Ain Shams University Faculty of Engineering
CSE345/CSE347: Embedded Systems

Lab 6 - Queues in FreeRTOS

Lab Objective:

- In this lab, you should get introduced to the usage of the queue
- Know the mechanism of the queue work
- Implement the queue in FreeRTOS.

Lab Mission:

1) Create an Init Task to Initizalize the UART0 and 2 push buttons.

```
void InitTask(void *){
....
....
}
```

P.S : Use the following to unlock PORTF using the Tivaware

```
#include "inc/hw_memmap.h"
#include "inc/hw_types.h"
#include "inc/hw_gpio.h"

HWREG(GPIO_PORTF_BASE+GPIO_O_LOCK) = GPIO_LOCK_KEY;
HWREG(GPIO_PORTF_BASE+GPIO_O_CR) |= 0x01;
```

2) Create a Queue using the FreeRTOS APIs

3) Create a Task that checks the first Push Button and increments a counter

```
void BTN1_CHK_TASK(void *){
....
....
}
```

4) Create a Task that checks the Second Push Button and send the counter to the created queue, and then sets the counter back to 0

```
void BTN2_CHK_TASK(void *){
....
....
}
```

5) Create a UART Task that periodically checks data in the queue, and send that data if available via UART to PC.

```
void UART_TASK(void *){
....
....
}
```