitely be a more complex feature to add and can be done once our backend is more in place. We could also add a store of users to hold their login information and which events they have marked as wanting to attend or attending. Finally, evaluators did not like that you had to click on the image of the event to be able to see what the event actually is, so overlaying some text on the images could be a big help here.

Now that we know the main areas that need to be improved upon, it will be a good path moving forward to tackle each task in order of importance and usability impact. Adding better labels or creating a quick tutorial for first time users would be a big help many users were confused with usage without being prompted to complete tasks. Our system for adding points to accounts and how many points a person gets from scanning someone's qr code and rules behind that would also need to have a page to explain that information. An exploration of friends' profile pages would also be a next step, as it would push our application to become more of a social application where you want to connect with, message, and meet new people.

Probably the largest barrier to our application is its competitors. In our post-evaluation questionnaire, many people said that while the application did what it was intended to do, they would not use this app as much as there are already similar ones that are on the market. People had mentioned applications such as Ticketmaster or Google Calendar being used more frequently, even though we had aimed to design our application to be the combination of apps like these. Through future evaluation and testing we can aim to make our application more user friendly as we strive to be a single stop mobile application for event seekers.

Future Path

The near future of our application looks like refinement. Our evaluators confirmed that we have a decent foundation in place, so now the objective is to redo our milestones again, narrowing down on final decisions, but also broadening our target audiences based on received data. It is important that as the application becomes more refined, it does not become too niche. A small target user base only limits our applications ability to reach its goal of getting individuals more involved in their local community. We will first fix the bugs and add simple fixes that were seen in the evaluations. Second we will go back to the first milestone and really dive into our stakeholders and see who will be affected by our application. We will then present different ways we can adapt to them, ultimately deciding on a single choice. Finally we will use the findings from this milestone to revamp our third milestone to create an updated, more user friendly and overall better functioning mobile application. We believe that by going through iterations like this multiple times, we will be able to best serve our target audience with our system.

Appendix

Questionnaire

Link to questionnaire

1. What is your name? (short answer)

   We asked this question so that we could keep track of who responded to the questionnaire.

2. Select your gender (multiple choice)
3. Which race or ethnicity best describes you? (multiple select)
4. Select your age range (multiple choice)
5. Select your employment status (multiple choice)
6. What is your major? (If selected student as employment status) (short answer)

   We asked these questions to get general demographic information on the people we tested in our usability/think aloud studies. We tried to generate responses from similar groups that we questioned in our first milestone to get feedback from similar people that had already said they were interested in this type of system/application.

7. How well do you feel the app attempts to provide a solution for the problem "How can we get people more involved in their local community?" (ranked question from 1 (Not well at all) to 10 (very well))

   We wanted to see if our application properly solved the problem that we identified in our first milestone; to ensure that the work that we had been doing throughout the semester would lead to a usable product that solved the problem of limited community engagement.

8. Explain why you chose that ranking. (Do you feel like this application attempts to answer this question?)

   We asked this in order to gain some insight on the user's response to the above question.

9. I was able to complete all the tasks presented to me using the application (selected the nearest percent) (multiple choice)

We wanted to see how functional the application was to the user and if they could complete all the tasks easily. This helped us gauge what was wrong with our application/what needed to be improved.

10. Rank each app feature below by the overall usability: [Home page]
11. Rank each app feature below by the overall usability: [Calendar page]
12. Rank each app feature below by the overall usability: [Friends page]
13. Rank each app feature below by the overall usability: [Login page]
14. Rank each app feature below by the overall usability: [Sign-up page]

Ranking from 1 (worst) to 5 (best). The above question was asked in order to see which pages needed to be changed in order to increase usability and which pages were already usable and did not need to be changed.

15. This application was easy to use. (multiple choice: strongly agree → strongly disagree)
16. If answered disagree or strongly disagree, please briefly explain why and give other applications that you would use instead. (short answer)

We asked users if the application was easy to use in order to get a general idea of usability and functionality and asked them to briefly explain what about the application was not easy to use (if they indicated as such)

17. The labels used in the application were easy to understand (and led to proper usage)
18. If answered disagree or strongly disagree, please briefly explain why.

We asked these questions to better understand what we needed to improve when it comes to help and documentation and ease of use for the user when they are not given verbal instructions and just need to read the labels that are on the screen. We also asked them to briefly explain if the labels were not easy to understand so that we could better improve them from their feedback.

19. Once fully developed, I would use this application in the future (instead of other similar applications)
20. If answered disagree or strongly disagree, please briefly explain why and give other applications that you would use instead.

We asked this question to alert users that our application is not fully complete and we would be making changes to improve it based on their feedback. And two, we asked these question to see if given the current state of our application would users be willing/want to use an application like this.

21. How would you rate the overall visual design of the app?
22. Explain why you chose that ranking. (What did you like about the design of the app? What did you not like?) (colors, graphics, text (font size, font color), etc.)

We asked these questions so we could evaluate how users felt about the visual aspects of the application. By doing so we as developers could make design decisions to make the application more appealing.

23. Rank each app feature below by the overall design: [Home page]
24. Rank each app feature below by the overall design: [Calendar page]
25. Rank each app feature below by the overall design: [Friends page]
26. Rank each app feature below by the overall design: [Login page]
27. Rank each app feature below by the overall design: [Sign-up page]

We asked this question so that users could tell us how they felt about the design and appeal of the pages they used, so that we could examine what is aesthetic to the current users.

28. Did you find the feature to add friends via QR Code appealing?
29. Please briefly explain your choice.

We asked these questions to see if users resonating with a relatively prominent feature of our application and if they enjoyed/would feel comfortable using it amongst other people.