// excerise 1

#include "stm32f4xx.h"

int main(void){

// Initialize GPIO Port for LEDs

RCC->AHB1ENR |= RCC\_AHB1ENR\_GPIODEN; // Enable GPIOD clock

GPIOD->MODER |= GPIO\_MODER\_MODER12\_0; // GPIOD pin 12 output - green LED

//Initialize Timer 2

RCC->APB1ENR |= RCC\_APB1ENR\_TIM2EN; // Enable timer 2 clock

TIM2->CR1 &= ~0x00000016; /\*Sets the counter as an upcounter\*/

TIM2->CR1 &= ~0x00000008; /\*Turn off repeat in CR1 - i.e. use one pulse mode\*/

TIM2->PSC = 8400-1; /\*Prescaler value - the prescaler clock defaults to twice the APB1 which is running at 42MHz - so the timer clock is 84MHz\*/

/\* PSC is frequency 8400/2 = 42 MHZ - 1 this will output to pulse \*/

TIM2->ARR = 5000-1; /\*sets the value in the autoreload register\*/

/\* ARR record for 1 sec = 10000, .5 sec = 5000 \*/

TIM2->EGR = 1; /\*Re-initialises the timer\*/

TIM2->CR1 |= 1; //Enables the counter using the register CR1

// turn green LED on and off based on timer

for(;;){

GPIOD->BSRR = 1<<12; // Turn on the green LED

while((TIM2->SR&0x0001)!=1){}; //TIM2 to implement a .5 second delay

TIM2->SR &= ~1; //Resets to 0 the update interrupt flag in the register SR

GPIOD->BSRR = 1<<(12+16); // Turn off the green LED

while((TIM2->SR&0x0001)!=1){}; //TIM2 to implement a .5 second delay

TIM2->SR &= ~1; //Resets to 0 the update interrupt flag in the register SR

}

}