Jeffrey Ross
CSC 314
Program 2

User Manual

This Simon program was written to run on the Raspberry Pi 2 using a breadboard with the configuration as displayed in **figure 1.**

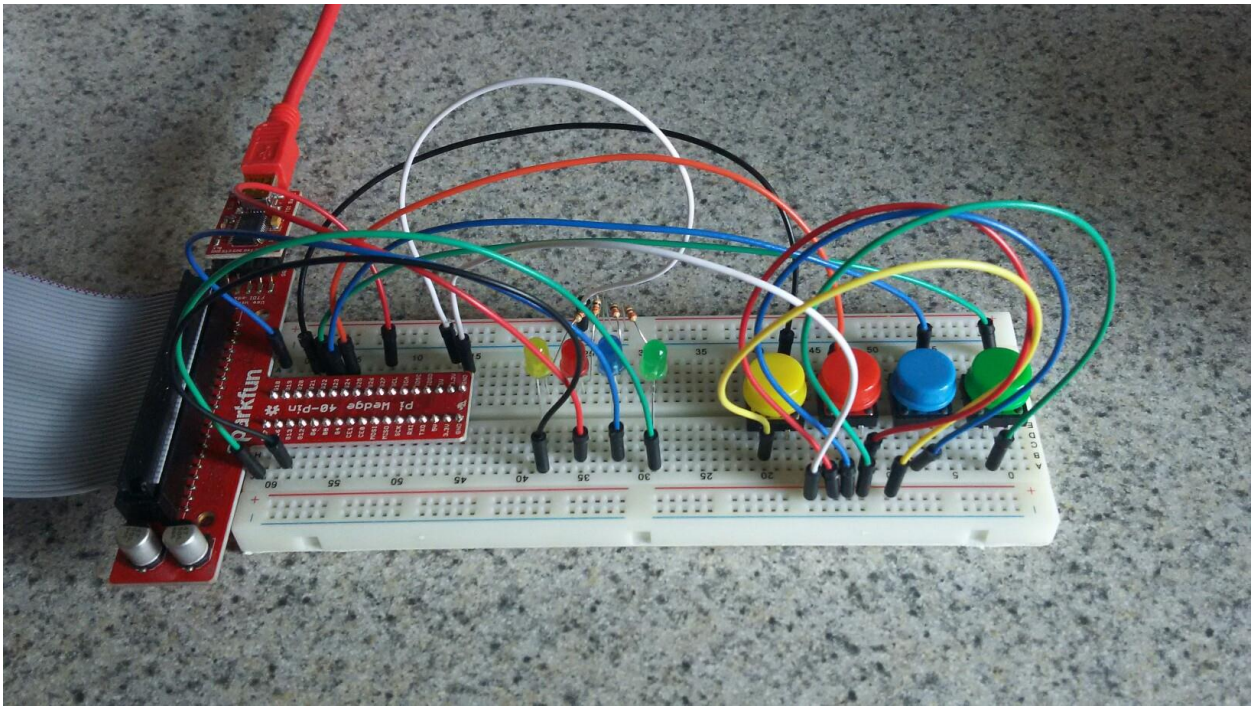

Figure 1

In order for this program to work 100% as intended, the buttons and LEDs must be connected to the proper pins as portrayed in **Table 1.** All buttons must be connected to the ground pin, and all LEDs must be connected to the 3.3V pin through a resistor.

Item	pin #
Yellow Button	G21
Red Button	G24
Blue Button	G23
Green Button	G22
Yellow LED	G13
Red LED	G27
Blue LED	G18
Green LED	G17

Table 1

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When first started, the program will display a main menu to the command prompt. The user will be prompted with corresponding options for each button. Green will start the Simon game, blue will start the Mastermind game, red will start the Whack-A-Mole game, and the yellow button will exit out of the program. Every game will produce sounds out of the audio jack on the Raspberry Pi. Simon and Whack-A-Mole can still be played without sound but in order to play the Mastermind game either a speaker or headphones MUST be connected to the audio jack.

Simon

When first started, the Simon game will display each LED and output a sound that corresponds to its color. After displaying each LED there will be a short pause before displaying an LED and outputting it's corresponding sound. The program then waits for the user to press a button. The user then must press the same color button of the LED as it was just displayed. If done correctly, the program will output a short victory sound before displaying the same LED and sound again, but adding a second after.

The user must then recreate the same two colors as they were displayed. If both colors were successfully recreated, the victory sound will be played and a third color will be added to the end of the sequence. For every round that the player is able to recreate the sequence, a victory sound will be played and the length of the sequence will increase by one. This will continue until the player fails to recreate the correct color in the sequence. When the player fails to recreate the proper sequence, a game over sound will be played and the program will return to the main menu.

Mastermind

In mastermind, a random sequence of colors is generated, but the player does not know the sequence. The goal for the player is to try and figure out the order of the sequence within a certain number of attempts. When Mastermind is first started, the user will be prompted with a menu on the command prompt. The user will be asked to select how long of a sequence they would like to attempt. The green button will create a sequence of 4 colors, the blue button will create a sequence of 5 colors, red will create a sequence of 6, and yellow will create a sequence of 7.

Upon selecting the sequence length, another menu will be displayed to the command prompt. This time the user will be prompted to choose their desired number of attempts. The green button will allow the user to guess the sequence 5 times, blue will give 4 attempts, red will give 3, and

yellow will give 2. Once selected the green LED will light up and play the sound which will be played when a guess for a color is correct. Then the red LED will light up and play the sound which will be played when a guess for a color is incorrect. The program then waits for the player to choose a color. If the color chosen matches the first color in the sequence, it will play the correct sound. If it does not match, it will play the incorrect sound. It will continue for each color in the sequence.

Once it has reached the end of the sequence it will either play a victory sound and exit to the main menu, or it will play a negative sound and return to the beginning of the sequence. The victory theme will only be played when every single color in the sequence has been correctly guessed. Once the player has run out of attempts at guessing the sequence, a defeat sound will play and will exit to the main menu.

Whack-A-Mole

The whack-A-Mole mode is a speed oriented game mode. When an LED lights up, the player must press the corresponding button to turn off the light. Once that light is turned off another will turn on and so on and so forth. When the Whack-A-Mole game is started, a menu will be displayed to the command prompt to ask the user how many lights they will have to turn off. Pressing green will get 10 lights, blue will get 20, red will get 50 and yellow will get 100. Following the selection of the number of lights to turn off, a “3, 2, 1, go!” beeping sound will play, once the audio is finished the first LED will light up. The player will then attempt to turn off the lights as quickly as possible. Once finished, a short tune will be played before displaying the players time to the screen. Pressing any button will return to the main menu.