University of Texas at El Paso
Electrical and Computer Engineering Department

EE4178 Laboratory for Microprocessors Systems II

LAB 0

Introduction to FREE RTOS

Goals:

- Given the program template shown in listing 1, download it and run it on the ESP32.

Bonus:

Modify the code so that your program prints to the screen every one second, the LED is off for two seconds and on for three seconds. **+10**

Pre-Lab:

- What is the function used to create a delay?
- What are the functions used to modify the output of a GPIO pin?

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```
#include <stdio.h>
#include "freertos/FreeRTOS.h"
#include "freertos/task.h"
#include "esp_system.h"
#include "driver/gpio.h"

/* Define pin 13 as a “BLINK_GPIO” */
#define BLINK_GPIO 13

/* Code for the hello_task task */
void hello_task(void *pvParameter)
{
  while(1)
  {
      /* print to the screen and delay this task by 100 ms */
      printf("Hello world!\n");
      vTaskDelay(100 / portTICK_RATE_MS);
  }
}

/* Code for the blinky task */
void blinky(void *pvParameter)
{
    /* Define pin 13 as a GPIO and make it an OUTPUT */
    gpio_pad_select_gpio(BLINK_GPIO);
    gpio_set_direction(BLINK_GPIO, GPIO_MODE_OUTPUT);
    while(1) {
        gpio_set_level(BLINK_GPIO, 0);
        gpio_set_level(BLINK_GPIO, 1);
    }
}

void app_main()
{
    /* Create the task defined by xTaskCreate.  NULL is used to specify ”not required.” */
    xTaskCreate(&hello_task, "hello_task", 2048, NULL, 5, NULL);
    xTaskCreate(&blinky, "blinky", 512,NULL,5,NULL );

    /* Should not reach here! */
}
```

Listing 1. Program template for Lab 0.