Pong Pong

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Project Overview

Pong pong recreates the famous Pong game designed by Allan Alcorn and developed by Atari. Pong pong features two Adafruit 7-segment LED displays and two Sparkfun Qwiic joysticks. The 7-segment LED display will display each individual player's scores and the joysticks will control the corresponding player's paddle. Pong pong has a twist and plays the original Tetris theme song in the background.

Materials

Software & Libraries

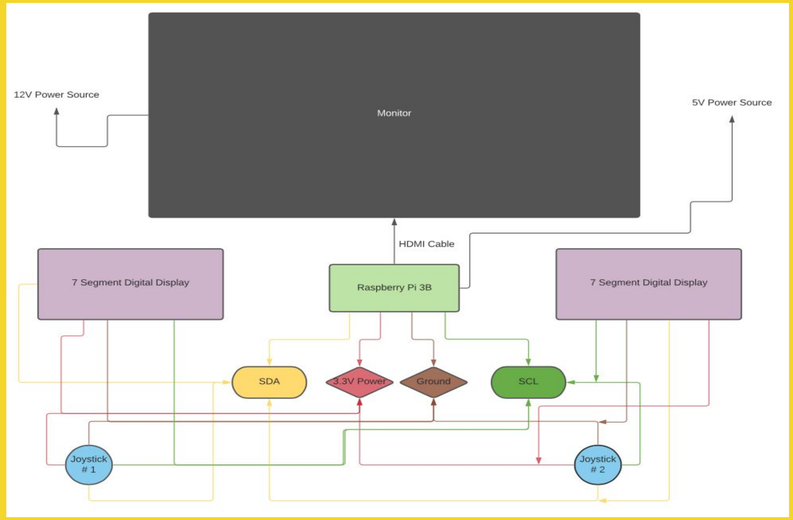
- C++ / SFML - Open Source
- Geany IDE
- WiringPi
- Raspberry Pi OS

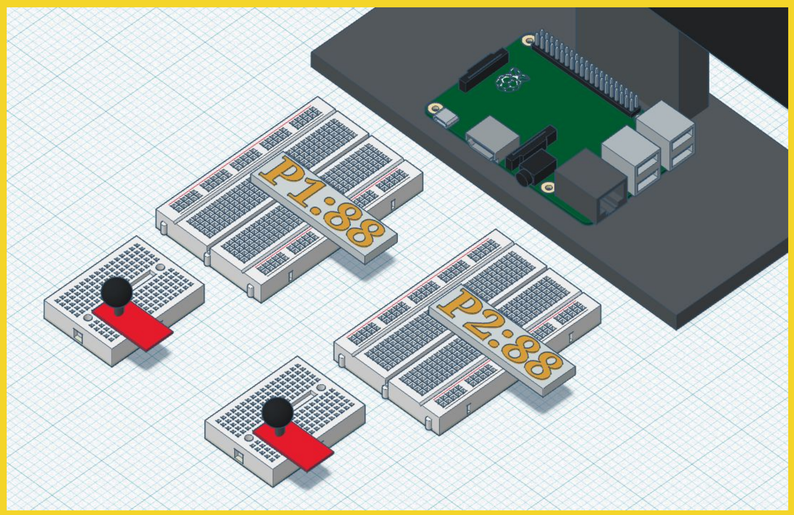
Hardware

- Raspberry Pi 3B
- Adafruit 7-Segment Display w/I2C (2)
- SparkFun Qwiic Joystick w/I2C (2)
- Female to male & male to male wires

Challenges Faced

The major challenge we faced during the development of Pong Pong was getting the SparkFun joystick to communicate with the Raspberry PI through I2C. Out of the three joysticks, only one was able to be initialized and have the values to be read. The other two joysticks had a constant value of 7f in each of the registers. We troubleshooted the joysticks by using Analog Discovery and waveforms. We hooked up two pins to monitor the SDA and SCL lines of the joysticks and was receiving errors from the joysticks. Due to time constraints and unable to order more joysticks, one of the player will be utilizing the keyboard instead of the joystick to move the paddle.





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Usage

Use of Software

The C++ library SFML, allows the graphical rendering, integration of sound and fonts for Pong Pong. With wiringPi, we are able to use I2C communication to take inputs from the joysticks that controls the paddles. WiringPi also display the scores of the each player on the 7-segment display.

Use of Hardware

The Raspberry Pi will host the C++ code, display the graphical interface of Pong Pong, and the onboard 3.3v, ground, SDA, and SCL pins will allow the communication of the I2C hardware. The soldering wand will solder the pins of the Sparkfun Qwiic joysticks and the Adafruit 7-segment displays. Lastly, the wires will wire up each component to the Raspberry Pi.

Sparkfun Qwiic Joysticks: Will control the corresponding player's paddle in Pong Pong.

Adafruit 7-Segment LED Display: Will display the corresponding player's score in Pong Pong.

Project Budget

Raspberry Pi 3B **$35.00**
https://www.adafruit.com/product/3055?src=raspberrypi

SparkFun Qwiic Joysticks (2) **$21.00**
https://www.sparkfun.com/products/15168

Adafruit Yellow 7-Segment Clock Display (2) . . **$7.90**
https://www.adafruit.com/product/811

Miscellaneous **$15.00**
Wires, solder, extra material

Grand Total (8% Tax): $85.21