Appendix

Appendix A: Works Cited

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Appendix B: Transcript of Interviews

Interview One with Client:
Brooks – B
Vithul – V

V – Hey Brooks, thanks for being able to stay after work for a bit.

B – No problem man, what’s up?

V – For my computer science class, we need to deliver a solution to a real-world problem, and I was thinking of doing a project for here.

B – You know, that’s actually really cool, I’ve been getting into coding recently too… [Conversation about functions in Google Sheets that Brooks has been using to increase efficiency in the online branch]

B – You know, a lot of kids are always asking instructors here and there, what’s my liveschool, what’s my liveschool at, what’s my liveschool at, and it’s honestly a pain to keep checking what their points are at in Liveschool itself.

V – Ooh, that’s a great idea, I’ve been asked that a couple of times too [note: I am also an instructor at Mathnasium]! I could just like make something to display to parents the points of the students, that would be so sick… Wait, wait, wait

B- Yeah?

V – I could also try adding a messaging function in there from students to Mathnasium, right? Just to make communication a lot more easy, you know, between you and, um, the parents. That can’t be THAT hard…

B- Eh, no point for now… We are already handling the communication part pretty well through phone calls and emails, no point in upgrading that for now, maybe when we get a bit bigger. Like, communication is getting hit a bit during Covid, cause we are getting some cancellations due to some freak stuff that's just easier to lose connections on during Covid. One parent cancelled as assessments took too long and took up too many sessions, something they never told us… But, I'm not a hundred percent sure if messaging is going to be the solution for that.

V – Alright, I guess that makes sense… [Bit more musing about potential additional ideas]

B – You know, it would also be the move to display instructor comments to parents, because sometimes, there's definitely a disconnect between us and the parents regarding students. There'll be [example of student, undiscloseable due to privacy], and it would definitely help that if we could give them comments.

V- Yeah, but I don't really want to show all of their comments that would be a pain –

B- Nah Vithul you can just give like the last five or something just to give them a sense of how their kid's doing in Mathnasium, kinda like what the Liveschool points are going to do.

V- Wait okay that's actually a pretty good idea – I'll start thinking about it a bit more, I'ma consult with advisor to think about how to create the whole thing tonight – can we meet tomorrow after work?

B- Yeah, for sure man, see you tomorrow.

V- Yep, see you Brooks.

Interview One with Advisor:

V- Vithul
T- Thamarai

V- Hi Amma, so Brooks said he wants something to display student's points and comments… [Conversation about how Mathnasium works and I showed her the Google Sheets we use]

V – I think we should integrate the program with Google Sheets and display, but I honestly have no clue how to display it.

A – Let me ask Rafiq uncle, he should know, he is very experienced with the front end developing and app developing so he should know [consults with Mohamed Rafiq, family friend and software engineer].

A – Okay, so we should use the Sheetdb.io and JavaScript, HTML, CSS to do.

V- HTML/CSS? Like a website?

A – Yes, that's what uncle says. The Sheetdb.io is to work with the Google Sheets, the HTML/CSS is for website, and JavaScript is to make it interactive, or then the HTML/CSS will be just text.

V- Yeah, I have used JavaScript before, but haven't for HTML/CSS. I think that should be complex enough for my Computer Science Class requirements, I think that's a good idea, I will ask Brooks tomorrow and see what he thinks.

A – Alright chellam.

Interview Two with Client:

B – Brooks
V- Vithul

V- Yo, Brooks, I just want to thank you again for having time after work to be able to talk with me, like, I can't tell you how much I appreciate it.

B – Hey, no problem man, I mean this app is for us right?

V – Haha yeah, I was talking with my mom yesterday, and we were thinking of linking a website to our @home [where all of the Google Sheets Mathnasium uses is stored] and then getting student data from there and displaying it on the website.

B – Oh, gotcha, I mean, that does sound good – I can definitely help out if you need help using sheets, but I don't want you linking your website to our @home things yet: we need to get more explicit permission from Angie and Jadelyn [higher Mathnasium employees] so I don't think that's the move. You could make like your own sample gameplan [how Mathnasium records data each day for students].

V – Yeah I guess I could… like make up some random names so I don't hit any privacy concerns. But like, once I'm done, and it gets A-Ok'd by Angie and Jadelyn, that's definitely possible right?

B- Yes, for sure it's possible it's just gotta be good.

V – You know, that's actually a good idea – wait – I forgot to input [student x's] data in the Google Sheets, give me a second I got to fix that [break in conversation to fix my work things]

V- Okay, and for Liveschool, I have no clue how to get current totals from the Liveschool website, so what I've been thinking is just updating the points on like a giant masterlist of students, tracking it through there.

B – That's cool, so you'll just use those five columns in the gameplan right? And I can help you on query for the comments if we get to implementing in Mathnasium.

V- Yeah, you know what, that would be great. Honestly, I don't need much more from you, but could you maybe make some success criteria for me and send it over? I can polish it and all for my writeup, but I just want some vague kind of idea from you.

B – Yeah sure man, I'll get it over to you during the weekend. Have a good one [general conversation]

V – Alright, see you Brooks!

B – Bye.

Interaction Three With Client:

Brooks rough criteria was as follows:

- Login
- Display Customer Data
- Update Google Spreadsheet Masterlist with new amount of Liveschool points for the kids who came in on the day of the update

I sent him a revised criteria, which he agreed upon:

- Login
- Display Customer Data
- Update Google Spreadsheet Masterlist with new amount of Liveschool points for the kids who came in on the day of the update
- Clean UI

Further revisions were made by me in the interest of making a more secure, usable, and useful application, and were okayed by Brooks. Brooks also recommended log out functionality, the stretch goal of adding an admin interface later on during the process, which I promptly added. We agreed on an ID-name combo for log-in later on also due to the intensely low probability of guessing the match. Brooks also helped me with Google Sheets functions later on, and I showed him many versions of my UI after work on numerous days.

Interaction Two With Advisor:

Transcribed Roughly From Memory:

T – Thamarai
V – Vithul

V – Amma, I'm not able to get this with the Fetch API, I can't find out how to edit the values on my spreadsheet itself for updating the Liveschool points. I'm able to read the data, and create this alert [shows alert], but I can't edit it…

T – Okay, let me research this…

[Day goes by]

T – Okay, watch this tutorial, he is using the Google Sheets API, and he is able to edit…
V – Thank you, amma!

This was one of my biggest problems, but other problems, such as my inability to pass data between files and to use Google Sheets API in an HTML file, were also solved with the help of Thamarai, my mom, in similar interactions in which she recommended a source which enlightened me on my problem.

Interaction Four with Client:
Transcribed Roughly from Memory

V -Vithul
B – Brooks

V – Hey Brooks, ready to be amazed
B – Haha, sure, let's see it, I'm ready [used test plan and several different student data as we iterated through my program together, talked about how I met success criteria]

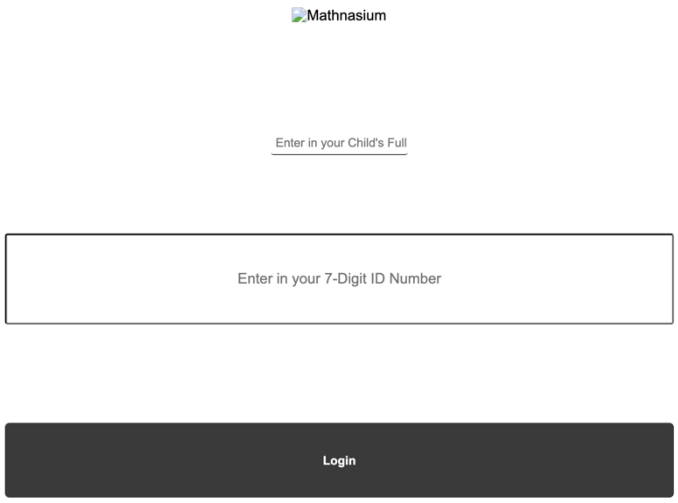
B – Alright man, I think if we can make the styling work perfectly on all different interfaces, we're set.

V – Yup, and I need to figure out Google Sheets API further so we don't need to pay to use Fetch API and run the program, because we will run out of free trials pretty soon haha…

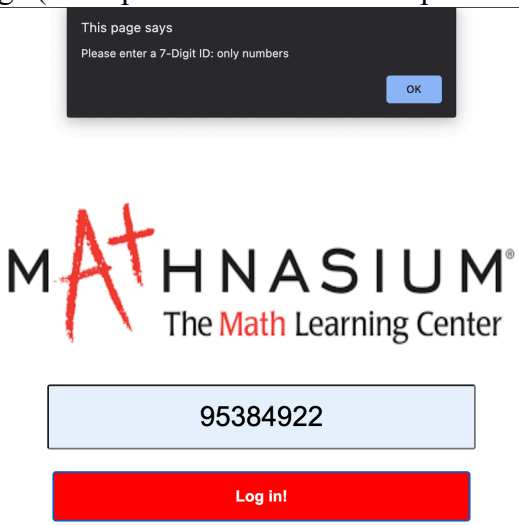
B – Yeah dude, proud of what you've done, see you later.

V- Thanks Brooks!

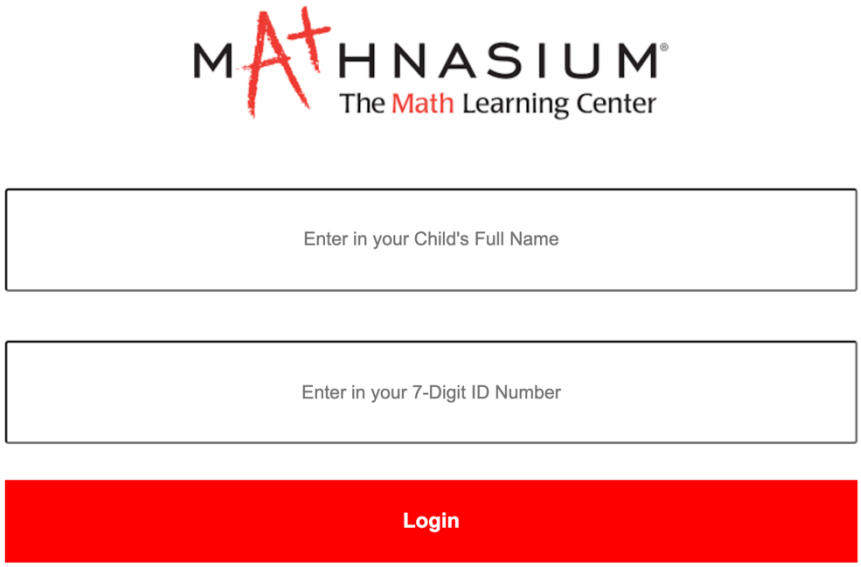
Appendix C: User Flow
UI Iterations:
First Version of Login Page



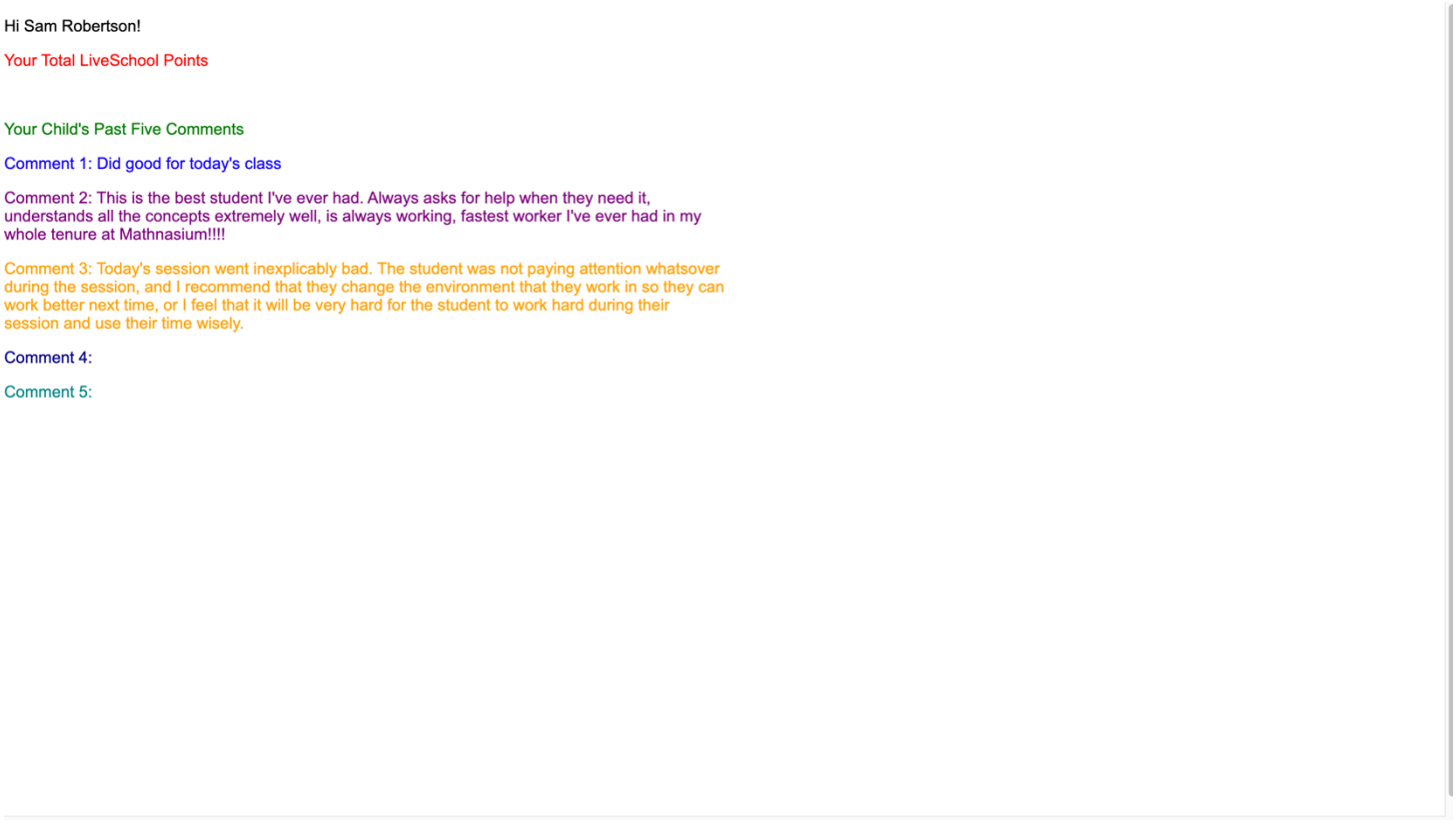
Second Version of Login Page (ID in password form added upon consultation with client)



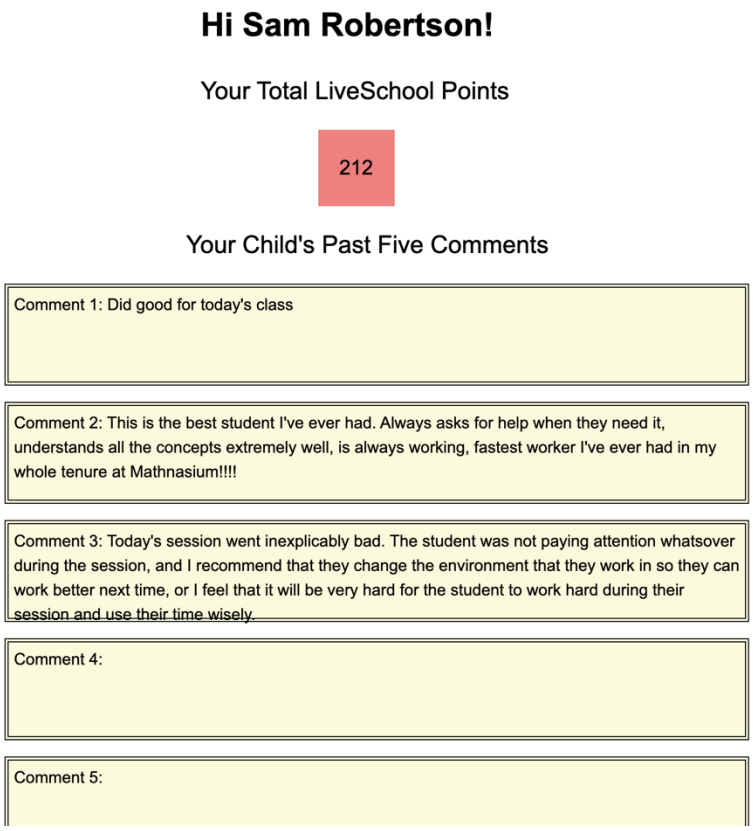
Final Version of Login Page:



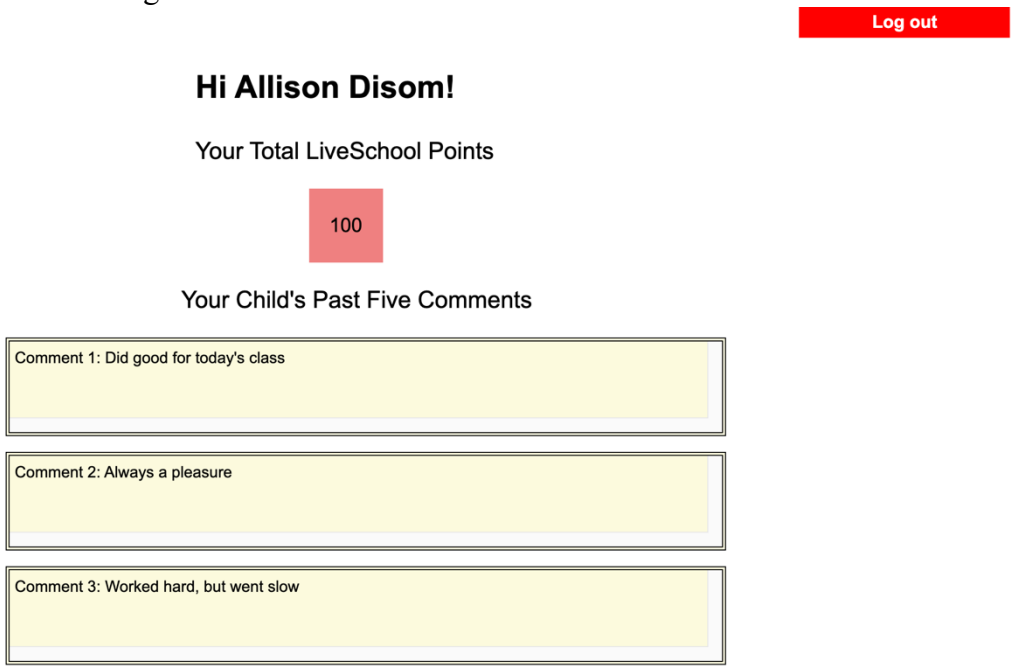
First Version of Customer Page (Very, very initial, received lots of backlash from client and advisor), liveschool points not even displayed

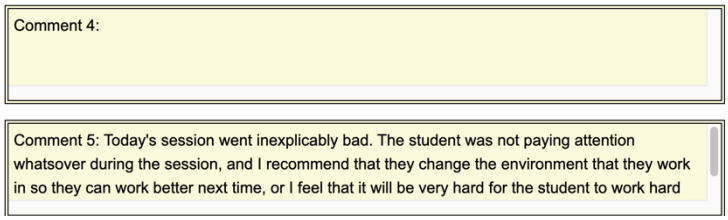


Second Version of Customer Page (Without log out functionality nor scroll functionality)



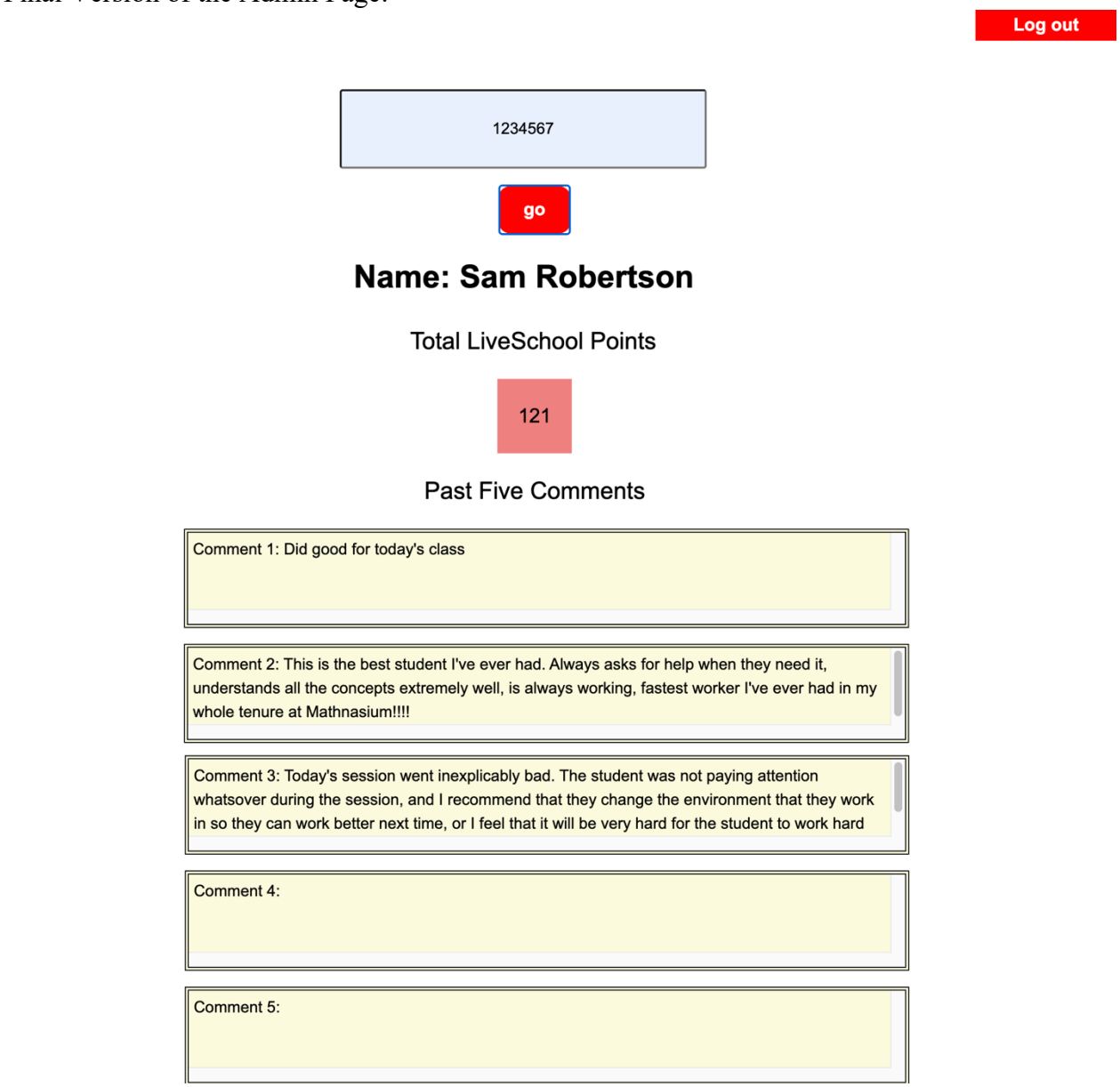
Final Version of Customer Page:





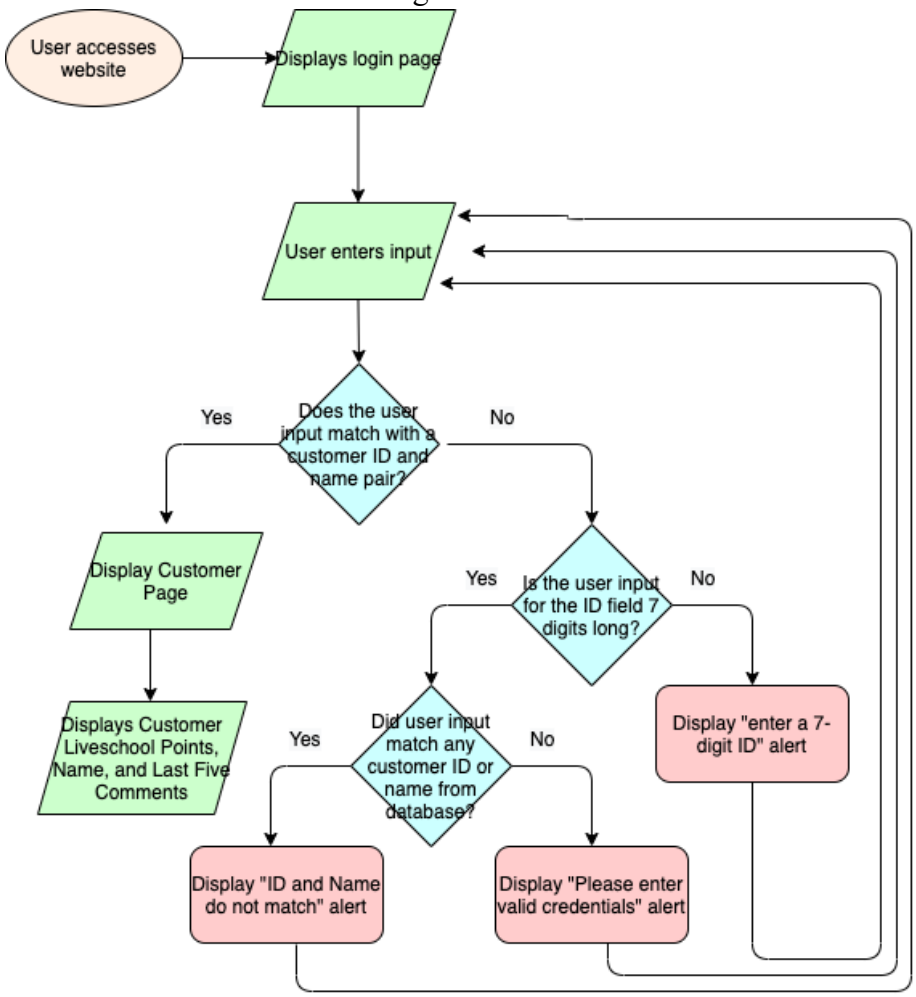
First Version of Admin Page (without Log out Functionality)

Final Version of the Admin Page:

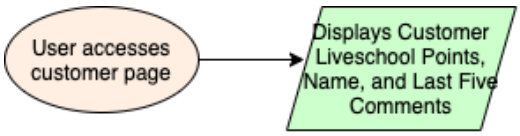


Appendix D: Previous Diagrams from Criterion B

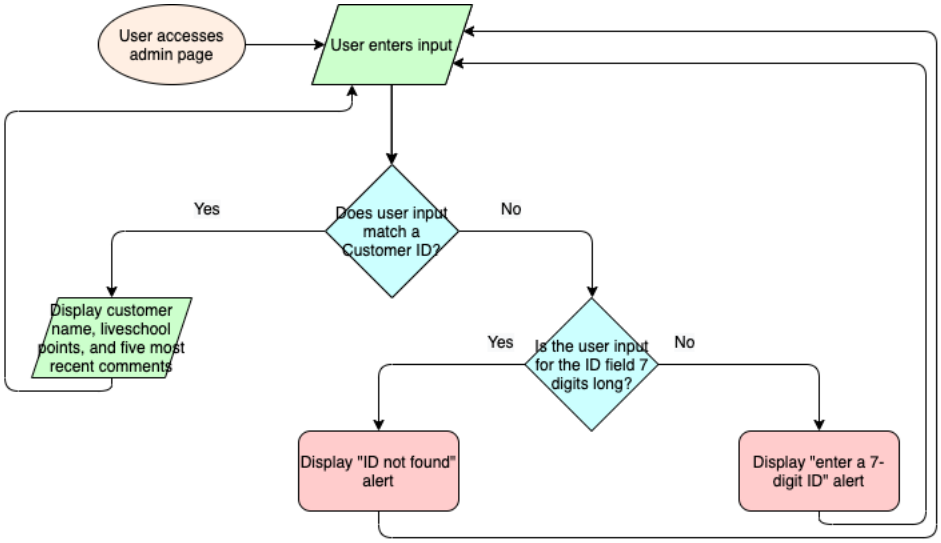
Initial User Flow for Whole Program:



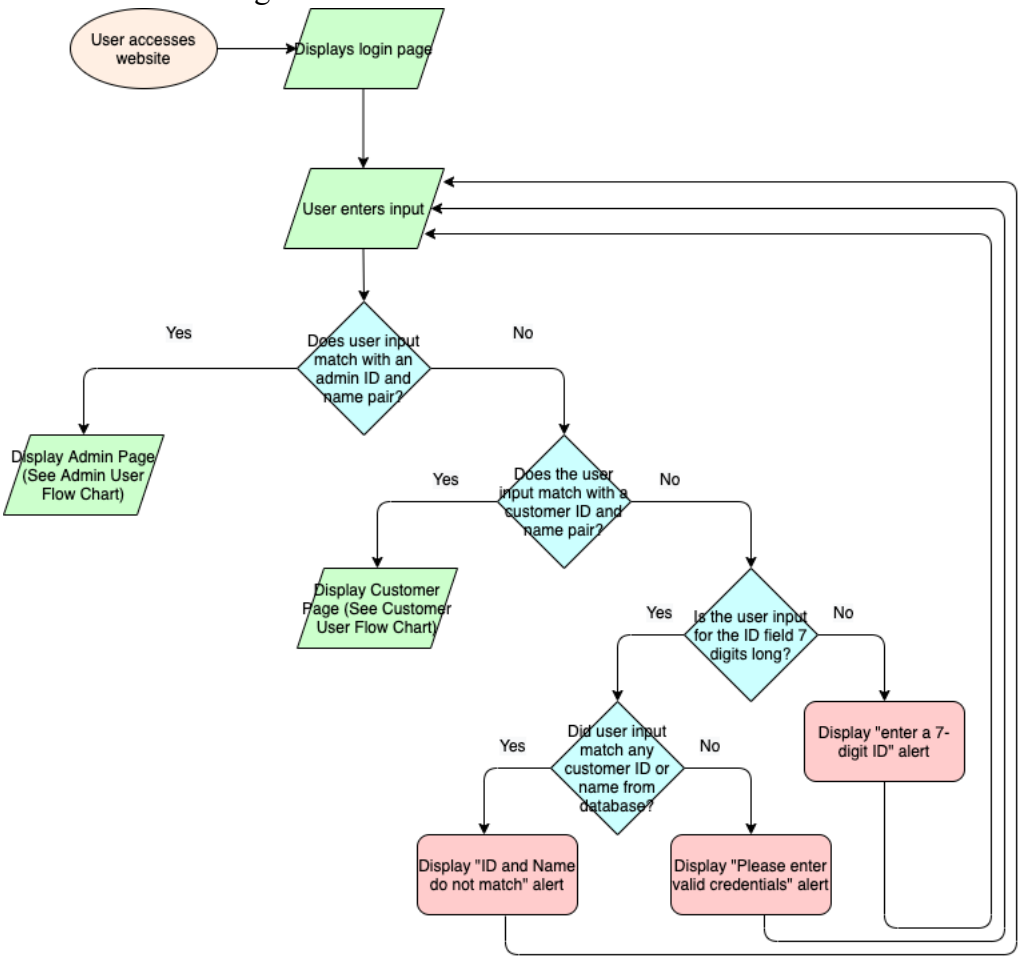
First Version of Customer Flow:



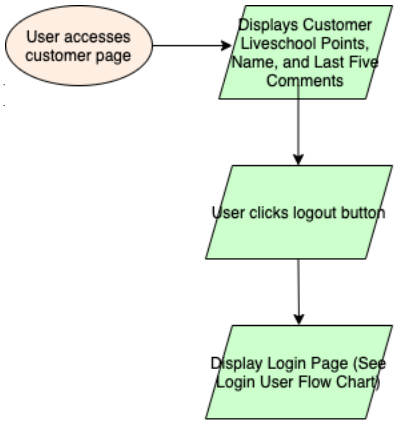
First Version of Admin Flow:



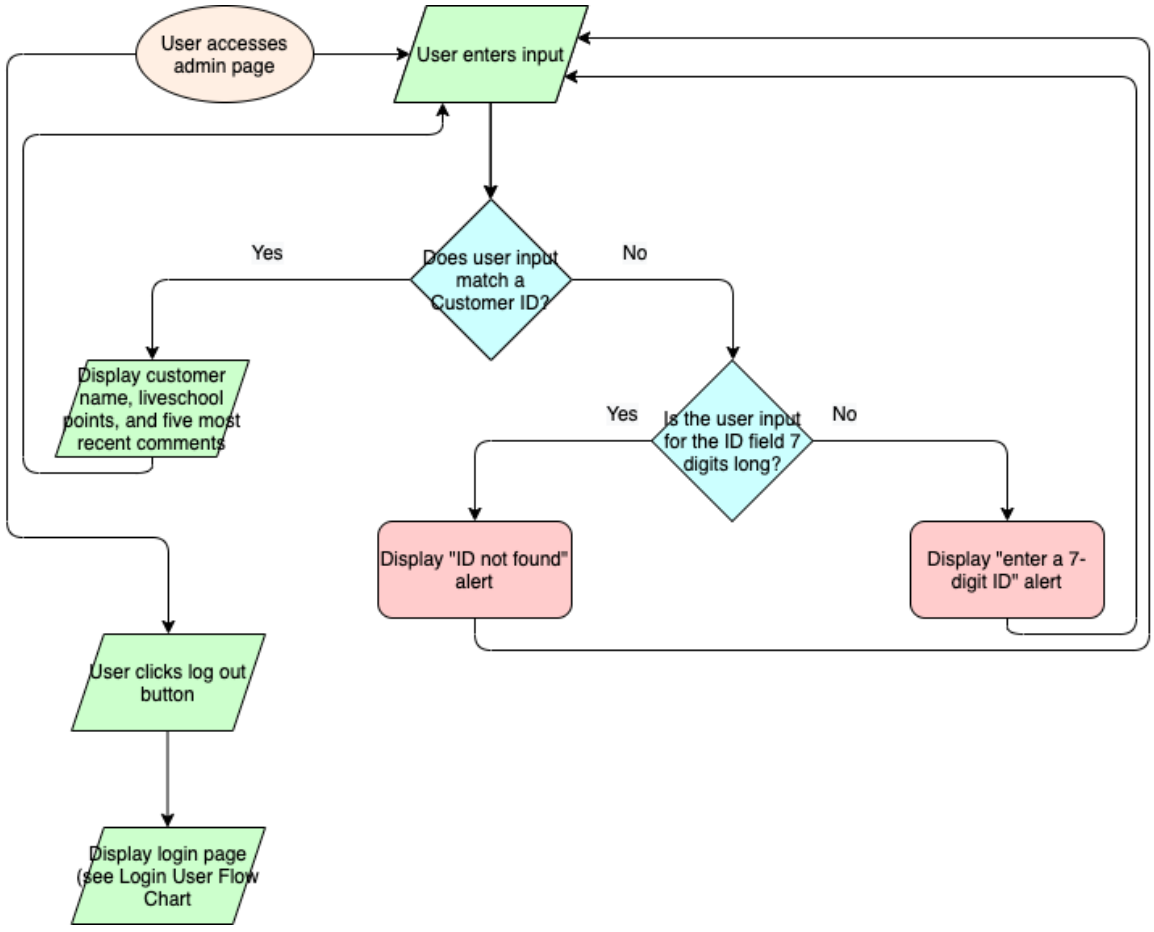
Final Version of Login Flow:



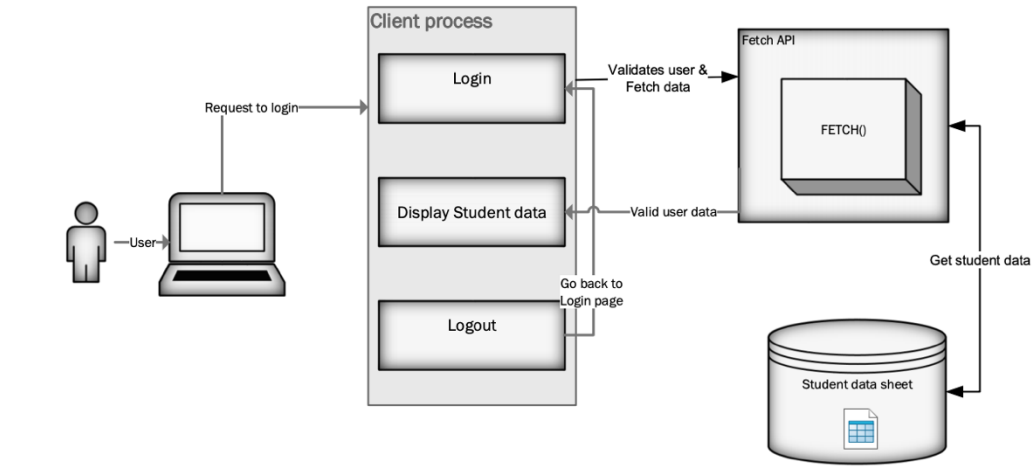
Final Version of Customer Flow:

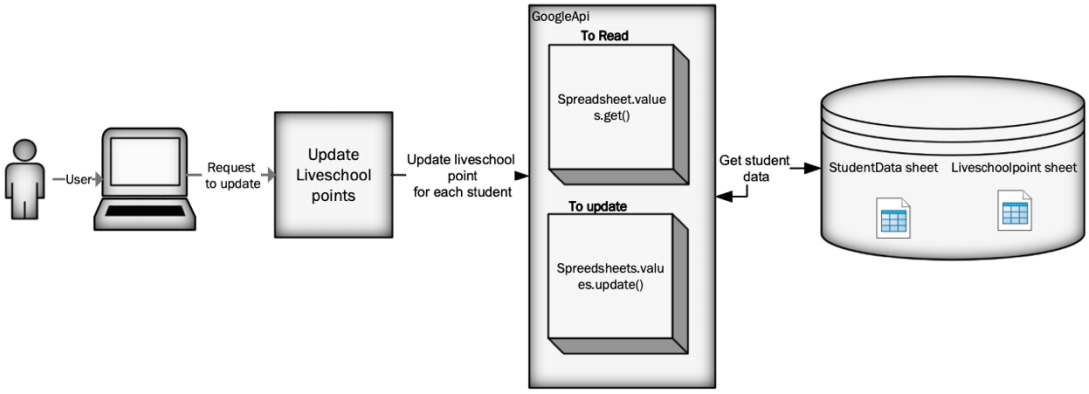


Final Version of Admin Flow:

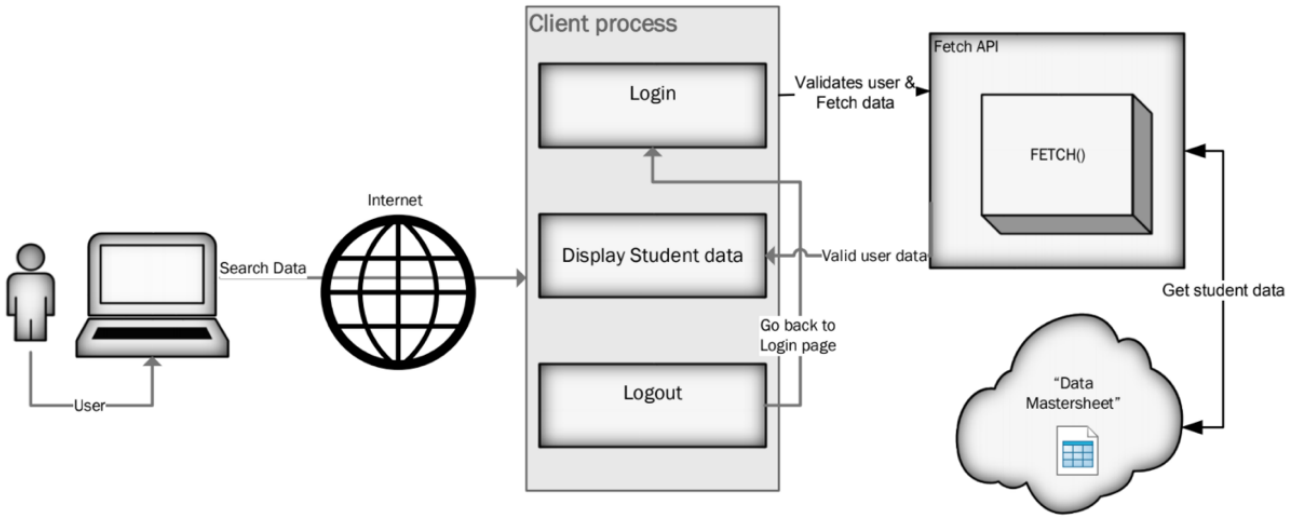


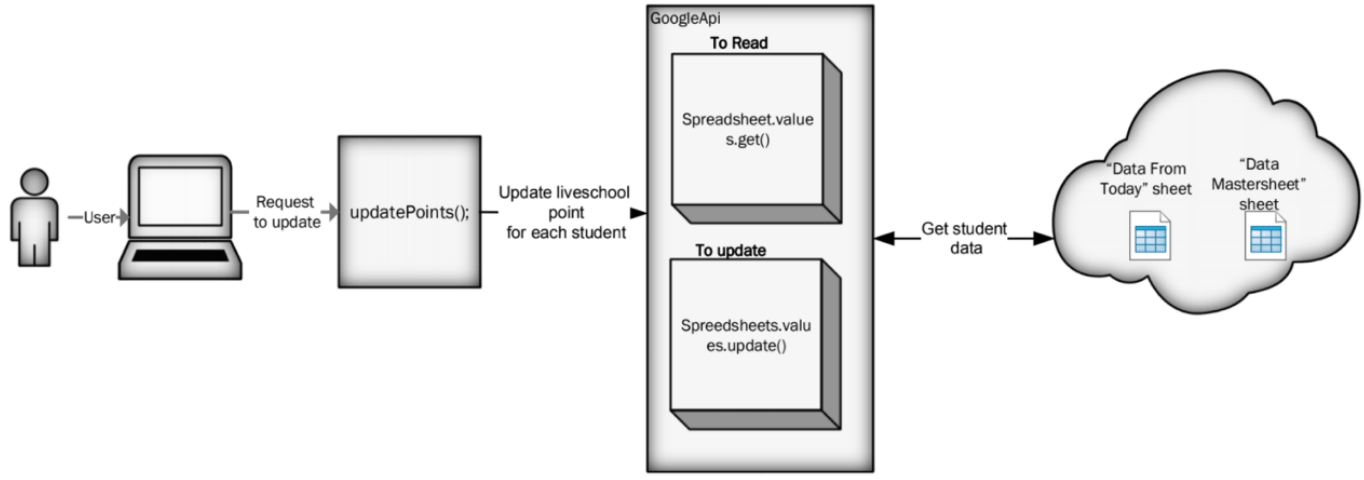
Initial Version of Architecture Diagram:





Final Version of Architecture Diagram:





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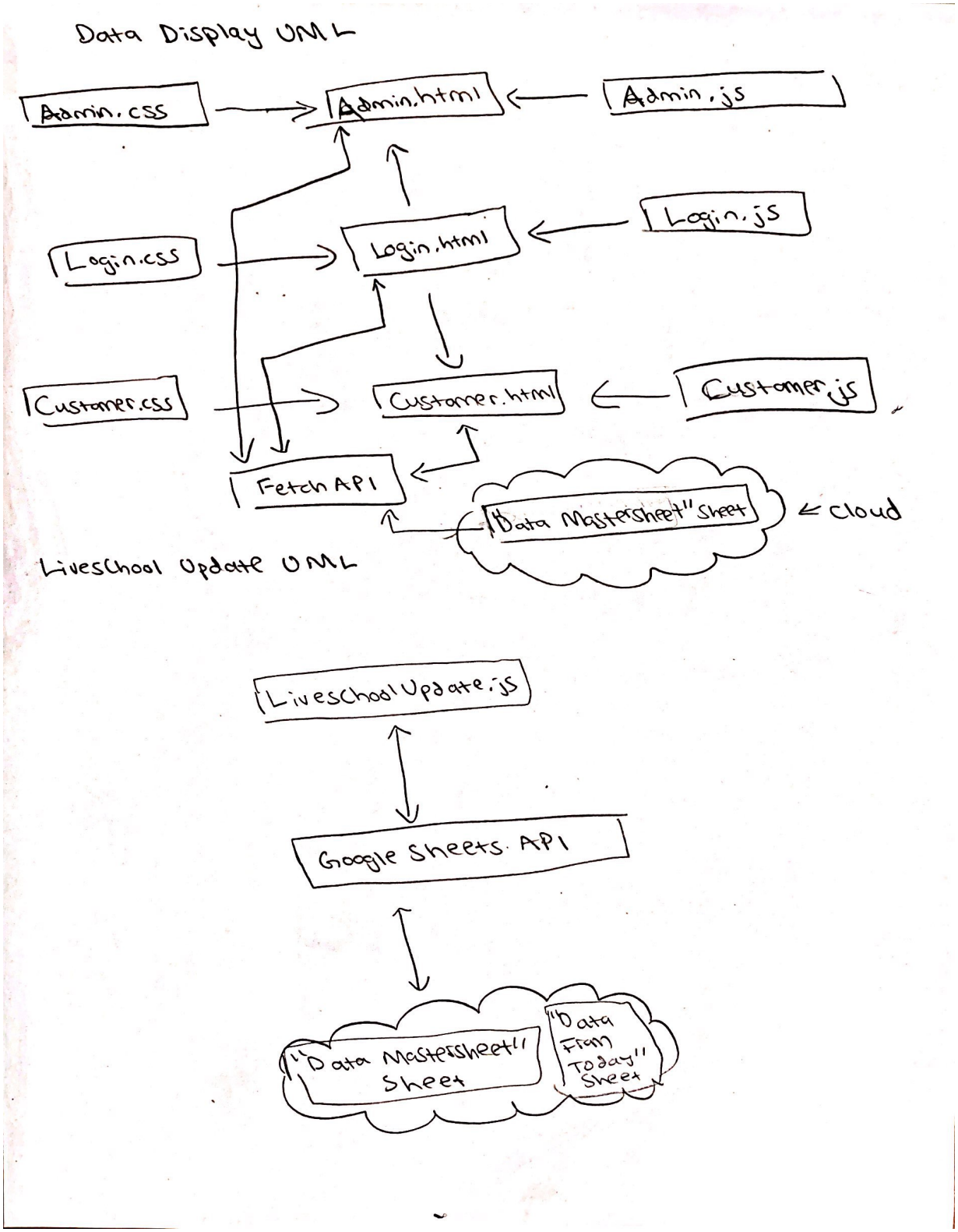

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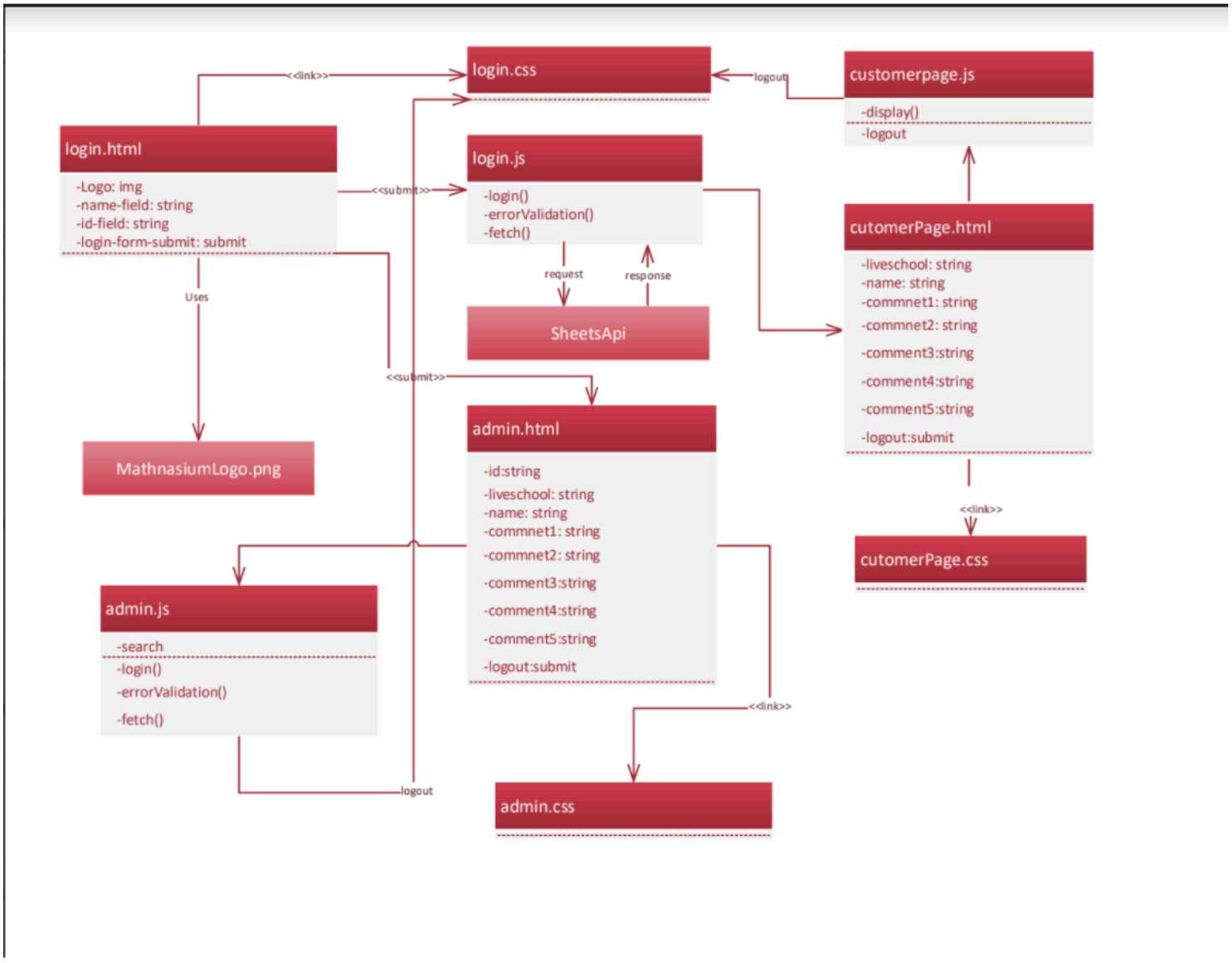
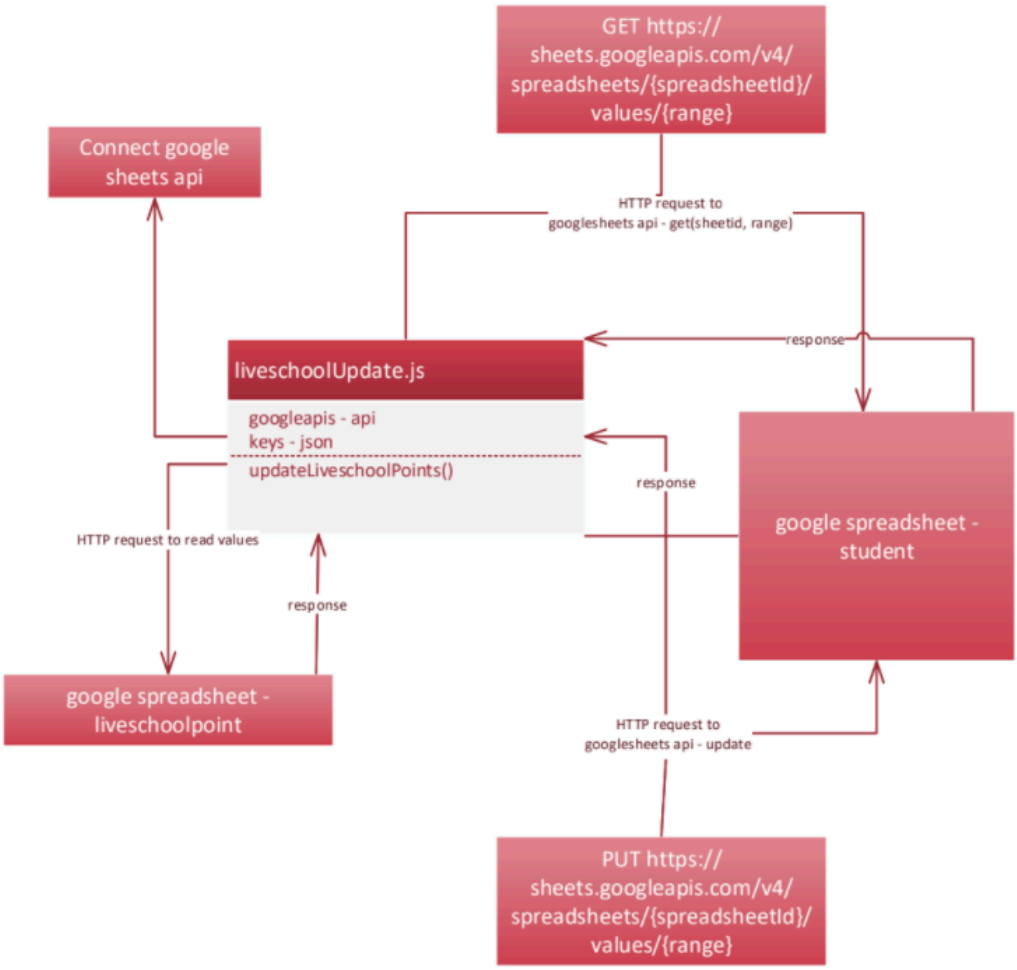
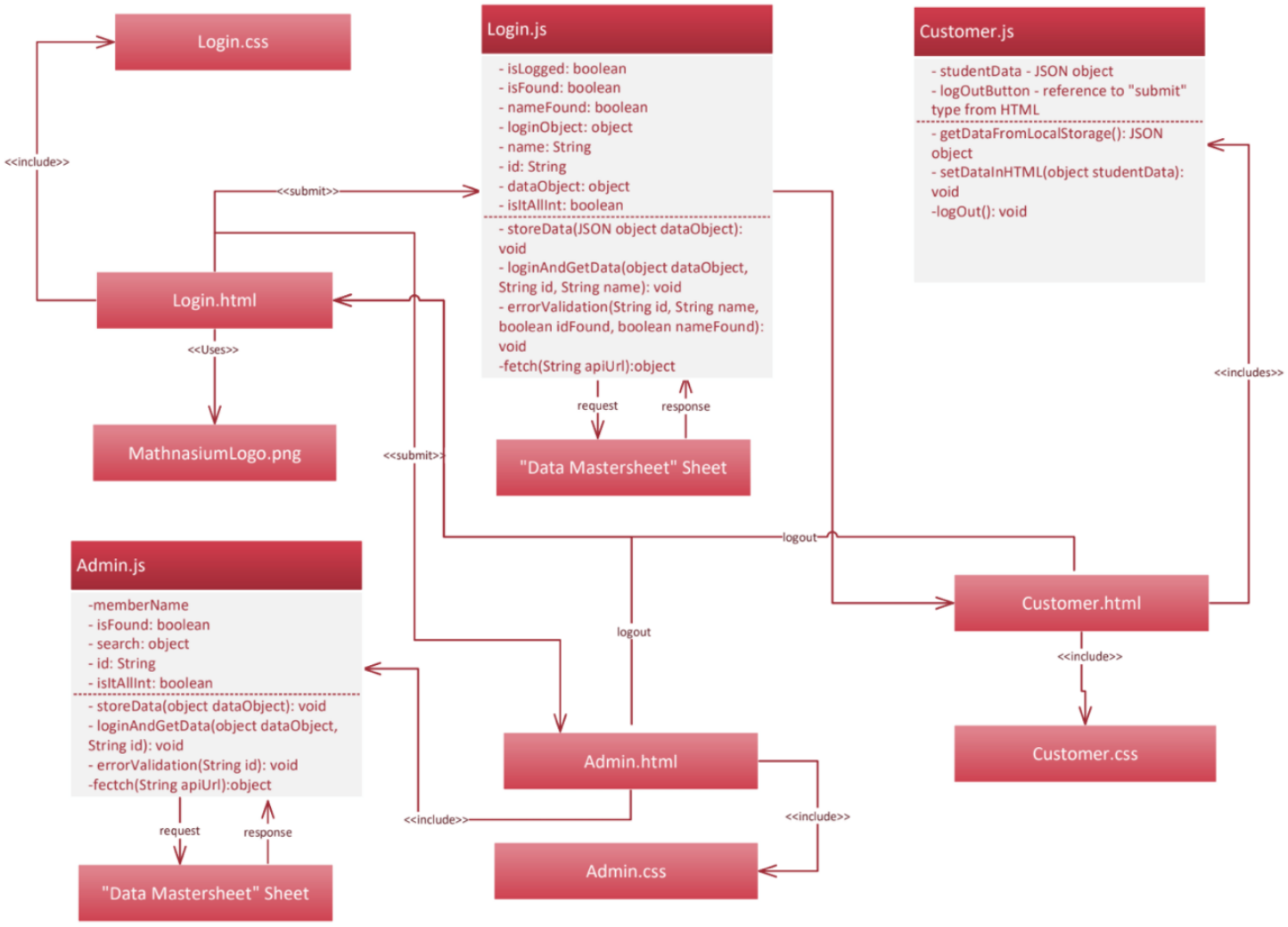
Second Version UML Diagrams:
Data Display UML:



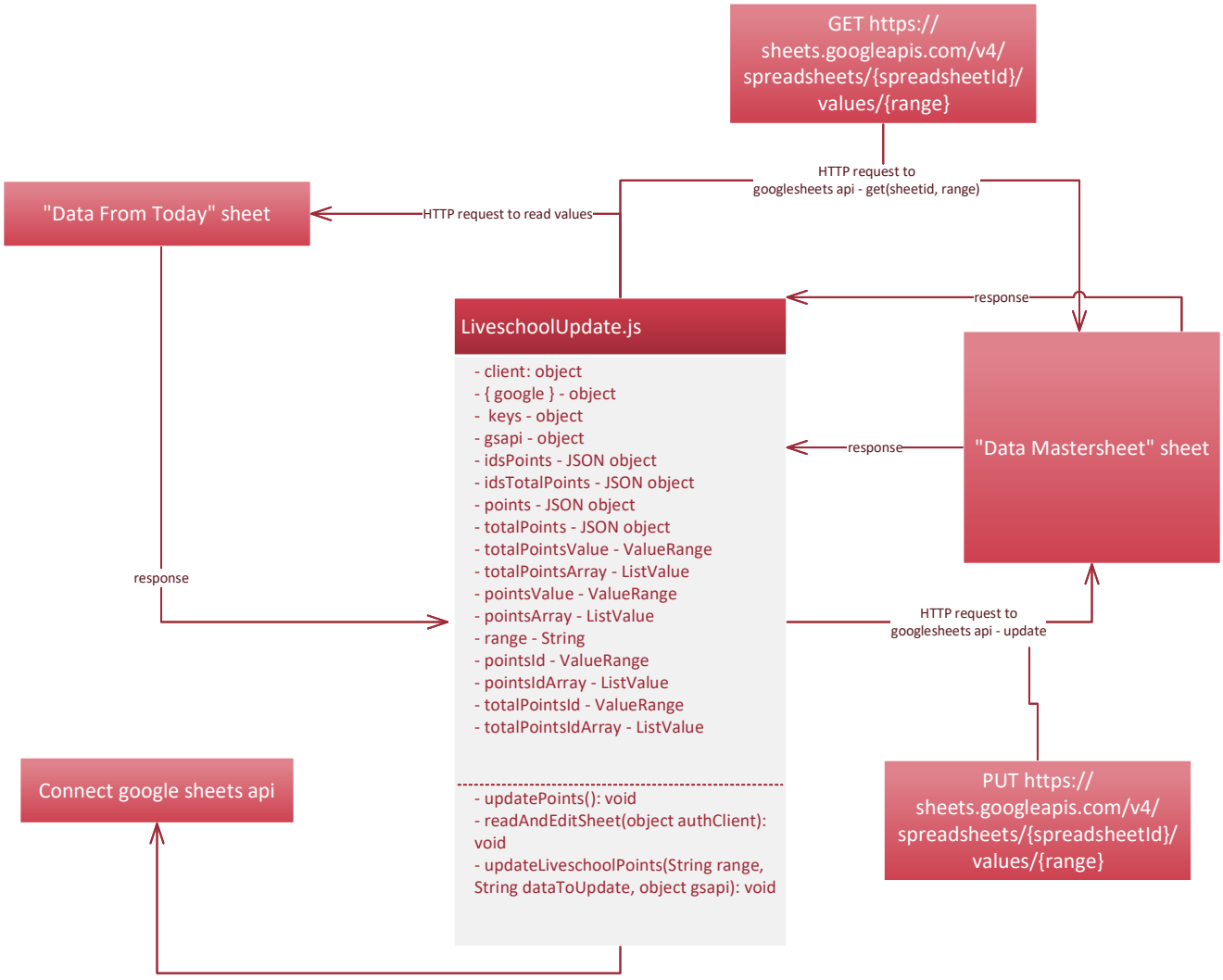
Liveschool Update UML:



Final Version UML:
Data Display UML:



Liveschool Update UML:



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