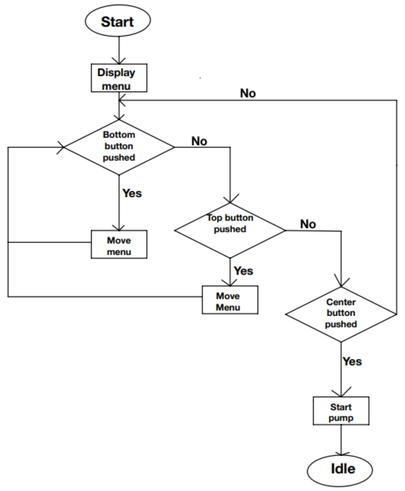
SipSynth

Project

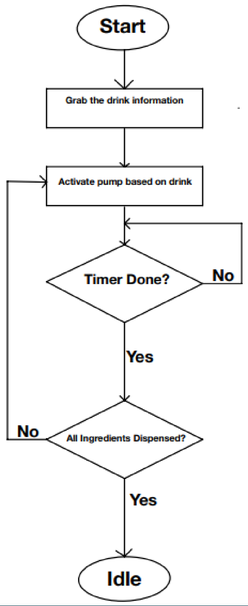
- The rising popularity of mocktails and dirty sodas in Utah has created demand for more consistent and efficient preparation methods.
- Many of these beverages are currently mixed by hand, leading to variation in taste, portion size, and ingredient ratios.
- SipSynth is an automated drink dispenser designed to deliver consistent, flavorful mocktails and dirty sodas with minimal user effort.
- The system uses an embedded microcontroller, peristaltic pumps, and a user interface to select and dispense pre-programmed drink recipes.
- This project aims to explore embedded systems integration while offering a fun and culturally relevant solution for beverage automation.

System

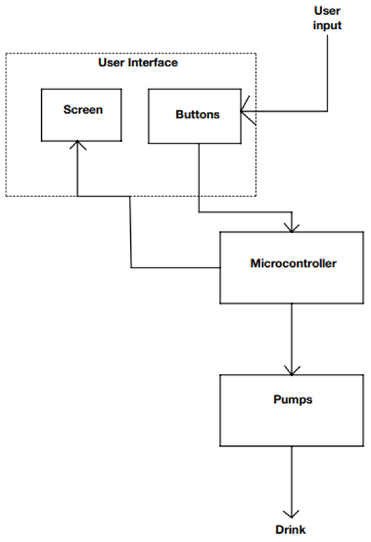
User Interface



Dispensing Unit



Block Diagram



Methods

- Uses a STM32- STM32 Nucleo-L476RG microcontroller programmed in C.
- Peristaltic pumps controlled via the controller for accurate dispensing.
- Simple LCD and button interface for drink selection.
- Predefined recipes mapped to pump timings for easy execution.

Conclusion

SipSynth proves that embedded systems can enhance everyday experiences—making beverage prep easier and more engaging.

What Was Learned

- Improved timing logic
- Fluid control
- Embedded UI
- Integrating hardware and software into a singular system

What's next

- Enable drink customization
- Add more flavors/pumps
- Make cleaning modular and simple
- Add touchscreen or app interface
- Sensor feedback for levels and error checking

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