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Digital Systems Project Proposal

Abstract

We aim to design and create a system that dispenses an item after a user inputs their unique identifying code. Each code corresponds to a given user and will keep track of the number of times that user can have an item dispensed per day/cycle. This system will function similarly to a standalone vending machine, though it does not take in currency. Once the user inputs their code, they will be prompted for the code for the item they would like dispensed, if they still have snack credits remaining. Selected items will be lit up as they are dispensed. There will be 4 to 6 different options.

Beta

The system will have 4 input buttons for both the users code, using numbers 1-4, and for the snacks codes. The output will be displayed on the hexs on the FPGA, and will display the current and updated balance of the credits. Then the system will use a 90 degree rotation motor to dispense the snacks. Finally a reset button will reset the systems balances.

Alpha

This system will include everything from beta, but instead use full rotation motors, a keypad for user inputs, and an LCD display instead of just the HEX display. We will also actually build a miniature machine.

Parts required

- Push coil or thick wire

- Mini rice crispy treats (or similar size for reference)

- Number pad

- Jumper wires

- Stepper motor

- Plastic shell, may be 3D printed

- Clear panel (acrylic)

- Lights (General lighting)

- LEDs (Item lighting)

The goal is to have the following systems in place

- Keypad input reading

- User identification

- Item Dispensing

- Item Selection

- Tracking credits

Our system should have the following inputs

- Data from keypad

- User's unique code

- Item selection code

- Item inventory

- Credits available

Stored values

- Number of credits remaining

- Number of allotted items per user

- Number of users

- User ID codes

- Snack codes

System Block Diagram