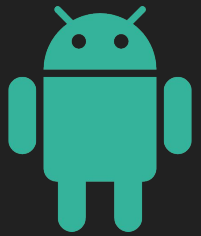
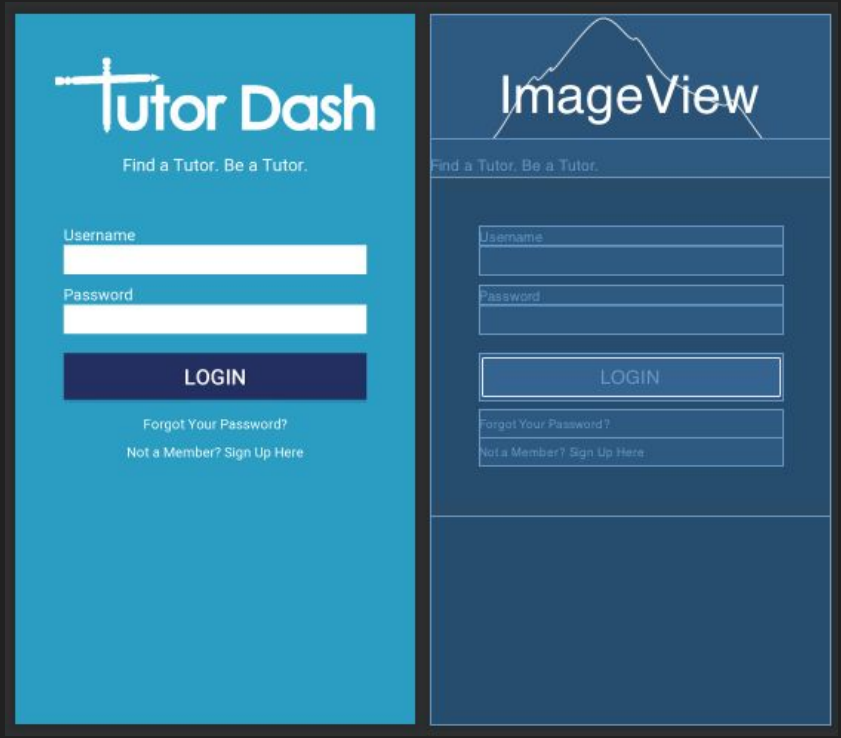
Tutor Dash Prototype

Android Application Development



Old Dominion University
Fall 2019
CS411W Team Gold
24 September 2019



Team Gold

Alex Wojtowicz
Team Lead/Webmaster
DB/Algorithms Developer

Brandon Campbell
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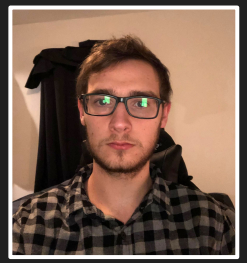
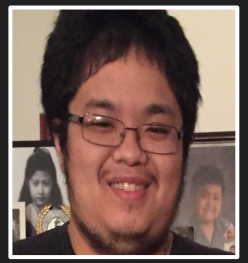
Back-End Developer

John Hessefort
UI/UX Developer/Tester
Domain Expert



Duncan Holterhaus
Back-End Developer
Lead Algorithms Developer

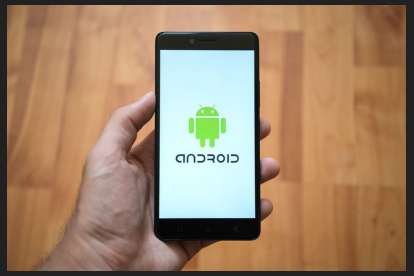


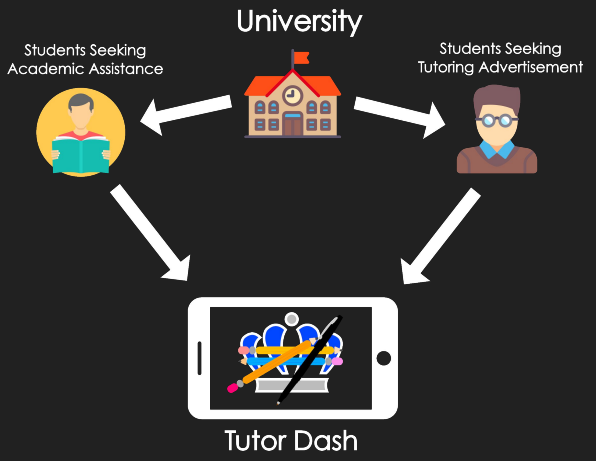
Edwin Ordona
UI/UX Tester
UI/UX Developer

Dwight Owings
UI/UX Tester
Quality Assurance

Tutor Dash - What Is It Supposed To Be?

- Mobile Android application for university students
- Will make finding private tutors more convenient.
- Will make offering tutoring services hassle-free.
- Aims to optimize human resources by connecting university students willing to tutor with other students looking for tutors.
- Concept is similar to Uber, but domain is specific to university course-specific private (freelance) tutoring

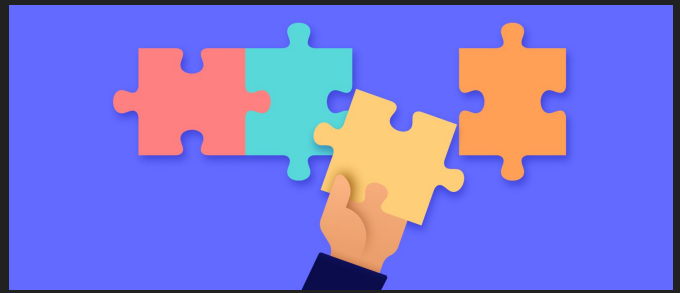




The Problems

- There are two current problems that Tutor Dash will address

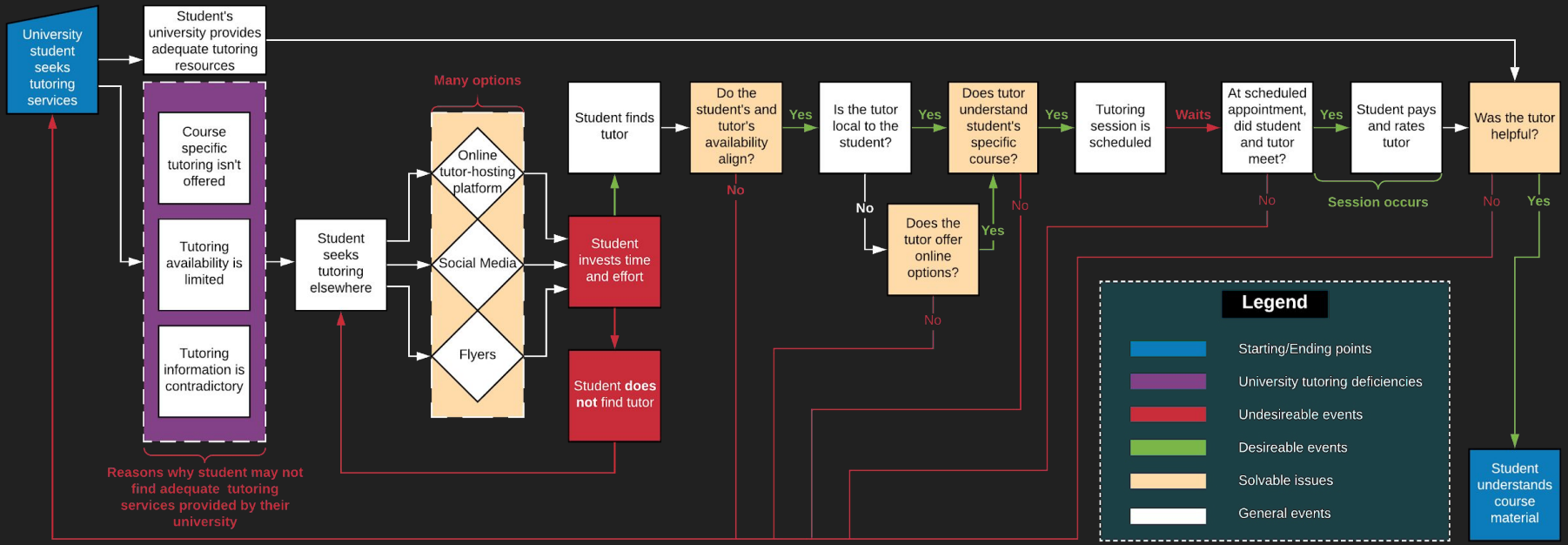
1. Tutoring services available to university students are insufficient
2. Students who want to tutor have a hard time finding clients



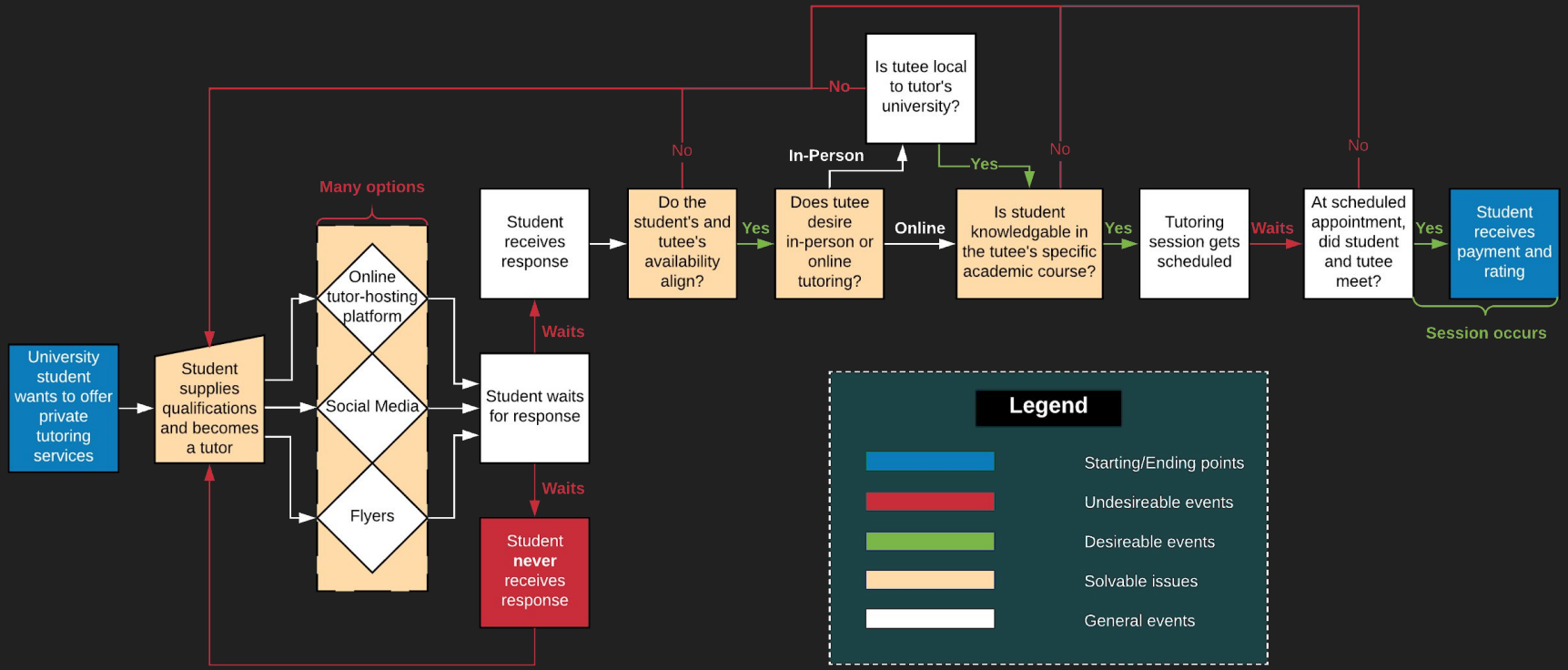
Problem Characteristics

1. Tutoring services available to university students are insufficient
    a. On-campus tutoring resources
        - Limited scope
        - Inflexible scheduling
        - Poor advertisement
    b. Private tutoring resources
        - Too many options
        - Tutors are overqualified/overpriced
        - Slow turnaround/Tutors desire routine scheduling
2. Students who want to tutor have a hard time finding clients
    a. No centralized platform for advertising
    b. Unable to meet high qualification requirements
    c. Difficulties setting the right rates based on course demand

Process Flow - Students Seeking Academic Assistance



Process Flow - Students Seeking Tutoring Advertisement

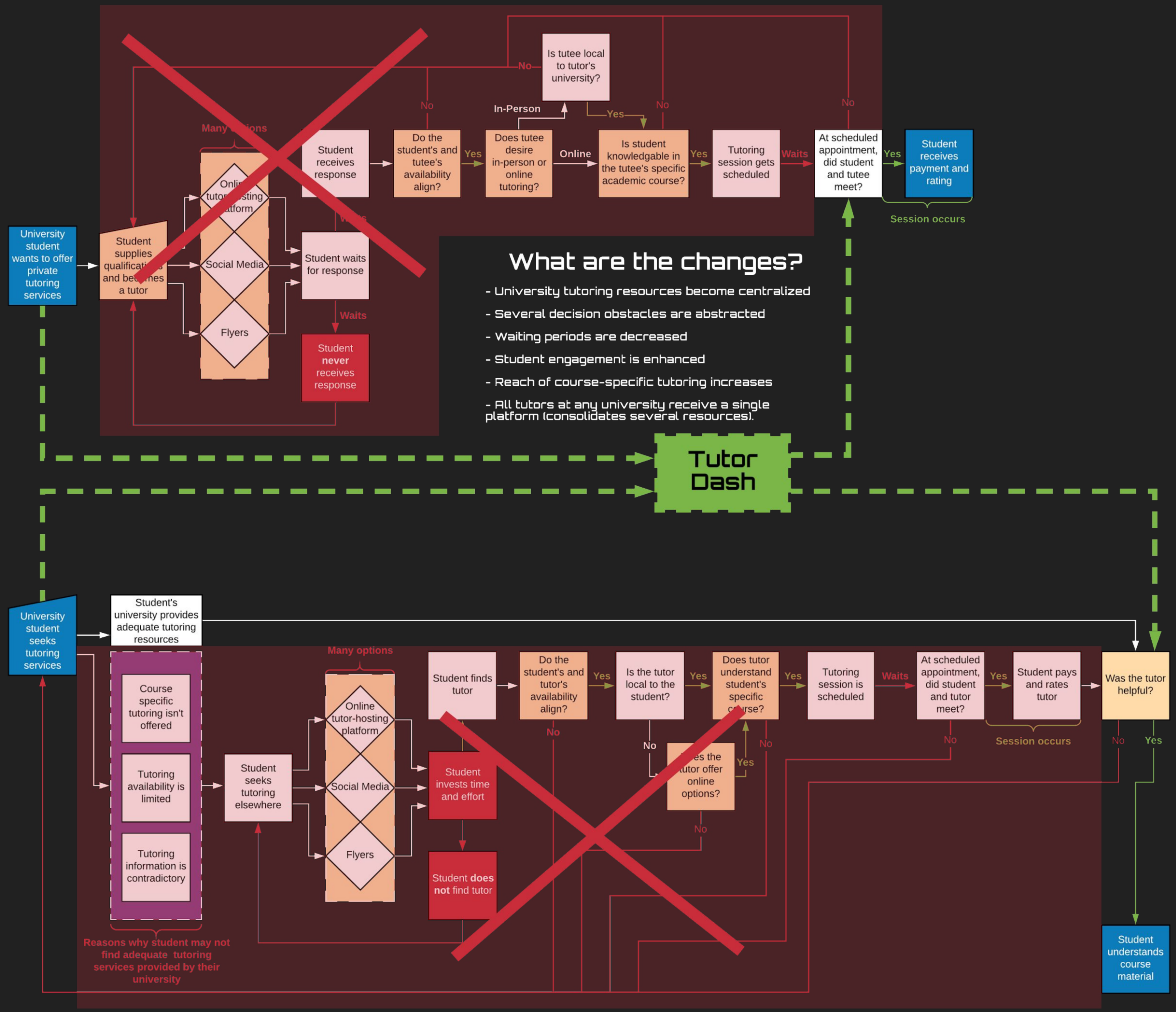


Our Solution - Tutor Dash

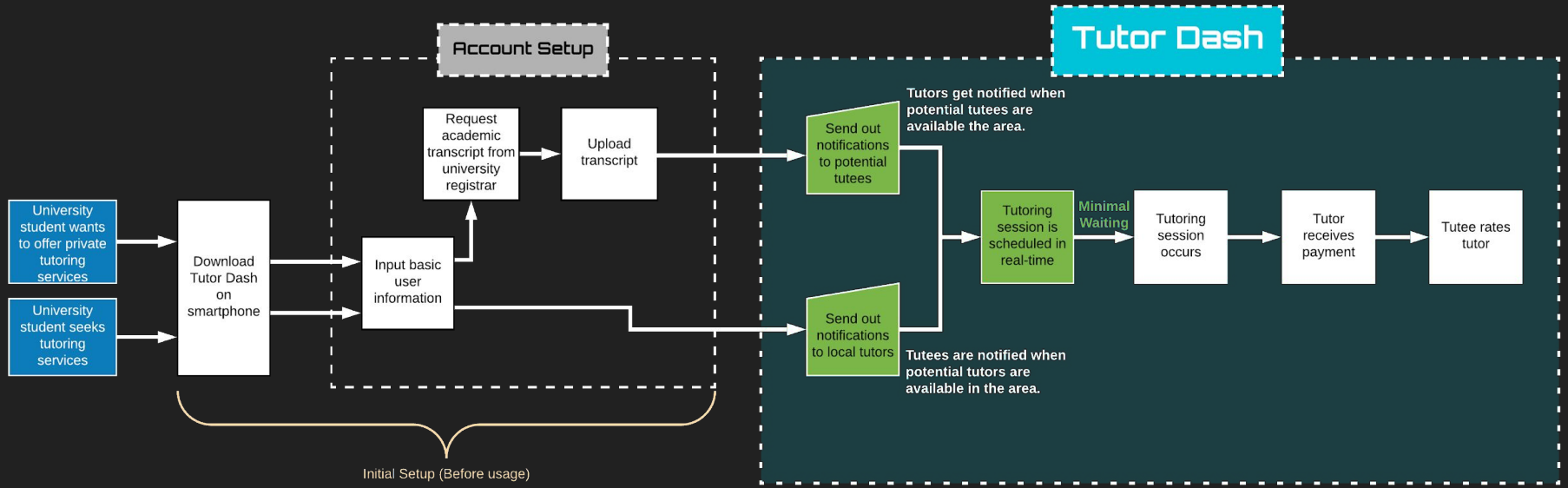
- Will implement several features that address the current problems
  - Users are exclusively university students
  - 24/7 scheduling
  - Any university course is eligible to tutor
  - Tutor/Tutee rating system
  - In-app automatic payments
  - Availability toggling
  - Notifications for potential matches and event reminders
  - In-app chat
  - Automatic pay-rate calculation
  - Real-time qualifications based on previously taken courses
  - Online/in-person meeting support

Process Flow -

Tutor Dash's Effects The Current Processes



Process Flow - Tutor Dash's Basic Flow



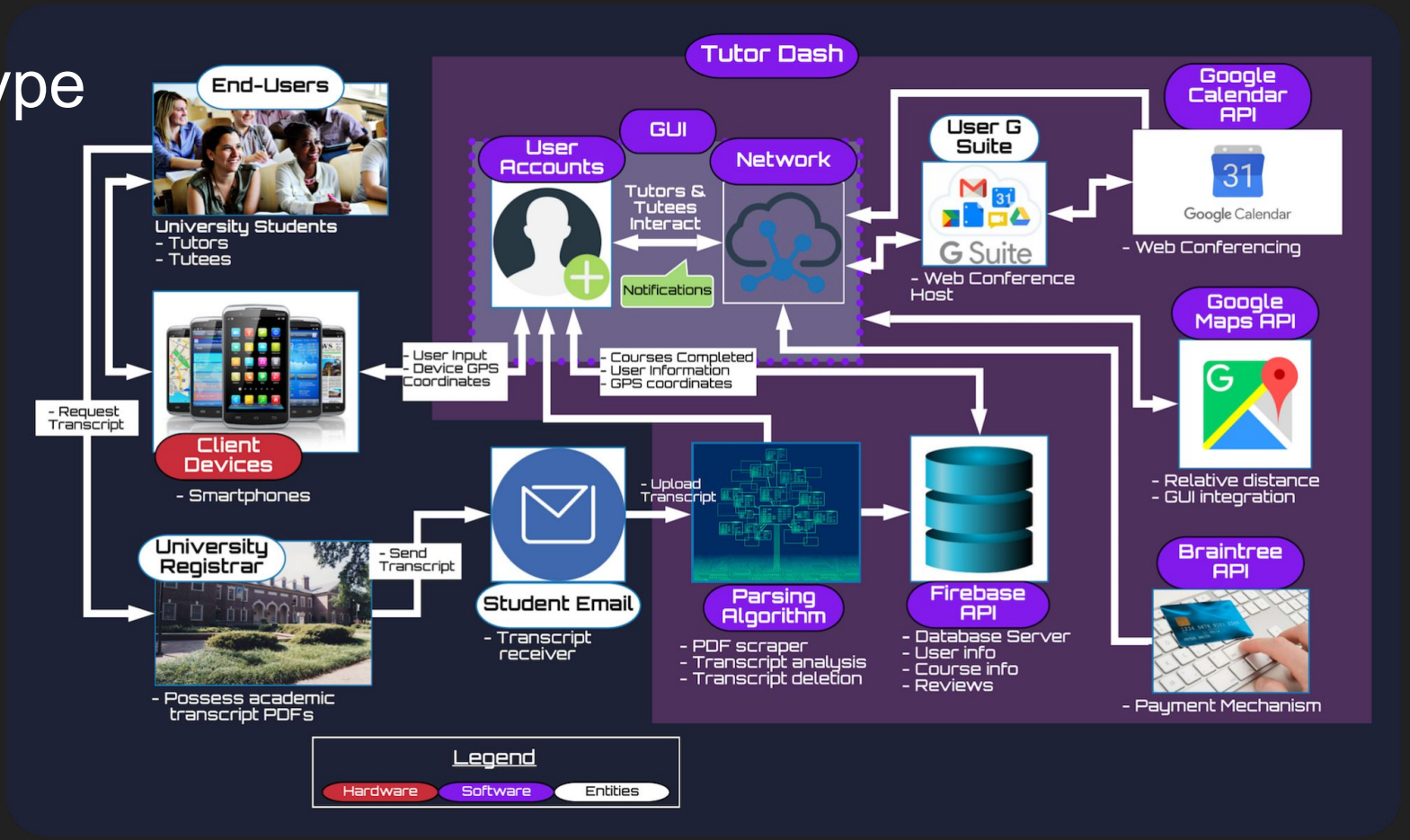
Customers & End Users

- University Students (ODU students)
  - Those seeking academic assistance (in the private tutoring market)
  - Those looking to tutor privately
    - Existing tutors looking for another platform/new clients
    - New tutors

RWP vs. Prototype

Feature	RWP	Prototype
On-the-fly tutor qualification based on transcript	Fully-Functional	Fully-Functional
University student verification based on email	Fully-Functional	Fully-Functional
Search results tailored based on tutor/tutee mode	Fully-Functional	Fully-Functional
Real-time scheduling	Fully-Functional	Fully-Functional
Weighted ratings for every course	Fully-Functional	Fully-Functional
Reviews and comments on user profiles	Fully-Functional	Fully-Functional
In-app payments/deposits (any transactions)	Fully-Functional	Fully-Functional
In-app messaging/history of conversations	Fully-Functional	Fully-Functional
Web conference and in-person meeting support	Fully-Functional	Fully-Functional
Relative distance user A is from user B appears in query	Fully-Functional	Fully-Functional
Night mode	Fully-Functional	Eliminated
Automated pay rate calculation for every course	Fully-Functional	Partially Functional - Mean & std. dev. of pay-rates will need to be mocked up
Reporting features	Fully-Functional	Partially Functional - Users can report, but no action will occur
Re-authentication when navigating back into app	Fully-Functional	Fully-Functional - However, this feature may disrupt the user experience
Refunds due to poor experiences	Fully-Functional	Partially Functional - Most likely, this will not be automated, but it still will exist
Free sessions/monetary bonuses	Fully-Functional	Eliminated
Blacklisting of users	Fully-Functional	Partially Functional - Will be functional, but not implemented in prototype
Support of multiple universities	Fully-Functional	Eliminated
Cross-platform support	Eliminated	Eliminated
Firebase console linked to test suite(s) with mockups	Eliminated	Fully-Functional

Prototype MFCD



Development Tools Overview

Collaboration Workflow	
Component	**Tool**
Version Control	GitLab
CD/CI	GitLab
Issue Tracking	Trello
Daily Communication	Discord
Weekly Communication	Google Hangouts

Development Workflow	
Component	**Tool**
Language	Java/XML
IDE	Android Studio 3.4+
UI/UX design	Android Studio 3.4+
Build Manager	Gradle
Back-end Testing	JUnit4
Front-end Testing	Firebase Test Lab
Database	Firebase Cloud Firestore (API)
Payment Service	Braintree (API)
Location Service	Google Maps (API)
File Parsing	PDF Box (Android port)
Scheduling	Google Calendar (API)

Database

- Firebase is a mobile and web application development platform.
- Tightly integrated with Google Cloud Platform
- Built-in APIs that make querying, authenticating users, and updating information in real-time easier than other options (like SQL).
- Tutor Dash will use the following Firebase products to handle backend services:
  - Cloud Firestore - Database
  - Firebase Auth - User Authentication
  - Cloud Storage - File Storage

Firebase

Database Schema

- Schema will most likely change as we discover new requirements
- Blacklisting will be implemented, but it will not be used as a feature in the prototype

User
UID
uName
fName
lName
email
picURL
schoolID
isTutor
isAvail
coursesOffered
coursesEligible
coursesPayRate
tutorRating
tuteeRating
inPerson
webConf
location
bio
timesSinceRequest
courseHours
courseID

School
schoolID
schoolName
schoolSuffix
courses

Courses
courseID
courseName
meanPayRate
stdDev

Chat
UID1_UID2
senderName
sendeeName
message
timestamp

Blacklist
email
schoolID

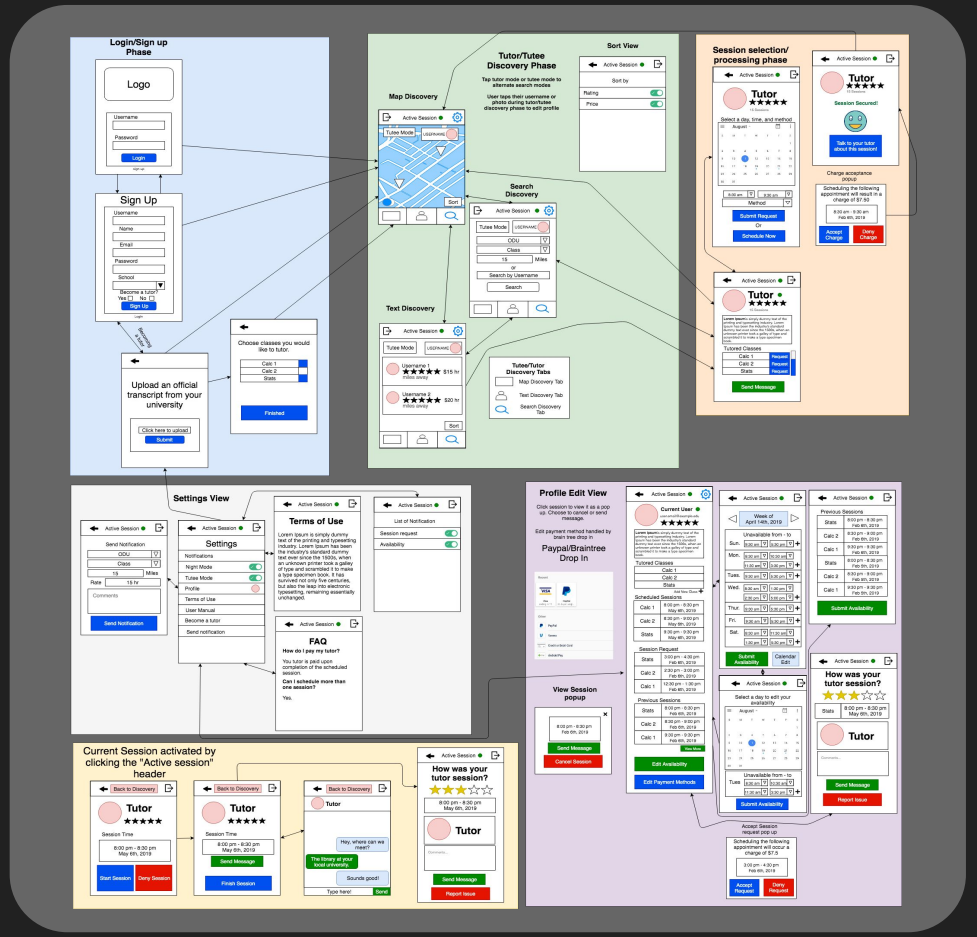
Reviews
UID
reviewerUID
rating
comment
timestamp

Payments
UID
receiverUID
dateTime
amount

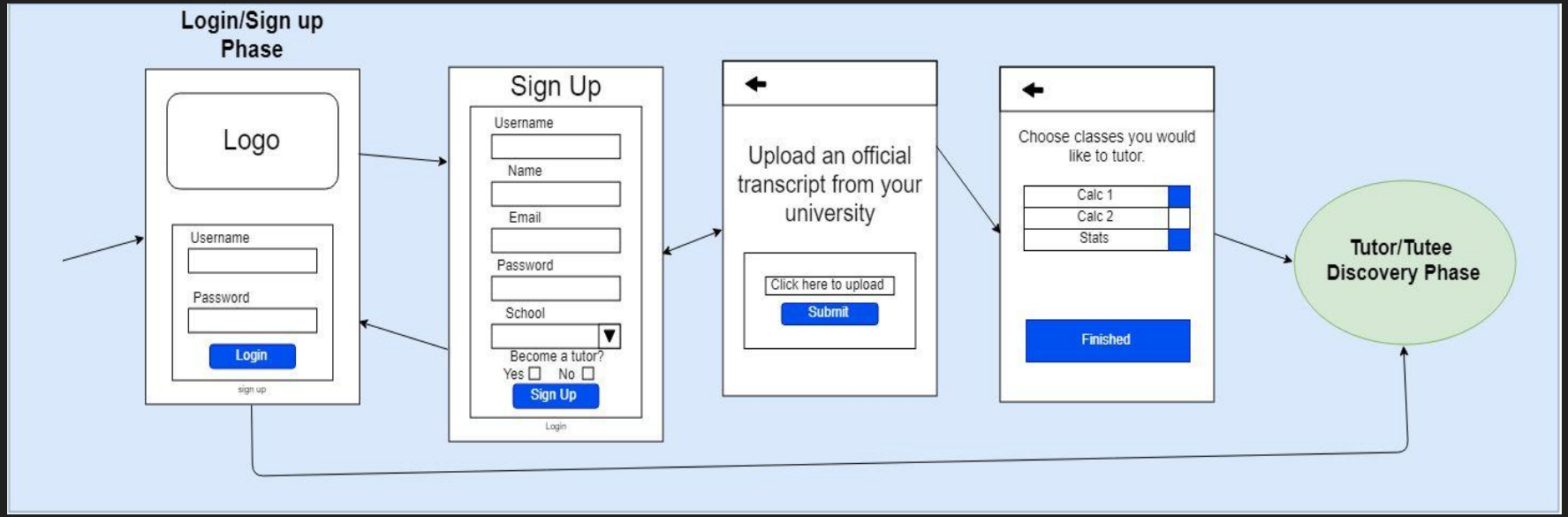
Schedule
schoolID_UID
date
eventID
eventName
startTime
stopTime

UI/UX

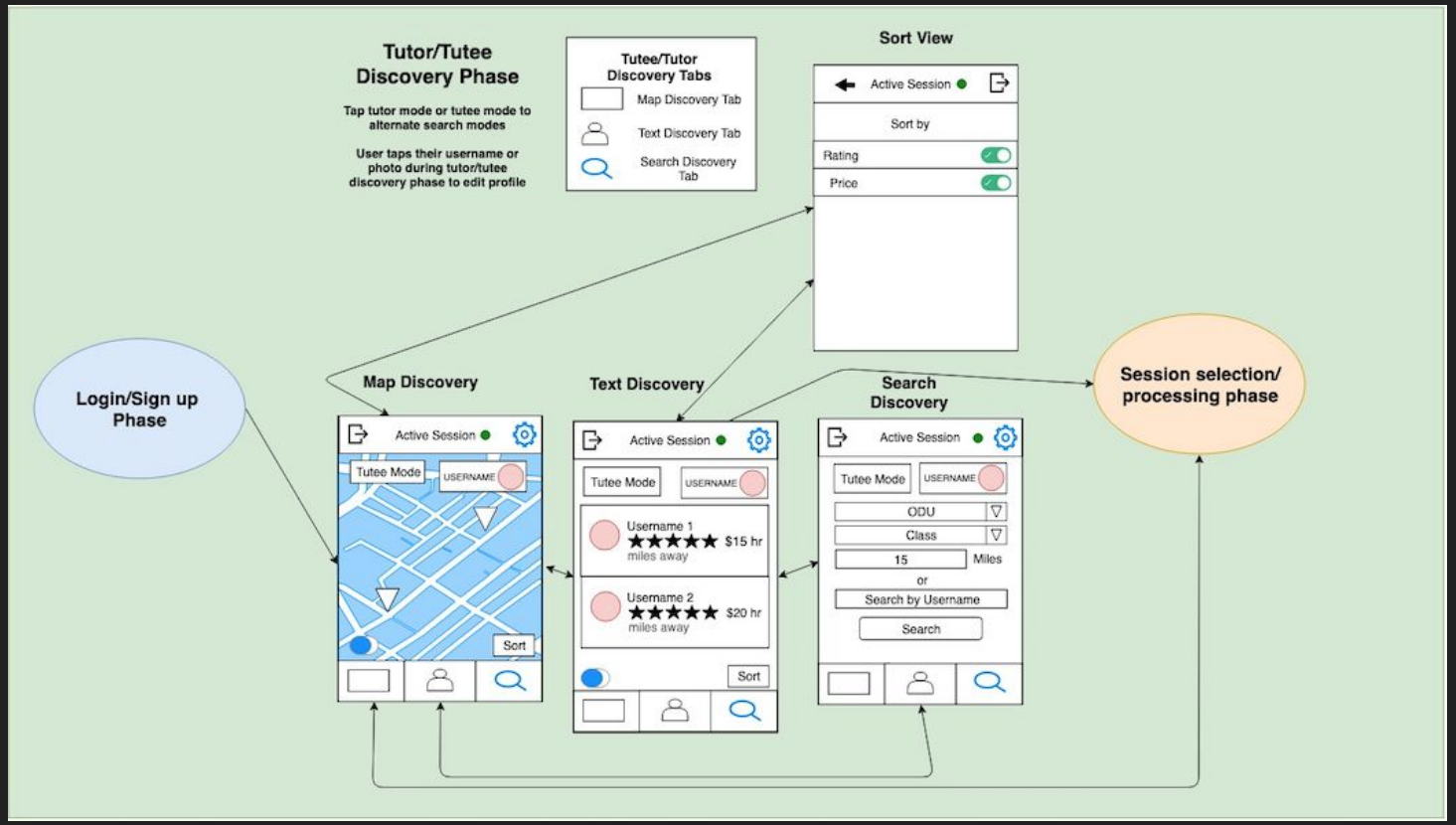
- Blue — Login/Sign Up
- Green — Tutor/Tutee Discovery
- Orange — Session Selection
- Yellow — Active Session
- Grey — Settings
- Purple — Profile Edit



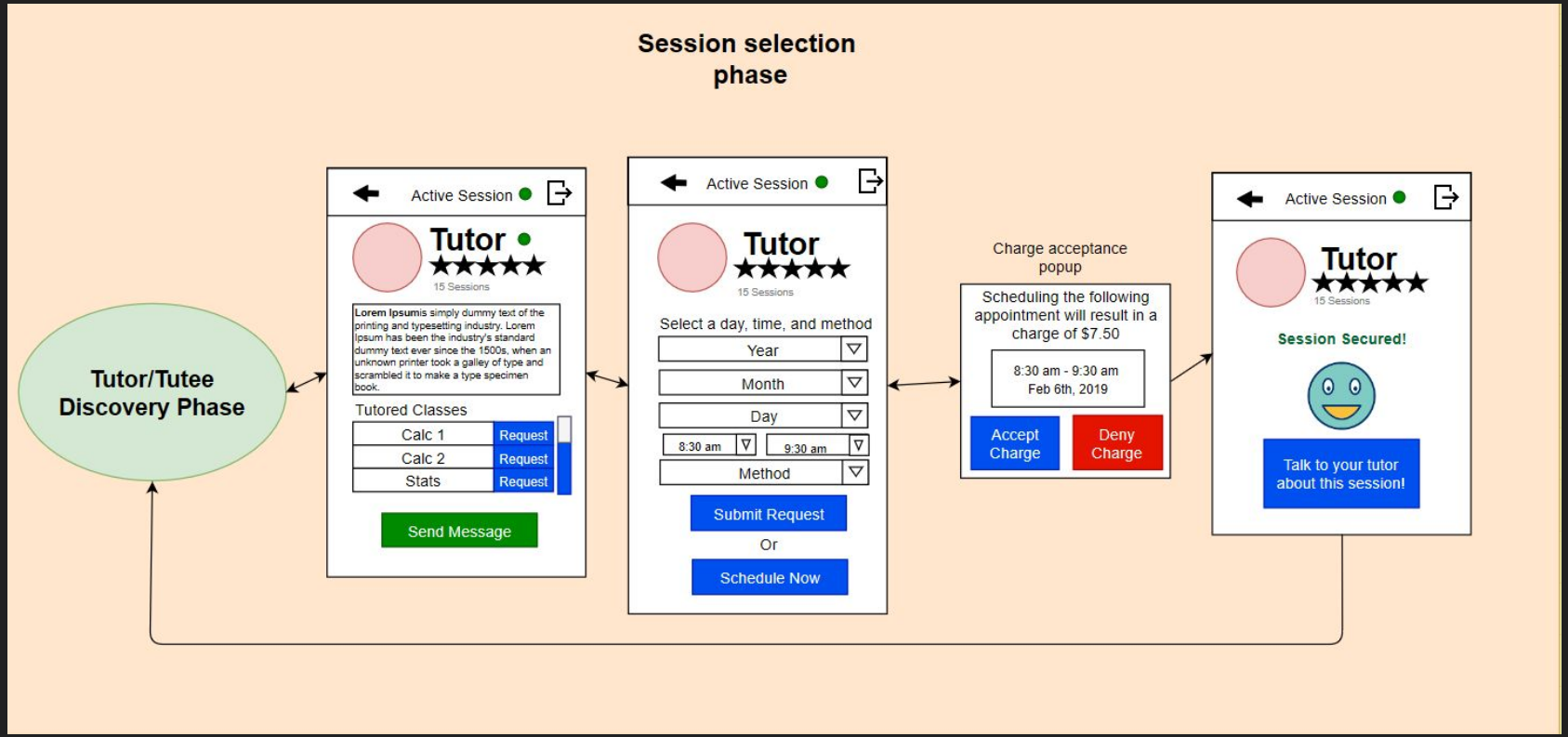
UI/UX Phase 1


Login/Sign up Phase
Logo
Username
Password
Login
sign up
Sign Up
Username
Name
Email
Password
School
Become a tutor?
Yes ☐ No ☐
Sign Up
Login
Upload an official transcript from your university
Click here to upload
Submit
Choose classes you would like to tutor.
Calc 1
Calc 2
Stats
Finished
Tutor/Tutee Discovery Phase

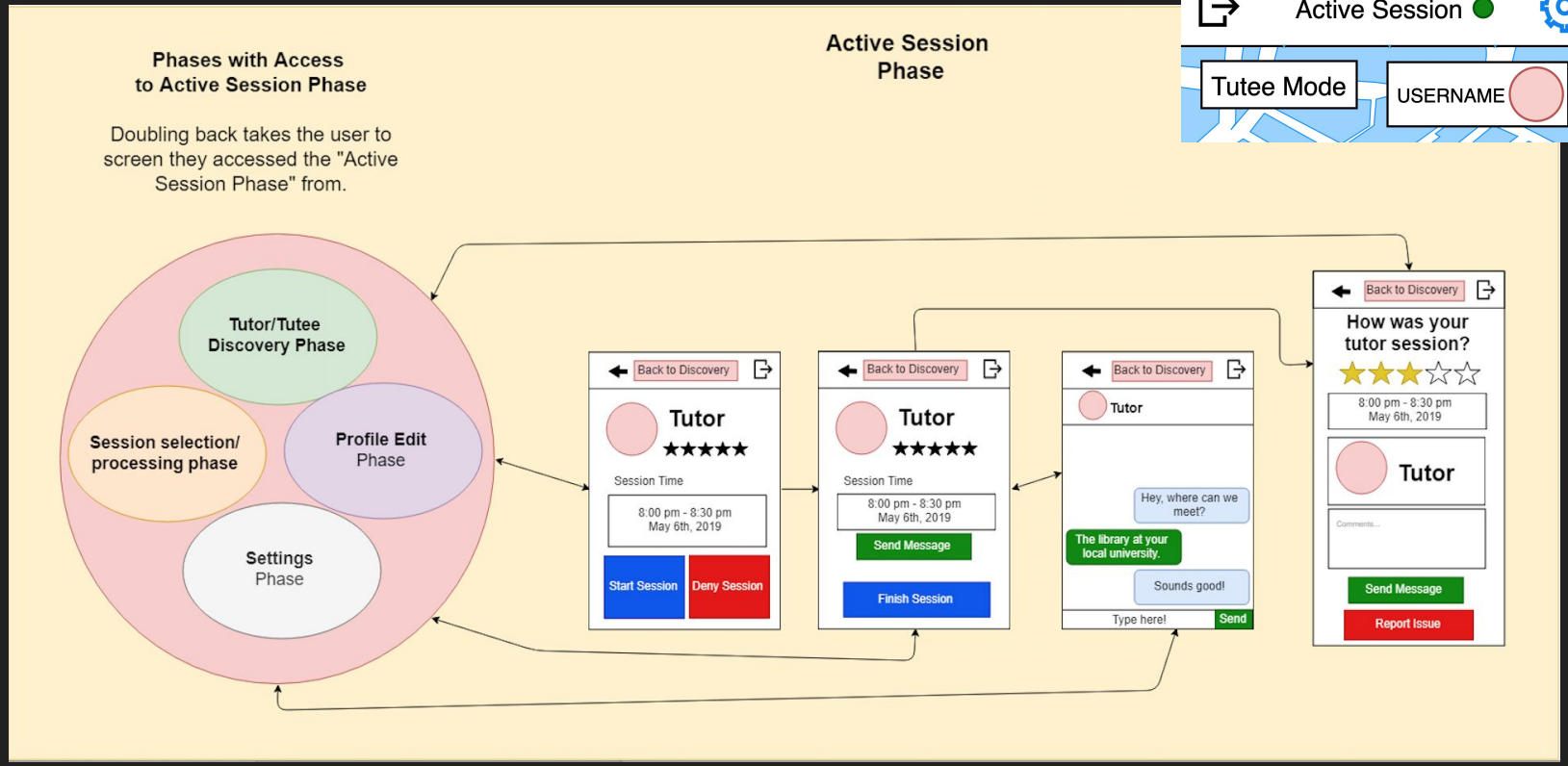
UI/UX Phase 2


Tutor/Tutee Discovery Phase
Tap tutor mode or tutee mode to alternate search modes
User taps their username or photo during tutor/tutee discovery phase to edit profile
Tutee/Tutor Discovery Tabs
Map Discovery Tab
Text Discovery Tab
Search Discovery Tab
Sort View
Active Session
Sort by
Rating
Price
Login/Sign up Phase
Map Discovery
Text Discovery
Search Discovery
Session selection/ processing phase
Active Session
Tutee Mode
USERNAME
Sort
Username 1
$15 hr
miles away
Username 2
$20 hr
miles away
ODU
Class
15
Miles
or
Search by Username
Search

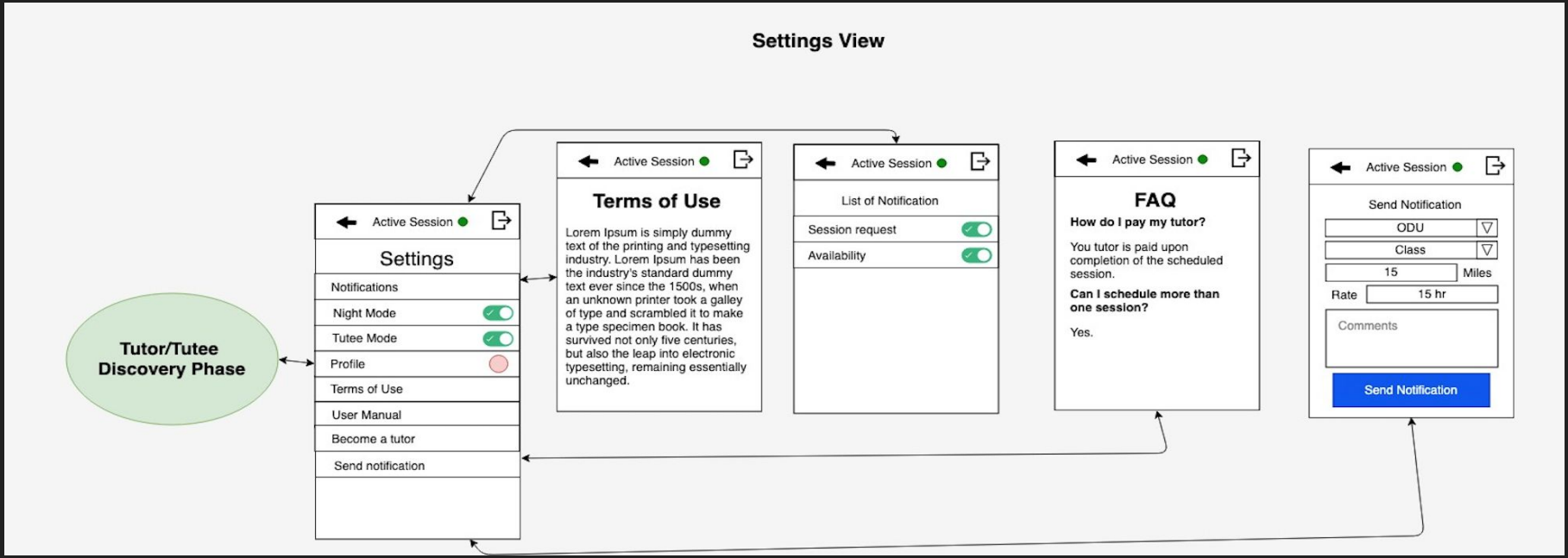
UI/UX Phase 3


Session selection phase
Tutor/Tutee Discovery Phase
Active Session
Tutor
15 Sessions
Lorem Ipsumis simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book.
Tutored Classes
Calc 1
Request
Calc 2
Request
Stats
Request
Send Message
Active Session
Tutor
15 Sessions
Select a day, time, and method
Year
Month
Day
8:30 am
9:30 am
Method
Submit Request
Or
Schedule Now
Charge acceptance popup
Scheduling the following appointment will result in a charge of $7.50
8:30 am - 9:30 am
Feb 6th, 2019
Accept Charge
Deny Charge
Active Session
Tutor
15 Sessions
Session Secured!
Talk to your tutor about this session!

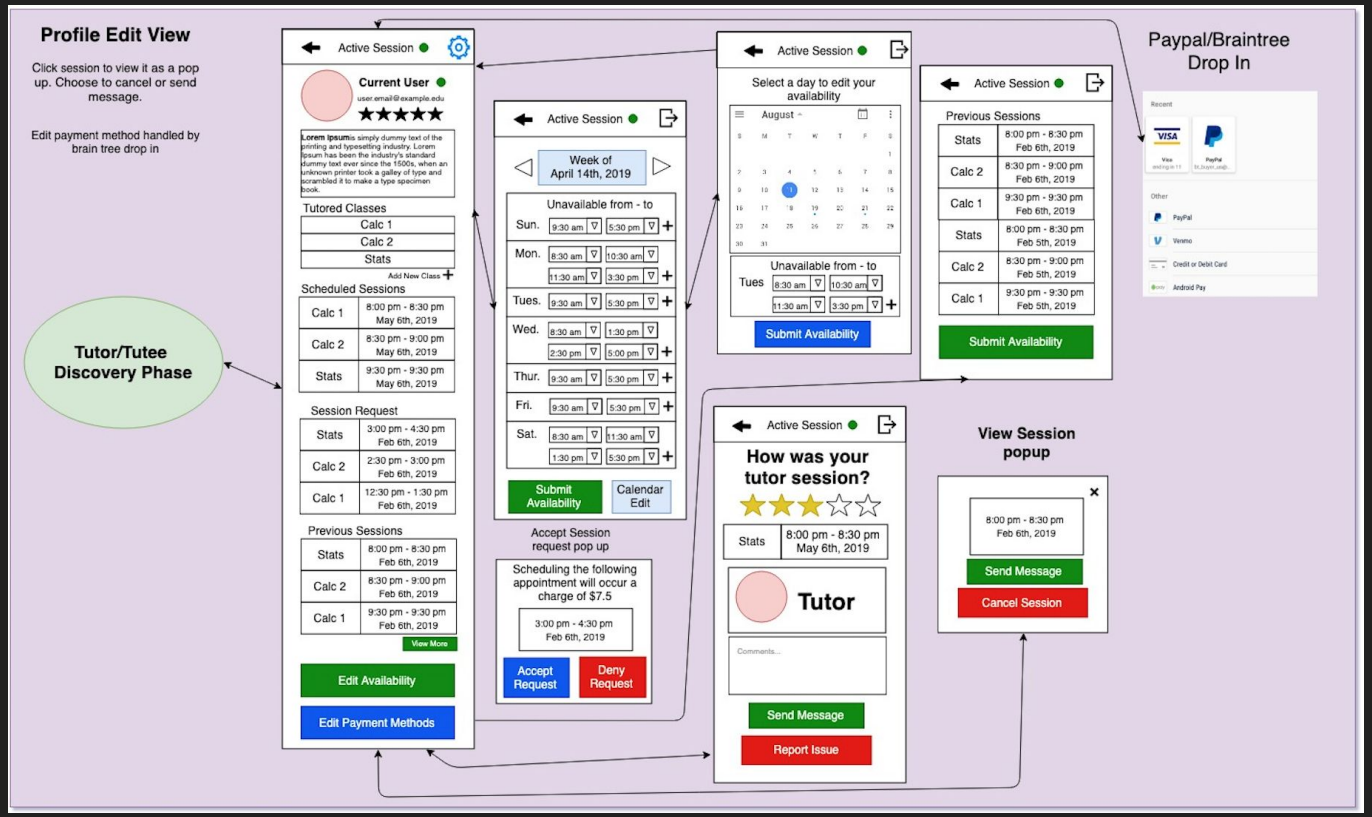
UI/UX Phase 4


Active Session Phase
Phases with Access to Active Session Phase
Doubling back takes the user to screen they accessed the "Active Session Phase" from.
Tutor/Tutee Discovery Phase
Session selection/ processing phase
Profile Edit Phase
Settings Phase
Back to Discovery
Tutor
Session Time
8:00 pm - 8:30 pm May 6th, 2019
Start Session
Deny Session
Send Message
Finish Session
Hey, where can we meet?
The library at your local university.
Sounds good!
Type here!
Send
How was your tutor session?
Comments...
Report Issue
Active Session
Tutee Mode
USERNAME

UI/UX View 1


Settings View
Tutor/Tutee Discovery Phase
Active Session
Settings
Notifications
Night Mode
Tutee Mode
Profile
Terms of Use
User Manual
Become a tutor
Send notification
Active Session
Terms of Use
Lorem Ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book. It has survived not only five centuries, but also the leap into electronic typesetting, remaining essentially unchanged.
Active Session
List of Notification
Session request
Availability
Active Session
FAQ
How do I pay my tutor?
You tutor is paid upon completion of the scheduled session.
Can I schedule more than one session?
Yes.
Active Session
Send Notification
ODU
Class
15
Miles
Rate
15 hr
Comments
Send Notification

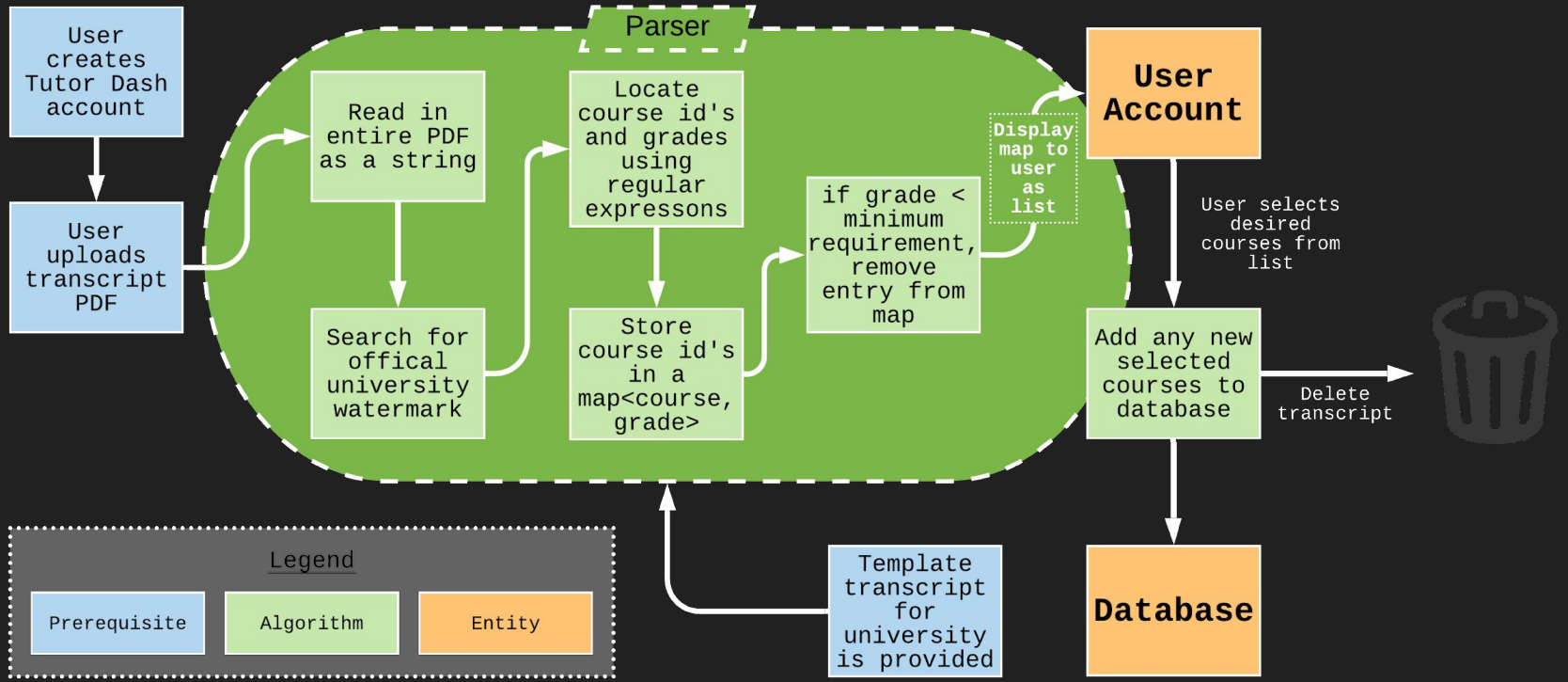
UI/UX View 2


Profile Edit View
Click session to view it as a pop up. Choose to cancel or send message.
Edit payment method handled by brain tree drop in
Tutor/Tutee Discovery Phase
Active Session
Current User
user.email@example.edu
Lorem ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book.
Tutored Classes
Calc 1
Calc 2
Stats
Add New Class
Scheduled Sessions
Calc 1 8:00 pm - 8:30 pm May 6th, 2019
Calc 2 8:30 pm - 9:00 pm May 6th, 2019
Stats 9:30 pm - 9:30 pm May 6th, 2019
Session Request
Stats 3:00 pm - 4:30 pm Feb 6th, 2019
Calc 2 2:30 pm - 3:00 pm Feb 6th, 2019
Calc 1 12:30 pm - 1:30 pm Feb 6th, 2019
Previous Sessions
Stats 8:00 pm - 8:30 pm Feb 6th, 2019
Calc 2 8:30 pm - 9:00 pm Feb 6th, 2019
Calc 1 9:30 pm - 9:30 pm Feb 6th, 2019
View More
Edit Availability
Edit Payment Methods
Active Session
Week of April 14th, 2019
Unavailable from - to
Sun. 9:30 am 5:30 pm
Mon. 8:30 am 10:30 am 11:30 am 3:30 pm
Tues. 9:30 am 5:30 pm
Wed. 8:30 am 1:30 pm 2:30 pm 5:00 pm
Thur. 9:30 am 5:30 pm
Fri. 9:30 am 5:30 pm
Sat. 8:30 am 11:30 am 1:30 pm 5:30 pm
Submit Availability
Calendar Edit
Accept Session request pop up
Scheduling the following appointment will occur a charge of $7.5
3:00 pm - 4:30 pm Feb 6th, 2019
Accept Request
Deny Request
Active Session
Select a day to edit your availability
August
Unavailable from - to
Tues 8:30 am 10:30 am 11:30 am 3:30 pm
Submit Availability
Active Session
Previous Sessions
Stats 8:00 pm - 8:30 pm Feb 6th, 2019
Calc 2 8:30 pm - 9:00 pm Feb 6th, 2019
Calc 1 9:30 pm - 9:30 pm Feb 6th, 2019
Stats 8:00 pm - 8:30 pm Feb 5th, 2019
Calc 2 8:30 pm - 9:00 pm Feb 5th, 2019
Calc 1 9:30 pm - 9:30 pm Feb 5th, 2019
Submit Availability
Paypal/Braintree Drop In
Recent
Visa
PayPal
Other
PayPal
Venmo
Credit or Debit Card
Android Pay
Active Session
How was your tutor session?
Stats 8:00 pm - 8:30 pm May 6th, 2019
Tutor
Comments...
Send Message
Report Issue
View Session popup
8:00 pm - 8:30 pm Feb 6th, 2019
Send Message
Cancel Session

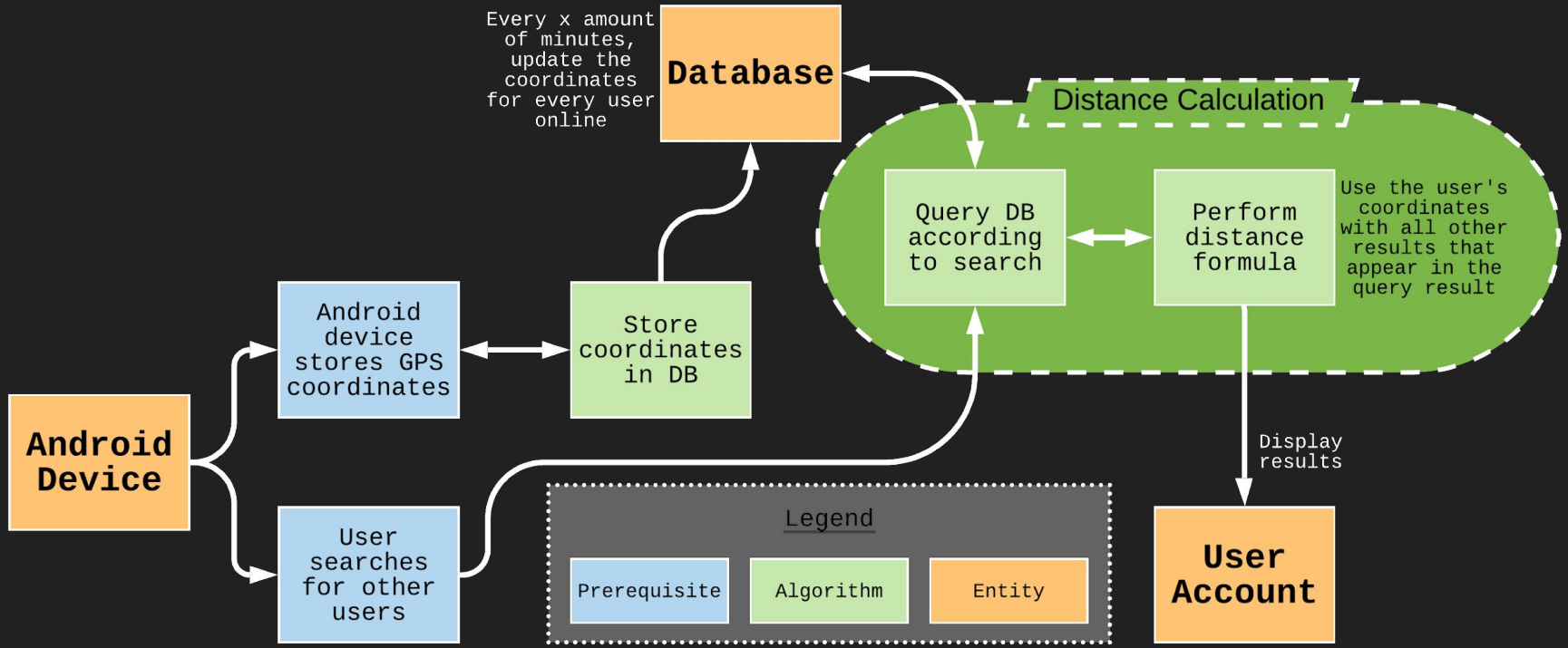
Algorithms

- PDF Transcript Parser
  - Used to parse academic transcripts when users want to become tutors.
  - Tools: PDFBox, Firebase Cloud Firestore
- Relative Distance Calculator
  - For displaying approximate distance other users are from the current user in search results.
  - Tools: Google Maps, Firebase Cloud Firestore
- Competitive Pay-Rate Calculator
  - Will calculate pay-rates for every course a tutor offers. Updates as parameter values change.
  - Tools: Firebase Cloud Firestore
- Appointment Creator
  - Will be used to add events to a user's Google calendar and in-app schedule.
  - Tools: Google Calendar API, Firebase Cloud Firestore
- Payment Handler
  - Will automate payment transactions and handle situations where payments transactions will not complete.
  - Tools: Braintree, Firebase Cloud Firestore

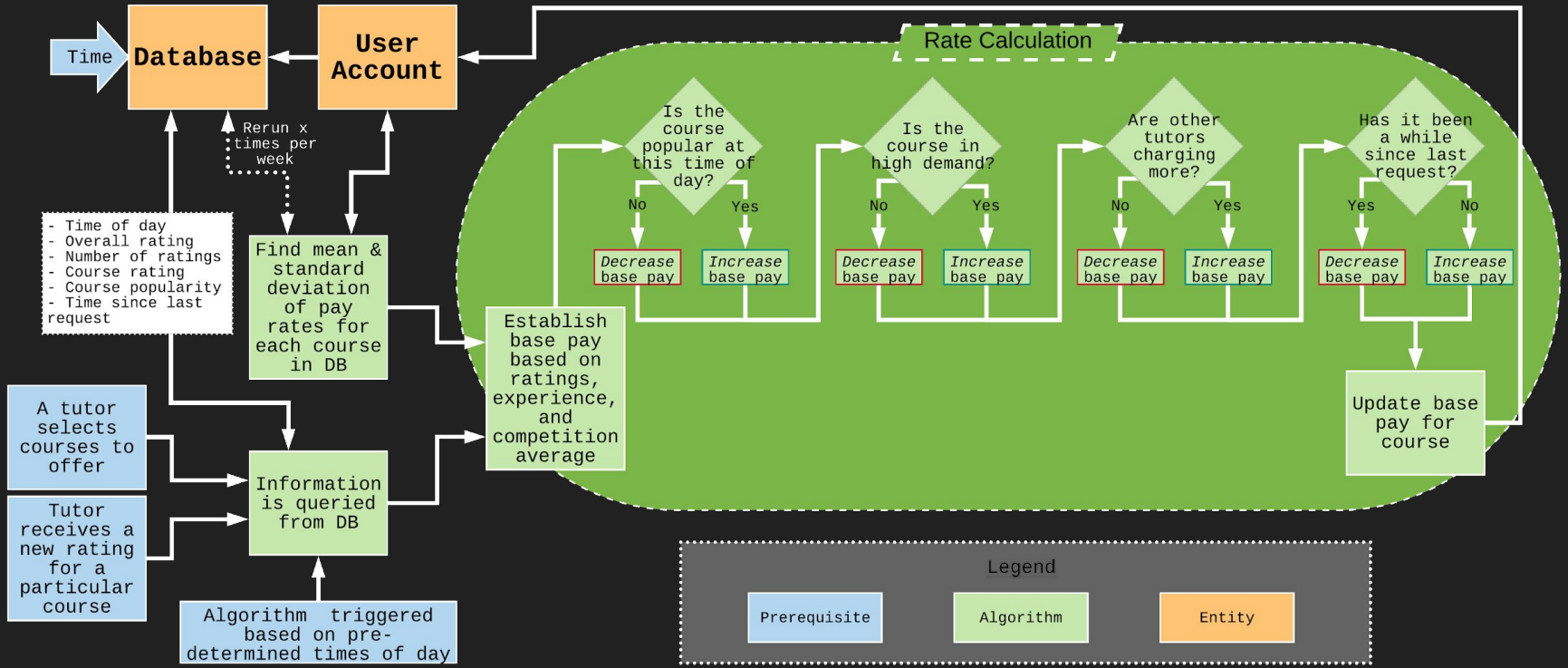
PDF Transcript Parser



Relative Distance Calculator

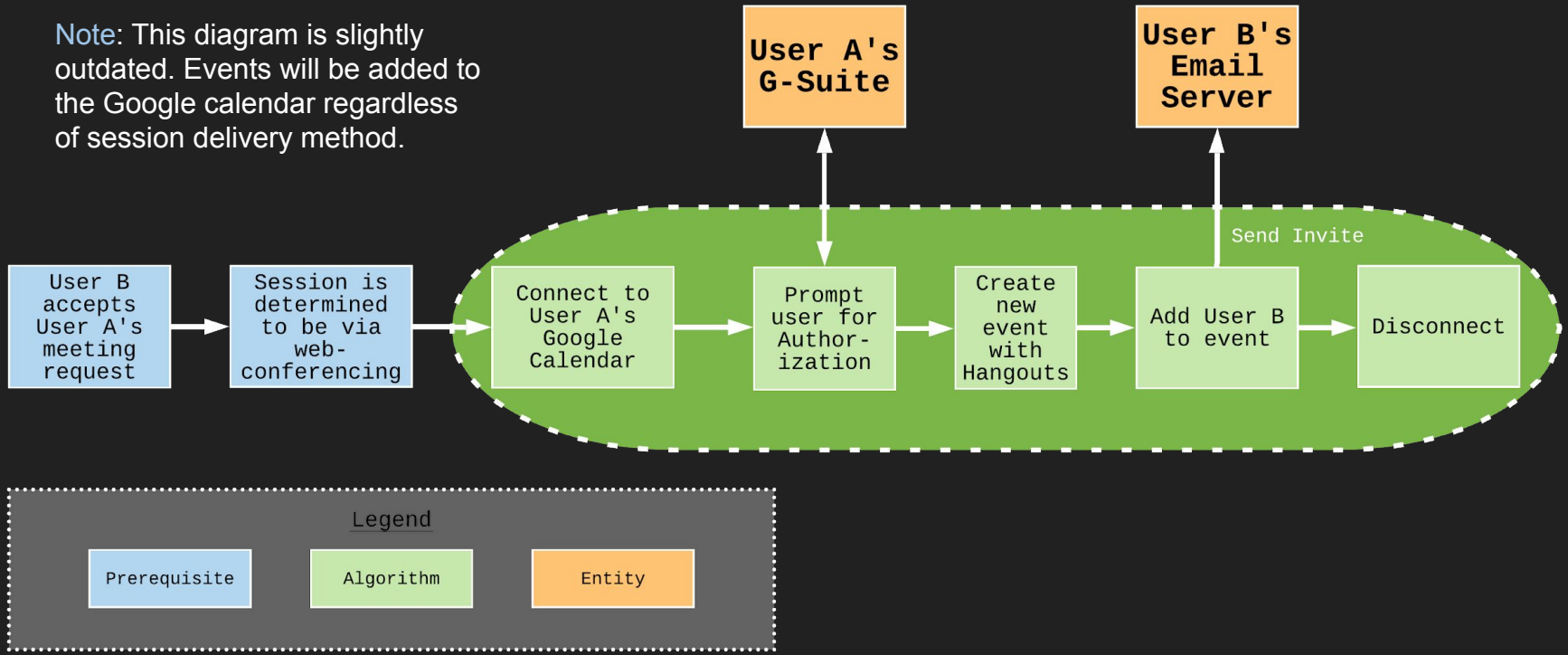


Competitive Pay-Rate Calculator

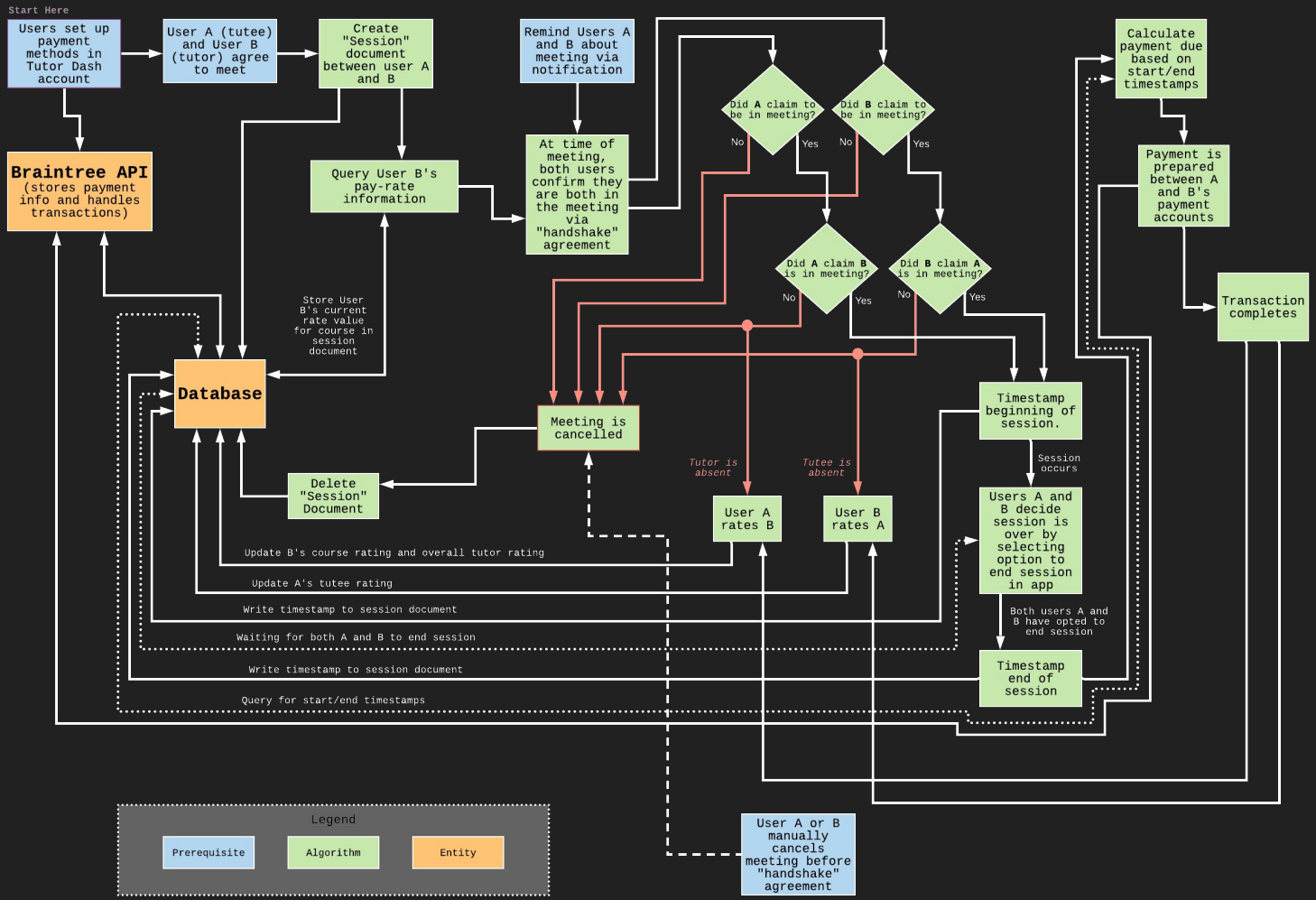


Appointment Creator

Note: This diagram is slightly outdated. Events will be added to the Google calendar regardless of session delivery method.



Payment Handler



More About Braintree

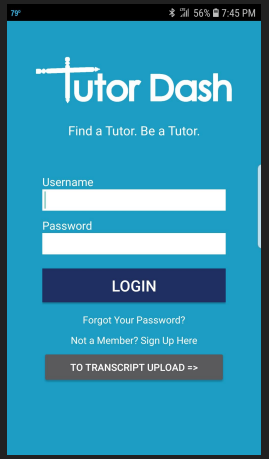
- Third-party service managed by PayPal
- Designed to handle e-transactions in web and mobile apps
- Payment information is stored in Braintree's "Vault" (not our DB)
- Master merchant (Tutor Dash) and sub-merchants (Tutors)
- Allows for recurring payment methods for users to be set up in-app
- Provides Drop-In UI with built-in functionality

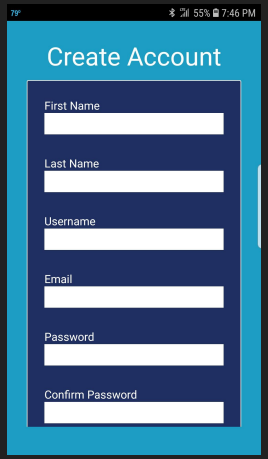
Development Plan

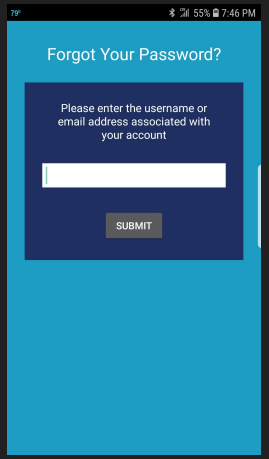
- Agile Workflow
- Weekly team meetings to discuss progress
- 4 to 6 agile sprints over 14-15 weeks
  - Each sprint will focus on a phase of the UI/UX (front and back-ends)
  - All major issues addressed and assigned at beginning of sprint
- Each Issue will have its own branch off master so that merges can be done as frequently as possible. This should mitigate conflicts.
- Currently in sprint 2
  - Focusing on creating functional searching and implementation of interactive google map

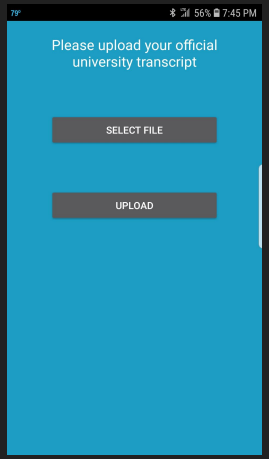
What Was Sprint 1?

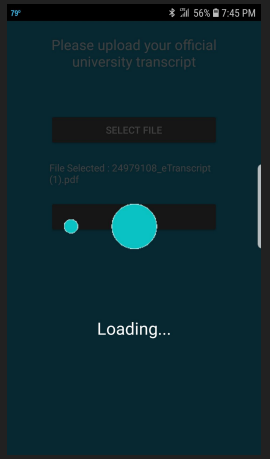
- UI/UX Phase 1 (Membership and transcript parsing)
- Functional front-end AND back-end

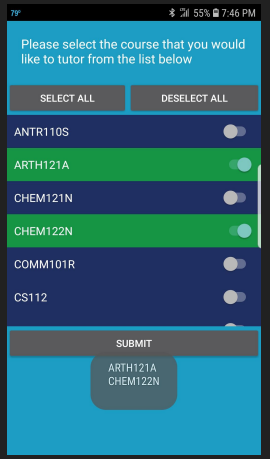


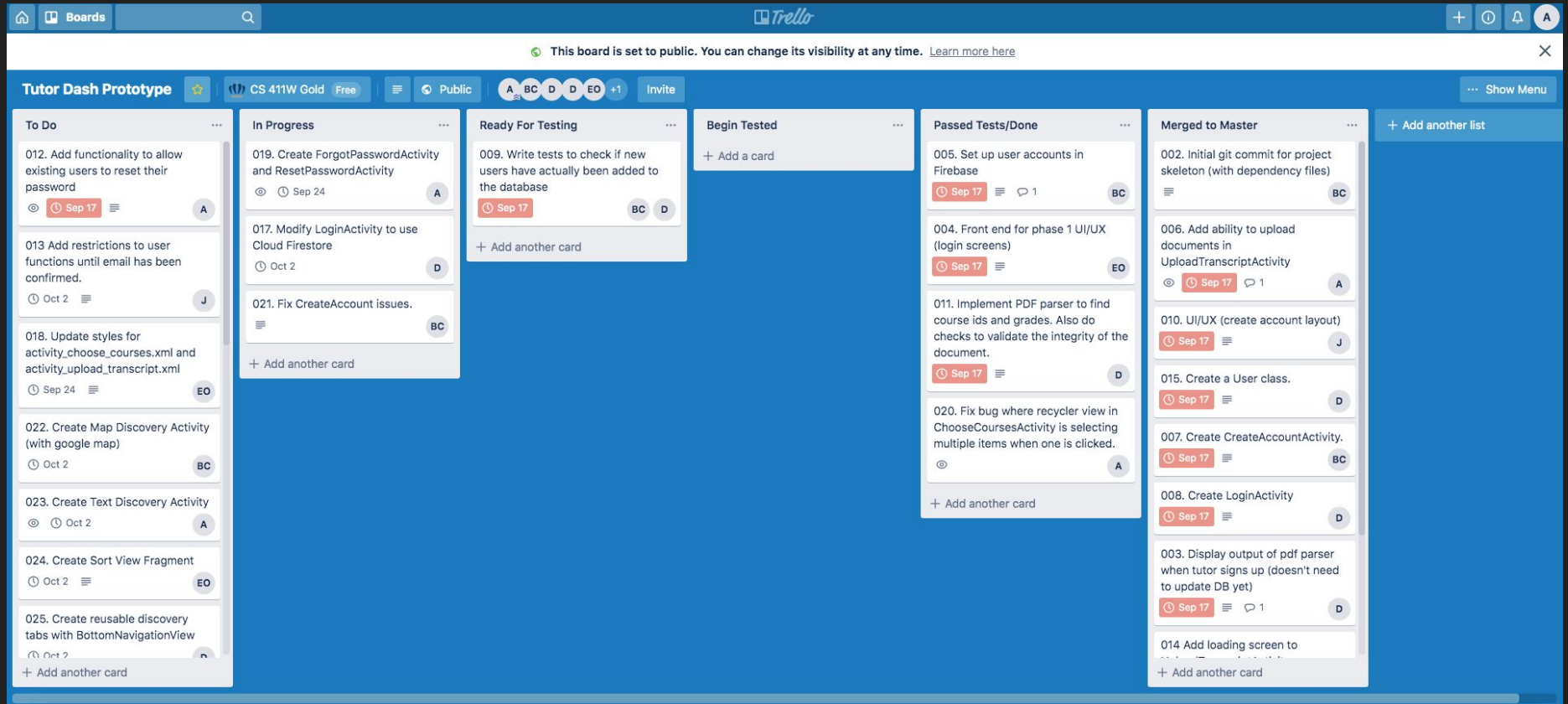


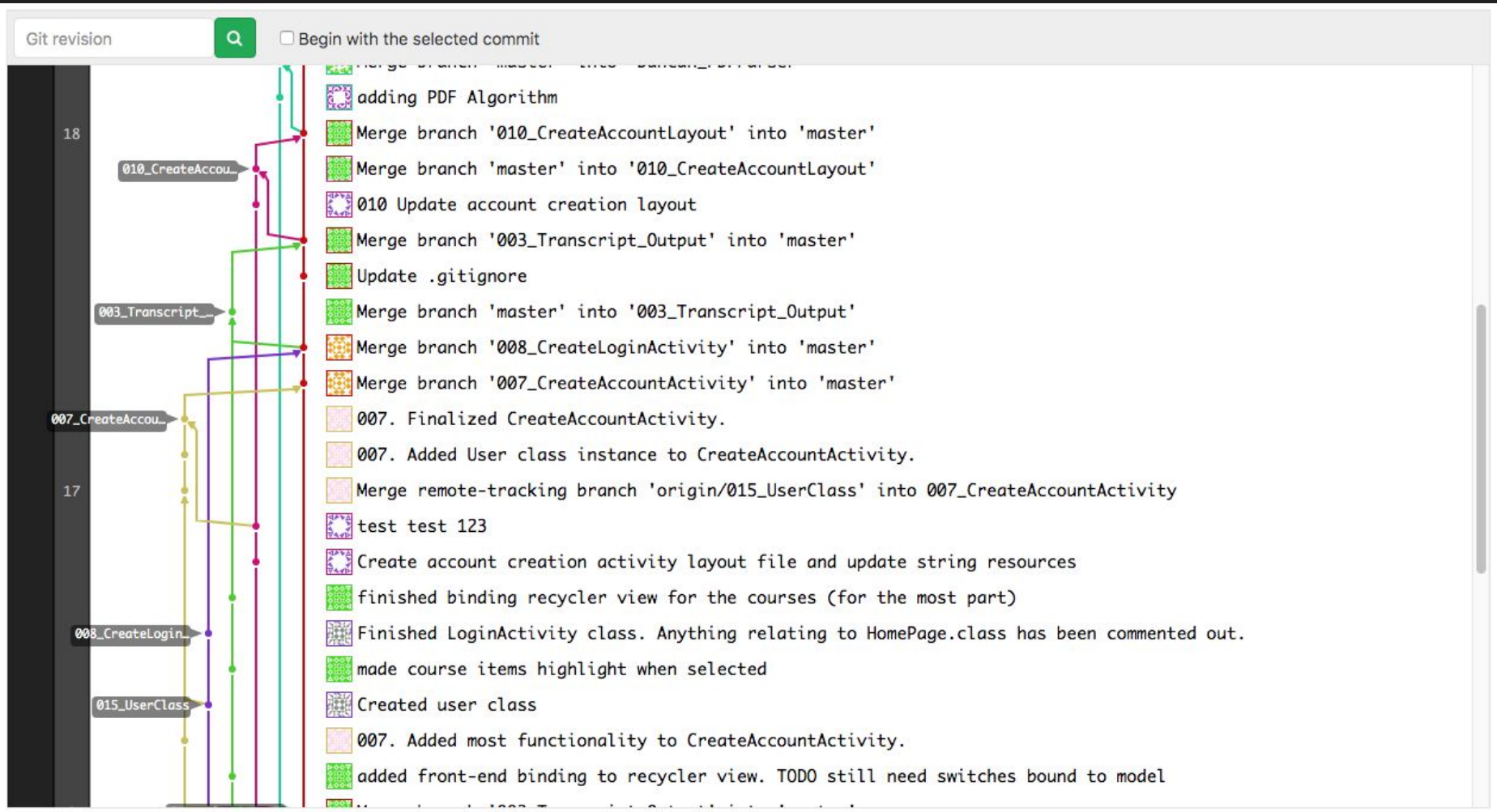









Boards
Trello
This board is set to public. You can change its visibility at any time. Learn more here
Tutor Dash Prototype
CS 411W Gold Free
Public
Invite
Show Menu
To Do
012. Add functionality to allow existing users to reset their password
Sep 17
013 Add restrictions to user functions until email has been confirmed.
Oct 2
018. Update styles for activity_choose_courses.xml and activity_upload_transcript.xml
Sep 24
022. Create Map Discovery Activity (with google map)
Oct 2
023. Create Text Discovery Activity
Oct 2
024. Create Sort View Fragment
Oct 2
025. Create reusable discovery tabs with BottomNavigationView
Add another card
In Progress
019. Create ForgotPasswordActivity and ResetPasswordActivity
Sep 24
017. Modify LoginActivity to use Cloud Firestore
Oct 2
021. Fix CreateAccount issues.
Add another card
Ready For Testing
009. Write tests to check if new users have actually been added to the database
Sep 17
Add another card
Begin Tested
Add a card
Passed Tests/Done
005. Set up user accounts in Firebase
Sep 17
004. Front end for phase 1 UI/UX (login screens)
Sep 17
011. Implement PDF parser to find course ids and grades. Also do checks to validate the integrity of the document.
Sep 17
020. Fix bug where recycler view in ChooseCoursesActivity is selecting multiple items when one is clicked.
Add another card
Merged to Master
002. Initial git commit for project skeleton (with dependency files)
006. Add ability to upload documents in UploadTranscriptActivity
Sep 17
010. UI/UX (create account layout)
Sep 17
015. Create a User class.
Sep 17
007. Create CreateAccountActivity.
Sep 17
008. Create LoginActivity
Sep 17
003. Display output of pdf parser when tutor signs up (doesn't need to update DB yet)
Sep 17
014 Add loading screen to
Add another card
Add another list


Git revision
Begin with the selected commit
adding PDF Algorithm
18
Merge branch '010_CreateAccountLayout' into 'master'
010_CreateAccou
Merge branch 'master' into '010_CreateAccountLayout'
010 Update account creation layout
Merge branch '003_Transcript_Output' into 'master'
Update .gitignore
003_Transcript_
Merge branch 'master' into '003_Transcript_Output'
Merge branch '008_CreateLoginActivity' into 'master'
Merge branch '007_CreateAccountActivity' into 'master'
007_CreateAccou
007. Finalized CreateAccountActivity.
007. Added User class instance to CreateAccountActivity.
17
Merge remote-tracking branch 'origin/015_UserClass' into 007_CreateAccountActivity
test test 123
Create account creation activity layout file and update string resources
finished binding recycler view for the courses (for the most part)
008_CreateLogin
Finished LoginActivity class. Anything relating to HomePage.class has been commented out.
made course items highlight when selected
015_UserClass
Created user class
007. Added most functionality to CreateAccountActivity.
added front-end binding to recycler view. TODO still need switches bound to model

Future Expected Challenges

- Limited Android development experience amongst team members
- Receiving adequate permission to access users' Google Calendars
- Linking front-end with back-end
- Receiving messages between users in real time
- Handling of funds between tutees and tutors
- Implementing the "handshake agreement" to initialize start of meeting
- Implementing notifications to alert users about potential compatible tutors/tutees
- Receiving a competitive rate accurately calculated based on a variety of factors
- Creating a google map with interactive markers that represent other users currently online
- Testing the user experience
- Development time constraints

Future Expectations For Progress

- One Month from now
  - Roughly 50% complete
  - Done with UI/UX phases 1 and 2, View 1, and most of View 2.
  - Fully-functional Membership and sign-up capabilities
  - Users will be able to search for other users based on user-defined filters
  - Current user will be placed on interactive google map
- Two Months from now
  - Roughly 90% complete
  - All activities and layouts for every screen in UI/UX will be complete
  - Users can schedule meetings
  - Pay rates and payments will be automated
- Two Months + Two Weeks from now
  - 100% complete
  - Algorithms will have full test suites of mocked data to support credibility
  - All available users will be displayed on the interactive google map

Questions?