Google My Business Prototype Integration for Aider

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Project Overview

What is the purpose for this project to exist?

Aider is a digital assistant for small businesses, which gives financial assistance to business owners through a conversational interface for a user-friendly experience. The purpose of the project is to explore increasing the functionality of Aider by implementing the Google My Business API. This would help small businesses have a presence on social media as they do not have time to use social media marketing tools, or do not know how to use them. Our goal is to make the process simple for business owners through Aider's application with the creation of a prototype that will interact with Google My Business.

What goals are identified?

- A customer shall be able to connect their Google My Business (GMB) to the prototype
- The prototype will extract customer data from GMB
- The prototype shall update business opening hours based on data from GMB
- The customer should be able to change their opening hours
- The prototype shall be able to update opening hours on GMB when it is updated on the prototype
- The prototype should allow customers to view reviews from the past month or all they have on GMB
- The prototype should allow the customer to reply to reviews on GMB
- The customer should be able to select a template response for replying to a review
- The customer should be able to manage images uploaded by themselves, or the public, on GMB

Planning

Project Scheduling

We scheduled the project by first establishing that we wanted to use 3-week-long sprints. We then fit the sprints into a Gantt chart, accounting for milestone dates and pausing sprints over semester breaks. To accommodate unexpected Covid-19 lockdowns and changes of schedule, we moved our sprint breaks to the lockdown times and instead worked through the semester breaks. This allowed us to stay on schedule and complete deliverables by agreed milestones.
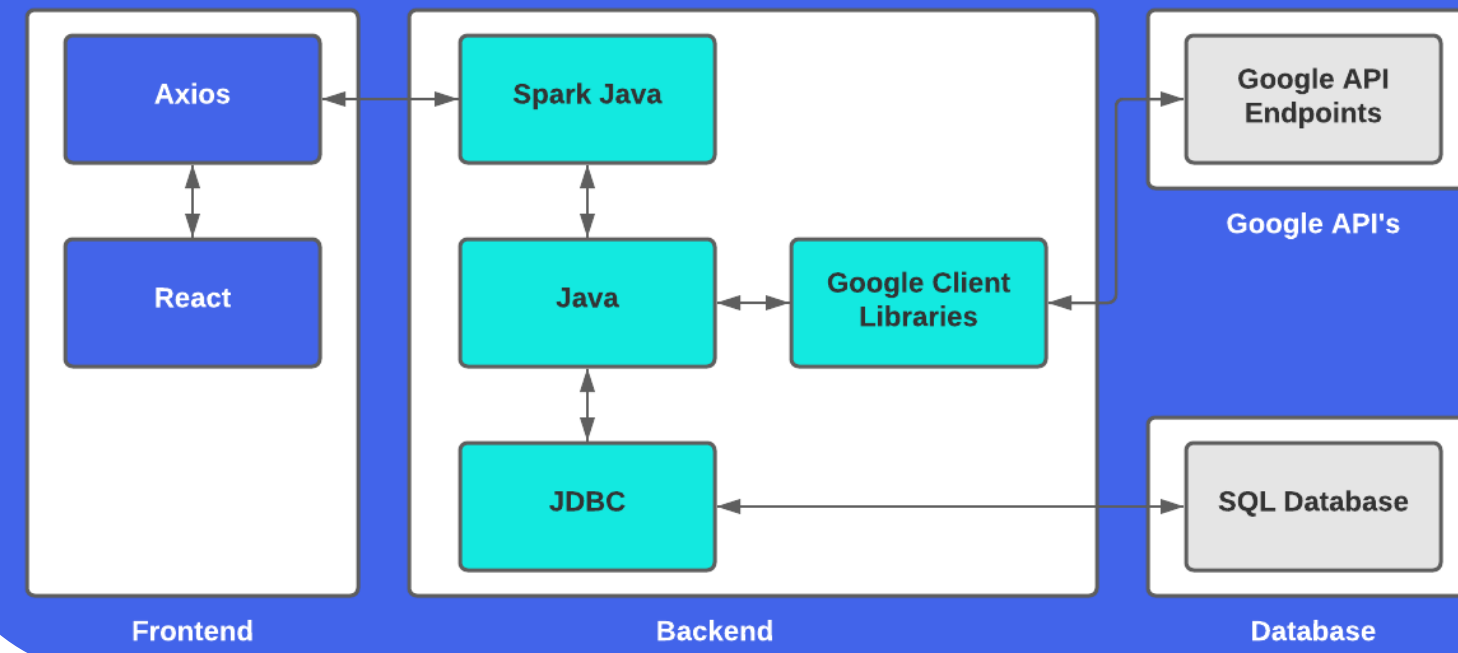
Requirement Refinement

Throughout the duration of the project, our requirements were continually refined and improved. At the outset, we identified requirements relating to the use of both Google My Business and Google Search ads. However, after investigation and after our team members decreased from four to three, we identified that we would not be able to implement both APIs. We spoke to the client and clarified that Aider was mostly interested only in Google My Business, so we refined our requirements to no longer include Google Search Ads.

We also refined several requirements that included the use of an additional Google service, PubSub, to send notifications to the users. After consultation with Aider, we concluded that the additional upskilling time was not worth the requirements, so they were adjusted to use an alternate solution.

Research and Development

The first phase involved research on different technologies and building our tech stack. We carried out technology evaluation reports and investigated different options to determine which stack would allow us to meet our requirements. Initially, we identified the Spring Boot framework as the part of the stack that would allow us to create an API and interface between the back and frontends. However, as we progressed through upskilling with Spring Boot, we discovered that it was overcomplicated for our needs and was taking up un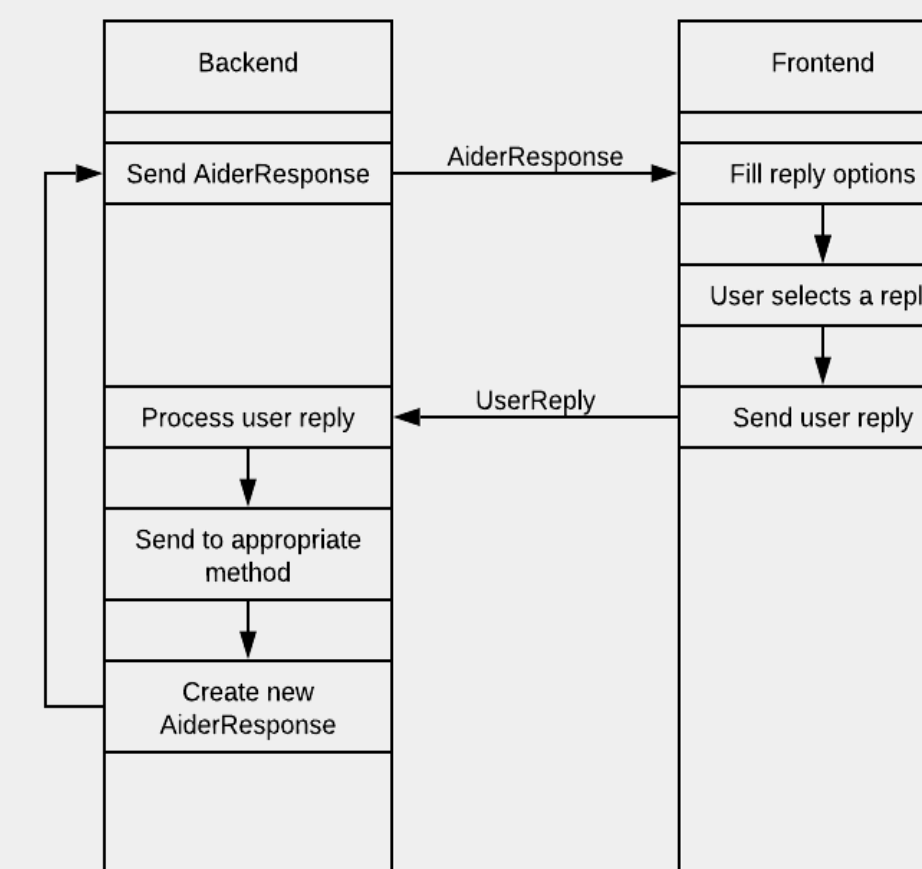necessary upskilling time. To solve this, we undertook further research and identified Spark Java as a simpler framework that would allow us to achieve our goals more efficiently.

The figure to the left is our final tech stack. After identifying our stack, we used the rest of the first semester to upskill on our chosen technologies and tools.

In the second phase of the project, we began development of the prototype. We had significant issues gaining access to the Google My Business API, as the service is restricted and we had to be approved for access. This process was delayed due to Covid-19, which pushed back our planned start date of development. During this time where we were not able to begin integration with the API, we prioritized upskilling and the architecture design of the prototype. We also began work on the fundamental development of the prototype, building the tech stack and creating classes and components that could later be linked to the API.

After we gained access to the Google My Business API, we were able to begin building the features that integrated with the API. We took care to ensure that our code was modular and followed good design patterns so that Aider will be able to build on our prototype.

The figure to the right describes the basic information flow between the backend and frontend of the prototype, and which form transmitted information is received in.

By the end of the project, we had achieved all of the requirements that we committed to. We presented the final prototype to Aider in a handover meeting. Our client contact, Hayley was impressed with the prototype stating in their client feedback form that "they have provided foundational work to make Aider smarter and provide Small Business owners the ability to update the information displayed in their Google My Business profile." Despite the challenges we experienced we were able to deliver on the requirements that we agreed upon with the client to create a functional prototype.
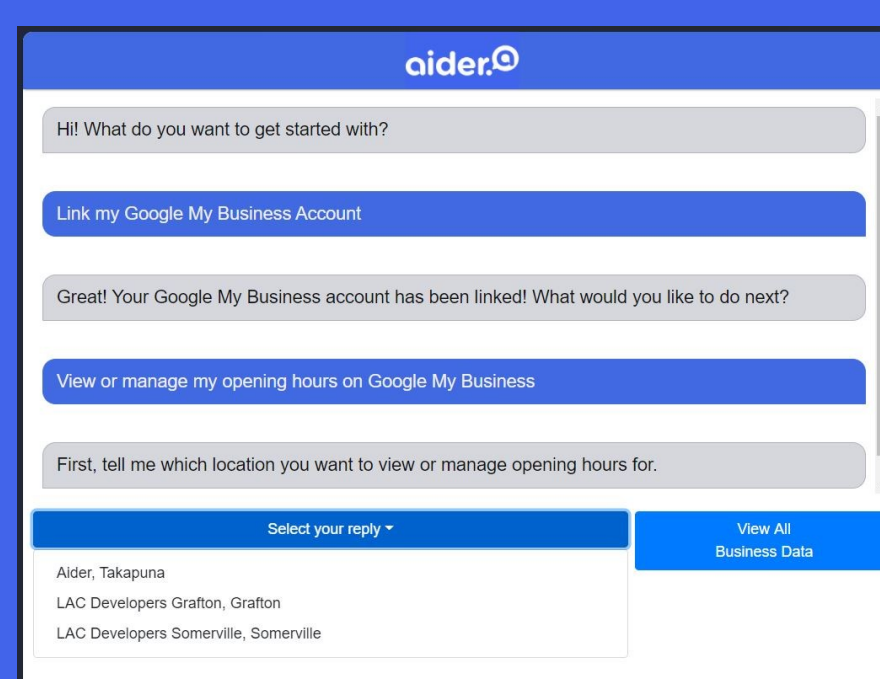
With the prototype the conversation flow allows the user to go through a simulated chat with the system to complete certain Google My Business tasks. In the beginning it will allow the user to authenticate their Google My Business account to allow the system to extract the data then take them to other features to complete tasks. The systems flow allows the user to edit their businesses opening hours, view and reply to reviews on their account and mange upload media on their Google My Business account. Providing the customer with multiple options to be able to efficiently manage their Google My Business account on the systems conversation flow rather than going between multiple UI to edit it.

Process

We chose to use a Scrum (Schwaber & Sutherland) process to control and schedule the development of the project. We utilized the following aspects of Scrum:

- Daily standups, to keep the team up to date and quickly resolve any issues blocking progress
- 3-week-long sprints to time-box and focus our development activities
- Sprint planning meetings, backlog grooming and user story size estimation to manage our product backlog and appropriately assign user stories to sprints and developers
- Sprint reviews and sprint retrospectives to continuously iterate and improve on our own performance
- A storyboard maintained on Trello to visually represent the progress of our product backlog and user stories

Scrum allowed us to be flexible and respond to change easily, which was extremely useful as we constantly adapted to new challenges like Covid-19 lockdowns and change of client contacts.

Challenges and Successes

Challenges

- Getting access to the Google My Business API
- Getting access to a verified business listing
- COVID-19, lockdown and uncertainty on the projects future
- Team member left the project
- Multiple changes of client contact for Aider

Our team encountered multiple challenges with this project due to the evolving nature of the COVID-19 pandemic, as well as changes to our client contact and difficulties gaining access to Google services. We were able to navigate these challenges by being resilient and employing an Agile development method that allowed us to be flexible and adapt to each obstacle.

Successes

- Successfully adapting requirements to deal with evolving needs and challenges
- Developing alternative solutions to meet requirements even under technical constraints
- Achieving all agreed requirements within the time frame
- All team members learning a completely new tech stack
- Successfully developing a full stack application from scratch

Our team experienced many technical and non-technical successes throughout the project. As a team we have immensely evolved our development and professional communication skills.

References

Schwaber , K., & Sutherland , J. *The Scrum Guide*.
https://www.scrum.org/resources/scrum-guide.