

Title Page

Lab #: Lab #4

Course: CSE379

Partner Names: Solomon Richards, Jah Ulerie

Partner Usernames: solomonr, jahsiemu

Lab Section: R1

Date: 03/14/23

Table of Contents

| | |
|------------------------------|---|
| Section 1..... | 3 |
| Division of Work..... | 3 |
| Section 2..... | 3 |
| Program Overview..... | 3 |
| Program Summary..... | 3 |
| High Level Flowchart..... | 4 |
| Section 3..... | 4 |
| Subroutine Descriptions..... | 4 |
| Section 4..... | 5 |
| Subroutine Flowchartst..... | 5 |

Section 1

Division of Work

Solomon: *gpio_btn_and_LED_init*, *read_from_push_btns*, *read_tiva_push_button*

Jah: *illuminate_LEDS*, *illuminate_RGB_LED*, *read_from_keypad*

Section 2

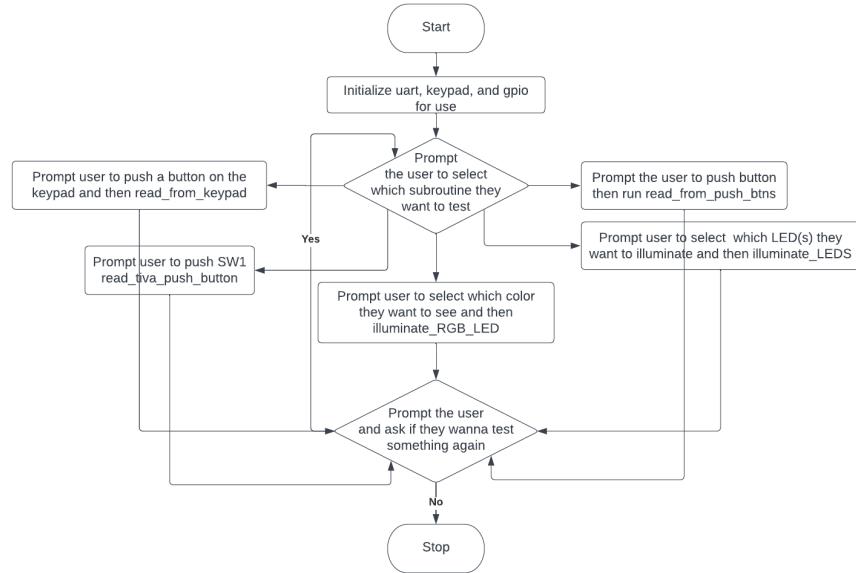
Program Overview

- Plugin Tiva board, open putty, and run instructions to set up the input and output terminal.
- Once you're set up you can begin to use any of the desired parts of the board (four LEDs on the Alice EduBase board, the four momentary push buttons on the Alice EduBase board, the RGB LED on the Tiva board, switch 1 (SW1) on the Tiva board, and the keypad on the Alice EduBase board).
- You can also use any of the subroutines that were previously defined in the labs prior to this (*uart_init*, *output_character*, *read_character*, *read_string*, *output_string*).

Program Summary

This lab applies the use of general-purpose I/O, loading and storing to and from memory, type conversion, and serial communication to illuminate LEDs on our Tiva and Alice EduBase boards. We also use these components to tell whether the momentary push buttons and SW1 button has been pressed on the board. The subroutines are working individually but we encounter an error when trying to output characters to the terminal.

High-Level Flowchart



Section 3

Subroutine Descriptions

uart_init - initializes the uart for the user

gpio_btn_and_LED_init - initializes the SW1 button, and RGB LED on the TIva board. Also initializes momentary push buttons and LEDs on the Alice EduBase board.

output_character - character passed in r0 is output to the terminal

read_character - reads the character from the uart and stores into r0

read_string - uses read_character and the base address passed into r0 to store the string in another specified memory address

output_string - uses output_character and the base address passed into r0 to print the entire string to the terminal

read_from_push_btns - tells which button was pressed on the Alice EduBase board and returns the value in r0

illuminate_LEDs - receives the LED that should be illuminated on the Alice EduBase board and does so

illuminate_RGB_LED - receives the color that should be illuminated from the TIva board and does so

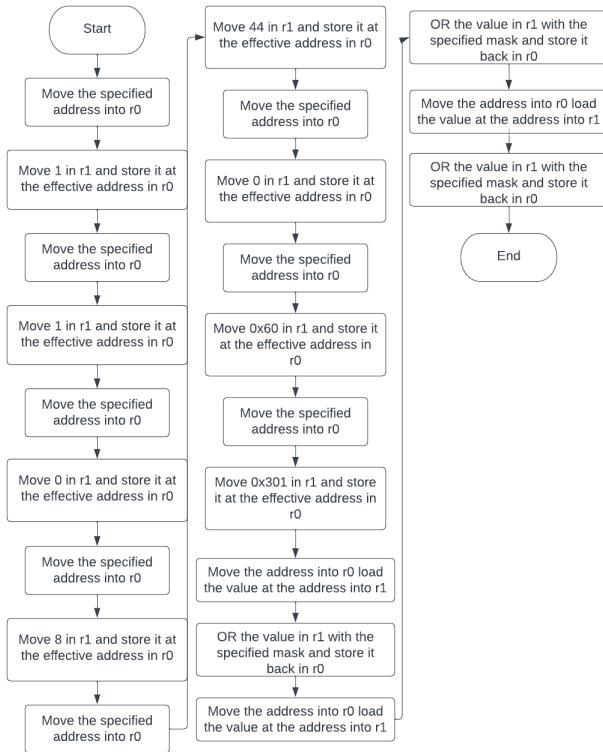
read_tiva_push_button - tells whether the SW1 button was pressed or not and returns the value in r0

read_from_keypad - reads which key on the keypad was pressed and returns the corresponding value

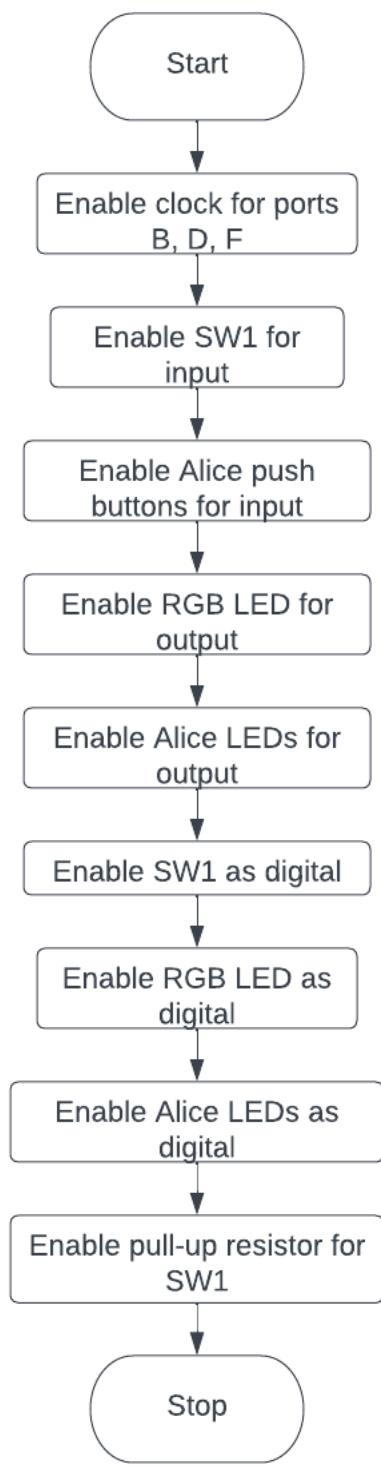
Section 4

Subroutine Flowcharts

uart_init

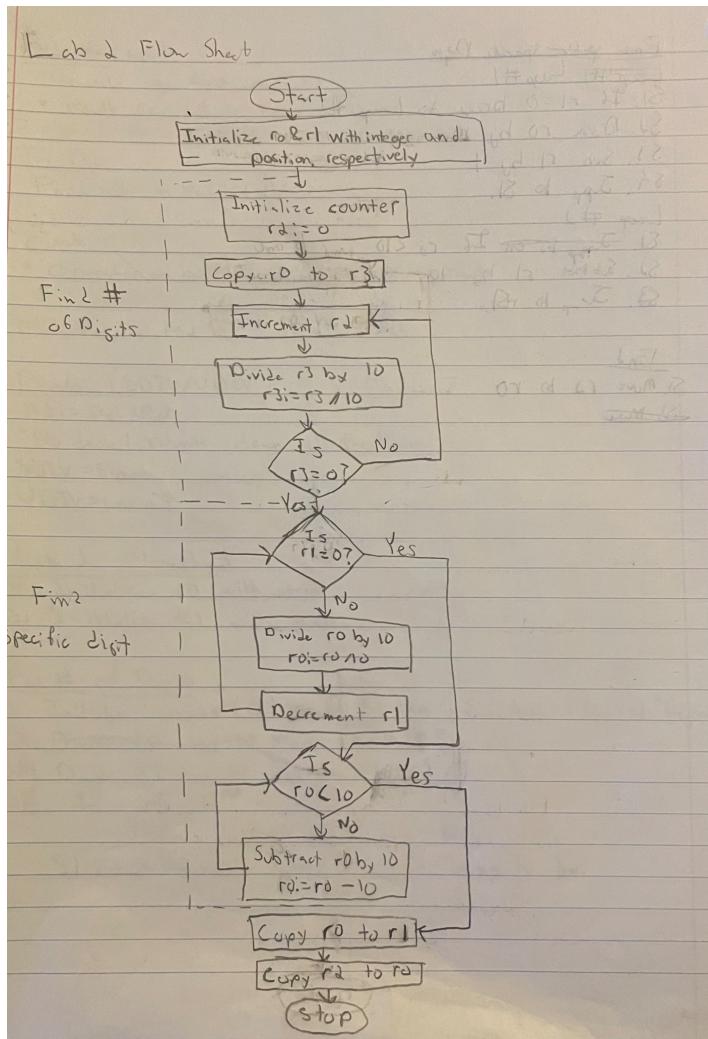


gpio_btn_and_LED_init

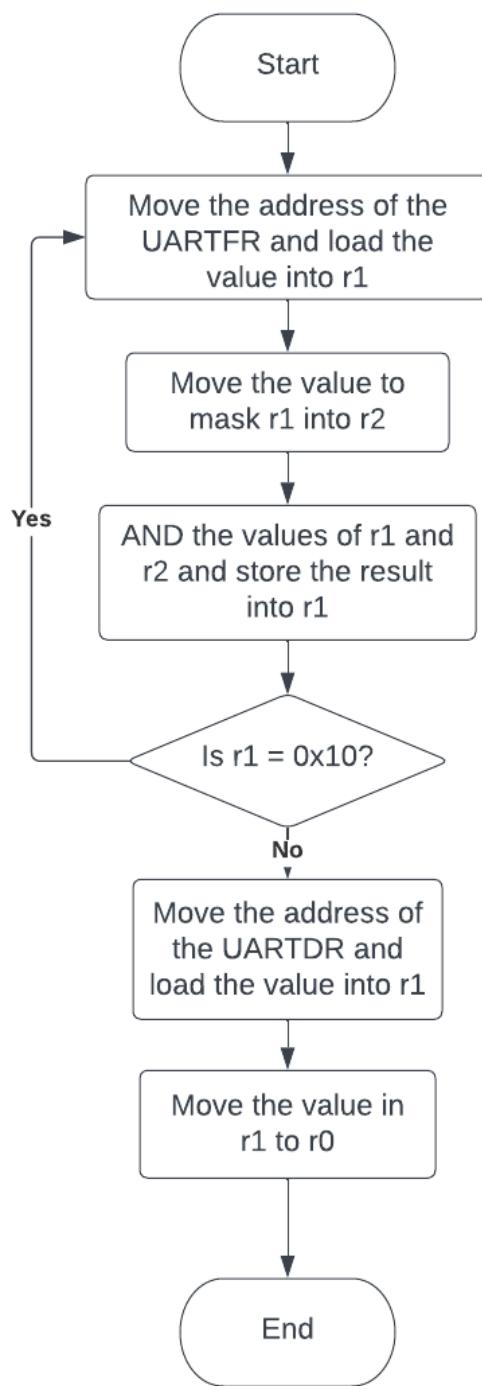


output_character

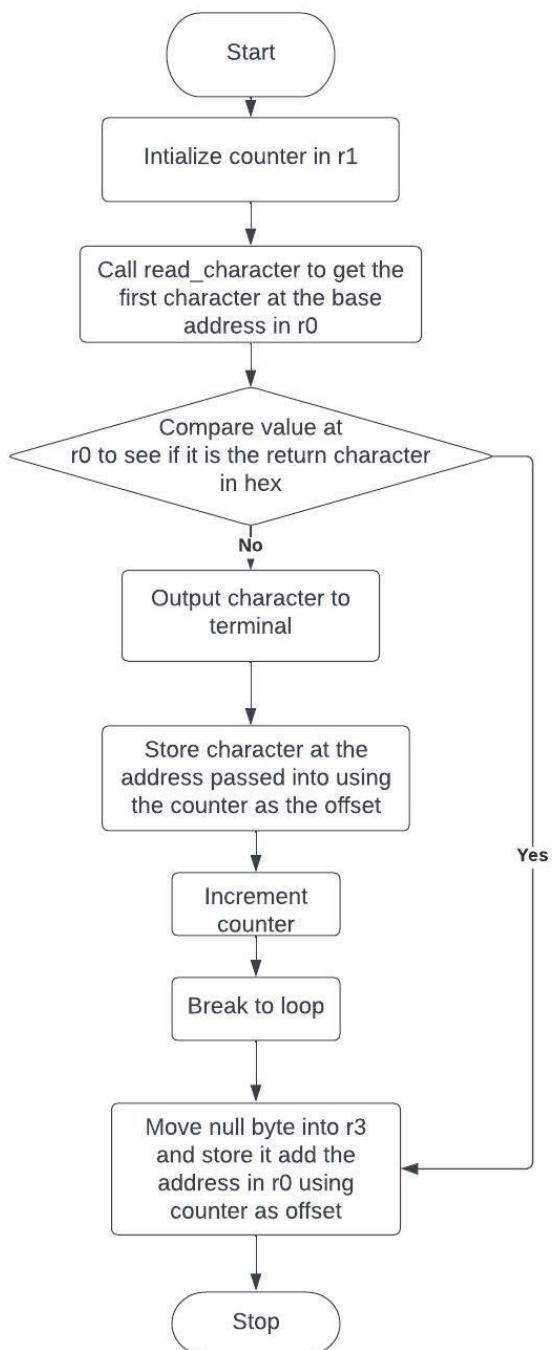
Lab 2 Flow Sheet



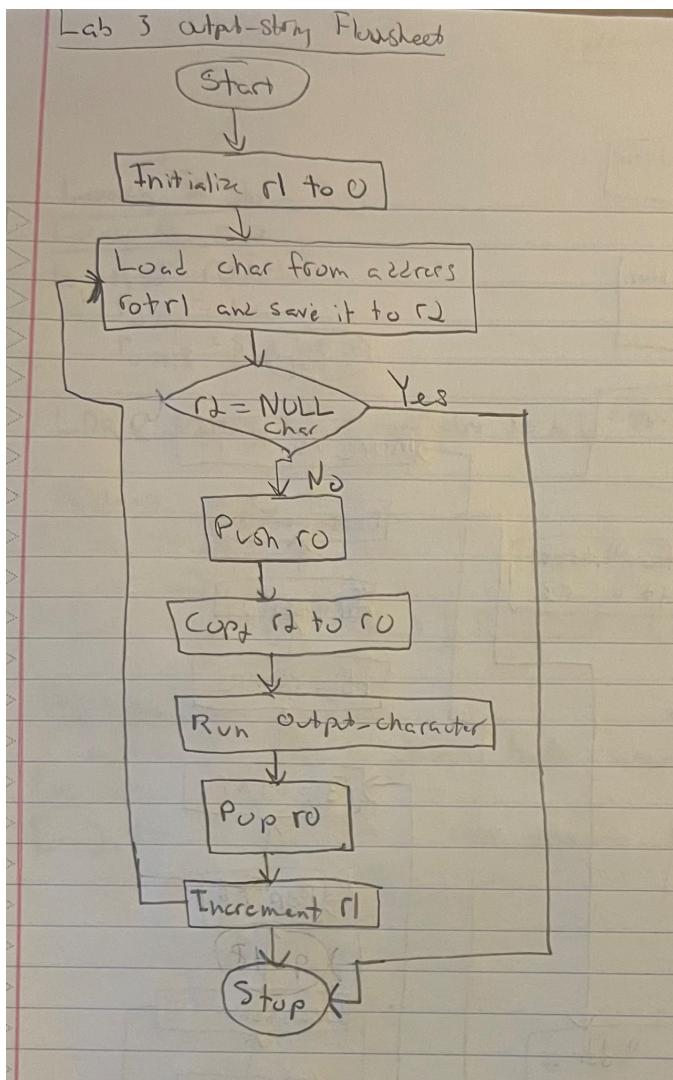
read_character



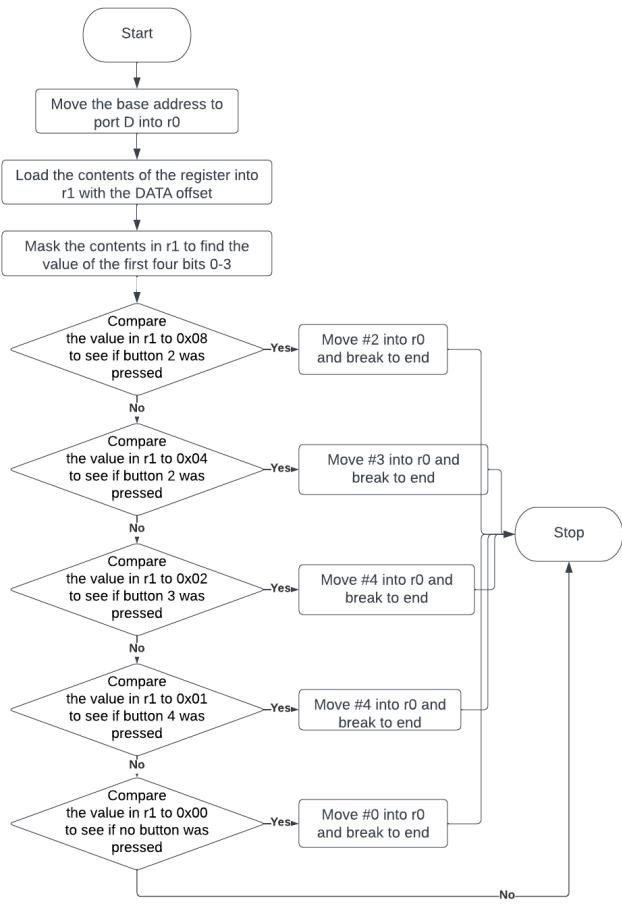
read_string



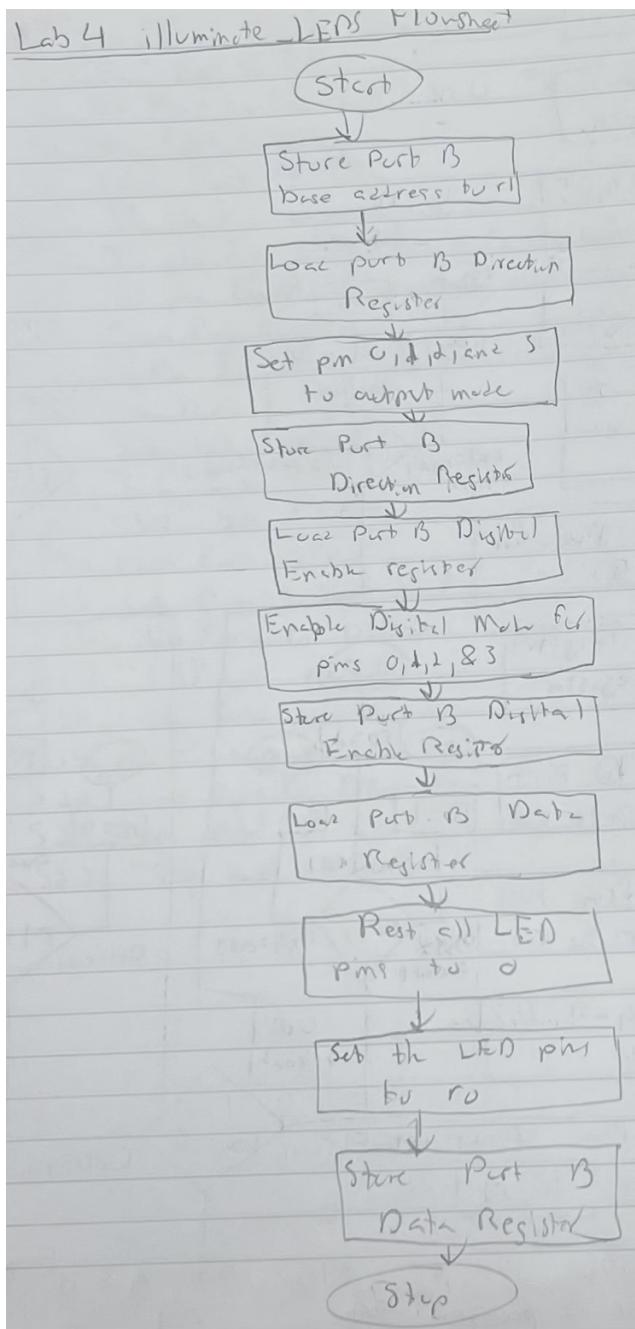
output_string



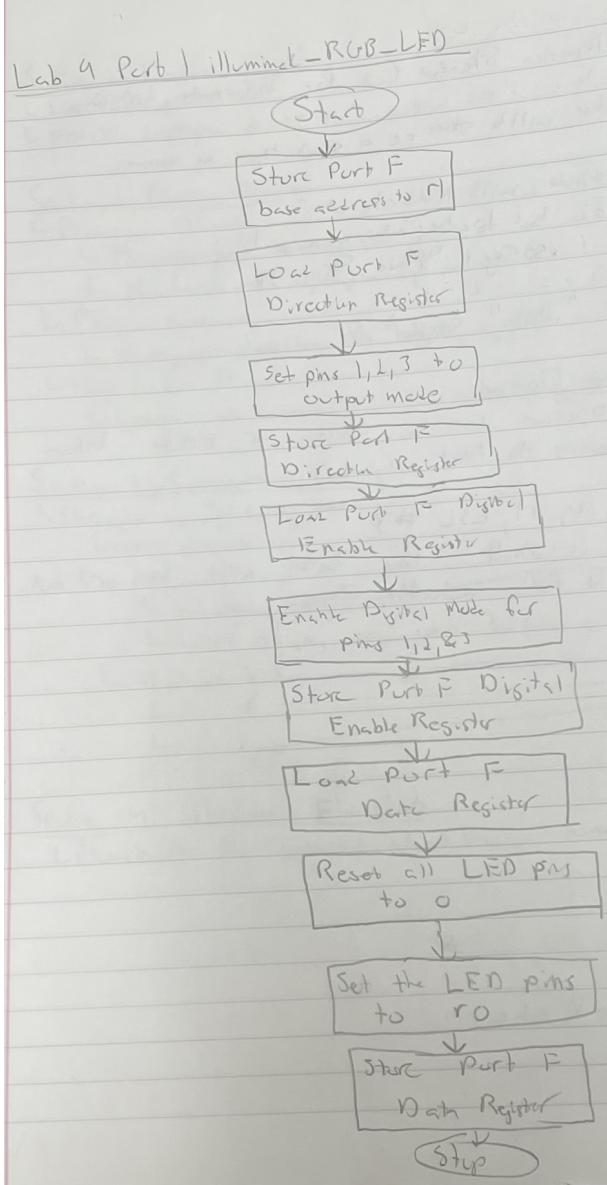
read_from_push_btns



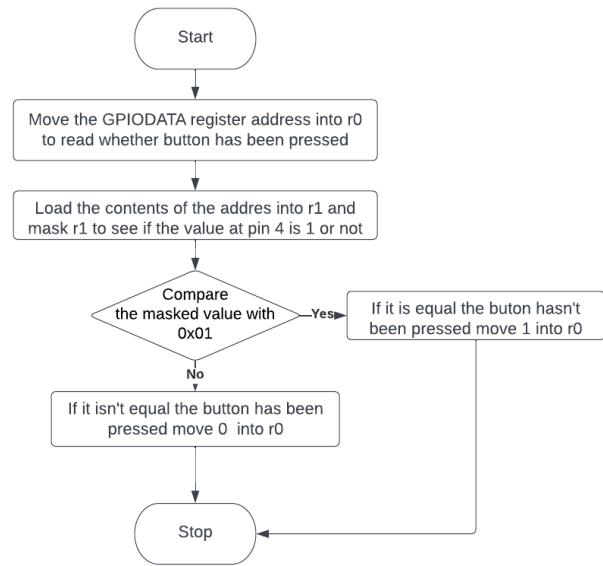
illuminate_LEDs



illuminate_RGB_LED



read_tiva_push_button



read_from_keypad

