

Project Proposal

Accelerometer-Controlled Video Game

2/19/2008

Daniel Gerber dgerber@gwu.edu

Project Abstract

This is a small video game console that will be controlled using the Z8 Encore. It will feature an LED display for visual feedback, a speaker for audible feedback, and an accelerometer and a button for user-input. I am still unsure of what video game I will create.

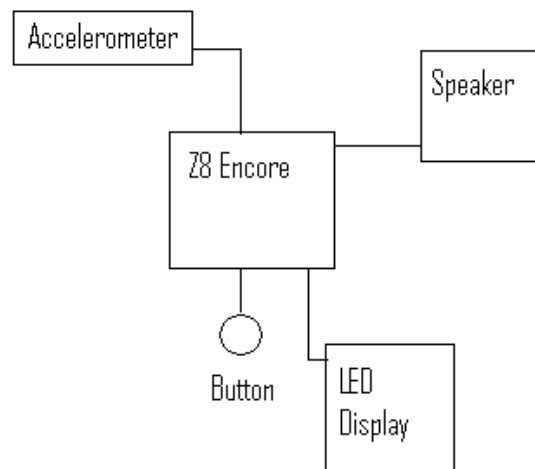
Strategy

The console's platform is built on the Z8 Encore Microcontroller. Using this platform will allow the system to use timers, interrupts, and boasts a large number of GPIO ports—something that will be very useful.

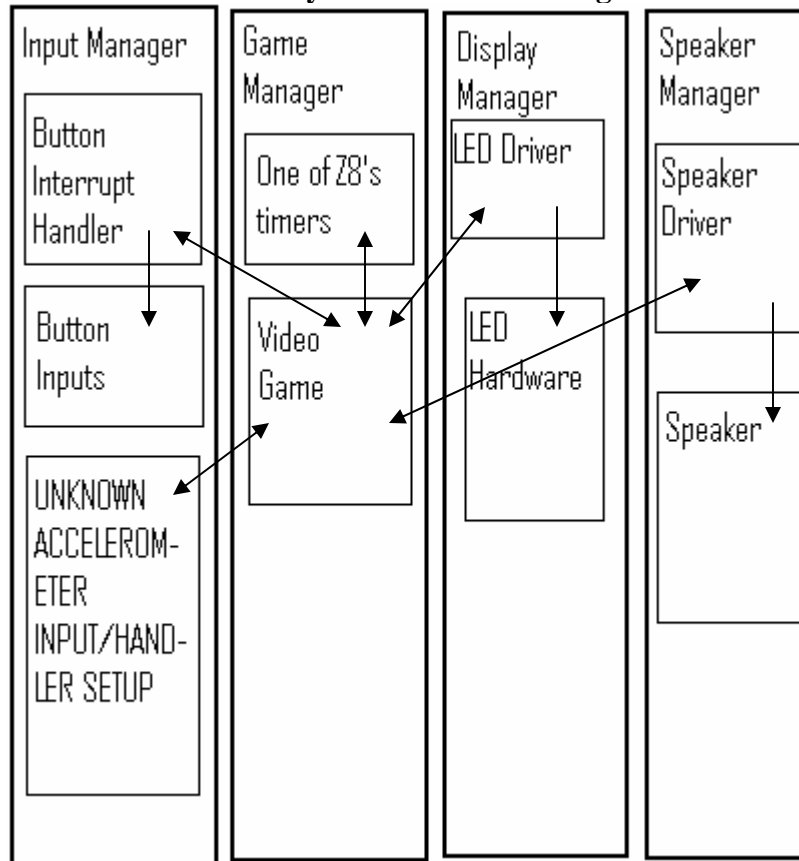
As mentioned earlier, there will also be external components in addition to the platform itself. These include an LED (currently do not know specifications), a speaker, an accelerometer (not sure how many directions of movement), and a button.

There will be several software modules needed to use the hardware as well as run the game itself. The modules needed for hardware include one to control the display, one to control the speaker, another to handle input from the accelerometer, and one to monitor the button.

Preliminary Block Hardware Diagram



Preliminary Software Block Diagram



Unknowns

I am not sure which LED display board I will be using for the project, so I am unsure what I will need to hook it up to the developer's board. The same issue applies to the accelerometer, with the exception that I think it will be a one-directional controller. More information will be available after I obtain these parts.

Implementation Plan

Parts

- Already have Z8 board (with button) and speaker.
- Need to obtain accelerometer and LED board.

Construction

- Recycle code from labs and determine what can be reused. (This will be helpful for using the button, speaker, and debugging various aspects of the project.)
- Hook up and debug accelerometer.
- Hook up and debug LED board.
- Write basic movement application using accelerometer and LED board.
- Create simplified version of game from the basic movement application.
- Add more game-play.
- Finalize game and console.

Resources

The project requires:

- 1 Z8 development kit and software (already have)
- 1 speaker (already have)
- 1 LED display board (Will likely purchase online.)
- 1 single-direction accelerometer (Do not know at the current time where I will obtain one.)