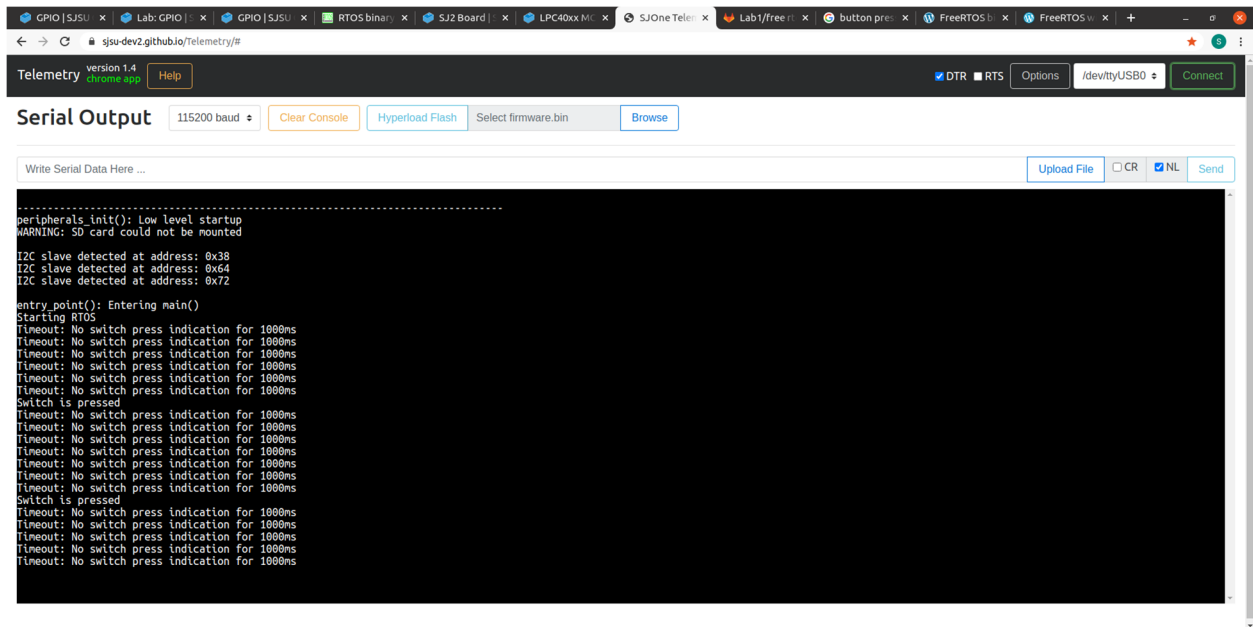


# LAB 3: LED SWITCH

## Part 3:

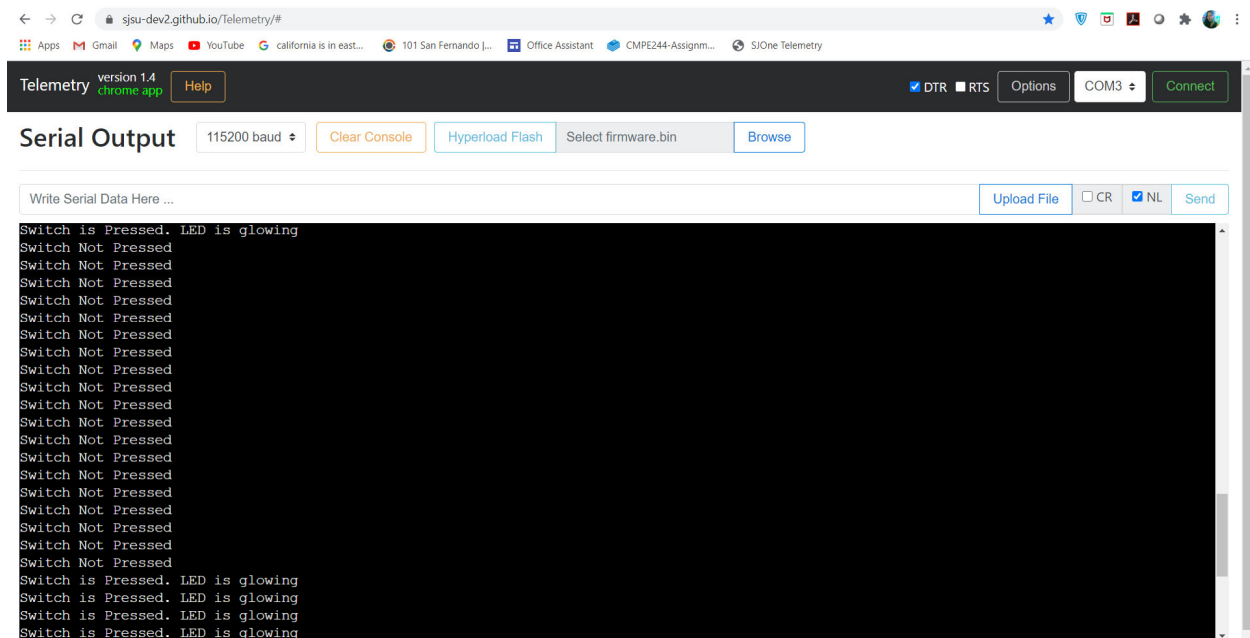


The screenshot shows a web browser window with the Telemetry interface. The top navigation bar includes links for GPIO | SJSU, Lab: GPIO, RTOS binary, SJ2 Board, LPC40xx MC, SJOne Teler, Lab1/freeRTOS, button press, FreeRTOS b, and FreeRTOS v. The main interface has a 'Serial Output' section with a baud rate of 115200, a 'Clear Console' button, a 'Hyperload Flash' button, a 'Select firmware.bin' button, and a 'Browse' button. Below this is a 'Write Serial Data Here ...' input field with 'Upload File', 'CR', 'NL', and 'Send' buttons. The serial output area displays the following text:

```
-----  
peripherals_init(): Low Level startup  
WARNING: SD card could not be mounted  
I2C slave detected at address: 0x38  
I2C slave detected at address: 0x64  
I2C slave detected at address: 0x72  
entry_point(): Entering main()  
Starting RTOS  
Timeout: No switch press indication for 1000ms  
Timeout: No switch press indication for 1000ms  
Timeout: No switch press indication for 1000ms  
Timeout: No switch press indication for 1000ms  
Timeout: No switch press indication for 1000ms  
Timeout: No switch press indication for 1000ms  
Switch is pressed  
Timeout: No switch press indication for 1000ms  
Timeout: No switch press indication for 1000ms  
Timeout: No switch press indication for 1000ms  
Timeout: No switch press indication for 1000ms  
Timeout: No switch press indication for 1000ms  
Timeout: No switch press indication for 1000ms  
Switch is pressed  
Timeout: No switch press indication for 1000ms  
Timeout: No switch press indication for 1000ms  
Timeout: No switch press indication for 1000ms  
Timeout: No switch press indication for 1000ms  
Timeout: No switch press indication for 1000ms
```

As per the task, each time a button is pressed the LED toggles and stops glowing whenever the button is released. As seen from the above picture the output is printed as “Switch is pressed” whenever the button is pressed on the hardware which also means semaphore is taken at this point. After releasing the button, the semaphore is released and hence prints “Timeout: No switch press indication for 1000ms” and the LED turns off.

## Part 3: Extra credit



The screenshot shows the Telemetry web interface in a browser. The address bar shows the URL `sjsu-dev2.github.io/Telemetry/#`. The interface has a dark header with the 'Telemetry' logo, version '1.4', and a 'chrome app' button. There are also checkboxes for 'DTR' and 'RTS', an 'Options' button, a 'COM3' dropdown, and a 'Connect' button. Below the header, there's a 'Serial Output' section with a baud rate of '115200 baud', a 'Clear Console' button, a 'Hyperload Flash' button, a 'Select firmware.bin' dropdown, and a 'Browse' button. A text input field 'Write Serial Data Here ...' is followed by 'Upload File', 'CR', 'NL' (checked), and 'Send' buttons. The main area is a black console with white text showing the following output:

```
Switch is Pressed. LED is glowing
Switch Not Pressed
Switch Not Pressed
Switch Not Pressed
Switch Not Pressed
Switch Not Pressed
Switch Not Pressed
Switch Not Pressed
Switch Not Pressed
Switch Not Pressed
Switch Not Pressed
Switch Not Pressed
Switch Not Pressed
Switch Not Pressed
Switch Not Pressed
Switch Not Pressed
Switch Not Pressed
Switch Not Pressed
Switch Not Pressed
Switch Not Pressed
Switch is Pressed. LED is glowing
Switch is Pressed. LED is glowing
Switch is Pressed. LED is glowing
Switch is Pressed. LED is glowing
```

The task will blink the LED's from left to right and right to left. The two semaphores used are 'switch\_press\_indication2' and 'switch\_notpressed' to monitor the switch press action. LED would blink only when the switch is pressed. The delay used is less so that the semaphore can be taken and released faster, and this will sync the LED glow and switch press action. As seen from the screen shot the LED glows only when the switch is pressed and will print the comment "Switch is pressed. LED is glowing."