**Digital Electronics**

**Lab Assignment 1 – 20%**

**Simulation of Traffic Light using STM32 Nucleo board**

**Due Date: Monday 24 July 2023**

Create a Traffic Light System. The system will have

* A SINGLE Switch to start to capture the user event.
* THREE LED’s, Red, Green and Amber to simulate the traffic control.
* The onboard Green LED (LED1) to indicate pedestrian crossing.
* When the Switch is pressed twice, the Green LED should switch off and the Amber LED should blink in interval of 1 seconds in infinite loop.

The Traffic Light Green LED will be ON by default. When the Switch is activated only one time, the following events must occur in sequence:

1. The Traffic Light Green LED will stay ON for another 3 s.
2. The Traffic Light Green LED will go OFF and the Amber LED will turn ON for 3 s.
3. The Amber LED will go OFF and the Red LED will turn ON.
4. At this time, the onboard Green LED (LED1) will turn ON for 3s.
5. After that, the onboard Green LED (LED1) will turn OFF and the Traffic Light Green LED will turn ON.

**Submission Requirements:**

* Each student is to submit a 2-page report explaining the Hardware and Software design of the system.
* Each student is to demonstrate their working design and answer basic questions about the system.
* Online submission to BB folder.
* Submission Deadline: Friday 21st July 2023 11:59pm
* Demo and interview will be performed during Lab session 4 (Monday 31 July)

**Marking Criteria:**

* All Basic Functionality (40%)
* Interrupts for Switch (15%)
* Timer Block to control LED Blinking(15%)
* QnA (30%)