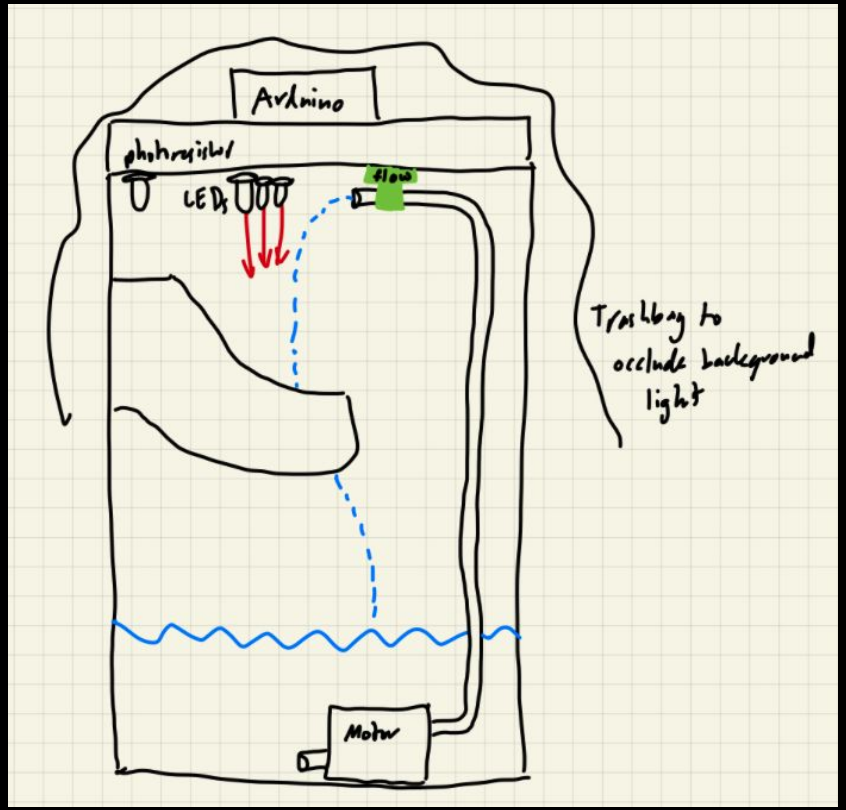
Intern Lab Notebook

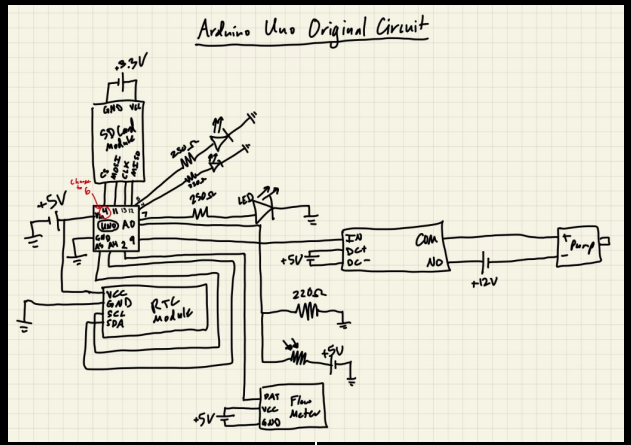
Ibrahim Al-Akash

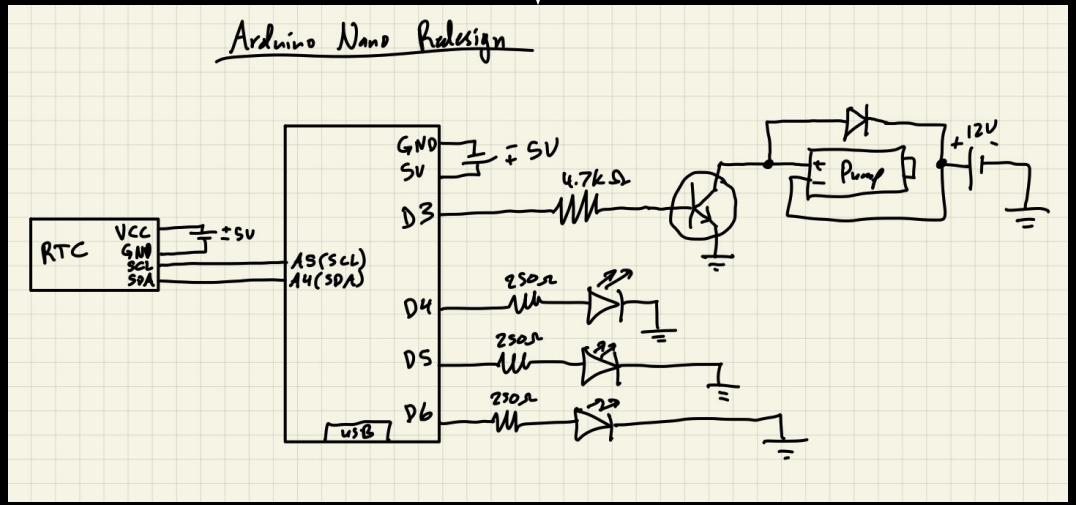
First Weeks (5/13 - 5/24)

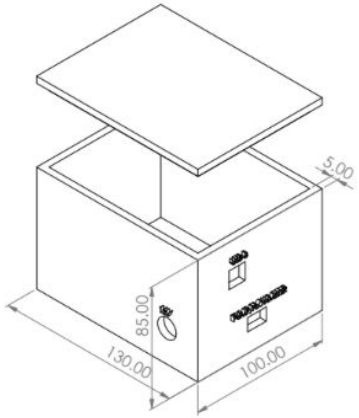
- **Completed refactoring the circuit for the 24/7 test apparatus**
  - Moved from Arduino Uno to Nano
  - Cut out extraneous sensors/modules to simplify circuit including the flowmeter, photoresistors, and SD card *(also not needed anymore since we can just check from the UrinDx measurements if the device is recording the readings at the correct time intervals)*
  - Moved from relay module to transistor to enable PWM adjustment of pump flow rate (used BJT since I found one in the lab)
  - Discovered the rusted RTC module was unreliable with the Nano, so replaced it
  - Added 2 more LEDs since the lone LED was not bright enough to trigger a reading

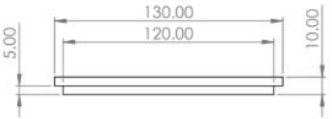
Original Test Apparatus Design (Urinator 3000)

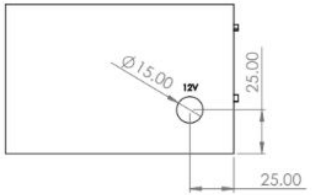


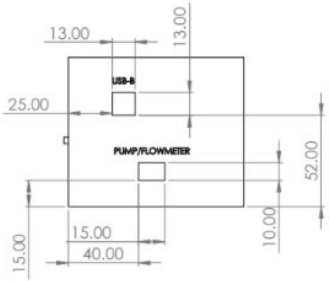

Arduino Uno Original Circuit
+3.3V
GND Vcc
SD Card Module
CS MOSI SCK MISO
250Ω
250Ω
LED
+5V
A0
GND
RTC Module
VCC GND SCL SDA
220Ω
+5V
IN DC+ DC-
COM NO
+5V
+12V
Pump
DAT VCC GND
Flow Meter
+5V

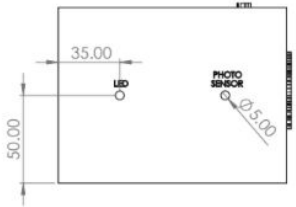

Arduino Nano Redesign
RTC
VCC GND SCL SDA
+5V
A5(SCL)
A4(SDA)
GND
5V
+5V
D3
4.7kΩ
+12V
Pump
D4
250Ω
D5
250Ω
D6
250Ω
USB











UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:			FINISH:			DEBURR AND BREAK SHARP EDGES
	NAME	SIGNATURE	DATE			
DRAWN	Ibrahim Al-Akash		2/29/24			
CHK'D						
APPV'D						
MFG						
Q.A						
MATERIAL:						
WEIGHT:						

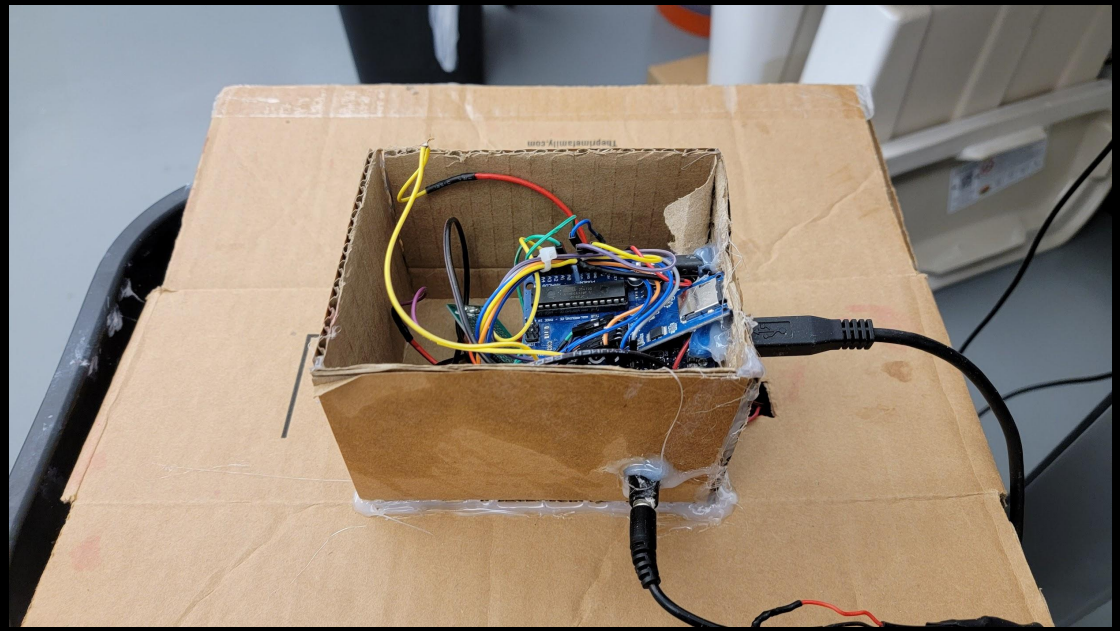
DO NOT SCALE DRAWING | REVISION

TITLE: Circuit Box

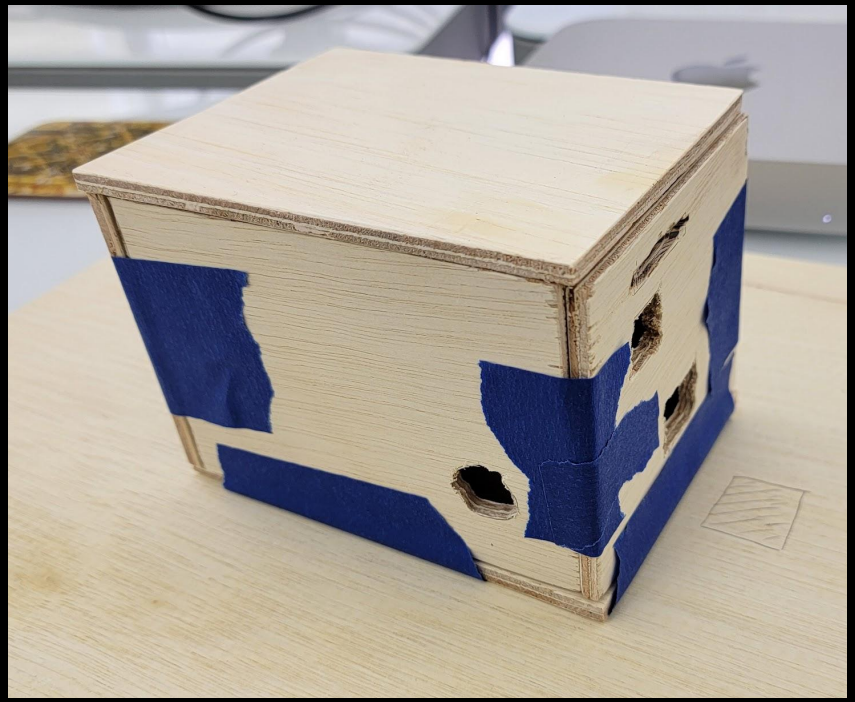
DWG NO. | A3

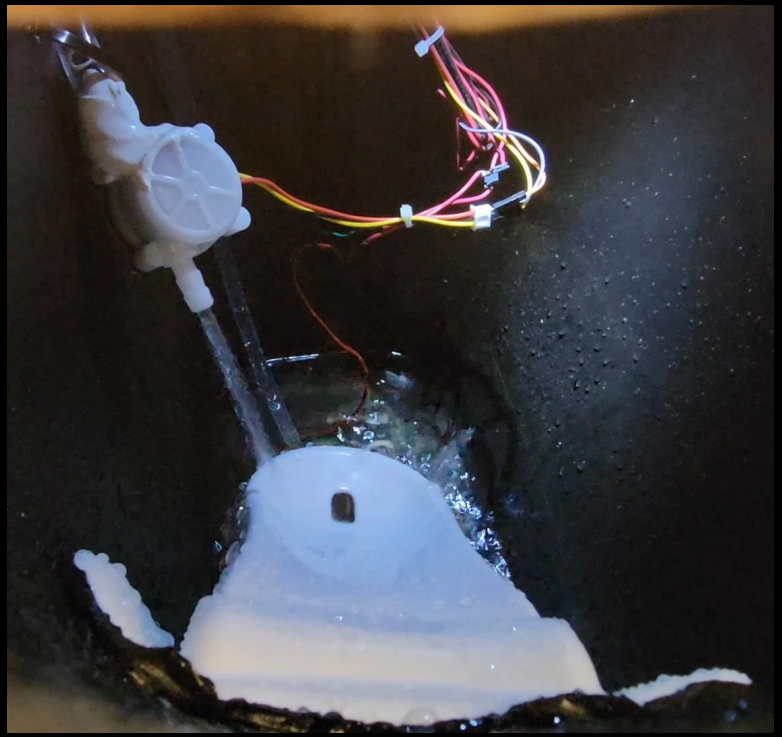
SCALE:1:2 | SHEET 1 OF 1

Iteration V1 (Cardboard + Arduino Uno)

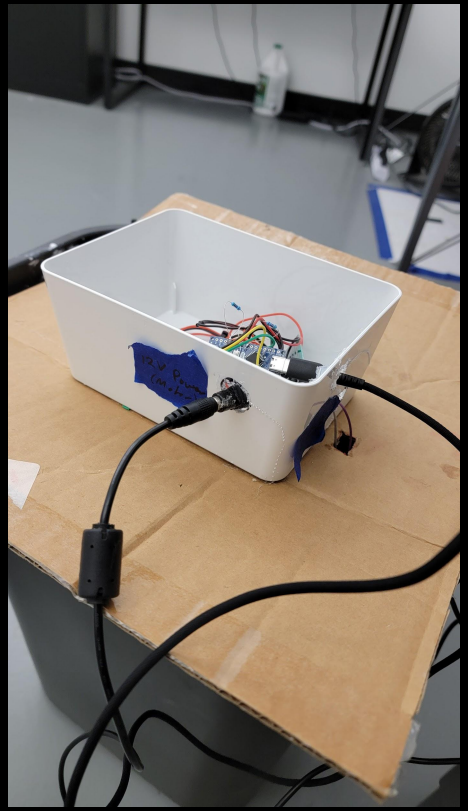


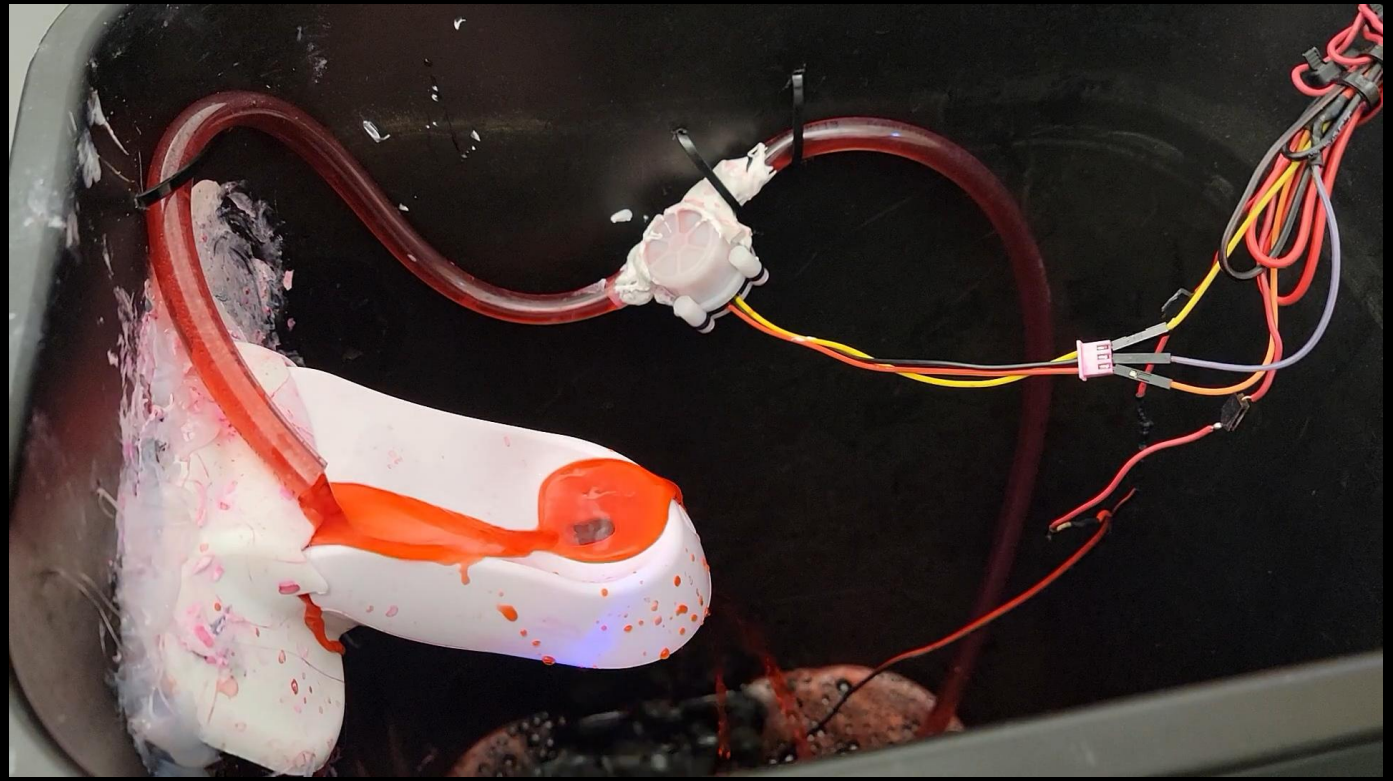
Iteration V2 (Wood + Arduino Uno)





Iteration V3 (Plastic + Arduino Nano)

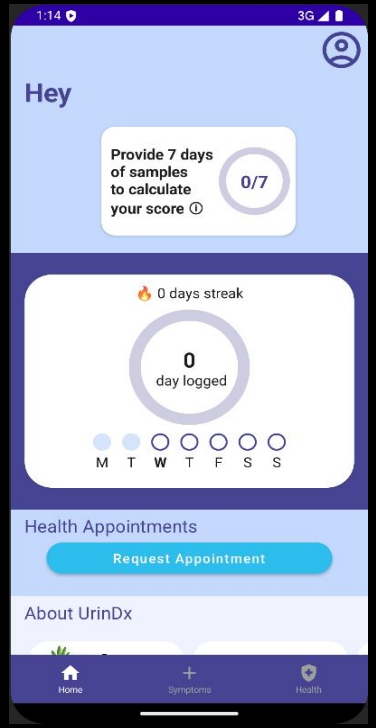




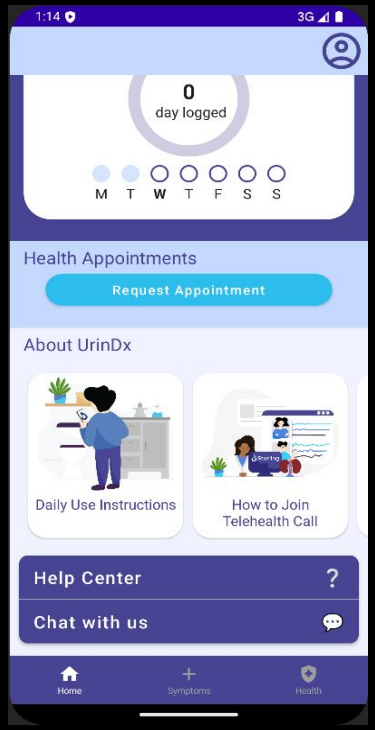
First Weeks (5/13 - 5/24)

- **Started working on revamping the UI for the Android Application**
  - Learned Kotlin and Jetpack Compose
  - Created a brand new Android project for UI development, planning on incorporating to Starling Pete official GitHub once UI passes testing and debugging
  - Replicated the features from the iOS application in the Android project
  - Programmed graphing functionality from scratch to minimize dependencies

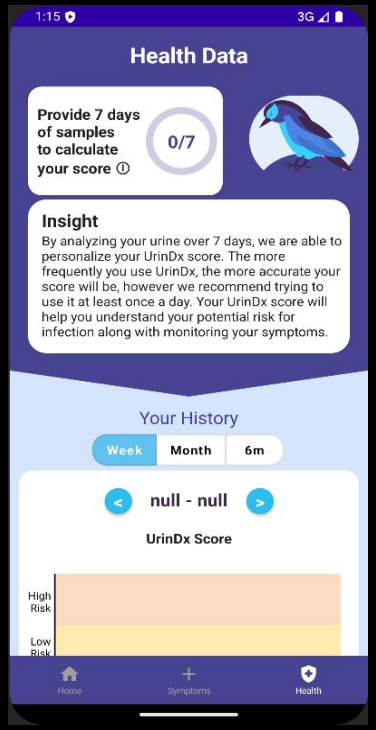
Old Android UI Design



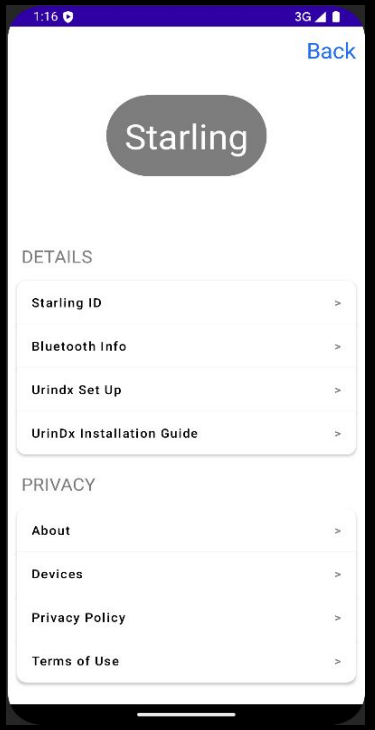
Homepage (1)



Homepage (2)

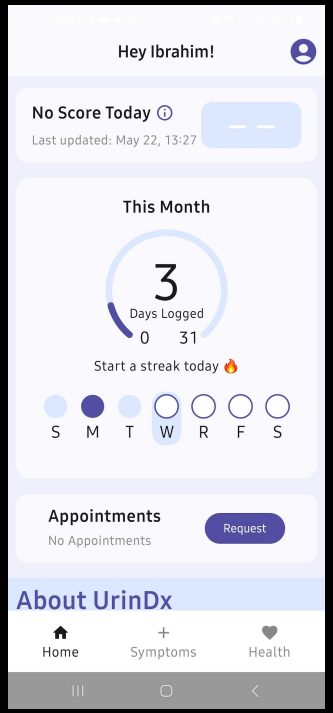


Health Page

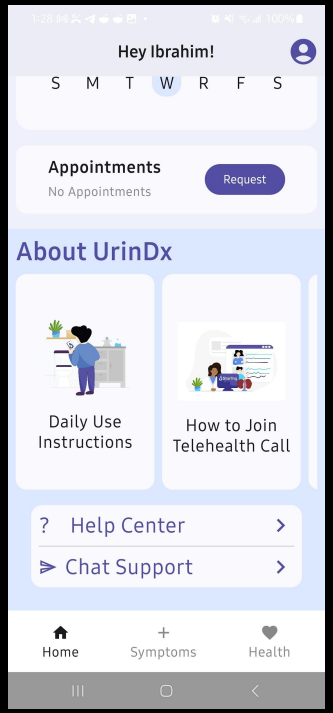


Account Page

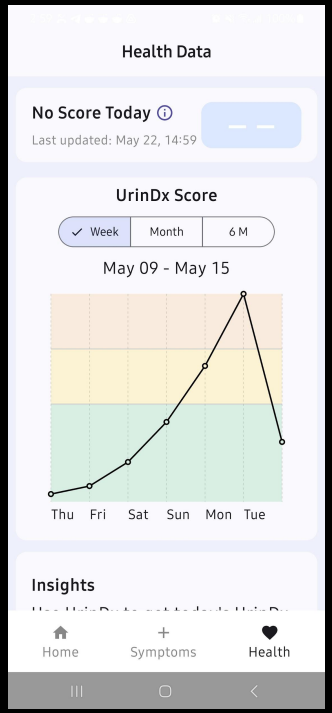
New Android UI Design



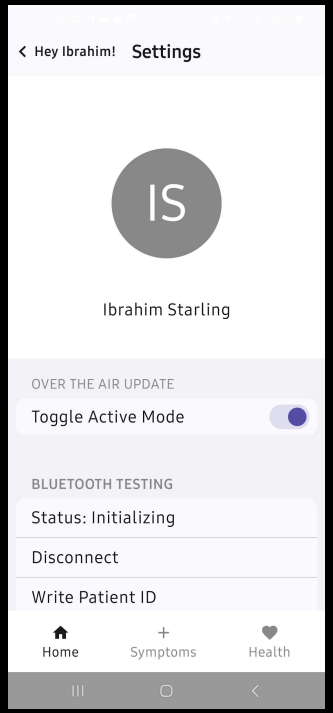
Homepage (1)



Homepage (2)



Health Page



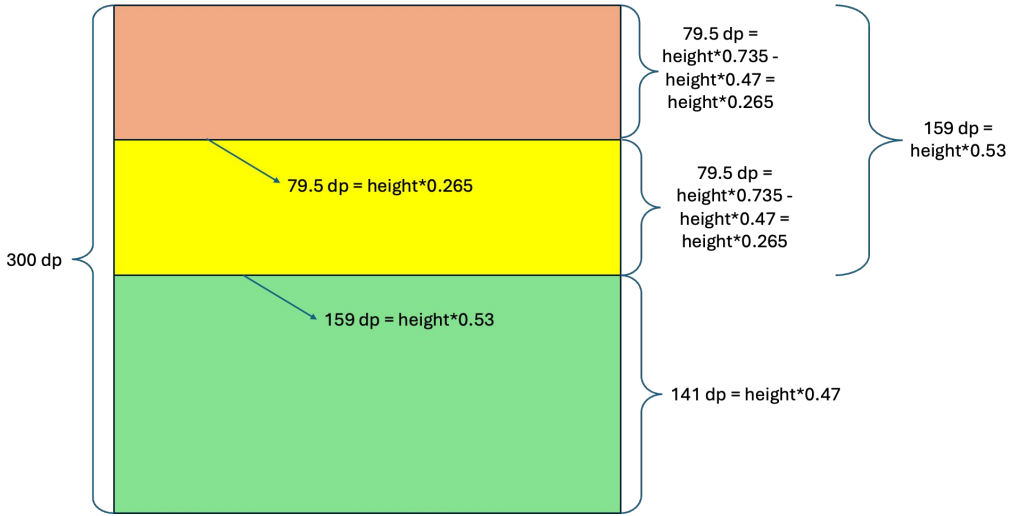
Account Page

Algorithm for Graphing Functionality

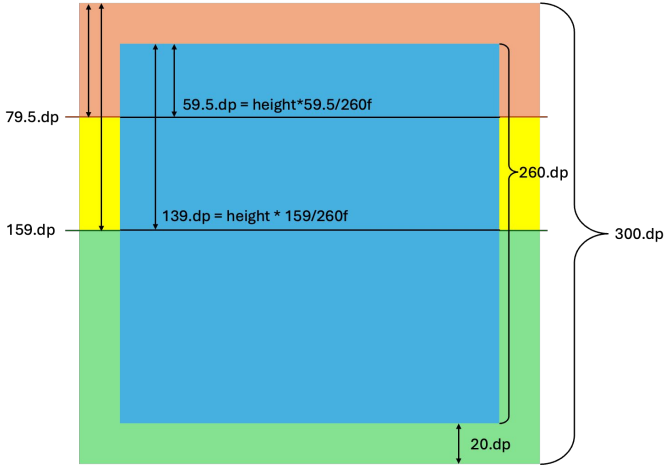
1. Calculate the correct dataset pairing of scores & dates with toggles (1 week, 1 month, 6 months)
2. Draw the demarcating lines according to type of toggle (1 week will have them at each day, 1 month will have them at beginning and end of the month, and 6 months will have them at the 1st of the last and first month)
3. Draw the lines connecting the points of the score values placed along the x-axis according to the date associated with that score
4. Draw the circles at each score value and fill in with appropriate color according to the risk level associated with that score

Geometry for Graphing Functionality

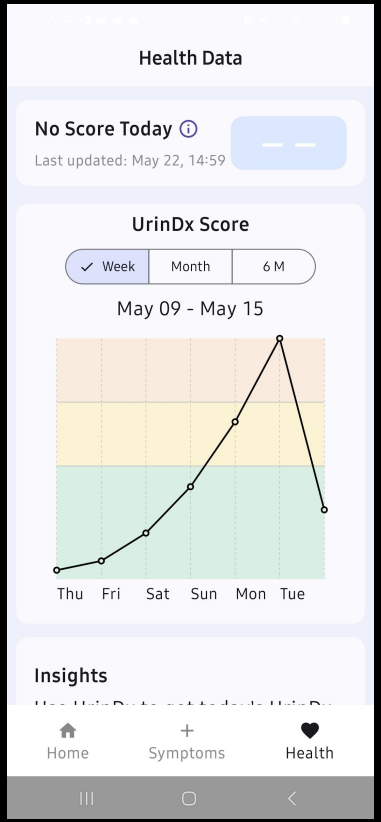
Background Box

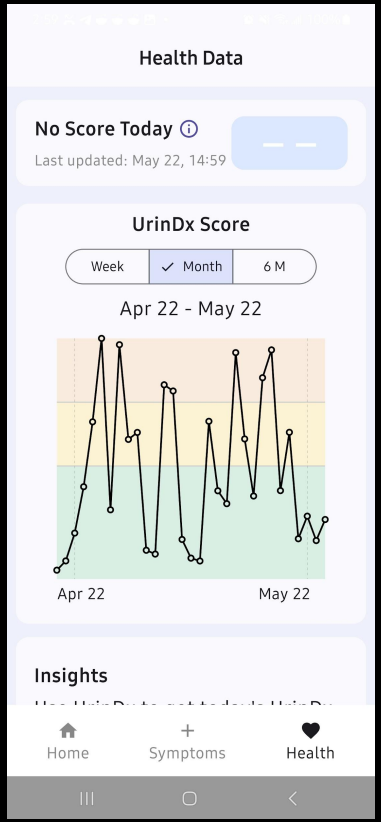


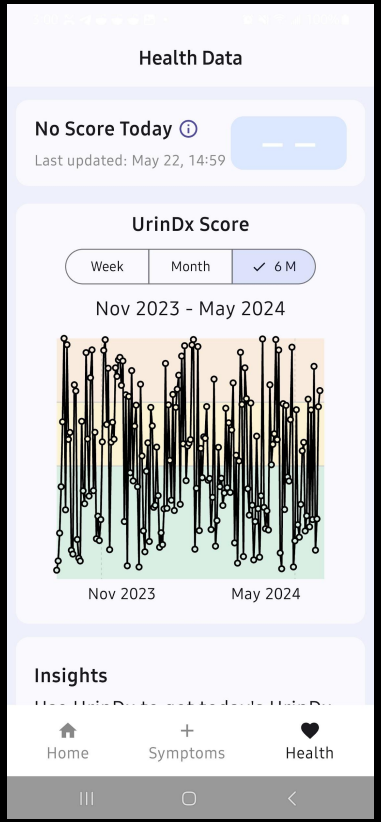
Graph Chart Area



Graph Examples







Week 2 (5/27 - 6/1)

- **Started working on integrating Starstream API**
  - Successfully connects to API and is able to retrieve data via Retrofit
  - Updated home page UI to dynamically display data from the API
  - Working on dynamically displaying the graphs
  - Want to figure out how to cache API data in case internet connection is lost