SIT210: Embedded Device Development

Task 5.2P RPi: Making GUI

Hardware Required

Raspberry Pi with Raspbian installed (NOOBS)
Keyboard, mouse and monitor (HDMI) to plug into the Raspberry Pi.

Software Required None

Pre-requisites: You must do the following before this task

1. 1) 5.1P
2. 2) Watch the youtube video on how to use Tkinter GUI platform for python:

   https://www.youtube.com/watch?v=ap-ABFNCBoE

Task Objective

In this task, you will learn to create simple GUI interfaces with Raspberry Pi (RPi). RPi supports python, which has many GUI packages. One of which is TkInter. The wiki page for TkInter here at https://wiki.python.org/moin/TkInter

In this task, based on what you learnt from the video tutorial, you will build a simple GUI interface to turn on one of three LED lights

Steps:

1. 1) Build a simple circuit board with RPi enable you to turn on 3 LEDs separately. Name them red, green, and blue.
2. 2) Create a GUI that has the following: 3 radio buttons that correspond to the 3 LED, and a button to exit the GUI.
3. 3) Create code for the GUI so that: when you click on each of the radio button, the corresponding LED will turn on, and all others are off. Reference documentation for usage of TkInter radiobutton is here: http://infohost.nmt.edu/tcc/help/pubs/tkinter/web/ttk-Radiobutton.html

Task Submission Details

Q1: Submit a video that demonstrates the system working.

https://youtu.be/BwXoghookOg

Q2: Create a repository named RPiGUI on Github. Upload your code to the repository. Include the link to your repository here.

https://github.com/stopkickingtherobots/RPiGUI

Q3: Describe a real life usage scenario for your system.

This system could be used as

- visual feedback in a custom musical instrument
- incorporated into a running race recording system, where runners have rfid chips that trigger the buttons, and the functions are programmed to record timestamps

Q4: How can you improve the system?

I would like to improve the code so by reducing the lines of code. This could be done by writing methods that pass the identifier for each led. It would improve the readability of the code and make it easier if adding a lot more leds. It would also be cool to add more buttons, I have little servos that could probably be triggered by the system with some tinkering

Remember to submit this to Doubtfire, and check the status of any existing tasks. You may need to fix and resubmit some of your work. You want to check out why, so that you can learn from this and make it faster and easier to get later work to the required standard.