Essay Outline

1. Brief overview of the purpose of the app, the user-friendly design, how the app communicates with the hub and watch, and briefly mention that future expansions would also include extra features on the app
2. Talk a bit about firmware (communication between hardware and software), how it plays a part in this project
3. Discuss the parts of the app itself
   1. Android app, mention choosing Android over Apple
      1. Licensing fees; would have to pay to develop an app for the Apple app store, free to develop for Android
      2. Majority of Android apps are made in Java; already familiar with this language
      3. I have experience with app development from Processes for Object-Oriented Software, experience with Android Studio
      4. Explain a bit about the Java code? Efficiency for apps, can be installed on most computers/devices without needing much extra, etc,
      5. The most ideal selection for a college project, also has a wide selection of tutorials and reference material to help with problems and troubleshooting
   2. Logging in, user account linked to the hub, email and password
   3. Three main menus
      1. Map - shows a map of the hub’s area, shows the watch-wearer in the location
         1. Explain a bit about the GSP/map features in Android, how they work
         2. The map will also follow the watch-wearer to help keep track of their location outside of the hub’s area
      2. Alerts - shows alerts that have been sent to the account concerning the watch-wearer’s status
      3. Settings - change settings of the app
4. Explain how the app communicates with the hub, probably have to discuss how the alerts are sent; how the hub’s hardware works well with the software of the app
5. Discuss testing and development of the app over the course of the project
6. Discuss how the app is designed to be user-friendly, mostly through simple menus and alerts
   1. Also mention how the app is easier to manage than sending text messages directly to the phone; texts can be possibly lost or just hard to find on the phone among other texts
7. Talk about possible future expansions for the app
   1. Multiple watches for a single hub, or multiple watches with multiple hubs; thus multiple hubs/watches can be associated with one account
   2. Keep track of multiple hubs/watches via the map, have separate alert windows for each hub/watch, etc.
   3. Send regular alerts to the app to let the user know the watch-wearer is doing okay
8. Conclusion, explain what you got out of this project, and hope for the future (maybe?)

Planned pages so far:

1. Executive Summary 1 page
2. Previous Products 4 pages
   1. Comparison benchmarks table 1 page
3. Android Application
   1. Android and Java 3 pages
   2. Features
      1. Menus 2 pages
      2. Functions 2 pages
   3. Application Design
      1. Software Goals for the Application 1 page
      2. Communication with Hub 2 pages
      3. Code Flow 2 pages
      4. Diagrams and Structures
         1. Class Diagrams (UML) 1 page
         2. Data Structures 1 page
   4. Application testing 2 pages
4. Administrative Content
   1. Budget and Finance 4 pages
   2. Milestones and Timeline 4 pages

Firmware

The firmware of a device is how its hardware and software components communicate with each other. For this project, the firmware refers to the permanent software within the hub and watch. The watch itself is programmed with two basic functions. Once is to tell the current time and date. The other is to tell the hub and the app its current location via GPS.

Meanwhile, the hub’s firmware allows it to check the status of the watch and send alerts to the app. The watch’s status would simply be whether or not it is within range of the hub. The alerts are sent whenever the hub detects that the watch is out of range. The alerts themselves tell when the alert was sent, and around what time the watch left the hub’s scope.

The firmware works by sending and receiving signals, namely from the watch to the hub, and from the hub to the app. As discussed in other parts of this report, the watch’s GPS module sends out information to the app concerning the watch’s location.

[Need to add more, more research]

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6.1.3 Software

The following few sections will go into more detail on the software within the watch itself.

6.1.3.1 Class Diagrams

Here are the class diagrams for the watch.

6.1.3.1.1 Software Goals for the Watch

The main software goal for the watch is to make sure that it gives an accurate reading of its location.

6.1.3.1.2 Functions

The main function of the watch is to give its own location via GPS.

6.1.3.1.3 Communicating with the Hub

The Wander Watch will be able to communicate with the hub to indicate that it is still within range.

6.1.3.2 Data Structures

The data structures used to implement the functions of the watch are vital to ensure that the watch performs its tasks efficiently and correctly.