AIN SHAMS UNIVERSITY
FACULTY OF ENGINEERING
Credit Hours Programs

Summer Semester, 2021

CSE 347: Embedded Systems

Lab. 4: Multiple Tasks

Goals of this Lab:

- Creating multiple tasks using FreeRTOS.
- Drawing the expected timing diagram of the tasks.
- Validating the timing expected timing diagram.

Task 1: Create a new project on Keil and set it up:

Refer to lab sheet 2 to setup a new FreeRTOS project using Keil.

Task 2: Initialize the Tasks:

- Create three tasks; one toggle the red LED on the Tiva c launchpad each second, one toggle the blue LED each two seconds and the final task toggle the green LED each three seconds.
- Draw by hand the expected timing diagram of the tasks.
- Draw by hand the expected timing diagram of the output color of the LEDs.
- Upload the code on the Tiva c launchpad and validate the timing diagrams.

Task 3: Lab Report:

A lab report is required from each of you, the report should include:

- The expected timing diagram of the tasks.
- The expected timing diagram of the output color of the LEDs.
- If the actual LED color was matching the expected timing diagram, and if not suggest what may have caused the mismatch.
- Would giving the three tasks different priority level have changed the output of the system or not, and why?
- While implanting the tasks did you use vTaskDelay() API or vTaskDelayUntil() API, would it have made a difference and why?