

COSC 251 – Programming Languages

Project 2 - Raspberry Simon

Spring 2014

Objective: Create a Simon game utilizing your groups Pi and Python.

Your Group's Task: Implement your own version of the classic game Simon using a Pi and electronic components. Simon involves showing the user a series of lights, after which the user must duplicate the series in order to progress to the next one.

Parts Supplied:

- Raspberry Pi
- Cobbler
- Bread Board
- 4 Colored LEDS
- 4 Colored Push Buttons
- 4 10k Ω Resistors
- 2 5.6 Ω Resistors
- 2 68 Ω Resistors
- Various Jumper Cables

Requirements: Your group's game should consist of the following

- A simple GUI which displays the high score and has a button which starts a new game. This GUI should also provide a popup to alert the loser when he or she loses the game.
- The game should generate a random sequence of lights, display the sequence, and wait for the user to attempt to duplicate the sequence.
- The user will duplicate the sequence by pressing buttons of the corresponding color to the lights which were shown. When a button is pressed its light should be lit up.
- If the user presses a button which corresponds to a wrong color order the user loses the game.
- When a user successfully repeats the series all 4 of the lights should flash at once before starting the next round.
- After each successful repeat by the user increase the number of lights in the sequence.
- The game should also increase the display speed of the sequence as the sequence gets longer.
- Your code should be well commented before turnin.

Likely Python Libraries Needed:

- Tkinter
- GPIO
- time

- random

Hints:

- You've received a number of different resistors. To figure out which ones go with which parts use the following information and this site: ledcalc.com

Color	Voltage Drop
Red	2.0-2.4 V
Green	3.2-3.4 V
Yellow	2.0-2.4 V
White	3.2-3.4 V

- This game and Tkinter work best if done within a class structure.
- You're going to need RPi.GPIO to do electronics work. Instructions for importing the library to your Pi can be found here: <http://learn.adafruit.com/playing-sounds-and-using-buttons-with-raspberry-pi/install-python-module-rpi-dot-gpio>
- There are a lot of parts to wire here, the hardest part is keeping it so that you can actually press the buttons!

Extra Credit/Style Points: Include a Piezo speaker which emits a different frequency for each color. If you would like to attempt see me.

Demonstrations: You will be required to demo your project to your instructor and fellow students during class on March 12th. You may not use slip days to postpone the demonstration, and all team members must be in attendance. The demonstration is worth 25% of your grade for this project.

Team Reviews: By 11:59pm on March 12th, you must provide a letter grade assessment for your teammates. Do not provide a letter grade for yourself. Team reviews, including getting a team review in on time, are worth 25% of your grade for this project.

DUE: All code due via Blackboard on March 12th, by 11:59pm. Team reviews are due via email by March 12th, 11:59pm.