Requirements and High Level Design Version I

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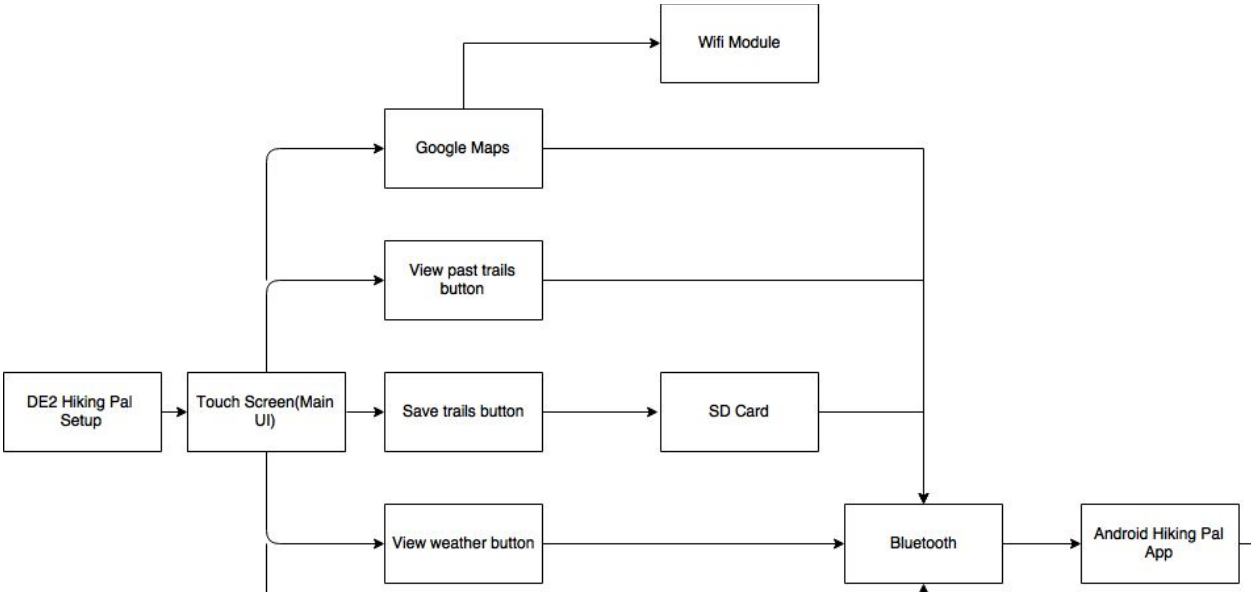
For Module 2, we are planning to develop a Hiking Pal Android app. This idea is carried forward from Module 1. This app can be used by users while on a hiking trip to enhance their experience.

Requirements

- Users can view the hike trails with corresponding weather information, as well as the nearby attractions.
- Users share their hiking routes, with related information, via Bluetooth to others
- Users can track his paths, and view other group members' location.
- Users can use the touch screen as an extended display to the Android app to minimize UI navigation. For instance, pressing the 'rate trail' button would lead to the DE2 board touch screen instead, so that the Android app doesn't need to navigate away.
- Users can use the app for recreational purposes such as interactive games or scavenger hunts which employ the DE2 touch screen for display.

High Level Design 1

Block Diagram



This design will build off the existing functionality that we implemented in module 1. All the new features that we add will be in the form of a button in the touch screen, which will execute in the Android device via bluetooth. The touch screen will always be showing the

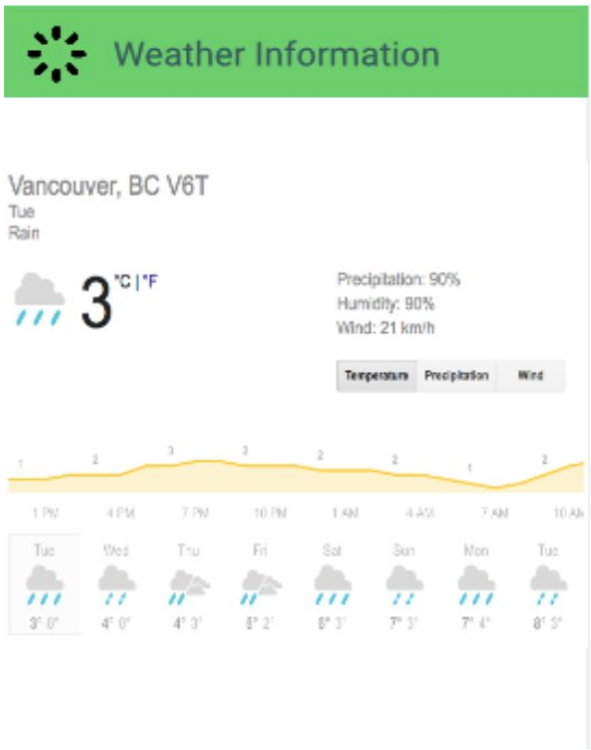
user's Google Maps location with buttons underneath. Displaying the Google Maps requires the use of the touch screen, wifi module and SD card as explained in module 1. The new features will be accomplished on Android device. For viewing weather, the Android device can consume a weather API, such as the OpenWeatherMap API, and display the corresponding information. For viewing trail options, the Android device can use the Google Places API to obtain a list of nearby attractions and display these spots as a list on our application.

The advantage of this design is that we can use all functionality developed from module 1, and build off of it. The disadvantage is that some of the features we implemented in module 1 could be better implemented in the Android app instead. For example, displaying the Google Maps on the DE 2 board touch screen is rather slow, low quality, and does not supporting zooming and scrolling. The tradeoff is time versus quality.

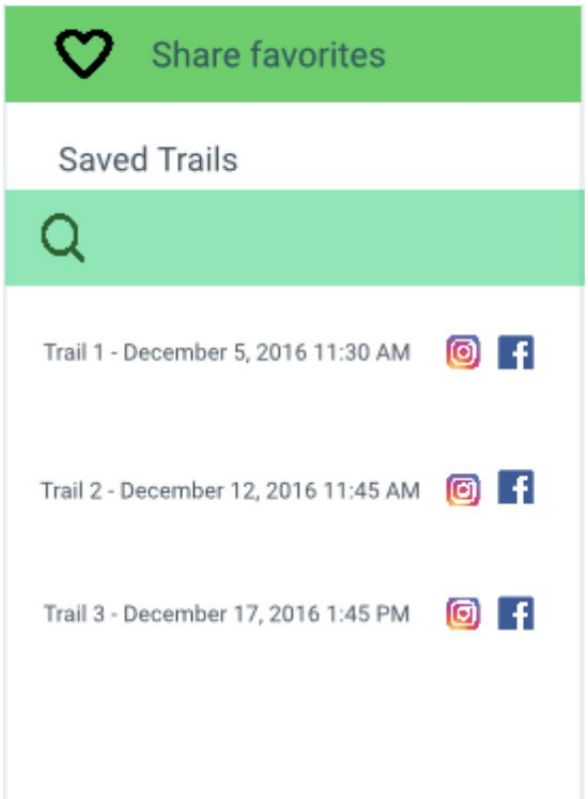
User Screen Prototypes

For this design, the Android application will be using most of the features as designed during Module 1 with a few extended features. The main driving force in this design in the DE2 implementation using the touch screen to display most of the features and options. The additional features that will be implemented for the Android application are listed below:

1. View trail options and attractions : An option to view an extended map of the trail and thus various trail options and attractions will be provided in the Android application.



2. Weather information: Before connecting to the DE2 setup, the user can view the weather for the day and decide whether it is conducive for him to venture out on a hike for the day.



3. Share favorite trails on social media: The trails that have been saved on the SD card by the DE2 setup can be retrieved on the Android application. A search feature will be provided and the user can share saved trails on social media.