RIT

SWEN-340 Final Project

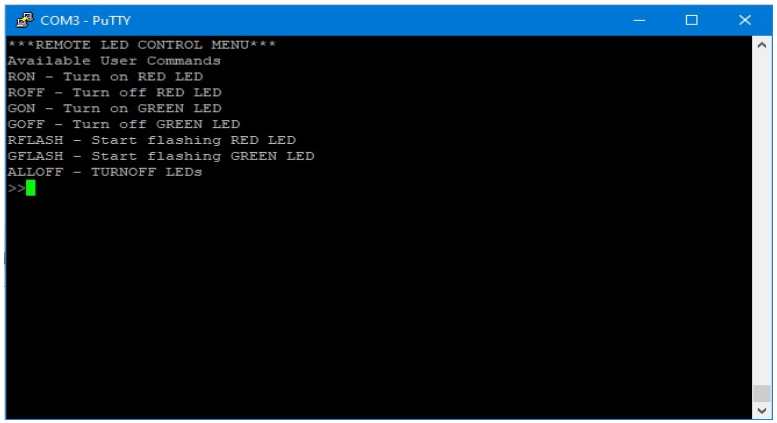
UART-GPIO LED Project

Final Project – High Level Requirements

- **Allow two modes of operation: Remote mode and Local Mode**
- **Remote Mode (Same as UART LED Project): A remote user can control LEDs from Putty /Screen terminal. In this mode, user is not required to flip any switches on the board itself. While in remote mode, the new red and green switches will have no effect.**
- **Local Mode: A super user can override and control LEDs by using "B1" switch on the board (Blue switch). Remote users will not be able to control LEDs using Putty/Screen terminal until this more is deactivated by the Super User. While in Local Mode, the LEDs will be controlled via two push buttons R1 (Red) switch and G1 (Green) switch. Pressing the button lights up the corresponding LED and releasing the button turns it off.**

Final Project – Detailed Design/Requirements

- Allow two modes of operation: Remote mode and Local Mode
- Add Remote mode and Local mode flags to manage switch back-and-forth between the modes of operation
- Default start shall be Remote Mode
- UI shall notify a remote user of current mode of operation and any changes occur over time
- UI shall prompt the same message as in UART LED Project at the start of the operation followed by " ***REMOTE MODE ACTIVE*** "
- UI shall prompt " ***MANUAL OVERRIDE MODE ACTIVE*** " when the Super User presses "B1" switch to activate the Override mode
- UI shall prompt " ***REMOTE MODE ACTIVE*** " again once the Super User deactivates the Override mode by pressing "B1" switch again



Final Project – Detailed Design/Requirements

- **Operation in Remote Mode**
  - A Remote User shall be able to type following commands:
    - **HELP**
      - Prompts messages on Slide # 3 (which commands are available)
    - **RON**
      - Turn on red LED - regardless of its current state
      - does nothing if LED is already on
    - **ROFF**
      - Turn off red LED - regardless of its current state
      - does nothing if LED already off
    - **GON**
      - Turn on Green LED - regardless of its current state
      - does nothing if LED is already on
    - **GOFF**
      - Turn off Green LED - regardless of its current state
      - does nothing if LED already off
    - **RFLASH**
      - Start flashing RED LED (one second on, one second off), regardless of its current state (On or off)
      - This does nothing if LED is already flashing.
    - **GFLASH**
      - Start flashing GREEN LED (one second on, one second off), regardless of its current state (On or off)
      - This does nothing if LED is already flashing.
    - **ALLOFF**
      - Stop all flashing both LEDs
      - Turn off LEDs, **do not leave them ON**

Final Project – Detailed Design/Requirements

- **Operation in Local Mode**
  - **Assume that a super user exist locally who can operate and control boards physically**
  - **A Super user will enable the Local Mode by pushing "B1" User switch on the Nucleo STM32L476RG Board**
  - **Once B1 Switch is pressed, both RED and GREEN LEDs will flash 3 times in three seconds and then turn off. This happens regardless of current state of the LEDs.**
  - **Pressing R1 Switch will cause the RED LED to turn on. Releasing the R1 Switch will cause the RED LED to turn off.**
  - **Pressing G1 Switch will cause the GREEN LED to turn on. Releasing the L1 Switch will cause the GREEN LED to turn off.**
  - **When B1 Switch is pressed again (to turn off Local mode), all LEDs will turn off and the R1 and G1 Switches should no longer function.**

- **R1 and G1 SWITCH**
  - **Refer to images and circuit diagram provided for SWTICH circuits**

Project Demonstration & Grading

- **See Grading sheet for details**