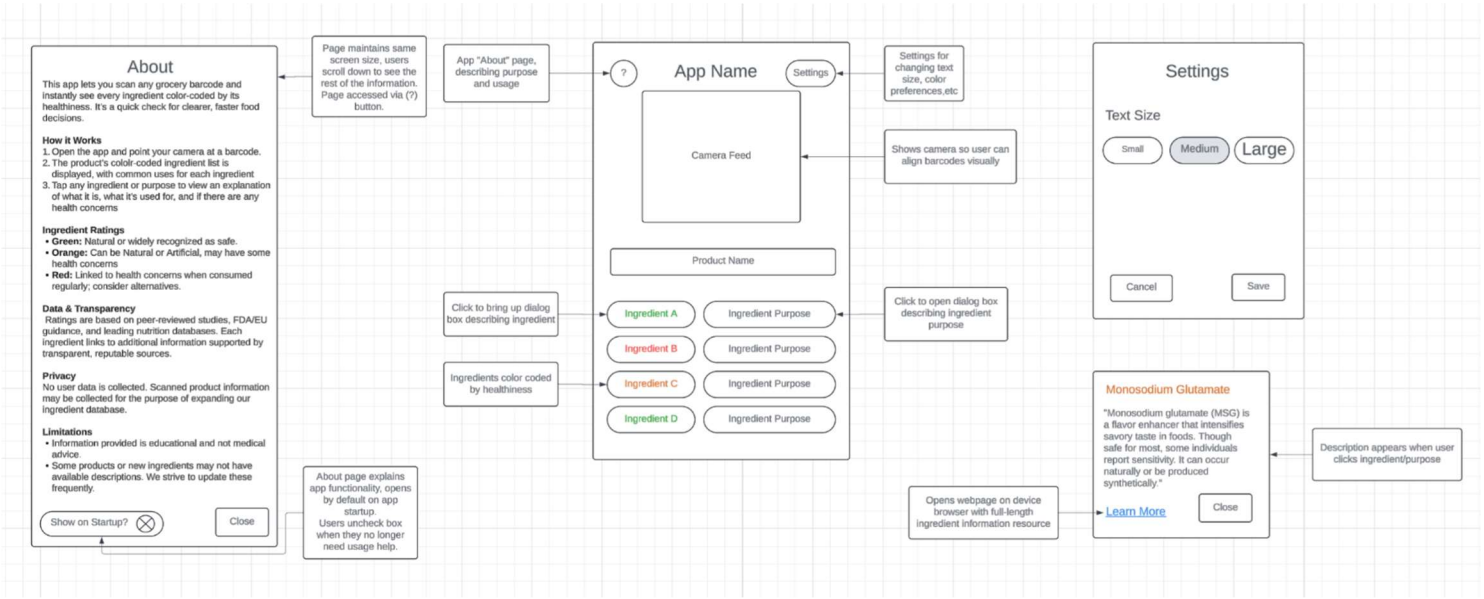
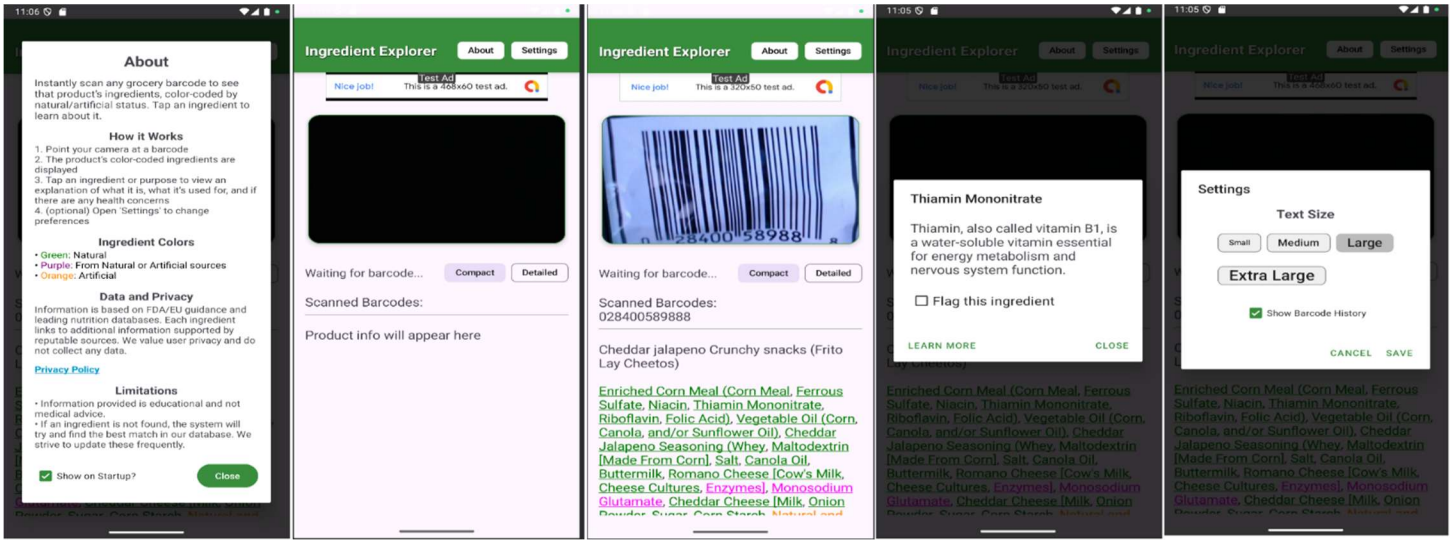
Artifact 1 Narrative – QR Code Scanning Enhancement

My artifact involves two classes from my android app Ingredient Explorer, which started working on about 2 months ago using my design framework from CS-319 (UI/UX Design/Development) and Android Studio experience from CS-360 (Mobile Architecture).

Design wireframe from CS-319



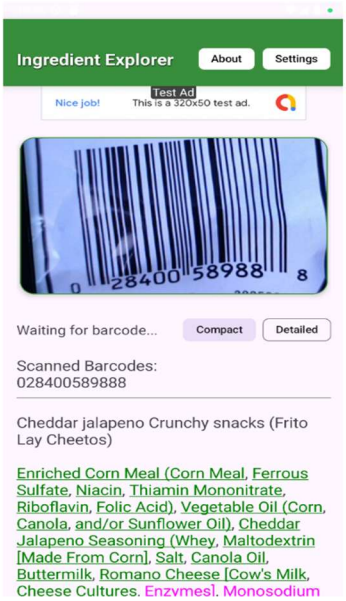
Actual implemented app screens



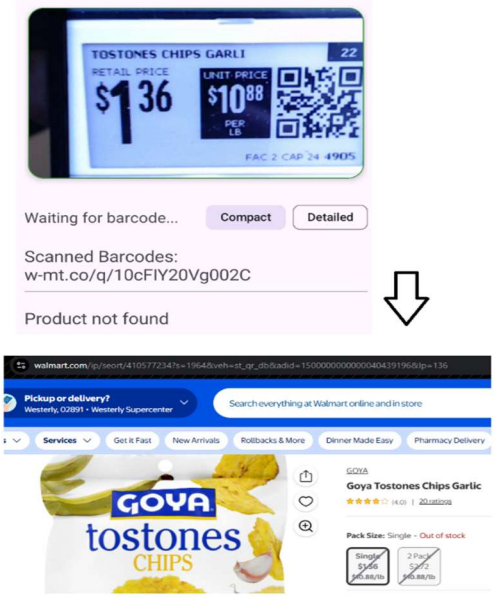
The app is designed to let users scan a barcode for a food item, and it returns a list of the products ingredients which are color coded by natural/artificial status, and each ingredient can be clicked to view a summary of what it is, where it comes from, and if there are health concerns related to it. The app retrieves product ingredients by looking up the UPC (universal product code), which works for scanning barcodes on products, but I noticed it didn't work when I tried to scan the QR codes on the shelves at Walmart, so my enhancement has been to make those codes compatible with the current system.

I selected this to demonstrate my ability to take high level real-world feedback and translate that into functional code integrated into a system. It shows my skills in identifying a problem, researching solutions, and then implementing them. The improvements that I made are updates to "lookupProductName()" and the newly created "walmartQRLookup()", the former now checks the results of a scan and calls the latter if it contains a walmart URL. The new walmartQRLookup() follows the redirects of the URL to their destination, then searches the output for a UPC code, which it returns to lookupProductName() can then handle it like a normal UPC code. Adding this enhancement met outcomes expected, where I practiced designing and evaluating computing solutions as well as using well-founded and innovative techniques.

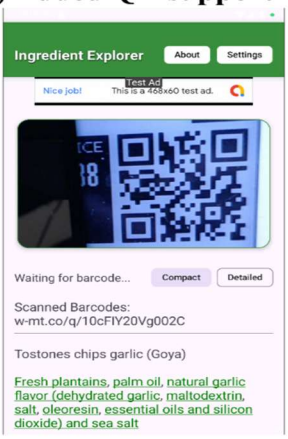
1) Typical App Usage



2) Error using QR code



3) Added QR support



Initially, I wasn't sure if it was going to be possible to get this working, but I had a few ideas on how to approach it. My first idea to try and convert or cross reference the Walmart product code to a UPC code didn't work, and inspecting the source code of the site which the QR links to didn't seem to have a stored UPC code that I could extract. I searched the website source code for things like product codes and found that the UPC was stored under the label of "GTIN" which stands for "Global Trade Item Number", of which UPC is a subcategory. So, I had the app function try to extract the information under that label, but it was failing to find it. One small issue I came across was the site not loading because the URL from the QR code didn't have a "http/https" prefix, so while the link would work with browsers it needed that prefix manually added to be compatible with GET requests. After some debugging I found that the URL redirects to another site, so I had the function follow redirects before reading output and it was able to get the UPC code from the output of the final page. From there the function just returns the UPC code to lookupProductName() which can then operate normally and retrieve the ingredients list.