Design and Develop Mobile and Web Applications
Final Project Report

# QUICK COMMUTE

# TEAM 6

Eamon Glackin | Kaitlin Heneghan | Alejandro Porcel | Kavitha Vishwanathan

# EXECUTIVE SUMMARY

Quick commute is a simple platform app which tells you what track your train is on for the following lines: LIRR, MTA Metro-North, and New Jersey Transit.  This app is perfect for commuters as it stores your favorite route and time, which allows for an immediate update of your train with one "click" of a button. The clean and simple interface helps you find your train quickly when time is of the essence.

# INTRODUCTION

This project arose out of the continual frustration of racing through the train station, not knowing what track your train is on, and the panic setting in that you will miss your train as you try to scan and understand the huge time table in the middle of the station.  While Quick Commute benefits anyone in this situation using the LIRR, Metro-North, or NJ Transit services, our team has concluded the app will be most beneficial to commuters who inevitably end up racing to the train station so they are not late for work.  Through Quick Commute, users will be able to worry about one less thing on their way to or from work.

# APP OVERVIEW

The application is extremely simple to use.  Upon downloading the app you will be instructed to create a profile, which includes your name, email, home station, and favorite destination *(Screen 1)*.  Once your preferences are set, you will be directed to the following page.  Here, you can either use your saved preferences
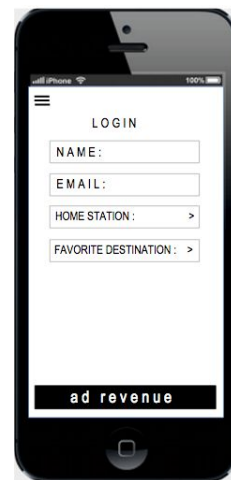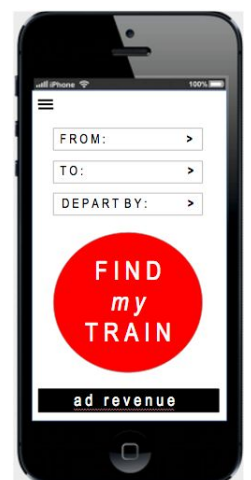


Screen 1    Screen 2

or enter a new route.  Then, simply press the big red button *(Screen 2)*.

The app will then generate a list of all of the upcoming times for your departure and the designated track for each train *(Screen 3)*.  Finally, share your status, route, and ETA with your social media followers through the social link on the side bar.  This also serves as a marketing tool to increase word of mouth from our current users to our potential users *(Screen 4)*.



Screen 3          Screen 4

## MARKET ANALYSIS

**Target Market**

The target market for Quick Commute is daily commuters on the LIRR, MTA Metro-North, and New Jersey Transit trains.  While there will be users outside of this target market (weekend users, rare users, tourists) our focus will be targeted to these daily commuters.  According to the American Public Transportation Association the number of unique weekday riders on these three trains is 483,000 (169,000 on the LIRR, 162,000 on New Jersey Transit, and 152,000 on the Metro-North).  Across these three lines, the ridership is growing at a rate of 1.5% annually (New Jersey transit: 2.59%, LIRR: .31%, and
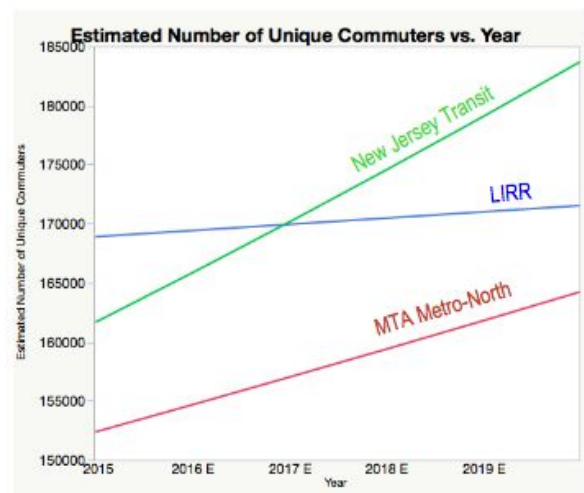
Metro-North: 1.51%).[1]  Based on these figures we can anticipate this total number of commuters to be 520,000 in 2020.

**Revenue Model**

The sole source of revenue for this application will be from in-app advertisements.  While the first year of our business will be selling general ads as a source of revenue, as our user base grows and we acquire more customer data (such as their location, where they spend the most time, location at certain times of day) we will use this information to sell customized paid ads to advertisers.  This targeted advertising will increase our price of eCPM's and eCPC's so that our revenue will grow not only with this increase in users but also with the increase in specific, targeted user information. Conversion rates also increase as ads become customized.  We have estimated a click-through rate (CTR) of ads to be .23% in 2017 and then increase to .37% in 2018, to .4% in 2019 and 2020 due to the increase in customer information.

---

[1] http://www.apta.com/resources/statistics/Documents/Ridership/2015-q4-ridership-APTA.pdf

| | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|
| Number of Riders | 500,000 | 504,000 | 512,000 | 520,000 |
| Download Rate | 30% | 35% | 40% | 42% |
| App Downloads | 150,000 | 176,400 | 204,800 | 218,400 |
| Conversion Rate - Post Download | 10% | 10% | 10% | 10% |
| Non-Converters | 135,000 | 158,760 | 184,320 | 196,560 |
| Have internet | 85% | 85% | 85% | 85% |
| Non-Converts, Evaluated App | 114,750 | 134,946 | 156,672 | 167,076 |
| Minutes Spent in App | 5 | 5 | 5 | 5 |
| Impressions/Min | 2 | 2 | 2 | 2 |
| Total impressions | 1,147,500 | 1,349,460 | 1,566,720 | 1,670,760 |
| ~ eCPM | $3 | $4 | $4 | $4 |
| Total Clicks | $2,639 | $4,993 | $6,267 | $6,683 |
| ~eCPC | $4 | $5 | $5 | $5 |
| **Revenue from Non-Converts** | **$14,000** | **$30,363** | **$37,601** | **$40,098** |
| Converters | 15,000 | 17,640 | 20,480 | 21,840 |
| Minutes Used (5 miutes a day, 5 days a week, 16 weeks a year) | 400 | 400 | 400 | 400 |
| Impressions/Min | 2 | 2 | 2 | 2 |
| Total impressions | 12,000,000 | 14,112,000 | 16,384,000 | 17,472,000 |
| ~ eCPM | $3 | $4 | $4 | $4 |
| Total Clicks | $27,600 | $52,214 | $65,536 | $69,888 |
| ~eCPC | $4 | $5 | $5 | $5 |
| **Revenue from Converts** | **$146,400** | **$317,520** | **$393,216** | **$419,328** |
| | | | | |
| **Annual Revenue** | **$160,400** | **$347,883** | **$430,817** | **$459,426** |

## PROBLEMS ENCOUNTERED + LESSONS LEARNED

**Getting real time api data from LIRR and NJT**

Long Island Rail Road (LIRR) api was not too difficult to find and use, even the information was easy to read. The api offers a very useful tool that help finding the next train that goes from one station to another, with these two parameters. Even the time could be a parameter and the api was able to give information. The main problem here is that there is a very complicated JSON file to decipher in order to get the necessary information.

On the other hand, New Jersey Transit (NJT) offered a very safe for developers api. There are some requirements that we should consider, for example: to be aware of updates and download every new table. JSON file has to be explored more difficult because there is no function which

returns in this format with information about a "from-to" query. But, there is all information about trains departing from the point we could choose, and all stops per train.

**Could not find real time api from Metro North**

There is actually a webpage that helps with this Service, but there is no api available, there is only broken links. Unfortunately this led to us not being able to include Metro North in the app for now.

**IOS and PhoneGap requirements**

The process of obtaining and creating a provisioning profile and a key for iOS was extremely difficult. In fact, I may not be able to replicate the process without having to look it up again plus more trial and error. Once the key was created, however, we were able to sign the app on Phone Gap to be able to create an iOS app.

**Project management**

The way we split up the work, some teammates worked primarily on the Model and Controller parts of the MVC framework while others focused on the View part. This was good in that it could split up the work and speed up development time, but it also led to some issues. The people developing the front end often did not know how to design it in such a way as to make it easy to display the information from the back end or pass data from forms to the controller. Also, the team members developing the backend and writing the majority of the code did not necessarily know how the file structure should be in order to make the app compatible with PhoneGap. Unfortunately we did not have a central project manager who could try to address these issues so they did not come up until very late in the process. In the future, it would be best

to have a project manager in charge who could try to understand what everyone is doing and coordinate. This would also be helpful for keeping people on a timeline.

NEXT STEPS

The immediate next steps for our app would be to be able to collect the data in order to expand to Metro-North as well as find advertisers to support the business. After this, we would like our app to offer SMS updates as a way to offer a higher level of service and efficiency to our users. We would also like to include a place for alerts which would aggregate train information from the internet as well as user uploaded information (similar to Waze). Additionally, we would like to collect and mine our user data over time and provide our advertisers with it to create more customized ads and generate higher revenue for the company. Finally, once all of this has been completed, we would like to expand to other cosmopolitan cities with a train system including internationally.
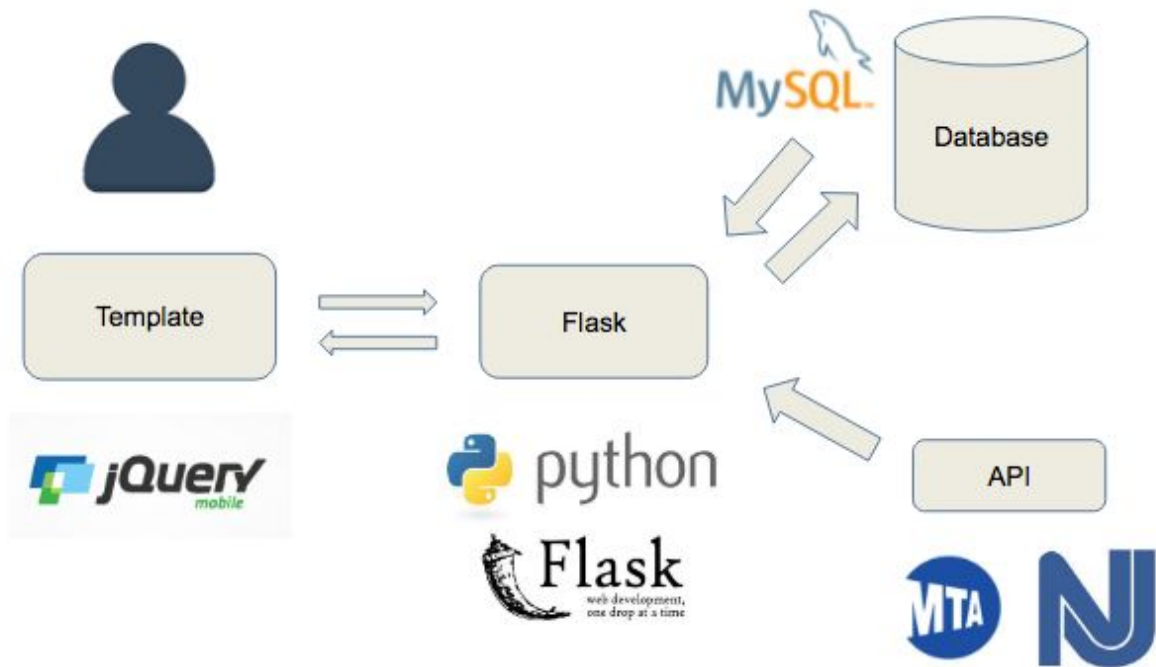
CONCLUSION

We hope that through this app we will be able to provide a solution to a problem that is faced by many commuters (and travelers in general) who use the LIRR, New Jersey Transit, and the MTA Metro-North. We hope to ease the stress of commuters on their way to or coming home from work by alleviating one of the many issues they have to face in their day-to-day life. The anxiety inducing experience of not only running late, but having to search endlessly through a confusing time table while hundreds of people run around you is something that no one should have to deal with. With Quick Commute, commuters are able to eliminate all of this panic with a click of a button, giving them time to focus on what really matters.
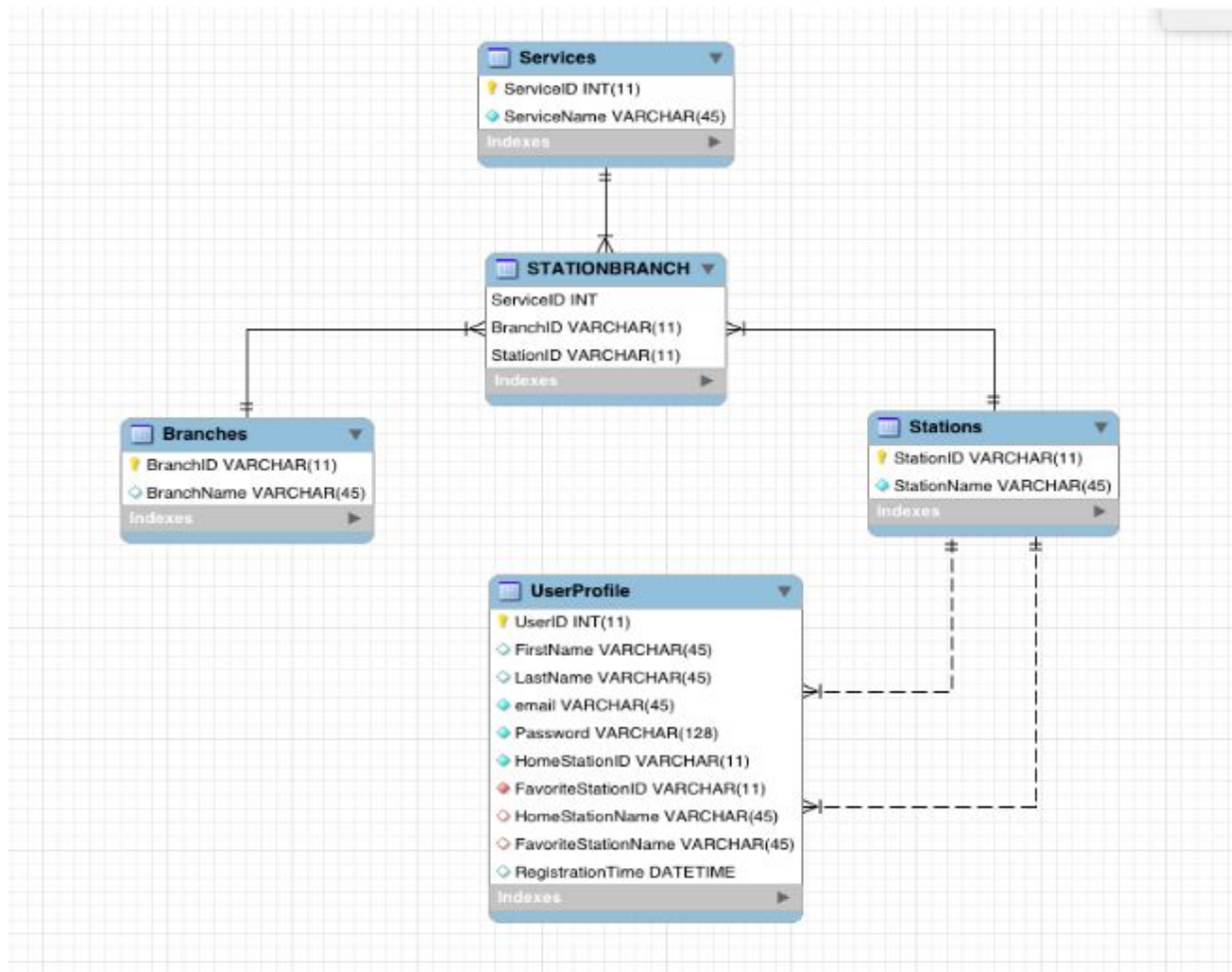
<u>A P P E N D I X</u>

<u>C O D E</u>

All project files including code saved in our group Websys directory:
http://websys3.stern.nyu.edu/websysS16GB/websysS16GB6/

<u>S Y S T E M   A R C H I T E C T U R E</u>

# TABLE DESIGNS



**Services**
- ServiceID INT(11)
- ServiceName VARCHAR(45)
- Indexes

**STATIONBRANCH**
- ServiceID INT
- BranchID VARCHAR(11)
- StationID VARCHAR(11)
- Indexes

**Branches**
- BranchID VARCHAR(11)
- BranchName VARCHAR(45)
- Indexes

**Stations**
- StationID VARCHAR(11)
- StationName VARCHAR(45)
- Indexes

**UserProfile**
- UserID INT(11)
- FirstName VARCHAR(45)
- LastName VARCHAR(45)
- email VARCHAR(45)
- Password VARCHAR(128)
- HomeStationID VARCHAR(11)
- FavoriteStationID VARCHAR(11)
- HomeStationName VARCHAR(45)
- FavoriteStationName VARCHAR(45)
- RegistrationTime DATETIME
- Indexes

<u>U S E R   I N S T R U C T I O N S</u>

Here is how a user should operate this mobile application:

1. **Download app** ▢ - the app can be found in our websys directory at

   http://websys3.stern.nyu.edu/websysS16GB/websysS16GB6/. The app file for android is

   QuickCommute.apk

2. **Register** | New users register an account using their name, email address, home station

   and favorite destination station. (For using the app, the professor can use the global user

   we have created with user email: user@gmail.com and password: user). ▢

3. **Login** | If you are traveling on your stored preferred route, simply press the big red button

   that says "find my train" If you are traveling on a different route, all you have to do is add

   your current station and your destination, then press the "find my train" button.

4. **Train info |** This will then take you to the train page which will list the upcoming train

   options for you, their departure times, and what track they will be on

5. **Menu** | The top menu includes the following options:

   a. **Profile** | Shows your name, email, and preferred route. If you would like to

      change your preferred settings, this is where you can do so.

   b. **Alerts** | This will be in the next steps when we have created alerts based on user

      inputs or news

   c. **Social** | Share your status via your social media pages such as Twitter or

      Facebook. We unfortunately did not add this to our app yet but could in the

      future.