SECTION A

Project Title: Which Way

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SECTION B

GENERAL OUTLINE

The aim of this project is that while cycling, the cyclist is able to easily identify the directions to take to get to their desired destination. It is a navigation app that will interact with GPS as well as an LED board which would be mounted on the bicycle and it will simply provide a left, right or straight-on indication as the cyclist approaches a junction. It will be an android app that runs on Google Maps servers. All you do is plug in your destination, start riding – but this time, you put your phone in your pocket. The Bluetooth paired processor will use the app as GPS and will light up the LEDs mounted on the bike to tell the cyclist where to turn. Also, because the app will run with Google Maps, if the cyclist takes a wrong turn, the software will re-route.

OUTLINE BACKGROUND

Cycling has always been a great way to get around, but it does come with some challenges. Finding your way often meant that you would have to stop regularly to check maps or sometimes even following prescribed instructions that do not work well in very busy urban environments. Also, it spoils the fun. This is where the project idea stemmed from. It had always been a pet peeve of mine that when I go cycling with friends of mine for adventures we would either have to mount our phones on our bikes or have to stop to memorise the next turns to take to lead us to our destination. This took a lot of safety risky especially having to focus a lot more on going the right direction than just looking at a glance and understanding where to go. It proved quite distracting. Why not create an interface that would simplify us cyclists assimilating the directions to take without us having to take a long look? This was how I got my idea.

ACHIEVEMENT

The function that this idea provides is that it makes cycling a lot more safer. Checking how you're doing just by taking a quick glance which leaves you free to focus on the road as well as your surrounding instead of looking for street names or working out which one is the right turn. Since bikes come in different shapes and sizes, it'll be made sure that it can be fit onto any bike. The app will be programmed for Android meaning it will be used by any cyclists that have an Android powered smartphones. The user will be able to put in their destination on the app, which would in turn connect to the LED device over Bluetooth. Once a connection has been made by the app and the LED device, the user can put their phone back in their

pockets and begin their journey. The device can be used for any age once they have an Android powered smartphone. Since the navigation system will be in line with Google Maps servers, the user receives the fastest route to their destination.

JUSTIFICATION

I like cycle touring. Often, I find myself going downhill towards a junction, and I need to know (QUICKLY!) which way I'm going. If it's straight through and I know that, then that's great. Just keep rolling. If I have to turn, then I'll have to slow down. I want to glance down and see clearly and quickly exactly which way I'm going. This is just one of the plus sides to having the navigation system I want to create. This navigation system give a cyclist more peace of mind when it comes to safety when travelling to places they are not aware of. Before they approach a junction, a short quick glance and they will be aware of where to turn whilst able to indicate early and safely for drivers to see. It allows cyclists to be able to focus more on the road and also the environment to enjoy nature. This navigation system will also save the battery that would have otherwise been wasted if they phone was out and used as the display. It is useful at any time regardless of it being day or night. Since the displayed interface will be LEDs, they will be bright enough to get the user's attention whether it be bright out or not.

PROGRAMMING LANGUAGE(S)

• Java

PROGRAMMING TOOLS / TECH STACK

• Possibly Flora Adafruit – LED Display or Arduino – LED Display
• Android Studio
• Google Maps API

LEARNING CHALLENGES

• Working with FLORA Adafruit
• Working with Arduino
• Working with Android Studio
• Integrating real time GPS mapping information
• Connecting Android app to the LED display interface

HARDWARE / SOFTWARE PLATFORM

Hardware

• Arduino
• LED board
• FLORA Adafruit
• Android powered smartphone

Software

• Android Studio
• Arduino Software

• FLORA Adafruit software

SPECIAL HARDWARE / SOFTWARE REQUIREMENTS

• Bluetooth connector for either Arduino or FLORA
• GPS connector for either Arduino or FLORA