**Abstract**

Bus Alert is a mobile app designed for the bus riders of Lexington, KY. We want to give bus riders with iOS/Android smartphones the power to see the status of a bus stop on the go. We do this by hooking into the GPS data that is present on all Lextran buses in Lexington. We offer a dynamic map that shows the bus stops on a route and the estimated times of arrival for those stops. On top of that, we have implemented a simple notification system that bus riders can use to alert them with information for a stop at a specified time.

**Introduction**

Need: Currently, there is no good method for mobile users to check on the status of the bus while on the go. Lextran provides a good web interface from a computer, but mobile users (until late in the project, when a Lextran iOS app was released without warning) are out of luck. This results in missed busses and unnecessarily long wait times at a bus stop. Knowing the estimated time of arrival of a bus based on its GPS coordinates greatly increases the user-friendliness of the bus system.

Solution: We will create Android and iOS (abandoned after release of Lextran app) application that offers live information and tracking of Lextran bus routes. We will offer an interactive map that can filter by route, then allows the user to view estimated arrival times at a particular stop on that route. We also plan to implement some kind of notification system so that users can be alerted with the estimated arrival times at a specified point in their day. This will benefit the user in that they will know if a bus is delayed 20 minutes. They can know put that time to good use instead of being stuck at the bus stop for that time.

Our customer for this project is ultimately the citizens of Lexington, but our point of contact is Nick Such of Awesome Inc. The project itself is part of the Code For America Civic Initiative that focuses on civic improvement through open source development.

**Specifications**

* Our project will focus on the creation of a bus tracker similar to the one on http://lextran.com/bustracker that will work on mobile platforms.
* At the moment we are planning on creating a native iOS app as well as a native Android app that would allow the user to see the interactive bus map on their phone. Lextrans webapp is formatted such that the map is difficult to use on a mobile device. Our app will fill a void that will help students and Lexingtonians to not miss the bus.
* We want to implement a feature that allows the user to subscribe to a specific stop, at a specific time of the day, for a specific bus, and get notifications that tell when the estimated arrival time of the bus is.
* The success of our project will be judged on the functionality of viewing the real-time bus routes, the user friendliness of the app, and the functionality of the bus subscription feature.

**Future Enhancements/Maintenance**

**Future Enhancements**

* Recurring notification system. A system that allows for a large number of recurring alerts to be created at specific times on specific days of the week. A user could be alerted of the bus times 10 minutes before he usually leaves in the morning, every morning. This would require a screen to create, edit, and remove existing notifications.
* Streamlined Android Layout. None of us were great with UI. Maybe a layout that starts on the map and then uses menu bars to navigate to the rest of the app.
* Text alert system. Implement a webapp for non-smartphone users that would allow them to set an alert and receive text message updates to their non-smart phone.
* “You Are Here” feature of map to communicate to the user where they currently are.

**User Raised Issues During Testing**

* App does not tell the user where they currently are on the map. User noted that it would be a useful feature for those not familiar with the geography of Lexington.
* Filtering routes in the interactive map did not remove the stops from the previous route selected. As you selected different routes, the stops from the old routes would remain on the map.
* Upon opening the map, exiting, then trying to reopen the map, the application would close unexpectedly.

**Project Features**

* Interactive map that is reached from the menu by clicking on the “Map” button. Map dynamically queries Lextran’s API and allows the user to select the route (hardcoded) they wish to look at, then dynamically populates the stops that are on the route. When a user clicks on a stop, the next estimated times of bus arrivals are dynamically retrieved and then displayed.
* The notification settings page. Has a similar set up to the map with pull-down boxes to select route and stop. Then has a time selecter and a button to produce a notification at this time. The notification includes the same info that would be displayed if the user had clicked on the stop from the map.

**Conclusion**

From this project we learned the basics of mobile app design in both Android and iOS. Even though the iOS app was discontinued because of Lextran’s application release, we were still able to gain the basic knowledge needed to develop an app in iOS. We also learned about the difficulties of UI, and how difficult it can be to make a simple interface for the user of an application. If we had known ahead of time that Lextran was working on an iOS application, we would have focused all of our efforts on the Android app’s development.

Nick Such is pleased with the outcome of the app. We have been in contact throughout the development of the application. He understands the development decisions we have made throughout, and is happy with their results.