



LAB 04

DAC Peripheral

Goals:

- Using the DAC peripheral create a task to output a triangular wave on GPIO 25.
- Using the DAC peripheral create a task to output a sine wave in GPIO 26.
- Use the code in listing 1 to start your project.

Bonus:

Make the sine wave have a 10 hz frequency. **+10**

Pre-Lab

Questions:

- What is a DAC?
- How does a DAC work?
- What are the two functions needed to use the esp32's DAC?

```

#include <stdio.h>
#include <math.h>
#include "sdkconfig.h"
#include <driver/dac.h>
#include "freertos/FreeRTOS.h"
#include "freertos/task.h"

void createTriangleWave(void *pvParameter)
{
    dac_output_enable(DAC_CHANNEL_1);
    static int i = 0;
    while(1) {
        dac_output_voltage(DAC_CHANNEL_1, i);

        // compute triangular waveform value

        vTaskDelay(10/portTICK_PERIOD_MS);
    }
}

void createSineWave(void *pvParameter)
{
    dac_output_enable(DAC_CHANNEL_2);
    static int i = 0;
    float val;
    int n;
    while(1) {

        // compute sine waveform value

        dac_output_voltage(DAC_CHANNEL_2, n);

        vTaskDelay(10/portTICK_PERIOD_MS);
    }
}

void app_main()
{
    xTaskCreate(&createTriangleWave,"createTriangleWave",4096,NULL,5,NULL);
    xTaskCreate(&createSineWave,"createSineWave",4096,NULL,5,NULL);

}

```

Listing 1. Program template for Lab 4.