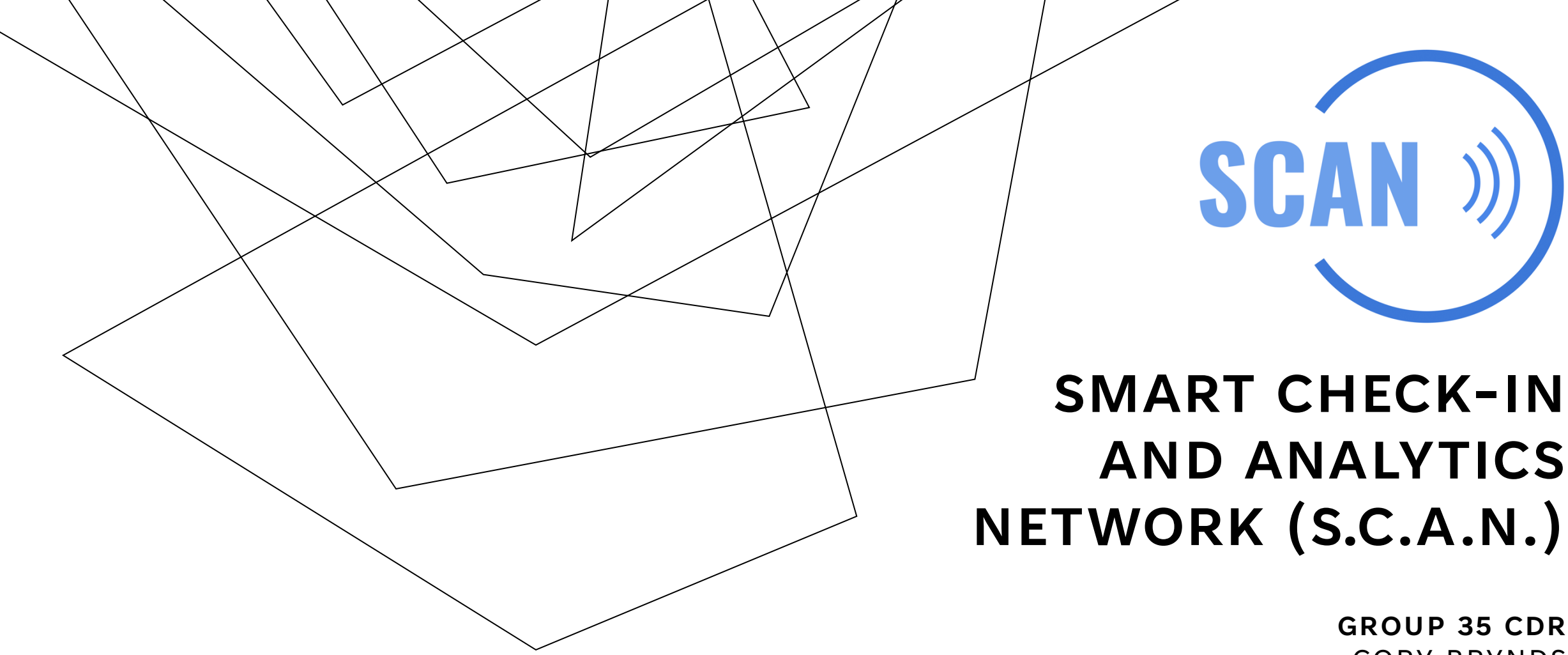
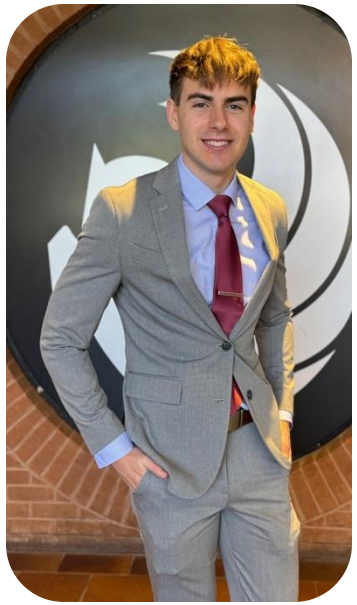


SMART CHECK-IN AND ANALYTICS NETWORK (S.C.A.N.)

GROUP 35 CDR
CORY BRYNDS
JONAH SPRANDEL
DEANDRE HENDRIX

TEAM INTRODUCTION



Cory Brynds
(Computer Engineering)

Jonah Sprandel
(Electrical Engineering)

DeAndre Hendrix
(Computer Engineering)

PROJECT MOTIVATION AND BACKGROUND


Cory (CpE)

- At a large public university like UCF, data collection is essential
- As an example, the UCF Recreation and Wellness Center uses check-in data for:
  - Facilities scheduling and staffing
  - Budgeting and financing
  - Determining attendee retention
- Existing check-in kiosks and software-as-a-service (SaaS) packages are expensive, non-portable, and overcomplicated

Cory (CpE)

S.C.A.N. GOALS & OBJECTIVES

BASIC GOALS

- SCAN will be used to identify, authenticate, and check in users
- SCAN will collect and track user data through a user database
- SCAN will analyze user data and provide actionable insights
- A web application will display and visualize SCAN's insights

ADVANCED GOALS

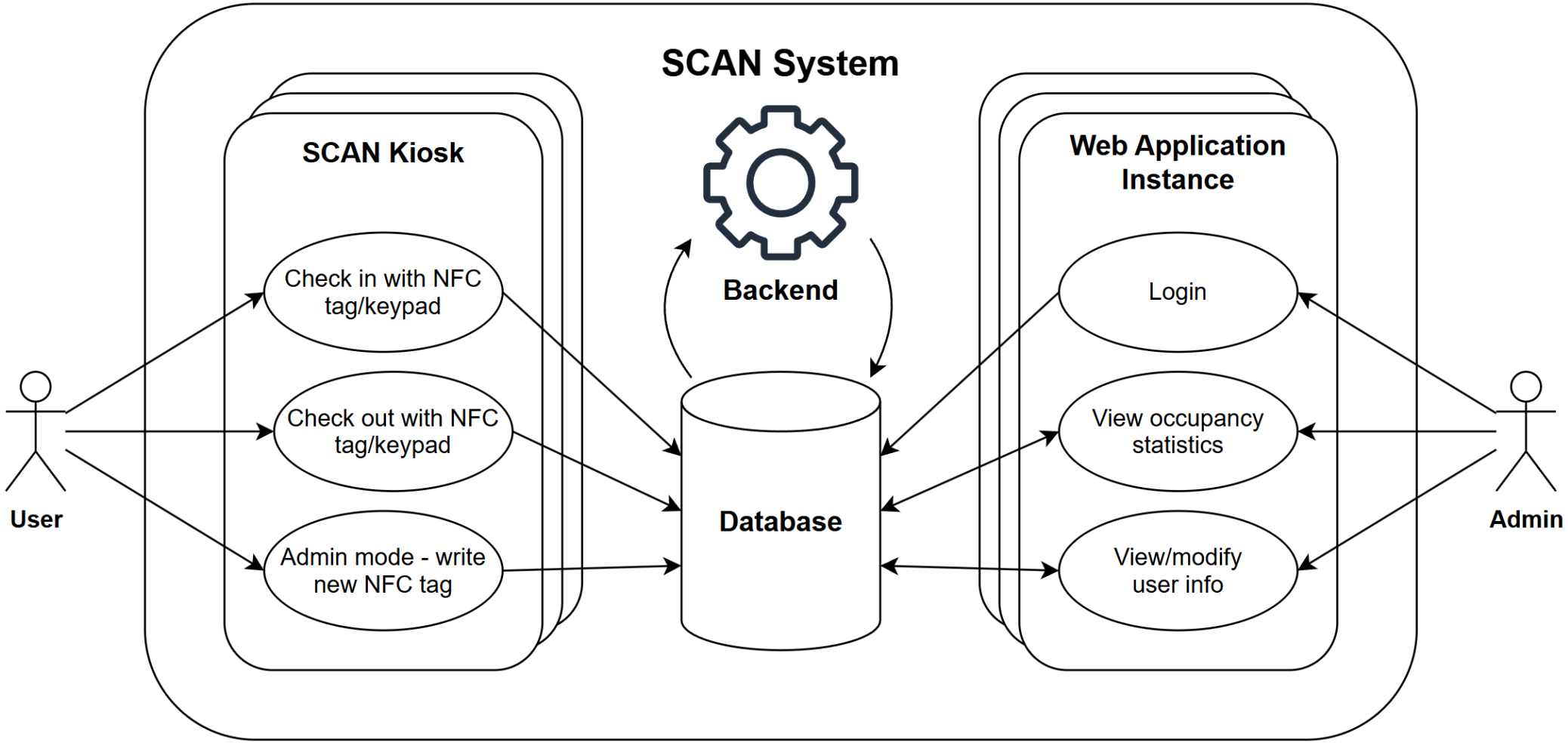
- SCAN can write new user ID cards through an administrator mode
- SCAN's firmware will efficiently execute features and tasks using a real-time operating system (RTOS)
- SCAN can operate as a network of kiosks, providing check-in and analytics from multiple locations

STRETCH GOALS

- The SCAN system will be capable of being charged by solar power
- SCAN can receive over-the-air updates for firmware patches
- The SCAN web application will implement lazy loading for more efficient data fetching

DeAndre (CpE)

USE CASE DIAGRAM



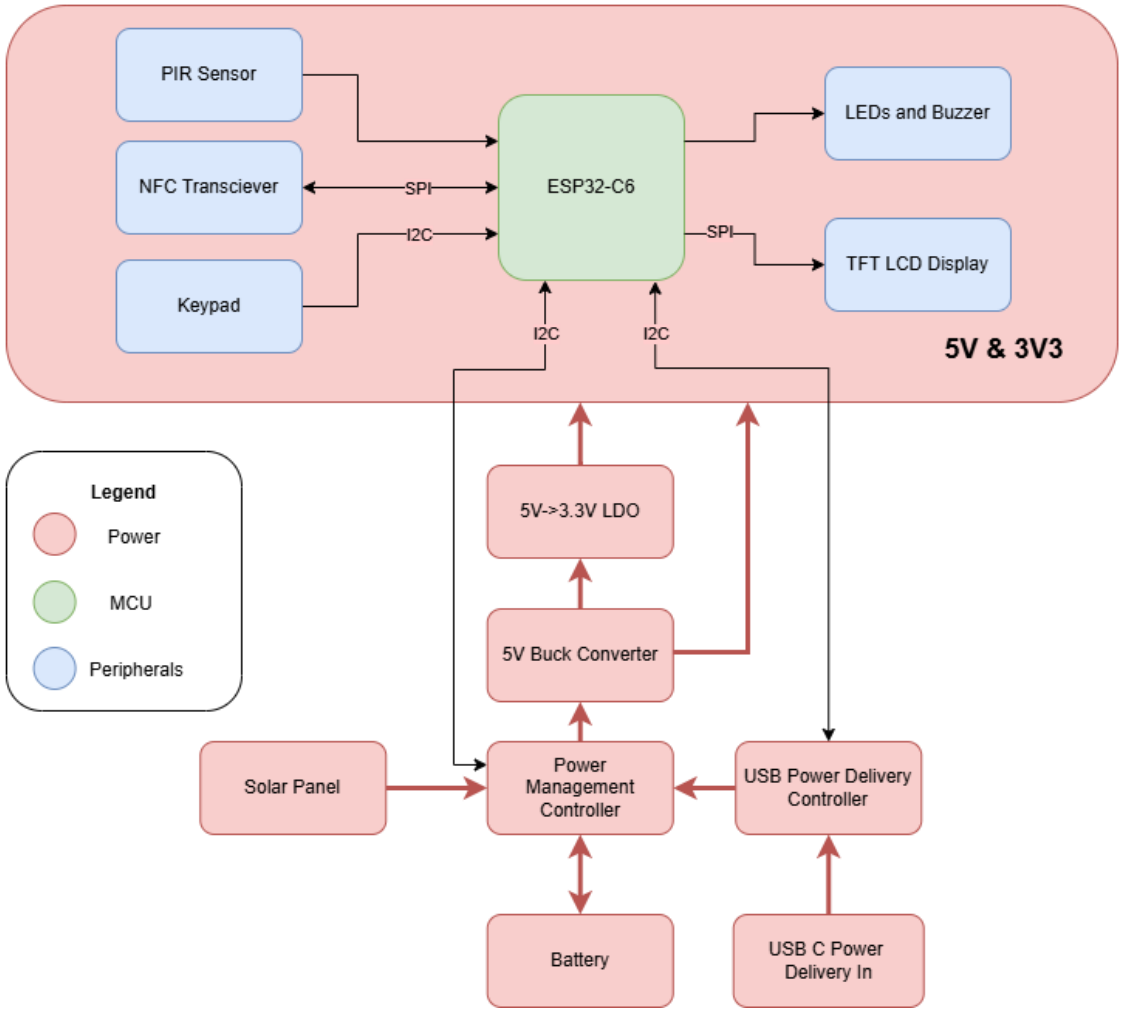

DeAndre (CpE)

REQUIREMENT SPECIFICATIONS

Feature	Requirement	Specification
Enclosure Size	The **maximum size of the enclosure and stand** for each SCAN system will be **1'x1'x4'**	< 1'x1'x4'
Authentication Methods	SCAN will support **two methods of authentication**: NFC tags and manual entry of a user ID through a keypad.	2
Battery Operating Time	The SCAN kiosk will have a **minimum operating time of 2 hours** on battery power under typical operating conditions.	> 2 hours
Charging Power	SCAN will have a **minimum supported charging power of 10W.**	> 10 W
Proximity Sensing Range	SCAN will be able to **detect users within a 1.5-meter range**.	> 1.5 meters
Number of Check-in Statistics	SCAN will display at least **three forms of analytics** based on check-in data, including occupancy, peak hours throughout the week, and the average duration of a user's stay.	> 3
Time to Authenticate	SCAN will **authenticate the credentials of a user ID in less than 10 seconds**.	< 10 seconds
Authentication Accuracy	SCAN will accurately authenticate users with an **error rate of 5% or less**.	> 95%
Analytics Refresh Rate	The analysis of SCAN's collected data will be updated on the web page once every minute.	< 1 minute

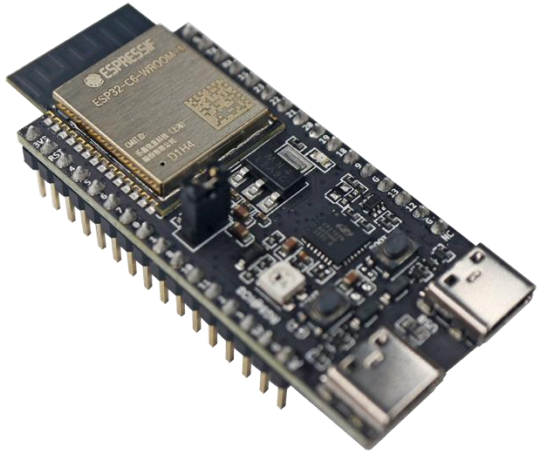
Jonah (EE)

HARDWARE BLOCK DIAGRAM



Jonah (EE)

COMPONENT SELECTION
PROCESSOR



FEATURE	Texas Instruments CC3235SF	Espressif ESP32-C6-WROOM-1-N8	Infineon CYW55912
Processor Core	ARM Cortex-M4	RISC-V	ARM Cortex-M33
Clock Speed	80 MHz	160 MHz	192 MHz
Wi-Fi Support	2.4 GHz and 5 GHz	2.4 GHz	2.4 GHz and 5 GHz
Wi-Fi Data Rate	16 Mbps	150 Mbps	143 Mbps
RAM	256 KB SRAM	512 KB SRAM	768 KB SRAM
Flash Storage	1 MB	8 MB	None
Relevant Peripheral Interfaces	1x I2C 1x SPI 2x UART 4x ADC 27x GPIO	1x I2C 2x SPI 3x UART 1x ADC (7ch) 30x GPIO	2x I2C 2x SPI 4x UART 7x ADC 47x GPIO
Documentation and Community Support	Low	High	Low

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DeAndre (CpE)

TECHNOLOGY COMPARISON PROXIMITY SENSING

Passive infrared sensing ultimately chosen for optimal detection range, response time, power consumption, and ease of integration

FEATURE	Ultrasonic	Passive Infrared	Capacitive
Detection Range	0.1 to 10m	5 to 12 m	< 10 cm
Measurement Medium	Sound	Infrared radiation	Electric field (capacitance)
Response Time	5 to 50ms	.1 to 1 second	< 10 ms
Power Consumption	72 to 336mW	Standby: 1 to 3 mW Active: 50 to 100 mW	50 uW to 5 mW
Cost	$1 - $3	$1 - $5	$0.02 to $2
Ease of Integration	High - simple digital interface	High – simple digital interface	Moderate difficulty (requires careful tuning)
Environmental Sensitivity	Affected by temperature, humidity, and noise	Affected by heat sources	Affected by humidity, temperature, and nearby metals

DeAndre (CpE)

FEATURE	HC-SR501	AM312	EKMB11071112
Operating Voltage	5 - 12 V	2.7 - 12 V	3 - 5 V
Detection Range	6 meters	3 – 5 meters	0.1 - 6 meters
Power Consumption	65 mA	0.1 mA	3 mW
Response Time	0.3 - 5 min	<1 second	1 – 25 seconds
Size	32 x 24 mm	10 x 8 mm	15 x 10 mm
Cost	$10	$2	$8.7

COMPONENT SELECTION
PASSIVE INFRARED SENSOR

AM312 PIR sensor chosen for low cost, response time, power consumption, and small size.


Cory (CpE)

COMPONENT SELECTION

NFC TRANSCEIVER

- PN532 is a popular RFID transceiver that supports the ISO/IEC 14443 standard necessary for Reader/Writer NFC communication
- Large amount of software support
- Support for all three common communication interfaces

FEATURE	PN532	ST25R3911B	CLRC663
Supported Standards	ISO/IEC 14443 Type A and B, Mifare, FeliCa, ISO/IEC 18092	ISO 18092, ISO 14443 Type A and B, ISO 15693	ISO/IEC 14443 A and B, ISO/IEC 18092, ISO/IEC15693, ISO/IEC 18000-3 mode 3, Felica, Mifare, NFCIP-1, EMVCo
Communication Modes	Reader/Writer, Peer-to-Peer, Card Emulation	Reader/Writer Peer-to-Peer	Reader/Writer Peer-to-Peer
Peak Data Rate (kbit/s)	424	6800	848
Host Interfaces	I2C, SPI, UART	SPI	I2C, SPI, UART
Max Power (mW)	820	1400	1125
Supported Range (cm)	7	10	12
Operating Temperature	-25 to 85 °C	-40 to 125 °C	-25 to 85 °C
Cost Per IC	$7.14	$6.48	$7.53

Cory (CpE)

COMPONENT SELECTION
SMART CARD

- NTAG213 selected as total capacity is sufficient, and it is well-supported by PN532 and NFC libraries
- Commonly used for storing passkeys, URLs, and other identifying information

FEATURE	NTAG213	NTAG215	MIFARE CLASSIC
Supported Standards	ISO/IEC 14443	ISO/IEC 14443	ISO/IEC 14443-A
NFC Type	NFC Type 2	NFC Type 2	NFC Type 4
Total Capacity	180B	540B	1kB
Write Endurance	100000 cycles	100000 cycles	200000 cycles
Data Retention Time	10 years	10 years	10 years
Data Transfer Rate	106kbits/s	106kbits/s	106 kbits/s
Operating Distance	Up to 10cm (dep. on reader)	Up to 10cm (dep. on reader)	Up to 10cm (dep. on reader)
PN532 Support	Full Support	Full support, extra effort needed on software	Full support but requires emulation of NDEF format
Use Cases	Smart posters, authentication, URL storage	Amiibo, larger data storage	Public transit cards, access control, payment systems
Price	$11.99/20 cards	$10/20 cards	$8/10 cards

Cory (CpE)

COMPONENT SELECTION: KEYPAD & IO EXPANDER

- An IO expander is used to reduce the total # of GPIO pins used on the ESP32

Keypad Features	Membrane Keypad	Keypad Module Array	Pushbutton Matrix
Dimensions	69.2x76.9mm	60x55mm	43x38mm
Number of keys	4x4 (16)	4x4 (16)	4x4 (16)
Number of pins	8	8	8
Tactility	Low	Medium	High
Cost	$1.60	$7.89	$2.25

IO Expander Features	AW9523	PCF8574	MAX7314ATG
GPIO Pins	16	8	18
Addressing Scheme	I2C, 4 addresses	I2C, 3 addresses	I2C, 2-wire serial
Interrupt Pin?	Yes	Yes	Yes
Clock Frequency	400kHz	100kHz	400kHz
Output sink/source current	37mA	1mA, 25mA	50mA
Cost	$4.95	$2.30	$2.53

COMPONENT SELECTION
DISPLAY AND AUDIO

Cory (CpE)

FEATURE	Round TFT LCD Display Module
Screen Size	1.28" Diameter
Resolution	240x240
Driver Chip	GC9A01
Color	Full RGB
Operating Voltage	3.3V/5V
Typical Operating Current	20mA
Cost	$6.33

- Display selection criteria:
  - Responsive
  - Low power budget
  - Driver support for ESP-IDF
  - Compatible with LVGL embedded graphics library
  - A passive buzzer was chosen to generate distinct tones for check-in, check-out, administrator mode, and error states

FEATURE	Active Buzzer	Passive Buzzer	Magnetic Speaker
Complexity	Low	Medium	High
Sound Range	Fixed Tone	Range of Tones	Real audio signals
Driving Method	Drive HIGH or LOW with GPIO	PWM Signal	GPIO and external amplifier circuit
Best For	Audio alerts	Alerts of various tones/melodies	Audio/Music Playback
Selected Component	CYT1036 5V Active Buzzer	160Ohm Passive Buzzer 3-5V	2W 8Ohm Round Magnet Speaker 2W

Jonah (EE)

COMPONENT SELECTION
USB POWER DELIVERY

- USB Power Delivery selected for fast battery charging to meet our goal of operating in outdoor environments
- Main selection criteria is low complexity

FEATURE	CYPD3171	CYPD3177	TPS25751
Input Voltage (V)	5 - 20	5 - 20	5 - 20
Role	Source & Sink	Sink	Source & Sink
Programmable Firmware	Yes	No	No
I2C Interface	Yes	Yes	Yes
Protection	OVP, OCP	OVP, OCP	OVP, OCP
Complexity	High	Low	Medium

Jonah (EE)

COMPONENT SELECTION POWER MANAGEMENT

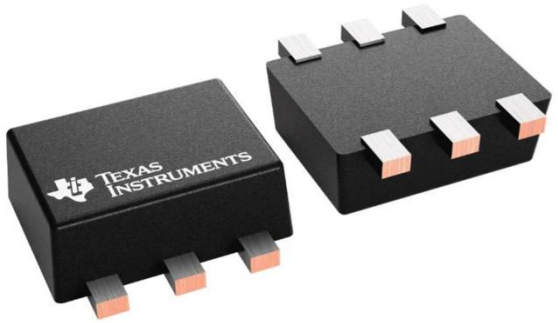
- Main selection criteria is support for solar panel and DC input power

FEATURE	MP2760	TI BQ25798	NXP PF1550
Charger Type	Buck-Boost	Buck-Boost	Buck
Input Voltage Range (V)	4 - 22	3.6 - 24	5
Charge Current (A)	4	5	1
MPPT for Solar Panel	No	Yes	No
Battery Cell Support	1-4 cells	1-4 cells	1 cell
Complexity	High	High	Low
Community Support and Reference Design Availability	Medium	High	Low

Jonah (EE)

COMPONENT SELECTION
LOGIC POWER

FEATURE	TPSM64406	TI TPS563203	TI TLV76733
Converter Type	Buck	Buck	Linear Voltage Regulator
Input Voltage Range (V)	3.8 - 36	4.2 - 17	2.5 - 16
Output Current (A)	6	3	1
Switching Frequency	500 kHz – 1 MHz	600 kHz	N/A
Complexity	High	Low	Low



Jonah (EE)

TECHNOLOGY COMPARISON AND COMPONENT SELECTION

BATTERY

FEATURE	Lead Acid	Lithium-ion ($LiFePO_4$)	NiMH
Energy Density (Wh/L)	50-90	200-300	140-300
Specific Energy (Wh/kg)	30-50	150-250	60-120
Nominal Cell Voltage (V)	2	3.2 - 3.7	1.2
Cycle Life (cycles)	300-500	500-2000	500-1000
Self-Discharge (%/month)	3-5	1-3	20-30
Recommended Depth of Discharge (%)	50	80-95	60-80

FEATURE	XZNY-C1212	Talentcell LF4011	Talentcell LF060A1
Size (L x W x H)	5.95" x 2.56" x 3.7"	3.43" x 2.68" x 3.86"	2.76" x 1.85" x 3.94"
Capacity (Wh)	153.6	76.8	38.4
Nominal Voltage (V)	12.8	12.8	6.4
Cost	$39.99	$38.99	$21.99

Jonah (EE)

System Schematic

Jonah (EE)

USB Power Delivery

Supply Decoupling Caps

VGS 10V Clamp

5A Load Switch

Power Sink Controller

USB PD

U3
CYPD3177-24LQXQT

VBUS_MIN = 9V

VBUS_MAX = 12V

ISNK = ISNK_CRS + ISNK_FIN

ISNK_CRS = 3A

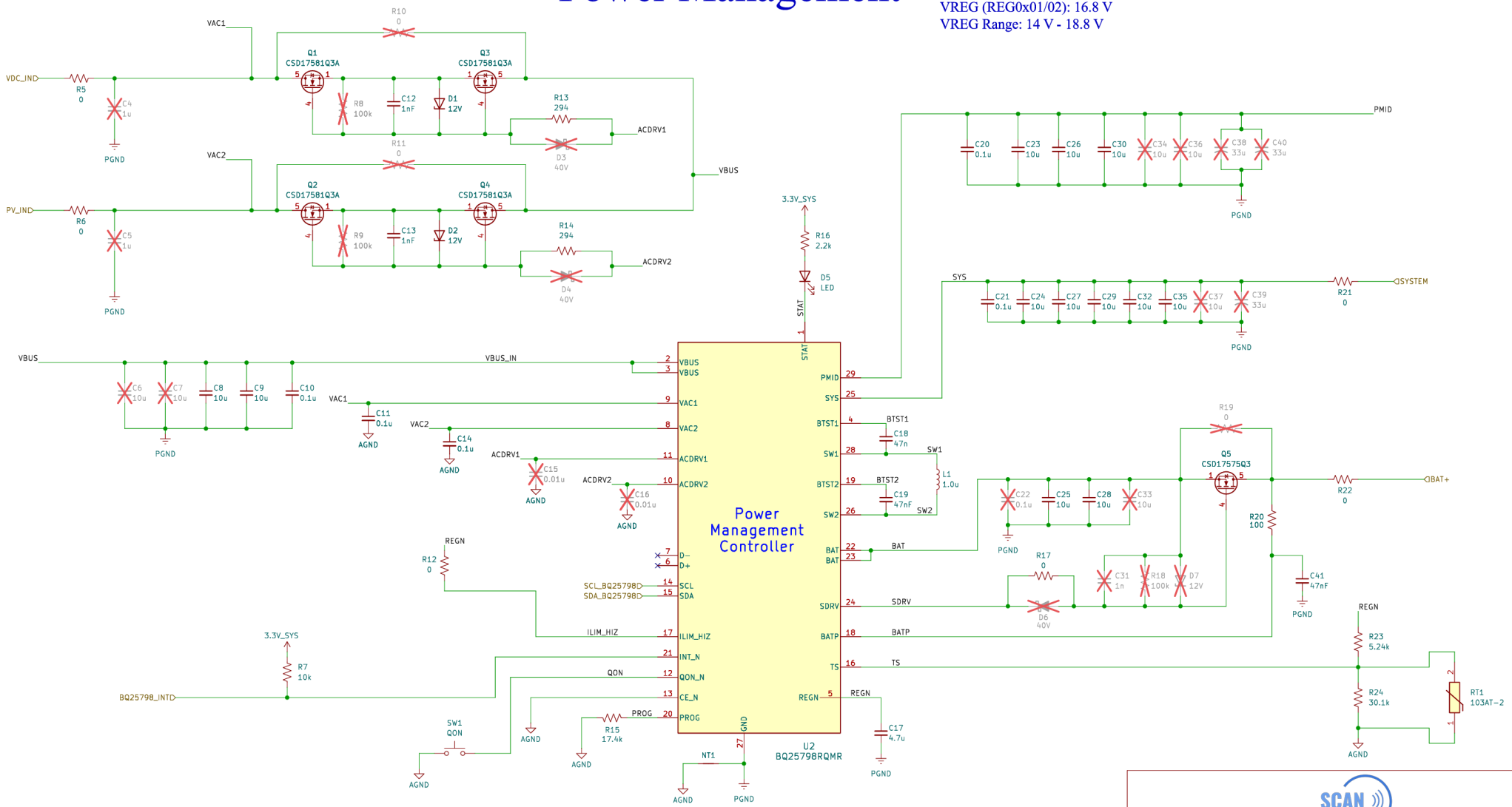
ISNK_FIN = 0A

Fault LED

Senior Design Group 35
Sheet: /USB Power Delivery/
File: usb_power.kicad_sch
Title: SCAN PCB
Size: B | Date: 2025-02-25 | Rev: 1.2
KiCad E.D.A. 8.0.6 | Id: 4/10

Power Management

At POR and WDT reset...
Fsw = 1.5 MHz
Battery Cell Count (REG0x0A[7:6]): 4s
ICHG (REG0x03/04): 1 A
VSYSMIN (REG0x00[5:0]): 12 V
VREG (REG0x01/02): 16.8 V
VREG Range: 14 V - 18.8 V



Senior Design Group 35
Sheet: /Power Management/
File: power_management.kicad_sch

Title: SCAN PCB

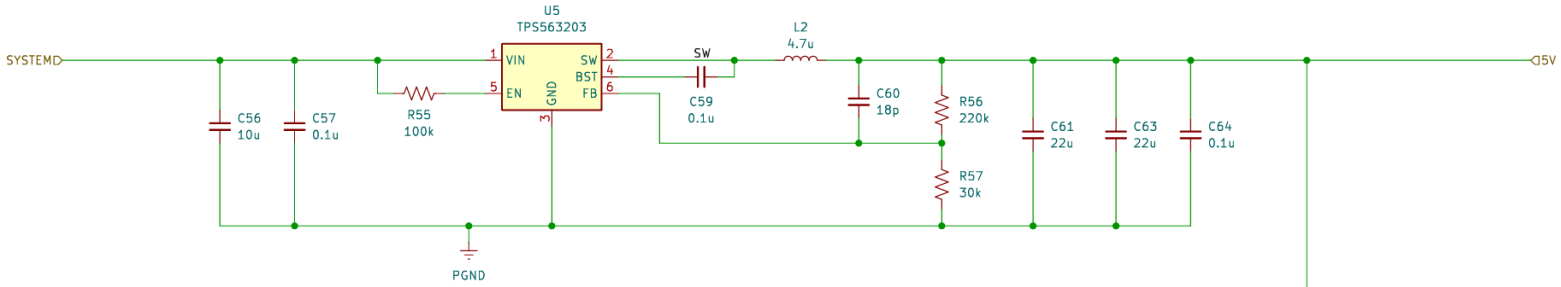
Size: B	Date: 2025-02-25	**Rev: 1.2**
KiCad E.D.A. 8.0.6		Id: 2/10

Jonah (EE)

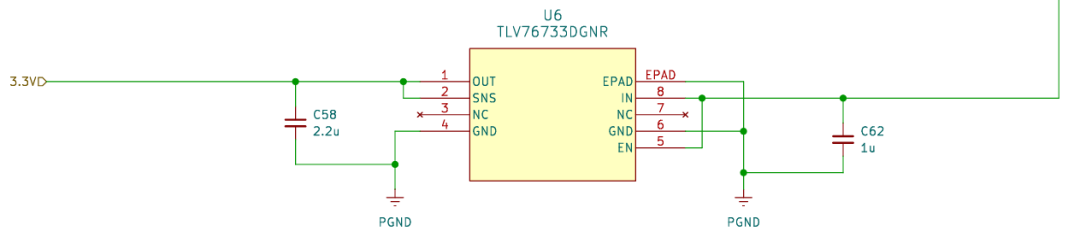
Jonah (EE)

Logic Power

Vin = 6.5 V - 17 V
Fsw = 600 kHz
Vout = 5 V
Iout(max) = 2.5 A

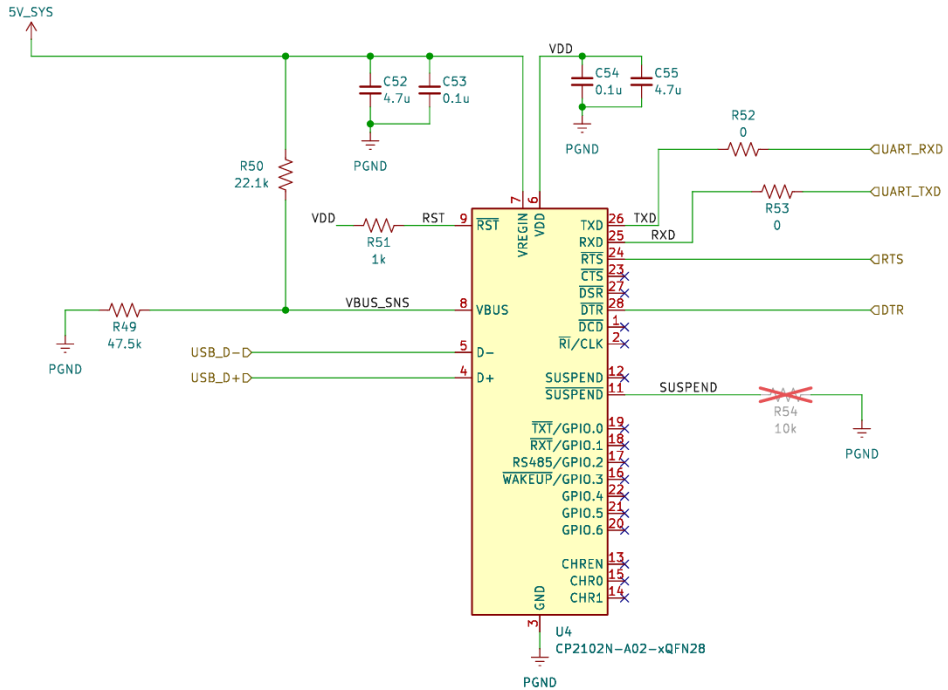


Vin = 5 V
Quiescent Current: 50 uA (typical)
Vout = 3.3 V
Iout(max) = 1 A



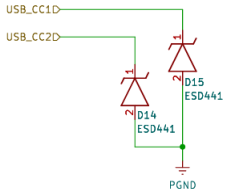
Jonah (EE)

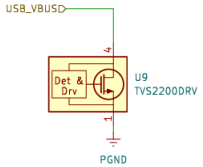
USB-to-UART Bridge

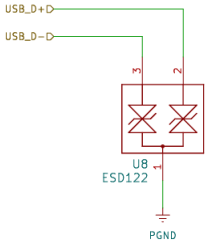


Jonah (EE)

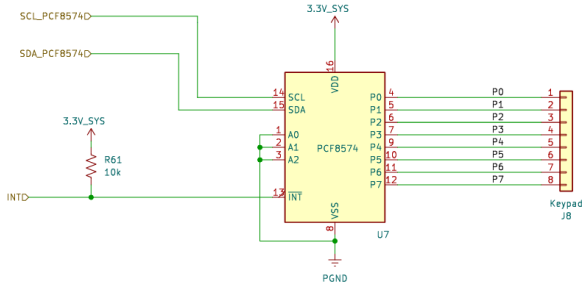
USB Protection



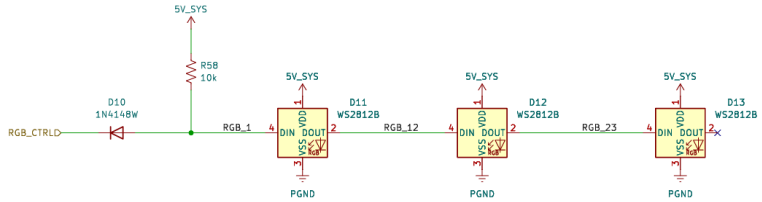


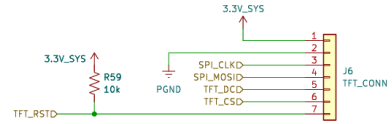


Keypad Bus Expander

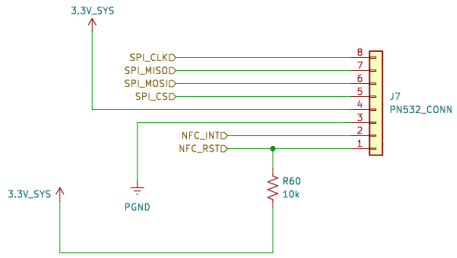


TFT Display Connector and RGB LEDs



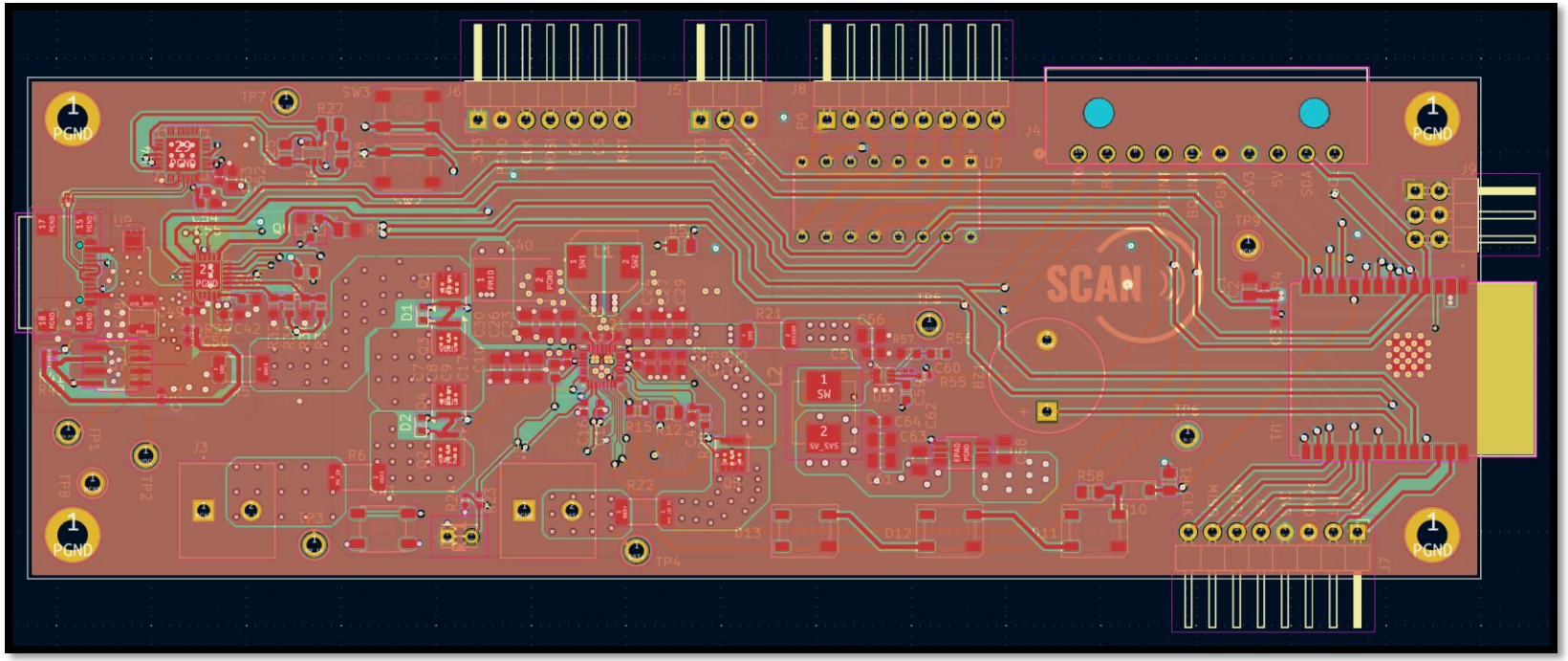


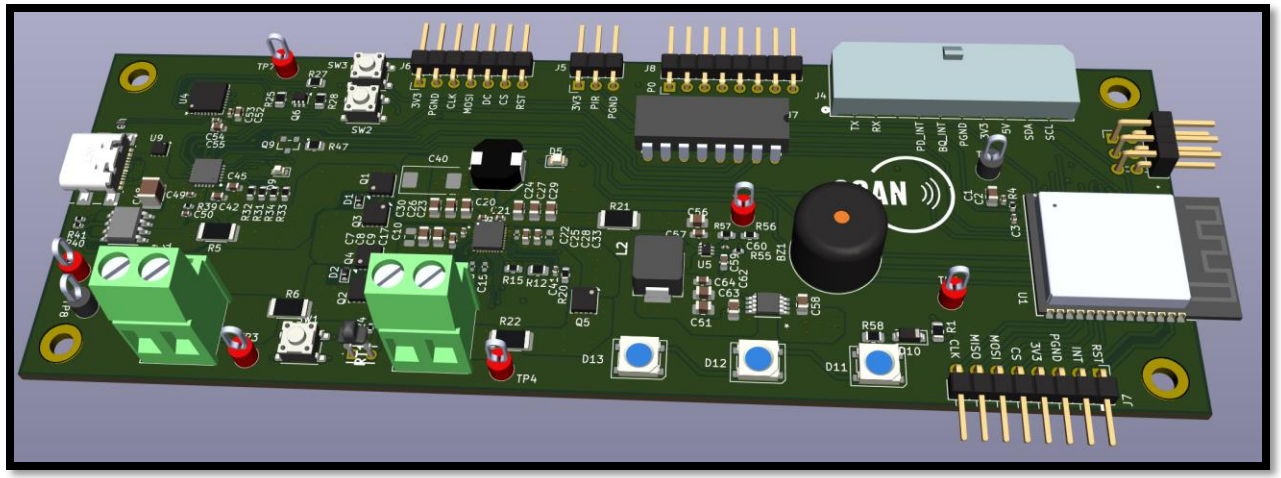
NFC Connector



PCB LAYOUT AND 3D MODEL

Jonah (EE)



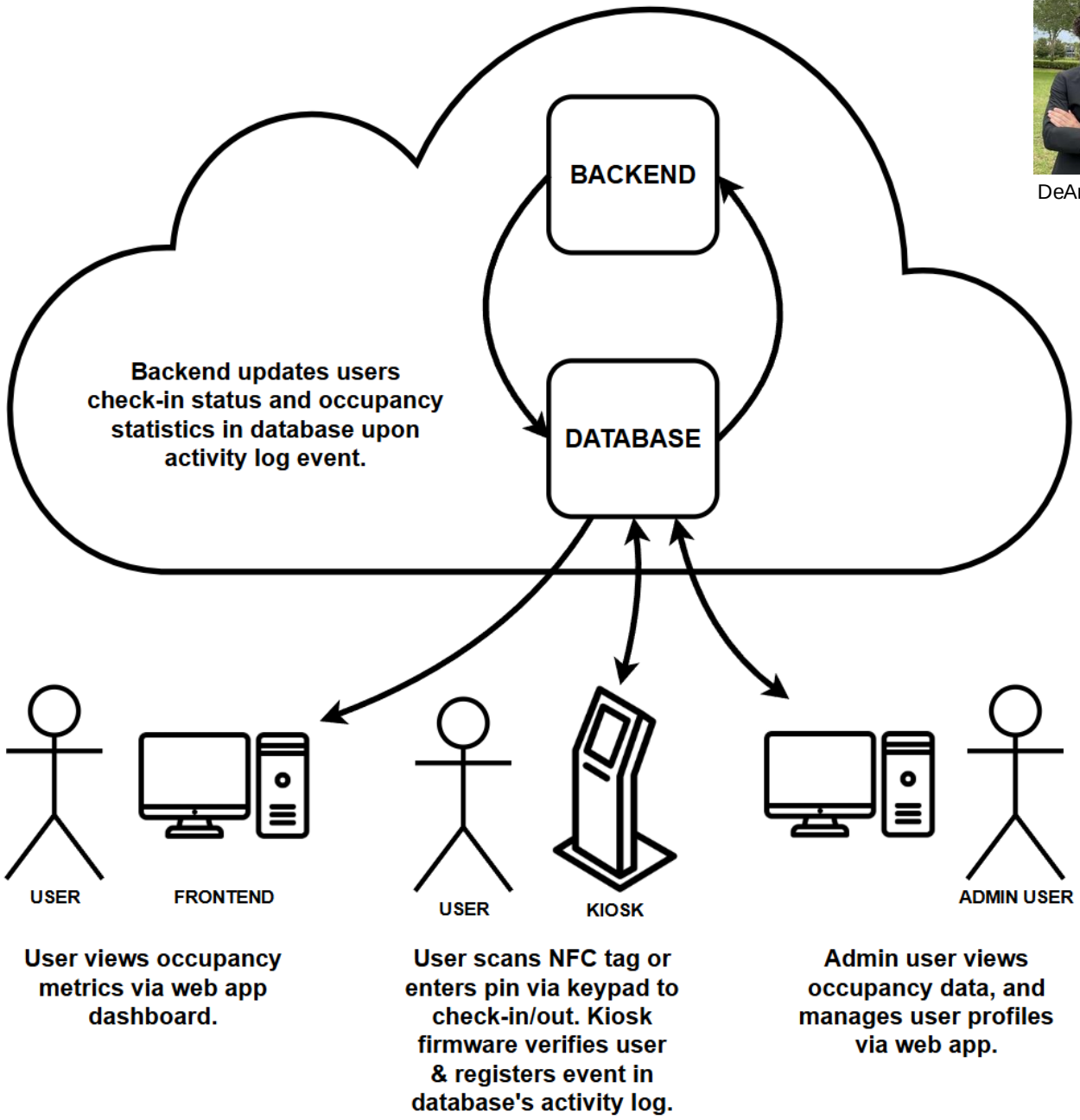


ENCLOSURE DESIGN

- Electronics enclosure will be 3D printed, PVC pipe and panels
- All PVC panels cut by the UCF machine shop and are ready for assembly

DeAndre (CpE)

SOFTWARE ARCHITECTURE DIAGRAM



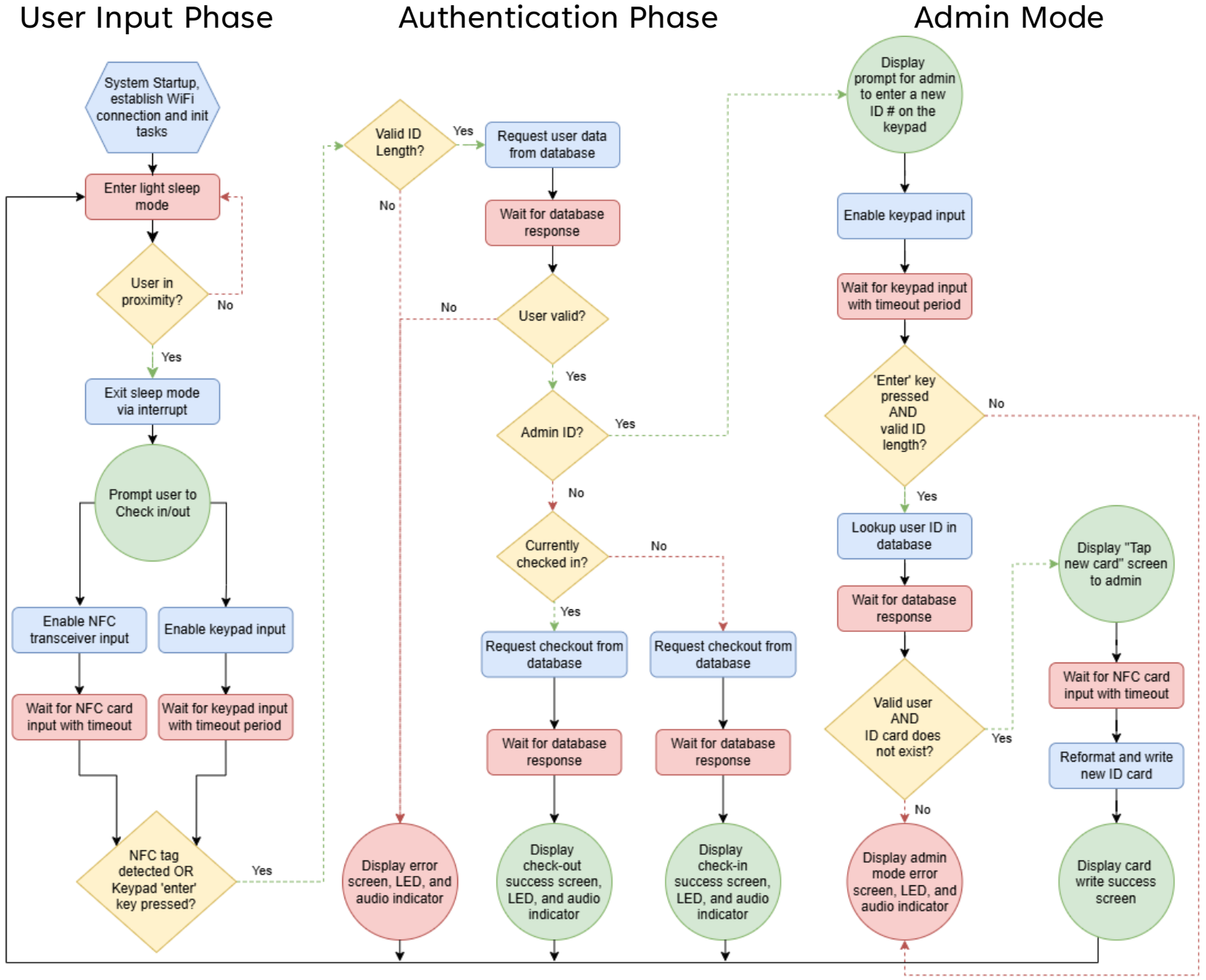
EMBEDDED IDE SELECTION

Jonah (EE)

Feature	Arduino IDE	VSCode + PlatformIO (Arduino)	VSCode + ESP-IDF
Setup Ease	Very simple, easy installation	Moderate setup required to configure for a specific board	More complex, manual ESP-IDF installation and config
Learning Curve	Beginner-friendly	Moderate	Steeper
Supported Framework	Arduino	Arduino Core but with more configuration	Native ESP-IDF, direct access to ESP32 hardware features
Debugging	Limited to serial output and logging	Improved debugging via VSCode extensions	Advanced debugging with GDB, real-time trace, and monitoring tools
Build System	Mostly hidden	Customizable PlatformIO build system	CMake/Ninja
RTOS Support	Limited	Similar to Arduino IDE	Full integration of FreeRTOS for task management, synchronization, and real-time operations
IDE Features	Text editor with limited library management	VSCode features such as intellisense, library management, and unit testing	Real-time monitoring, profiling, and component management
Community Support	High community support	Moderate community with good documentation	Direct support from Espressif with growing developer community
		^ For quick prototyping	^ For final project, RTOS integration

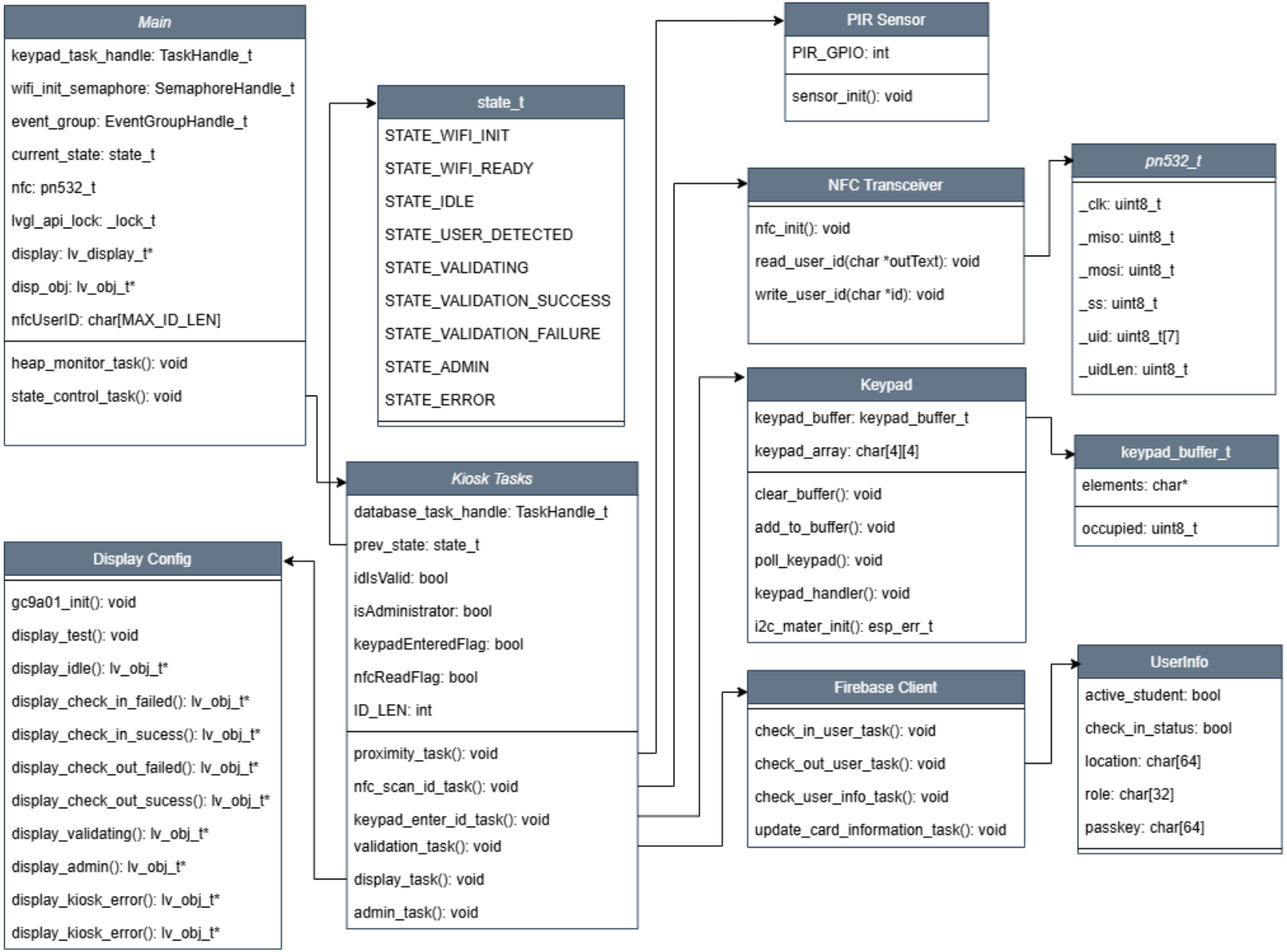
KIOSK FIRMWARE FLOWCHART

Cory (CpE)



KIOSK FIRMWARE CLASS DIAGRAM

Cory (CpE)



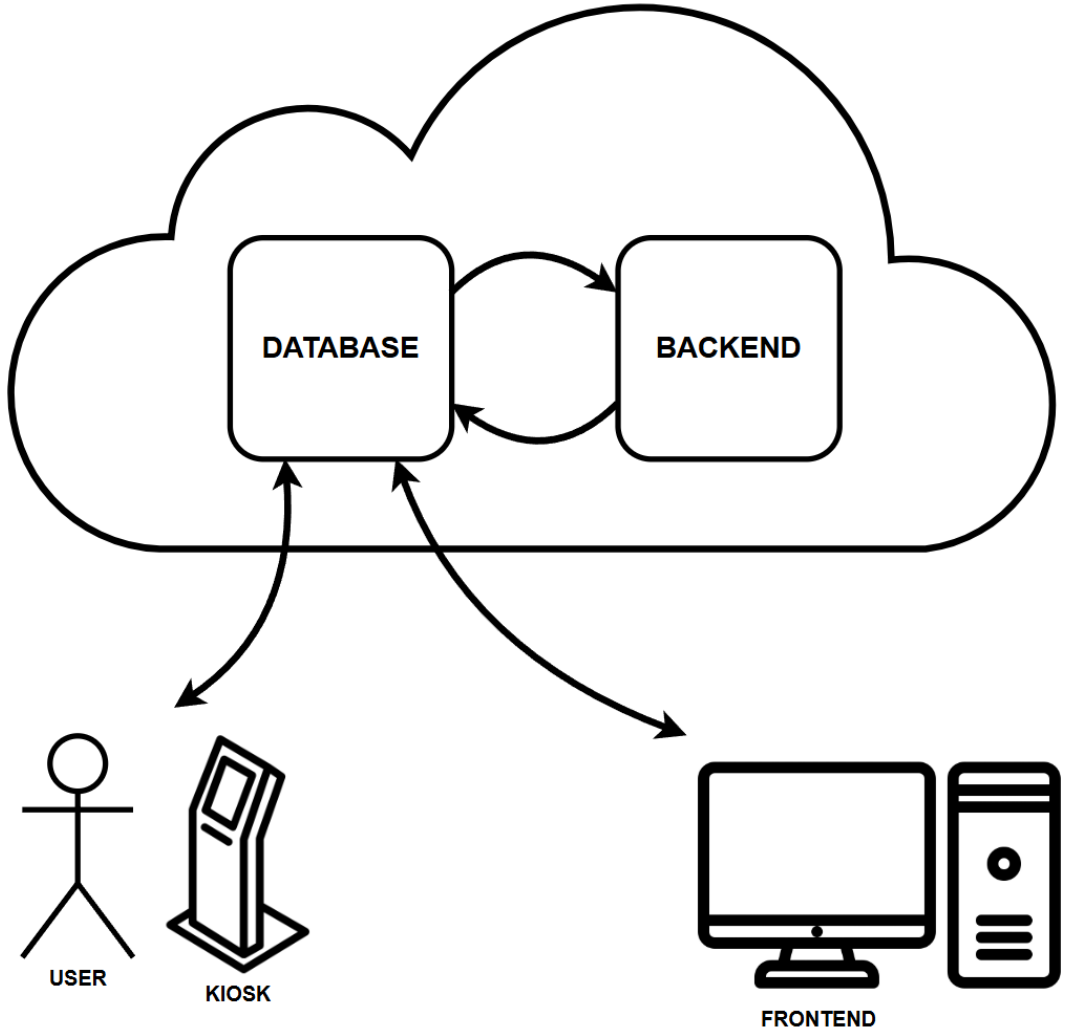
DeAndre (CpE)

WEB APP STACK

FRONTEND

BACKEND

DATABASE



DeAndre (CpE)

TECHNOLOGY COMPARISON

WEB APP FRONTEND

ReactJS chosen primarily due to:

- Group familiarity
- Online support and resources
- Ease of integration with other components in the Firebase ecosystem, like Firebase real-time database, hosting, and Cloud Functions.

FEATURE	Angular	Vue	ReactJS
Key Features	Two-way data binding, Dependency injection	Reactive binding, Virtual DOM	Component-based, Virtual DOM
Ease of Use	Low - Steep learning curve, small community	Easy learning curve, quickly growing	Easiest – group familiarity, large community
Performance	Slightly slower	Fast	Fast and lightweight
Ease of Firebase Integration	Moderate	Easy	Easy

DeAndre (CpE)

FEATURE	Firebase Realtime Database	Firebase Firestore	Microsoft Azure
Data Model	NoSQL (JSON tree)	NoSQL (Documents and Collections)	NoSQL (Multiple models)
Real-Time Sync	Best for real-time updates	Supports real-time but slower	Limited (Change Feed for near real-time updates)
Deployment	Cloud-based (Managed by Firebase)	Cloud-based (Managed by Firebase)	Fully managed (Azure Cloud)
Cost	Free tier available, pay-as-you-go for large apps	Free tier available, pay-as-you-go for large apps	Higher cost, but flexible pricing models
Implementation Complexity	Simple (built-in integration with Firebase SDKs)	Slightly more complex than Realtime DB	More complex due to multiple database models

TECHNOLOGY COMPARISON
DATABASE

Firebase Realtime Database chosen for minimal cost, responsive real-time updates, and ease of integration with frontend, backend, and Firebase hosting

DeAndre (CpE)

TECHNOLOGY COMPARISON

WEB APP BACKEND

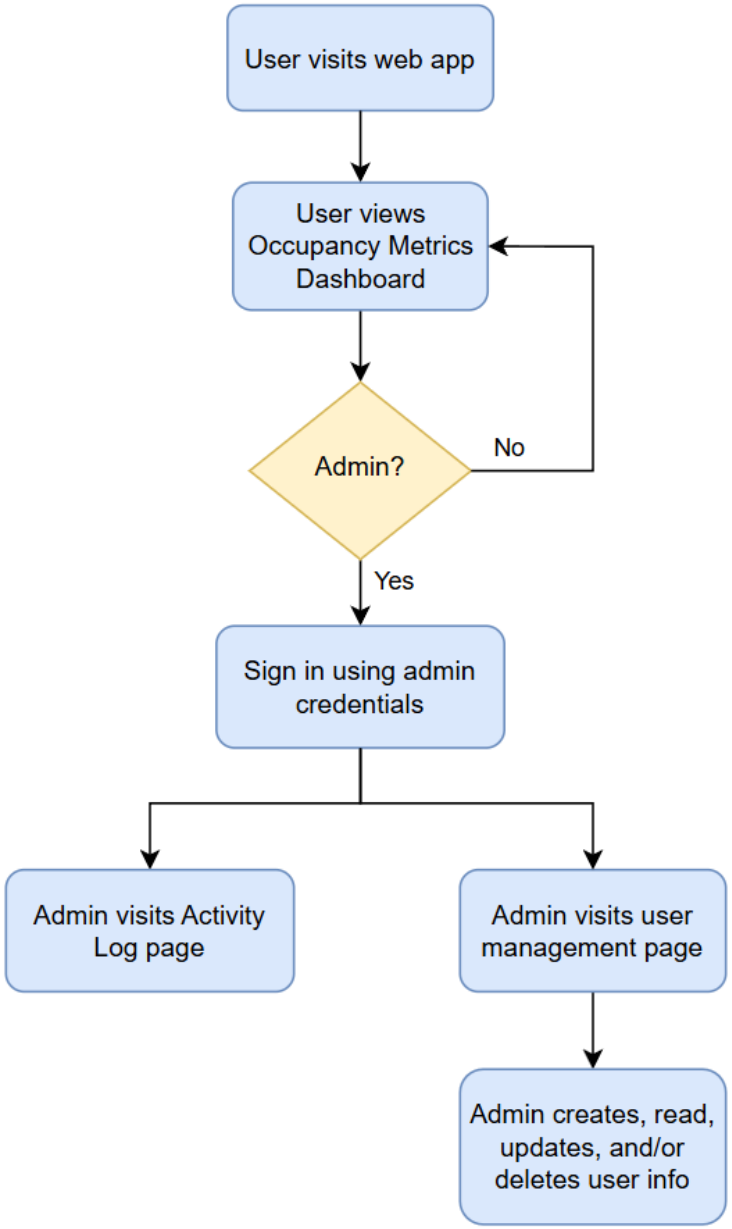
Firebase Cloud Functions for low implementation complexity and ease of integration with Firebase Realtime Database

FEATURE	Express.js on VPS	Firebase Cloud Functions	AWS Lambda
Complexity	High, requires hosting and setup	Low, serverless	Medium
Cost	Fixed server costs	Limited free tier, then pay-as-you-go	Potentially high – pay-as-you-go
Real-time Capabilities	Requires WebSockets	Built-in	Requires WebSockets
Security	Google authentication & IAM	Manual implementation, built-in traffic encryption	IAM roles

WEB APP FRONTEND DESIGN

- 3 pages navigable via stagnant navigation bar
- Admin sign-in (optional)
- Implemented using the Firebase SDK for updating displayed statistics immediately upon changes to database

DeAndre (CpE)

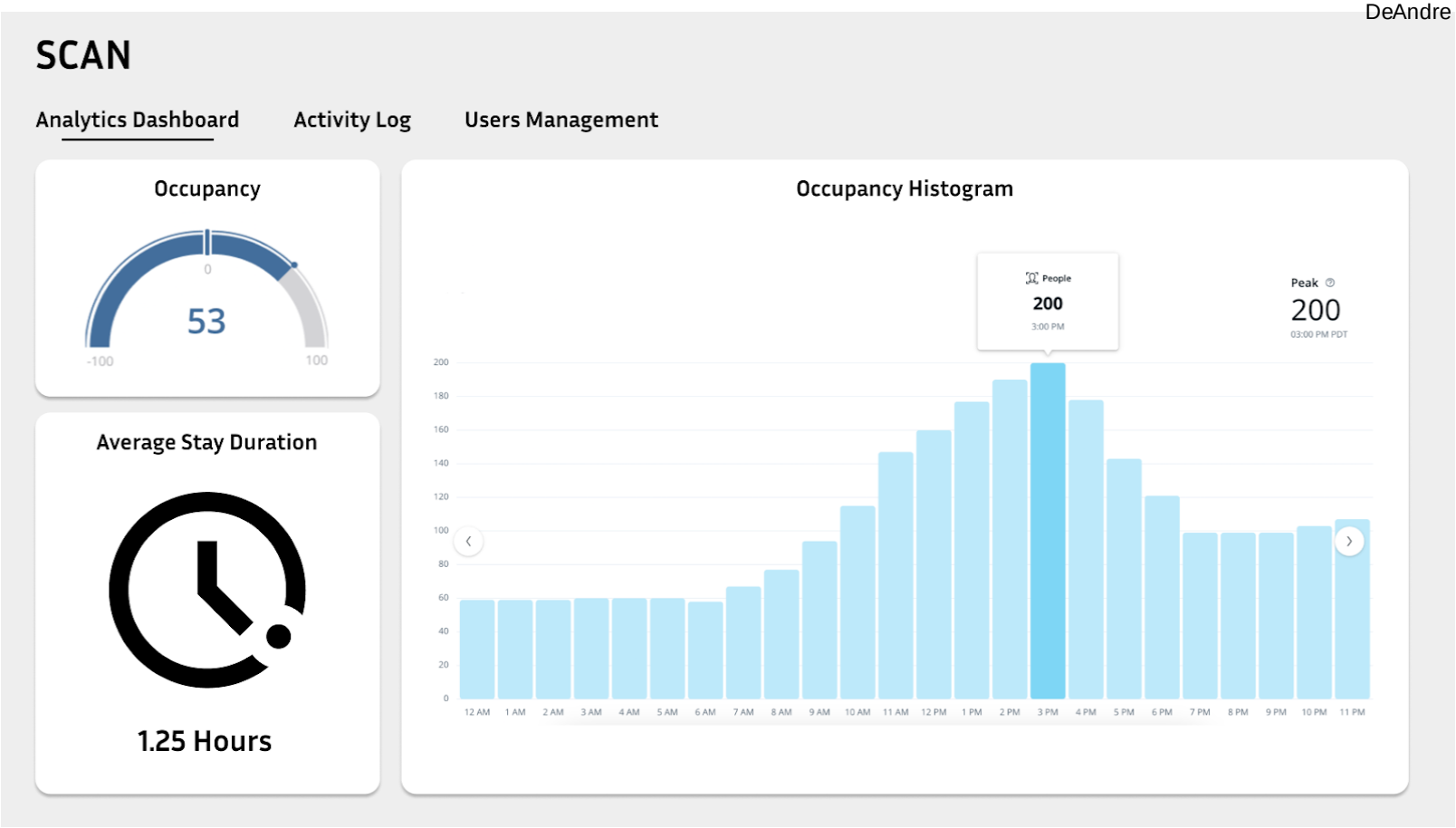


DeAndre (CpE)

WEB APP ANALYTICS DASHBOARD

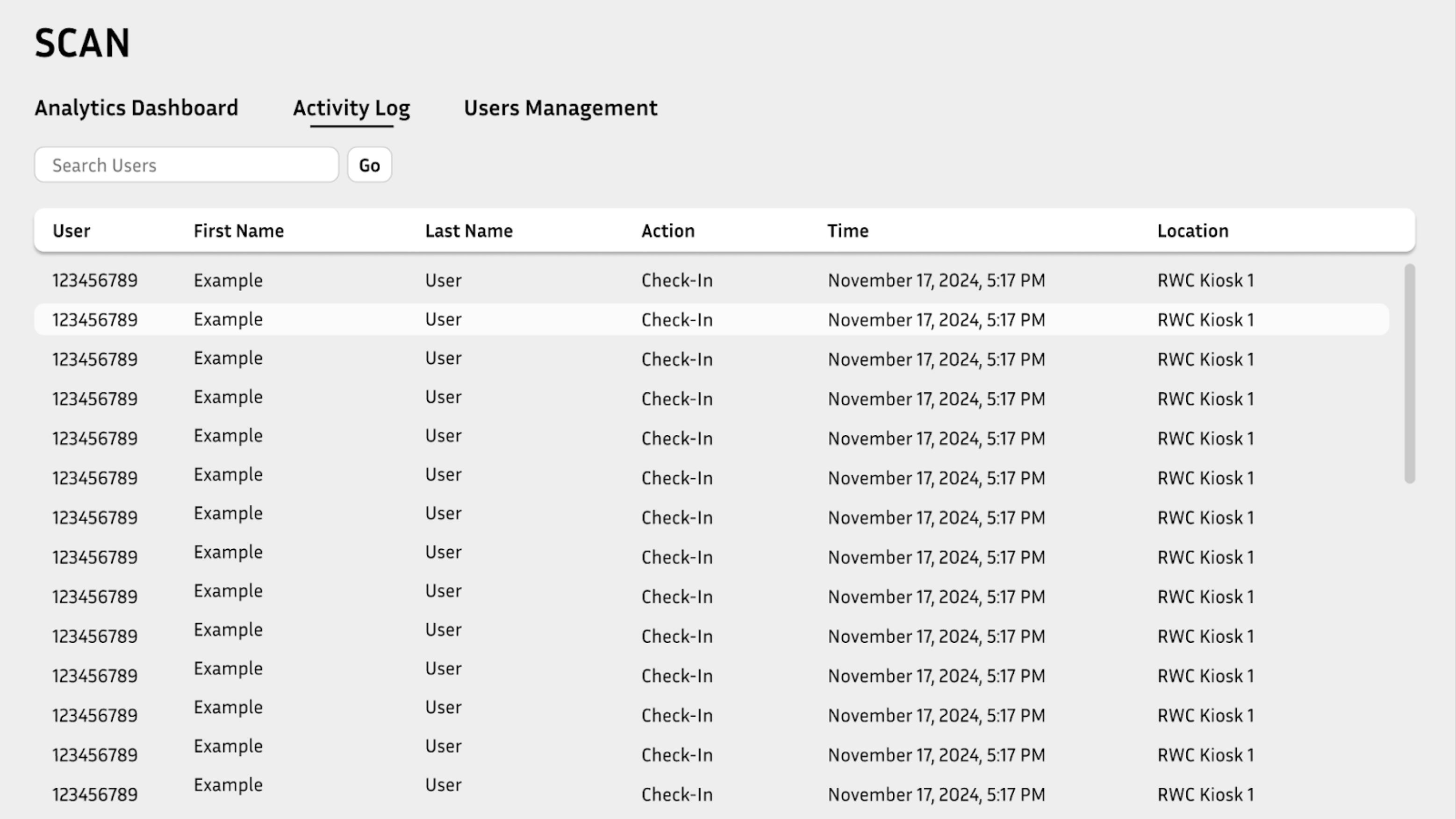
Wireframe shows intended design encompassing a variety of metrics including:

- Live occupancy
- Average stay duration
- Occupancy histogram



DeAndre (CpE)

WEB APP ACTIVITY LOG



SCAN

Analytics Dashboard | Activity Log | Users Management

Search Users | Go

User	First Name	Last Name	Action	Time	Location
123456789	Example	User	Check-In	November 17, 2024, 5:17 PM	RWC Kiosk 1
123456789	Example	User	Check-In	November 17, 2024, 5:17 PM	RWC Kiosk 1
123456789	Example	User	Check-In	November 17, 2024, 5:17 PM	RWC Kiosk 1
123456789	Example	User	Check-In	November 17, 2024, 5:17 PM	RWC Kiosk 1
123456789	Example	User	Check-In	November 17, 2024, 5:17 PM	RWC Kiosk 1
123456789	Example	User	Check-In	November 17, 2024, 5:17 PM	RWC Kiosk 1
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123456789	Example	User	Check-In	November 17, 2024, 5:17 PM	RWC Kiosk 1
123456789	Example	User	Check-In	November 17, 2024, 5:17 PM	RWC Kiosk 1
123456789	Example	User	Check-In	November 17, 2024, 5:17 PM	RWC Kiosk 1
123456789	Example	User	Check-In	November 17, 2024, 5:17 PM	RWC Kiosk 1
123456789	Example	User	Check-In	November 17, 2024, 5:17 PM	RWC Kiosk 1

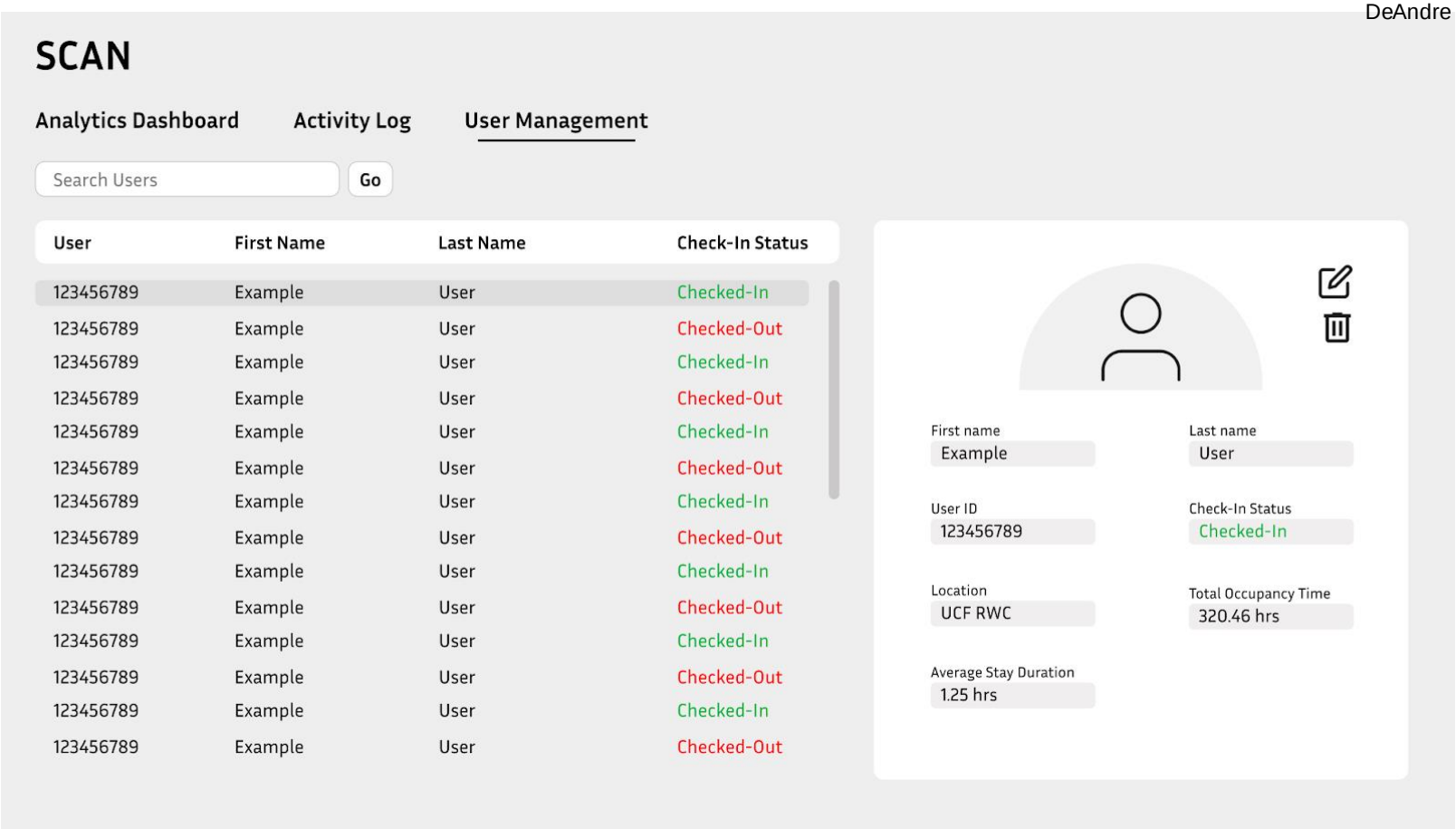
Allows administrative users to view an actively updated log of check-in/out events

Details user ID, name, action, time, and location.

DeAndre (CpE)

WEB APP
USER MANAGEMENT

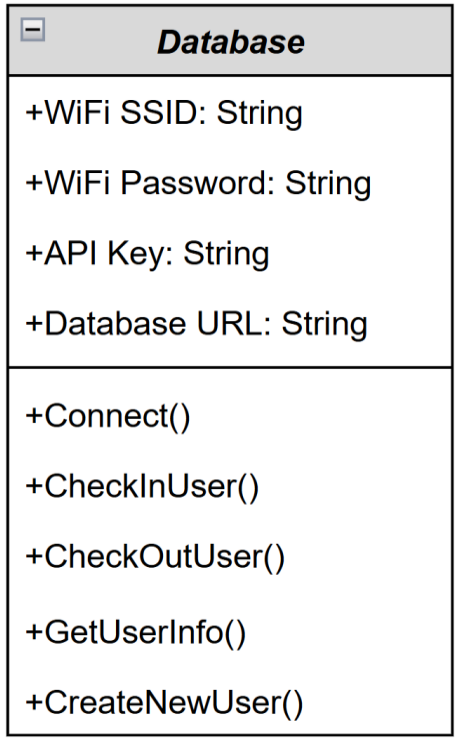
Allows admin users to search, view, create, update, and delete user profiles



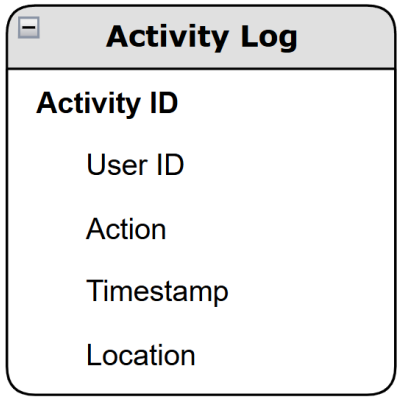
DeAndre (CpE)

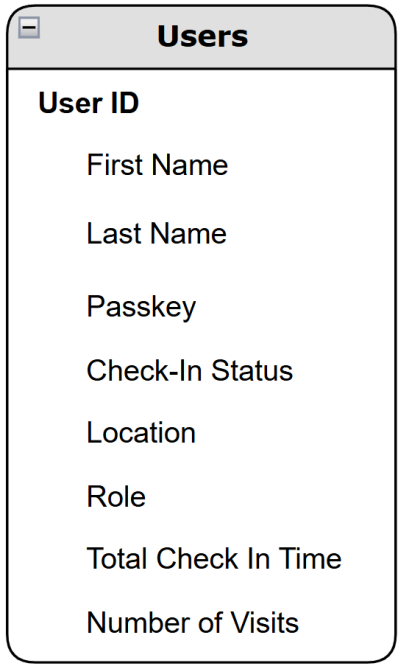
DATABASE DESIGN

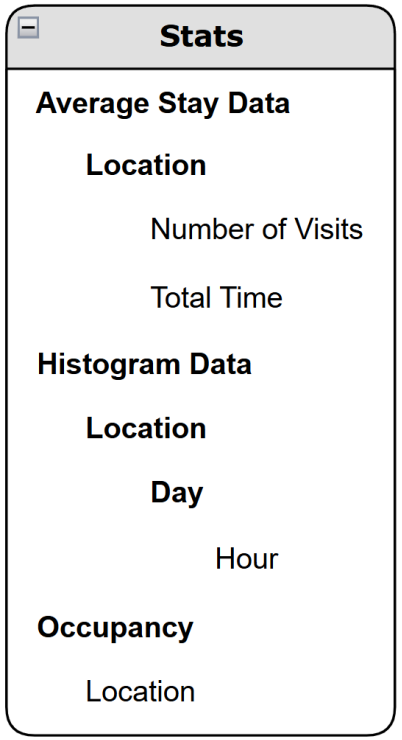
CLASS DIAGRAM



SCHEMA



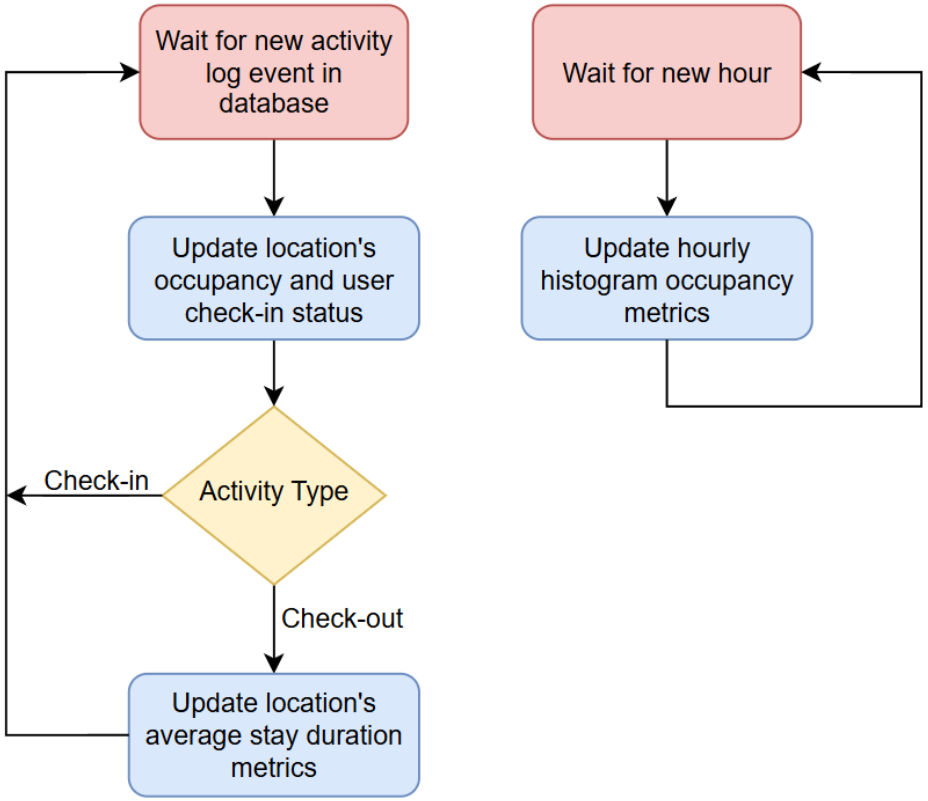




DeAndre (CpE)

BACKEND DESIGN

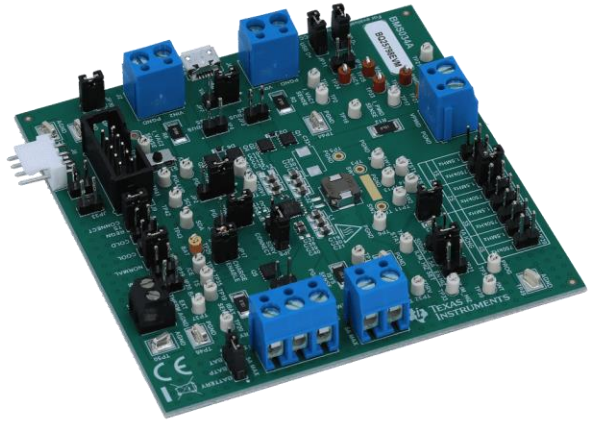
1. Kiosk pushes check-in/check-out event to Activity Log in Firebase Realtime Database
2. Firebase Cloud Functions are triggered to update statistics and user profile



Jonah (EE)

POWER SUPPLY TESTING

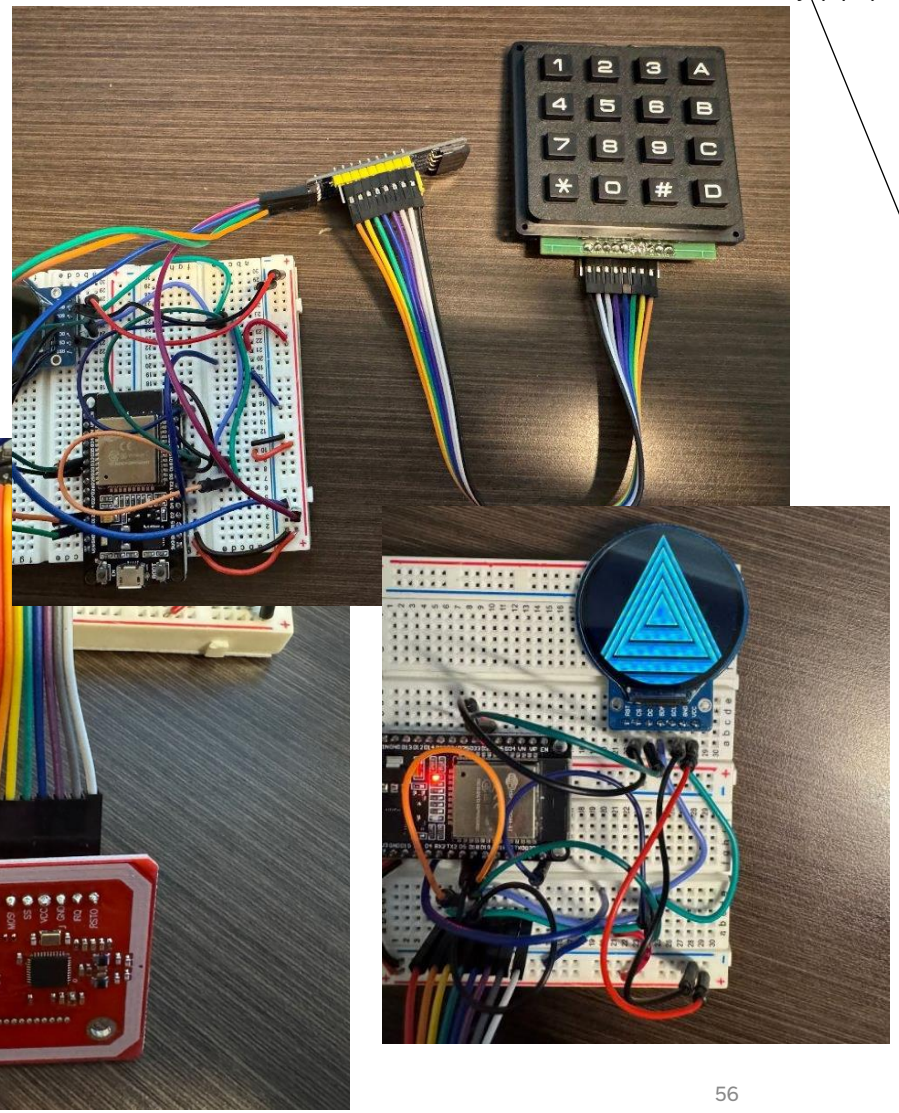
Component	Test	Status
CYPD3177	USB Power Delivery Contract Negotiation Test	Complete
CYPD3177	Non-USB Power Delivery Source Test	Complete
BQ25798	Battery Charging Test	Complete
BQ25798	DC Input Power Output Test	Complete
BQ25798	Solar Panel MPPT Test	To Do
BQ25798	Battery Supplement Mode Test	To Do



Cory (CpE)

KIOSK PERIPHERALS TESTING: NFC TRANSCEIVER, KEYPAD, AND DISPLAY

Component	Test	Status
PIR Sensor	Detection Range Test	Complete
PIR Sensor	Hardware Interrupt Test	Complete
NFC Transceiver	NTAG215 Test (R/W)	Complete
NFC Transceiver	MIFARE Test (R/W/Format)	Complete
NFC Transceiver	NTAG213 Test (R/W)	Complete
NFC Transceiver	NDEF Text Record R/W	Complete
Keypad	Input test (8 GPIOs)	Complete
Keypad	Input test (I2C via IO Expander)	Complete
Display	Graphics test (Adafruit test suite)	Complete
Display	Graphics test (LVGL)	Complete




DeAndre (CpE)

WEB APP TESTING

Component	Test Description	Status
Dashboard Real-Time Statistics Rendering	Simulated database updates via Postman, manually verified updates on Dashboard	Complete
Activity Log Updates	Simulated check-in/out activity with Postman and verified live updates visually	Complete
User Creation	Manually tested via website UI and verified via database web viewer	Complete
User Deletion	Manually tested via website UI and verified via database web viewer	Complete
Edit User Profile	Manually tested via website UI and verified via database web viewer	Complete

Cory (CpE)

TESTING SUMMARY

Test	Due	Progress
Test NFC Transceiver Functionality	01/15/2025	Completed
Test Keypad Functionality	01/15/2025	Completed
Test Display Functionality	02/01/2025	Completed
Test Database Querying	02/01/2025	Completed
Test Analytics Updating	03/12/2025	Completed
Power Management Controller Testing	02/28/2025	In Progress
USB Power Delivery Testing	02/28/2025	In Progress
PCB Testing	02/28/2025	In Progress
Kiosk Firmware Integration Testing	02/28/2025	In Progress
Full Software Integration Testing	03/25/2025	To Do

Cory (CpE)

BILL OF MATERIALS

Item	Cost
JLCPCB manufacturing, tax, and shipping	$100.00
PCB Assembly & Components	$100.00
PN532 NFC Transceiver	$8.99
NTAG213 NFC Cards	$9.99
Round TFT Display	$6.33
Keypad Module	$7.89
Passive IR Sensor	$2.90
Passive Buzzer	$2.00
12V LiFePO4 Battery	$38.99

Item	Cost
Solar Panel	$20.49
3D printing PLA filament	N/A
Machine shop manufacturing costs	N/A
PVC pipe	$11.82
Total	$309.40

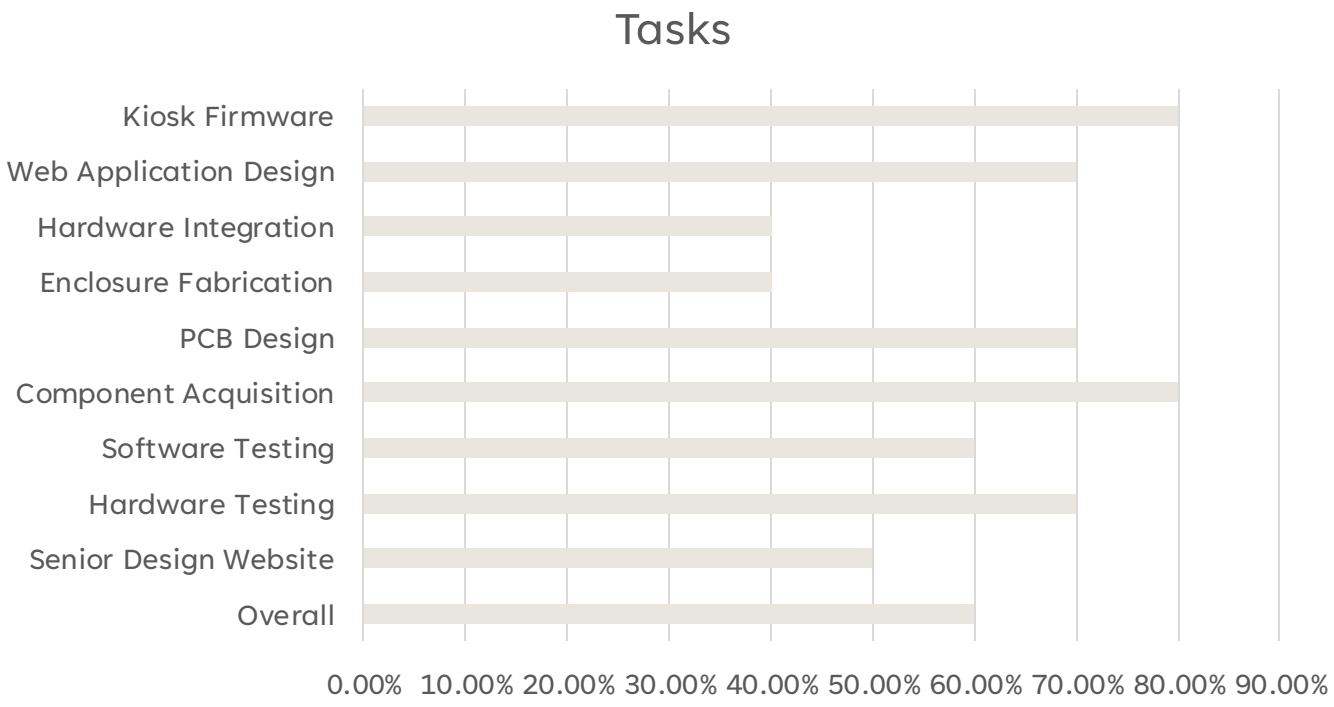
WORK DISTRIBUTION

Cory (CpE)

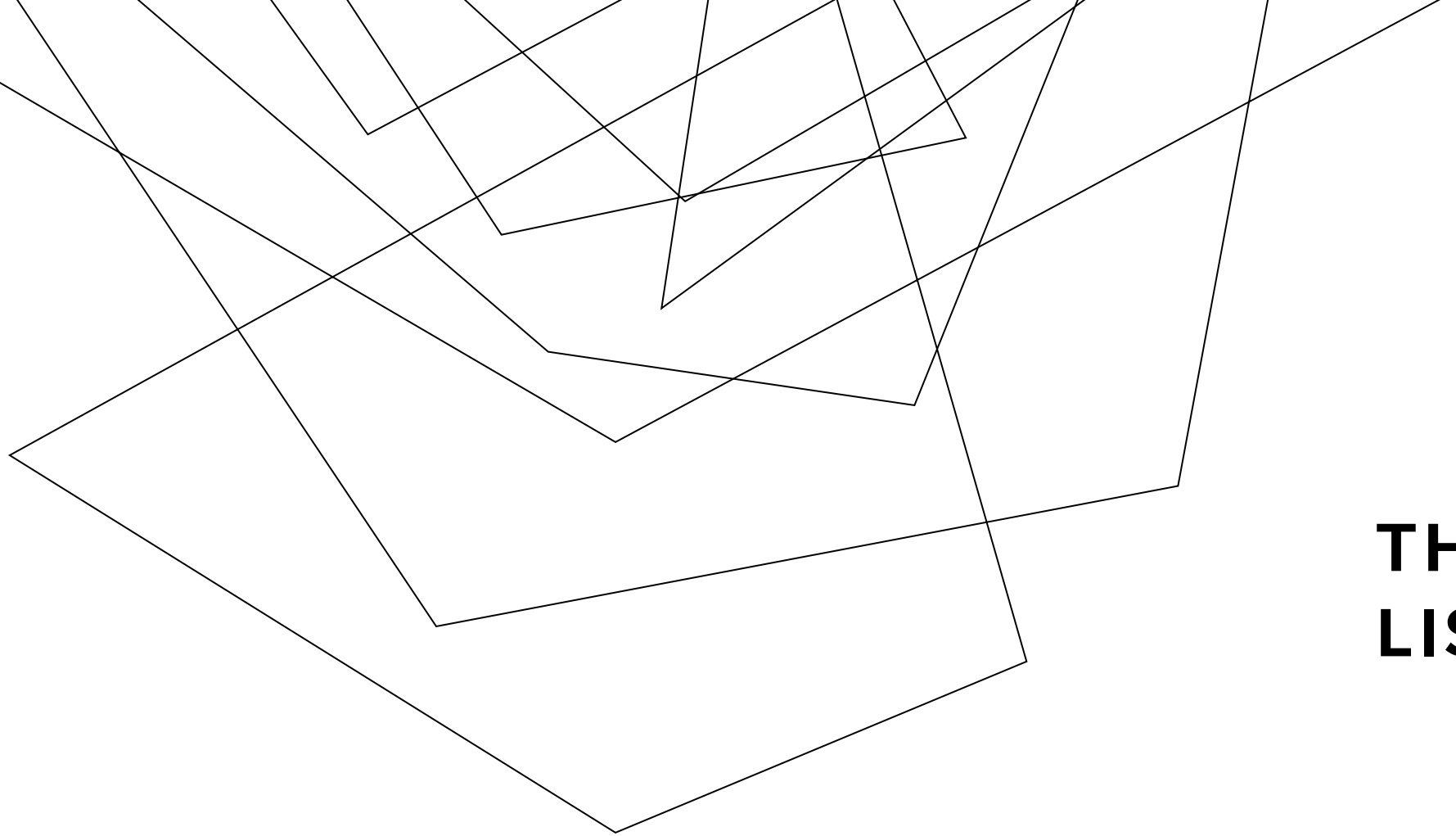
TEAM MEMBER	PRIMARY RESPONSIBILITIES	SECONDARY RESPONSIBILTIES
Cory Brynds (Computer Engineering)	Project Lead	Firmware task management/RT control
	Embedded software development	Testing of database implementation
	Mechanical design of kiosk	Schematic review + PCB layout
	Senior Design website development & administrative documentation	
DeAndre Hendrix (Computer Engineering)	Web app frontend and backend	Administrative documentation
	Database implementation	Website design and review
	Server-client Wi-Fi interfacing	Power subsystem testing
	Embedded software development for proximity sensor	Mechanical design review
Jonah Sprandel (Electrical Engineering)	Schematic/PCB layout	Software testing of client-server interface
	Power subsystem design	
	Firmware task management/RT control	

CURRENT PROGRESS & PLAN FOR COMPLETION

Cory (CpE)



Task	Finish By	Progress
Kiosk Peripherals + Database Interaction Integration	02/28/2025	In Progress
Analytics Webpage + Database Integration	03/03/2025	In Progress
Main PCB Testing	03/07/2025	In Progress
Initial Enclosure Prototype	03/07/2025	In Progress
Midterm Demo	03/08/2025	To Do
PCB Integration	03/24/2025	To Do
Full Software Integration	03/24/2025	To Do
Final Project Testing and Redesigns	04/11/2025	To Do
Senior Design Showcase	4/17/2025	To Do
Final Document Submission	04/22/2025	To Do



THANKS FOR LISTENING!