Final Project Report for No Bugs Allowed; Beacon

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1. Executive Summary

This is the final project report for No Bugs Allowed's Capstone project, Beacon. As a reminder, Beacon is a social medium of places where users can create, view, and share interesting locations and locales with others. It is an Android application using Google's Maps API and developed with Android Studio.

This report will cover the final delivered product of this project. This includes the final project requirements, the final timeline, the final product, comparisons with the initial expectations for each of these three segments, a review of the project process our group followed, and an overview of additional work to be done in the future. Each of these parts has been afforded its own section or subsection. Please refer to the Table of Contents above for the page number of any listed section or subsection.

2. Final Project Requirements

Our group decided early on in this project to utilize two services, GitHub and Trello to aid our development. The latter specifically was chosen to help us to conceptualize, document, and communicate the project's requirements. For better understanding, a screen capture of the current status of the Trello Board is included below. This tool was vital to our development.

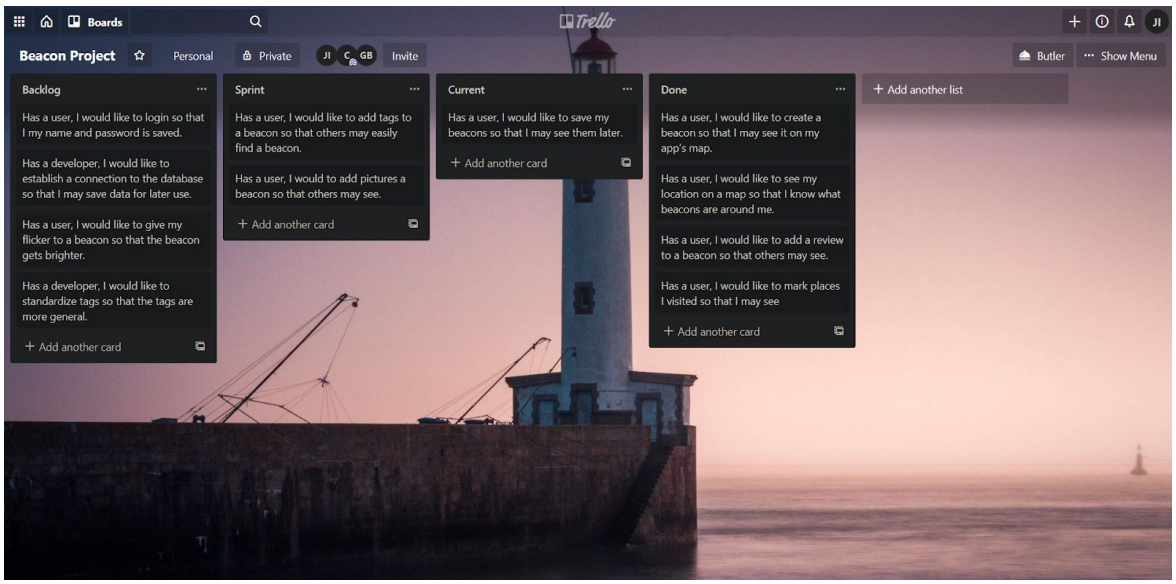

Figure 1: Screen capture of the project's Trello Board as of April 23, 2020.

From the above figure, we can see a total of ten requirements that were outlined for this project. At the time of writing, three of these requirements are considered met and are at a final or semifinal state: creating beacons, see current location, saving viewed beacons. These three requirements encapsulate what we believe to be the core experience of the application. Thus, they were at the forefront of our development. We decided they needed to be completed for the project to reach a minimum viable product and first release.

Another single requirement, that of adding images to an existing beacon, is positioned in the 'current' column, meaning it is actively being implemented. In addition, two other requirements, adding tags and reviews to existing beacons, is placed in the 'sprint' column. These are requirements that are planned for the current or next sprint. They may have seen some sort of implementation already, but, for the most part, they are in pre-planning stages. These three requirements, across the two 'current' and 'sprint' columns, are not included in the first release that accompanies this report. We view them as secondarily-important requirements.

The last column we see is the 'backlog' column. This column is reserved for requirements and features we have identified as necessary for a full, official release but are not yet implemented. In almost all cases, these requirements have seen no work done and are not even in pre-planning.

2.1 Comparison with Initial Requirements

At the project's outset, when the idea of Beacon was very much nebulous, we identified six total requirements. These were pulled from the Project Plan document submitted in late January.

1. Users would like to create their own beacons
2. Users would like to view nearby beacons to their location
3. Users would like to grow the beacons they enjoy
4. Users would like to maintain a persistent account
5. Users would like to save beacons for later or offline viewing
6. Users would like to add images, descriptions, or tags to beacons

Of these initial six, all are present, in some form or another, in the list of final requirements. The first two and the fifth items are considered done and in a semifinal state at this time. The sixth item has since been separated into three distinct requirements, one of which is actively being implemented; the other two are planned next for implementation. The fourth item has since morphed into the idea of user login system and is currently sitting in the project backlog for future development.

3. Final Timeline

During development, our group did not maintain very specific logs. That is partially a result of our personalities and approach to development and partially a result of the various setbacks with which we were dealt. Thankfully, there is a means to quantify our development timeline. As was mentioned in the previous section, one of the tools our group decided early on to use in the course of development was GitHub. GitHub includes a feature that shows contributions to a repository over time. For our purposes, we'll use this chart, seen in Figure 2, as a substitute for our development timeline.

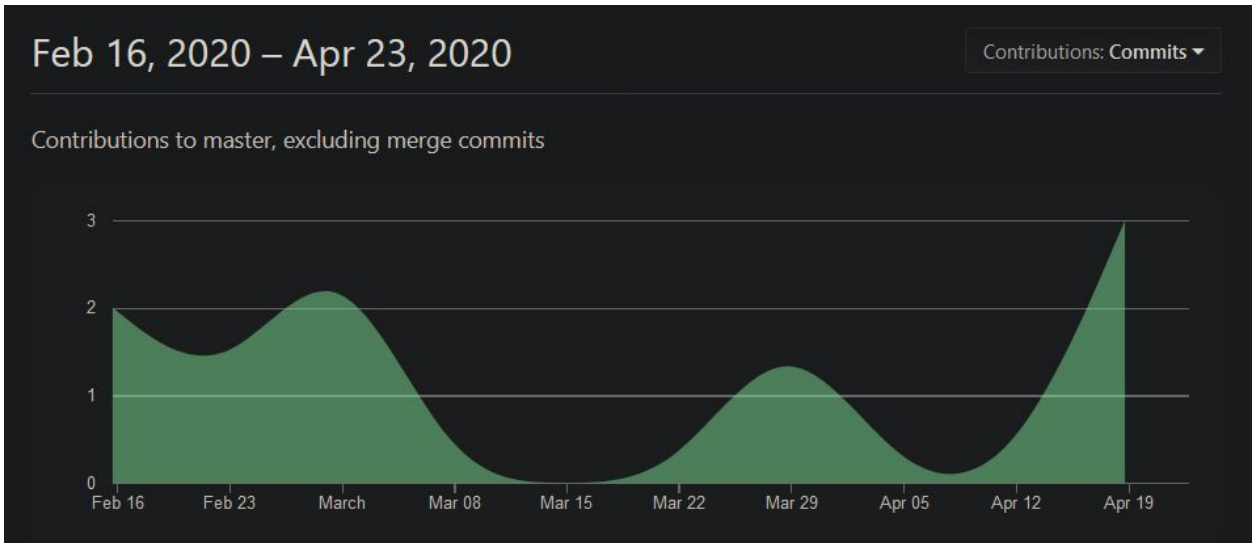

Figure 2: A graph over time of our group's contributions to the project's GitHub repository. Retrieved on April 23, 2020.

As can be seen in the provided figure, our development included three spikes of development over time. These spikes coincide with the sprints our group was able to complete.

More specifically, our group had three sprints running from roughly February 23rd to March 8th, March 22nd to April 5th, and April 12th to April 24th, respectively. These sprints, other than the last which ran until the final submission deadline, were conducted over two weeks with at least one week separating them.

Not shown in this figure is group meetings that were held. These were very consistent at the beginning of the semester, but as each member's workload in other courses accrued, these meetings became shorter and more infrequent. Compounding this problem was the arrival and subsequent spread of Coronavirus, which further complicated meetings. Despite all this, we still did manage to hold some meetings.

3.1 Comparison with Initial Timeline

Our initial project development timeline was more or less followed in retrospect. The one major difference present is that our sprints were pushed back a week from their planned start. There's not much to say on why this happened. It likely was a result of some stumbling block early on that we have long since forgotten about. Regardless, we had planned on conducting three sprints; we did. We planned on having weekly scrum meetings; we mostly did. We planned to deliver all assignments on time; we definitely did.

4. Final Deliverables and Results

Again here, we utilized GitHub to store our code repository and publish our final deliverable. This repository housed not only the source code, but other, surrounding documentation. We had allotted folders that housed, firstly, the source code, but also manuals and user documents, conceptual and planning documents, and technical documentation. This all can be seen in Figure 3.

<inserting a screen capture here of the GitHib repo after I reorganize it to the schema described in the readme file>

At the time of writing, the project mainly consists of an Android application. Like was previously described in the requirements section, the app has three essential features. The first is the ability to create and view beacons. This is the most integral part of the project. The other

two, the ability to view other beacons near your location and to mark beacons as having been previously viewed, are also equally important features and have been fully, or at least mostly, implemented into this final deliverable. Some features that were planned or are being actively developed are not included. Notably, the project currently has no large interactions with a database

4.1 Comparison with Initial Expectations

The most clear difference between our final deliverable and our initial expectations of the project are the present components. We originally had thought the project would include three components: a client application, a database of beacon information, and a server that handles requests between the two other components. We quickly learned that with our lack of a member possessing cybersecurity expertise, the relatively short development window, and our relatively small development team that deliverable all three of these components would be a near impossible task. Because of this, we chose early on to focus our efforts primarily into the client application, here the Android application. We saw this as both the potentially easiest component to implement as well as the flashiest. The other two components were then either scrapped entirely or offloaded onto outside Google Maps servers, depending on how one wants to view it.

5. Project Process Review

In retrospect, the project process we used had numerous flaws, but, eventually, was workable. We greatly overestimated the time we would have to contribute to this project; in addition, we greatly underestimated how much work that would be. Further complicating this were outside circumstances beyond our control that extraordinarily impacted our productivity. The epidemic and related shutdowns severely hampered our ability to communicate. This, coupled with our already mediocre communication, made working as a team infeasible.

What instead happened was a large fragmentation of responsibility and not along the lines we had initially planned. Core development fell exclusively on one member who had the most Android development experience. Another was responsible for oversight and tracking

progress. The last was left to fill out the various documents and submissions. In the end, we were able to deliver a final product, but the road to get there was a tumultuous one.

6. Work Still to Be Done

As was previously seen in the requirements section, there remains much functionality to still develop and implement into the application in the future. Among this functionality is a standardized beacon tagging system, a search engine to work alongside the tag system, an improved account systems, additional user settings options and customization, etc. With all that being said, all three members of our group are set to graduate and we don't plan to further pursue this project. At least, we do not plan to do so in the near future. We still have some ideas that we would like to see to their conclusion, but there's is no telling when, or if, that will be done.