Johnny Do
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Gamer's Cache

Description

Gamer's Cache is a lockbox system. The system starts up once motion is detected with a start message displayed on an LCD screen. Navigation is done with an SNES controller. Once a box is selected a signal is sent over to the specified box which a stepper motor unlocks. Once finished with storing and retrieving items, the box can be closed by pressing the START button. If no user is detected in the area for an extended period of time then the stepper motor locks the box that was opened.

Technologies & Components

- AVR Studio 6
- ATmega1284p (2)
- LCD Screen (2)
- Stepper Motors (2)
- SNES Controller
- HC-SR04 Distance Detector
- HC-SR501 PIR Motion Detector
- USART
- ADC

Controls for System using SNES Controller

<- \ ->	Menu Navigation
A	Select Box / Start System
START	Start System / Close Box
SELECT	Cancel Transaction (Only available in Main Menu)

User Guide

- After the system has activated and allow a minute to fully boot.
- Navigate the menu using the controls mentioned above
- Pick a cache, or reset to Wait User mode
- Work with contents of the chosen cache after the cache opens
- Press start, or walk away to reset the system

Rules

Must allow a full minute to pass by on a cold start. The motion detector takes a minute to power up.

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Demo Video

Demo Video
https://www.youtube.com/watch?v=O8gv6GGbEWc

Source Files

jpadi004_jdo007_master.c
https://drive.google.com/file/d/0B03i9_FkWI6OOE9aNzl0Nkdpczg/view?usp=sharing
Code for leader microcontroller. The leader controller handles input from the SNES controller, and the motion detector.

jpadi004_jdo007_slave.c
https://drive.google.com/file/d/0B03i9_FkWI6OMWh4TnZyWDRyX3c/view?usp=sharing
Code for follower microcontroller. The follower handles the stepper motors, the distance detector and other information via usart.

.h includes (Given)
https://drive.google.com/folderview?id=0B03i9_FkWI6Od2NMSmZJN2xuaFU&usp=sharing
All includes given from the class including header files for the LCD, USART, and Scheduler.

Deviations from Project Proposal

Master Microcontroller
Motion Detector instead of Card Reader(USB)
We did not have the correct parts to properly interface the card reader with the microcontroller. Handling the output of the usb was harder than originally thought.

Follower Microcontroller
Card reader removed from this system due to lack of parts required to properly interface with the card reader.

Division of Work

Jonathan - SNES controller, Motion Detector, USART, Leader Microcontroller
Johnny - Stepper Motor, Distance Detector, USART, Follower Microcontroller

Future Functions and Features

The Gamer's Cache system does not have a safety system on the door such that if a hand is within the doors, a closing door will in fact continue to attempt closing.