

Appendix

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Appendix A: Citations

Works Cited

Fetching Data From Internet | Flutter | http Call. Youtube.com,

www.youtube.com/watch?v=3ht6O1Ax_G0.

"Flutter - Dart API docs." *flutter.dev*, api.flutter.dev/.

Flutter Pagination Example | ListView.builder | Load More on Scroll ListView.

Youtube.com, www.youtube.com/watch?v=scsexlO1ezo.

"How to create a hyperlink in Flutter widget?" *StackOverflow.com*, stackoverflow.com/questions/43583411/how-to-create-a-hyperlink-in-flutter-widget.

"How to show alert on firebase auth errors flutter." *StackOverflow.com*, stackoverflow.com/questions/65190087/how-to-show-alert-on-firebase-auth-errors-flutter.

"Implementing Rest API in Flutter." *GeeksForGeek.org*, www.geeksforgeeks.org/implementing-rest-api-in-flutter/.

"Recursive Bubble Sort." *GeeksForGeeks.org*, www.geeksforgeeks.org/recursive-bubble-sort/.

"split method." *api.flutter.dev*, api.flutter.dev/flutter/dart-core/String/split.html.

Updating with a Stateful Widget. Youtube.com,

www.youtube.com/watch?v=wIKR_pj39SQ&t=2s.

Appendix B: Evidence of consultation

Provide pics of notes, or written notes from every consultation with client and/or advisor. You should have multiple conversations with each, and include full transcripts of each conversation, not just a log of dates/times that conversations occurred.

For the following consultations and interactions, I will be abbreviating their names and role. Below is the legend/key I will plan on using:

Role	Abbreviation
Client	C
Advisor	A

Interactions with Client

Interaction #1

For my first interaction, I reached out to Mr. Howard through email. Below is the email I sent and his initial response:

Me: Hi Winston,

I hope you are doing well! My name is Garv Maheshwari, and I am enrolled in the IB Computer Science HL course. In this course, I have an internal assessment project where I have to develop, over the course of 6 weeks, a software solution for a client which addresses a specific problem. I was wondering if you would be willing to be my client?

As the client, you would provide me a list of requirements/things that you would like to see implemented into a software solution for any specific problem you are facing in any area of your life. Most communication would be done over email, and I will frequently update you on the solution and ask for any feedback once the product is complete. Say for instance, you are having problems with scheduling I could create a planning application to assist you. This is just an example of what a solution for a client might be, and we can further discuss this if you do decide to be my client for this project. Please let me know if this is something that you would be interested in being part of. I have to finalize a client and problem statement by the end of this week, so I'm hoping to hear back from you with your decision by then.

Thanks and regards,
Garv Maheshwari

C: Hi Garv,

I'm happy to be your client and help you define a project. It would be great if you could create an online application that returns product pricing data to users. Hopefully this service will allow users to search for an item, see its current price and set a "price alert". Also, if it could alert once the ideal price is achieved that'd be amazing.

Interaction #2

Me: Hey Winston,

This is a wonderful idea; I will definitely be developing this for my project! For the problem state-

ment, I would like some more context information surrounding it, so if you could answer the following questions that'd be great:

What are some problems that you currently face that provoked you to wish for this application? How will a new application help you? What do you hope for out of this?

Thanks and regards,
Garv Maheshwari

- C:** 1. When purchasing items online, manual effort is required to ensure that you get the best deal. I shop online because it's convenient and comes right to my doorstep. Instead taking the time to go shopping in-person, I'm able to spend more time with family and focus on my work. But recently, even online shopping has become a painstaking task.
2. This application will help consumers like me ensure they pay a fair price for a good. If you create this, it will also help me save a lot of time because ideally, I won't have to go hunting for the best deal across multiple sites.

Winston

Final Interaction

Me: Hey Winston, I hope you are doing well!
I was wondering if you be able to watch this video showcase of the app I created. Let me know if you have any questions and if you could provide me with some feedback that'd be great.

C: Sure thing, do you have a questionnaire or a feedback template that I need to fill out?

Me: I honestly don't but here's some questions if they'll help.

How do you think the "final" product is? Did it meet your expectations?

C: The final product meets my expectations for the MVP. It returns pricing data from competing retailers for searchable items. I like the application allows a user to create an account and does basic email validation on SignUp.

Me: Is there functionality missing or anything you would like to see down the line?

C: It would be great if the application allowed you to bookmark an item so you could be notified about future price changes. Down the road it would be nice if the WebPortal allowed you to compare the same item between retailers without having to click through to the retailers site.

Me: How will this product help you in its current form?

C: I will use the product first when searching for a new purchase like a graphics card. It will allow me to filter between retailers for my price range.

Me: Are there any changes you would like to see?

C: The aforementioned notification functionality as well as the ability to compare products in the webUX. These are stretch goals, the MVP meets my expectations.

Interactions with Advisor

***For this initial interaction, my advisor and I met in person.

Me: Hi Garima, I

I hope you are doing well. I've assigned a client-based project that will be over the next 6-weeks. I have to find an advisor. Would you be willing to help me out?

A: Of course, I am happy to help. What kind of things will you need me to help you out with?

Me: There isn't too much to do on your end. It's just sometimes if I am having lots of trouble, if you could possibly lend me a hand or nudge me in the right direction that'd be great.

2nd Interaction

This interaction with my advisor was done in-person.

A: Hi Garv, how is your computer science project going? Have you gotten started yet?

Me: Yes, thank you for asking. I've started creating the login screen. Beyond that I've just been doing research on what possible APIs I could use. Do you have any suggestions?

A: That's great. I've done some surface level research myself and have found that one may have some potential. It's from BestBuy and has relatively simple documentation. It should be something that you can easily add.

Me: Sounds good. I will definitely take a look.

3rd Interaction

Me: Hi Garima,

Hope you are doing well! I was doing some research on the API that you mentioned and wanted to update you. Unfortunately, I won't be able to utilize the commercial BestBuy API because they have eliminated API key access for free and .edu emails. However, I did find another API repo that BestBuy has released but am unsure if this will work out as it is a localhost API playground. Today I emailed the BestBuy team asking whether they could make an exception.

Thanks and Regards,
Garv Maheshwari

4th Interaction

***This interaction was in-person

Me: Hi Garima Didi, I was wondering if you could help me out. I've never actually used an API and done http calls before and I seem to be having a lot of trouble trying to retrieve the data.

A: Hey Garv, yeah, I can help. What specifically are you struggling with?

Me: For whatever reason when I call both APIs it doesn't display both data sets although they're in the same list.

A: You should doublecheck your API docs and make sure you're using the correct format and search parameters, sometimes if you have them wrong it won't work.

Me: Oh, thanks I got it from here.

Final Interaction

Me: Hey, I was wondering if you wanted to take a look at the video showcase of my IA project. Please let me know if you have any questions and if you have feedback that'd be great.

A: Oh wow, this is an okay application. Nice job. One thing I'll say is that it doesn't look like much even though I know you put a lot more into it. Maybe try sprucing up the user interface. At face value it just seems like the MVP. Also, I was looking at your success criteria and it doesn't seem like you met the requirement for the price alert. Maybe try doing that when you get the chance, it may be challenging but it's going to be rewarding.

Me: I was thinking the same thing about the price alert. It's just I didn't have a lot of time after dealing with the API issues but yeah, I'll do that next. Thanks, Didi.

Appendix C: UI Design Progressions

Preliminary Sketches

Login

Welcome

email

Password

Login

Forgot ?

Create Acct.

Signup

Create Account

First Name

Last Name

email

Password

create account

Main Page

search

\$ Cost

Brand Link




\$ Cost

Brand Link

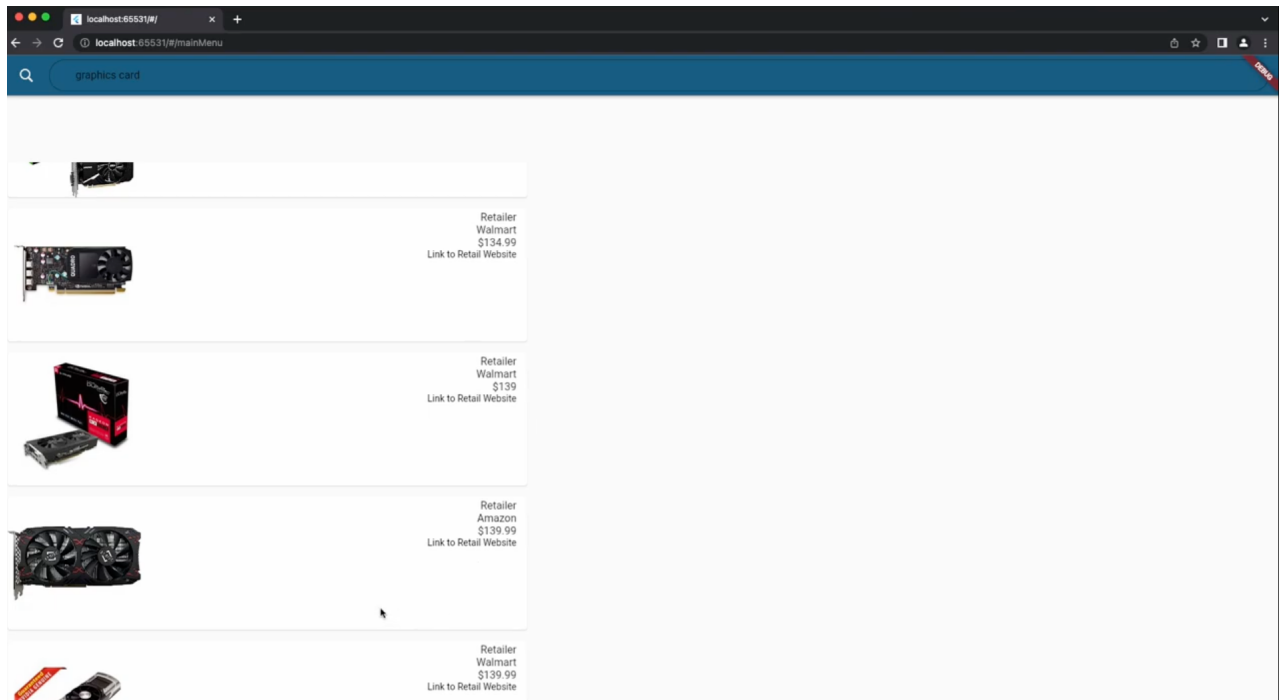
\$ Cost

Brand Link

PriceWatchList

Item link	Desired value
	
	
	

UI Progression 4 Week 4



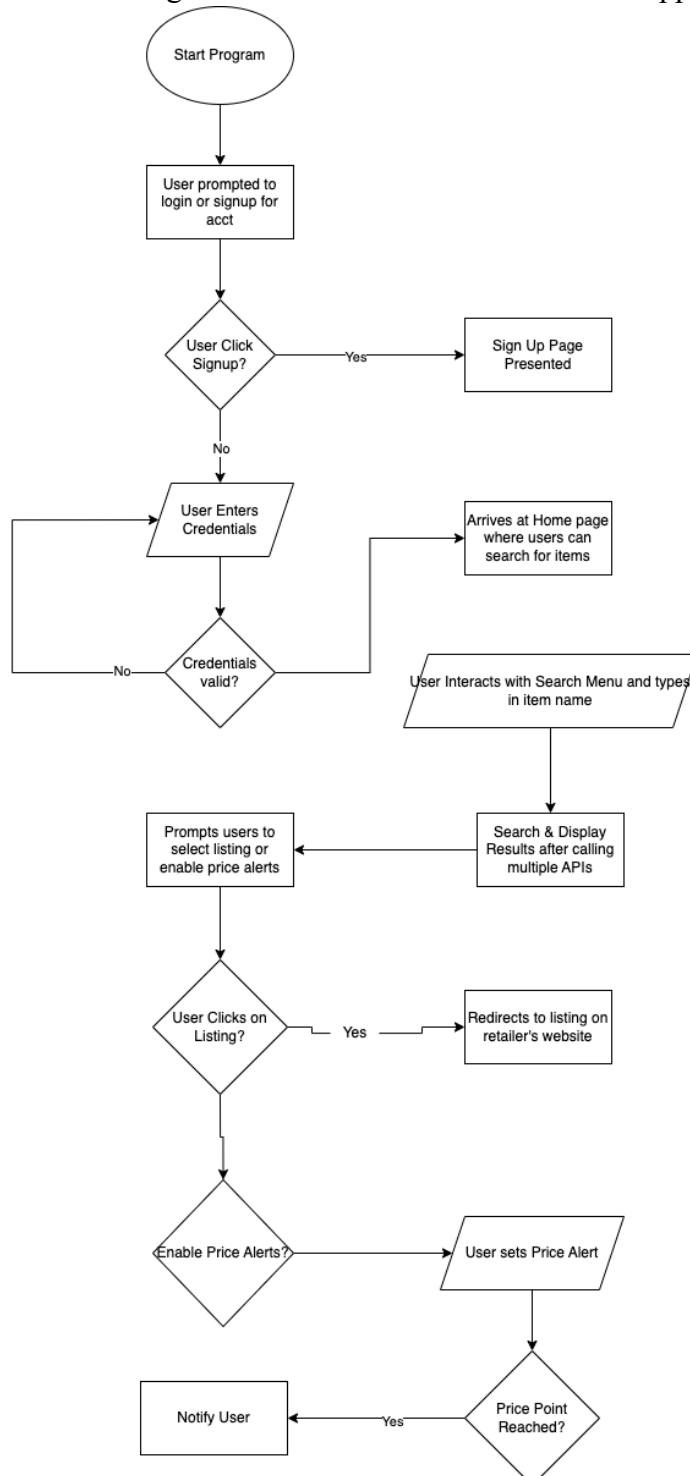
Appendix D: App Design progressions

Initial Design Progression

Criterion B: Design

Flowchart(s)

The following flowchart outlines the workflow of application when a user interacts with it.



Algorithms

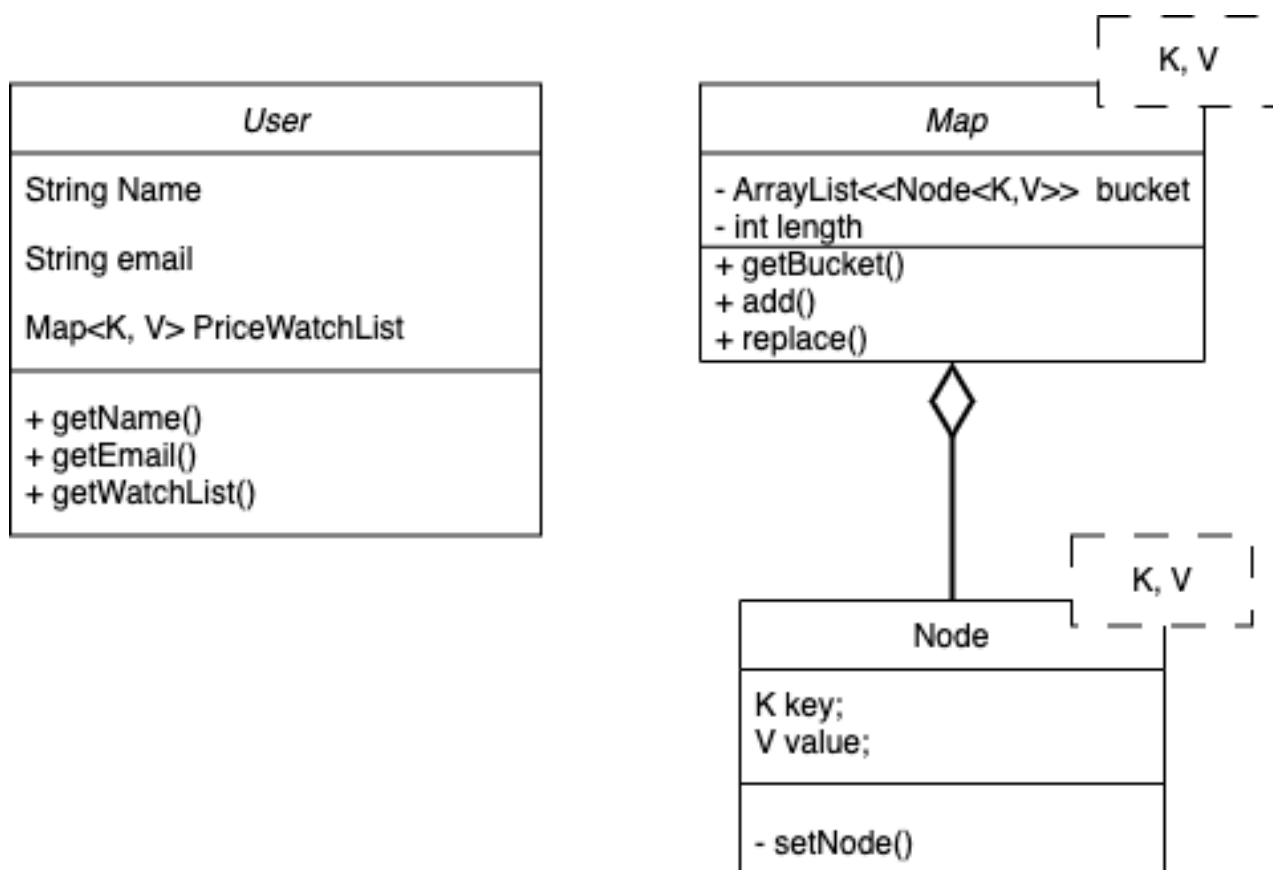
Since this is a web application for comparing retail prices and knowing when the best deals are on the market, I will be using a user-based approach for this. Meaning, if users would like to set a price alert, they will be required to sign up for an account. My intent with this is so that I can send alert notifications to valid email addresses. To help me in this, I will be using Firestore's password management system. Also, I will need to read and write data, mainly to help me retrieve information from multiple retail sites about products.

Data Structures

Since I am making use of price alerts, and having to store a lot of user information that will be stored in the cloud database Firestore, I will be employing the use of a Map. Using Firestore as my backend service will allow me to create new users with ease and write to the database without any issues.

Objects / UML diagram

I will be making use of a user class that stores basic information like email, name etc. It will also have an arraylist of nodes or maps that is used to store the price point of an item the user would like to look out for.



UI flows

I have not discussed about user flow yet with my client. I will be discussing this in the near future.

Test Plan

Success Criteria	Test Plan	Expected Outcome
1, 7	<ul style="list-style-type: none">a) Upon start-up, test the security of the login page by entering random characters.b) Users signs up for an account when “create account” is pressed.	<ul style="list-style-type: none">a) User stays on the login page until valid credentials are input.b) Users are redirected to sign up page and then back to the login after successful creation of an account.
2, 3, 6	<ul style="list-style-type: none">a) Search up common household products.b) Search products with typos in their name.c) Type part of a product name in search menu.	<ul style="list-style-type: none">a) Listings from all online retailers are presented in a list view. The listings are presented in a hierarchical fashion where product listings at the top are the “best deals.” All listings have a price next to it.b) If no product is found on retail sites, return feedback to user saying to type in a valid product name.c) Returns accurate listings for desired product.
4, 5	<ul style="list-style-type: none">a) Search up common household products and click “set price alert”b) Search up another common household products and click “set price alert”. Setting it to something very simple that can be met quite easily.	<ul style="list-style-type: none">a) Allows the user to select a price point for a product. When said price point is satisfied, an email notification is sent to the user’s inbox.b) User should receive emails for all the products they are currently looking out for.
6	<ul style="list-style-type: none">a) Search up another product that is offered at many different retailers.	<ul style="list-style-type: none">a) When list view is presented, upon user clicking on a specific listing, they should be redirected to its respective web page where they can purchase it.