#include <stdint.h>

#include <stdbool.h>

#include "stm32f10x.h"

int main() {

RCC->APB2ENR |= RCC\_APB2ENR\_IOPCEN;

// Настройка альтернативной функции для пина PС8 (TIM3\_CH3)

GPIOC->CRH |= GPIO\_CRH\_MODE8; // OutMode 50MHz

GPIOC->CRH &= ~GPIO\_CRH\_CNF8; //сброс битов

GPIOC->CRH |= GPIO\_CRH\_CNF8\_1; // Altfunc

RCC->APB2ENR |= RCC\_APB2ENR\_IOPAEN;

RCC->APB1ENR |= RCC\_APB1ENR\_TIM3EN;

RCC->APB2ENR |= RCC\_APB2ENR\_AFIOEN;

AFIO->MAPR |= AFIO\_MAPR\_TIM3\_REMAP;

TIM3->PSC = 240;

TIM3->ARR = 100;

TIM3->CCR3 = 80;

// Выбор режима ШИМ для канала 3

TIM3->CCMR2 |= TIM\_CCMR2\_OC3M\_1 | TIM\_CCMR2\_OC3M\_2;

TIM3->CCER |= TIM\_CCER\_CC3E; // Разрешение сравнения канала 3

TIM3->CR1 |= TIM\_CR1\_ARPE; //предзагрузка

TIM3->CR1 |= TIM\_CR1\_CEN;

bool button\_state = false;

bool sign = true;

uint16\_t brightness = 80;

while (1) {

button\_state = GPIOA->IDR & GPIO\_IDR\_IDR0;

if (button\_state) {

if (sign) {

GPIOC->BSRR = GPIO\_BSRR\_BS9;

brightness = brightness + 2;

TIM3->CCR3 = brightness;

if (brightness == 100) {

sign = !sign;

}

}

else if (!sign) {

GPIOC->BSRR = GPIO\_BSRR\_BR9;

brightness = brightness - 2;

TIM3->CCR3 = brightness;

if (brightness == 0) {

sign = !sign;

}

}

for (uint32\_t i = 0; i < 1000000; ++i);

}

}

}