

Introduction to Embedded Systems CSE 211

Project Submission

Team 15

10,5226
19p5326
19p4193
- r
10.55
18p6670
18p7917
101/1/
10700
18P9927
¥

Table of Contents

1.	Project Description	3
2.	Flow Chart	4
3.	Code	5
4.	Drive link	7
	ole of Figures	
Fig	ure 1: Flow chart	4

1. Project Description

In this project we aim to design a traffic light control system.

This system consists of 4 traffic lights, 2 car traffic lights, and 2 pedestrian traffic lights.

Car traffic light:

The first car traffic light shall stay GREEN for 5 seconds, then YELLOW for 2 seconds, then turns RED. When one of the traffic lights is set to RED the other one has to go GREEN exactly after 1 second. The same sequence then is repeated.

Pedestrian traffic light:

Each pedestrian traffic light has 2 LEDs (red & green), and controlled with a push button.

once the push button is pressed, the traffic light goes from red to green for 2 seconds.

2. Flow Chart

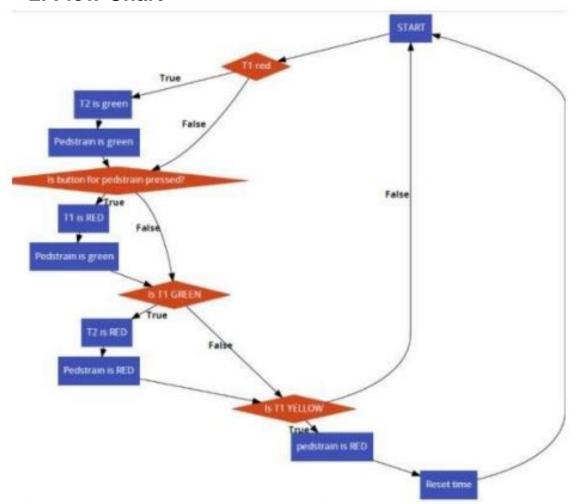
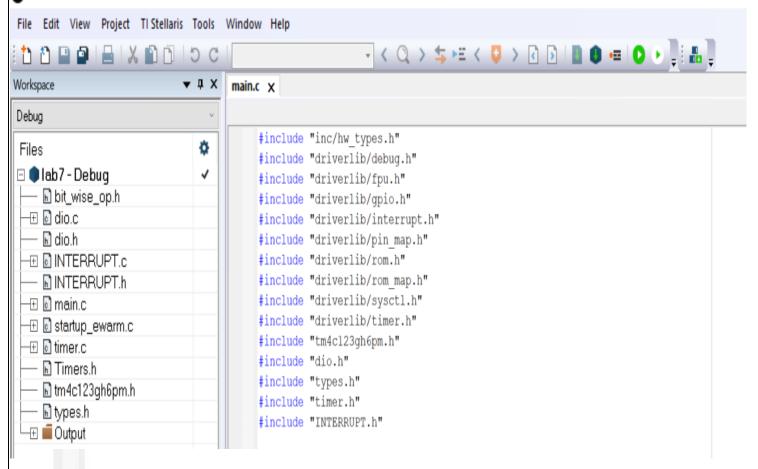


Figure 1: Flow chart

3. Code

main.c

TEAM15 - IAR Embedded Workbench IDE - Arm 9.10.1



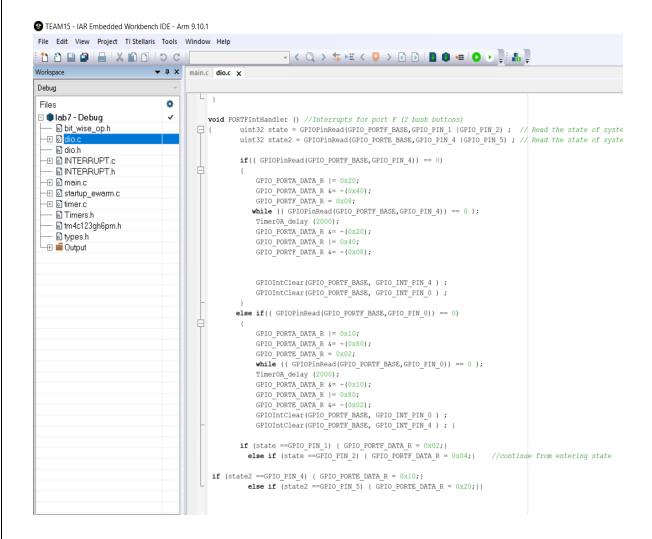
```
while(1)
  GPIO PORTF DATA R |= 0x02;
  GPIO PORTE DATA R |= 0x02;
  GPIO_PORTA_DATA_R = 0x50;
  TimerOA_delay (5000);
                            // System 1 GREEN
  GPIO PORTF DATA R &= \sim (0x02);
  GPIO_PORTF_DATA_R |= 0x04;
  TimerOA_delay (2000); // System 1 YELLOW GPIO_PORTF_DATA_R &= \sim (0x04);
  GPIO PORTF DATA R |= 0x08;
  GPIO PORTA DATA R = 0 \times A0;
  TimerOA_delay (1000); // Delay 1 sec between traffic and pedstrain
  GPIO PORTE DATA R &= ~ (0x02);
  GPIO PORTE DATA R |= 0x10;
  Timer1A delay (5000); // System 2 GREEN
  GPIO PORTE DATA R &= \sim (0 \times 10);
  GPIO PORTE DATA R |= 0x20;
  Timer1A delay (2000);
                            // System 2 YELLOW
  GPIO PORTE DATA R &= \sim (0x20);
  GPIO_PORTE_DATA_R \mid = 0x02;
                              // Delay 1 sec between traffic and pedstrain
  TimerlA delay (1000);
  GPIO PORTE DATA R &= \sim (0x02);
  GPIO_PORTF_DATA_R &= \sim (0x08); }}
```

dio.c

```
TEAM15 - IAR Embedded Workbench IDE - Arm 9.10.1
 File Edit View Project TI Stellaris Tools Window Help
 🛅 🖰 🔛 🗗 🖶 🐰 🖺 🛅 🖰 C
                                                             · < Q > 5 № < ♥ > d D | • • | D • • | H
Workspace
                              → 1 ×
                                      main.c dio.c x
Debug
                                 ø
 Files
                                           void InitPortF(void)
 🖂 🌒 lab 7 - Debug
                                        □ {
    - 🗟 bit_wise_op.h
                                              SYSCTL RCGCGPIO R |= 0x00000020;
  ⊕ 🗈 dio.c
                                              while((SYSCTL_PRGPIO_R&0x00000020) == 0);
   — 🗟 dio.h
                                              GPIO_PORTF_LOCK_R = 0x4C4F434B;
  -- INTERRUPT.c
                                              GPIO PORTF CR R = 0x1F;
                                              GPIO_PORTF_DIR_R = 0x0E ; //pins 1,2,3 for 1st car traffic leds
    - 🔝 INTERRUPT.h
                                              GPIO_PORTF_DEN_R = 0x0E;
  —⊞ 🖸 main.c
                                              GPIO PORTF PUR R=0x11;
  -⊞ 🖸 startup_ewarm.c
                                              GPIOPadConfigSet (GPIO PORTF BASE, GPIO PIN 4 GPIO PIN 0, GPIO STRENGTH 2MA, G
  -⊞ 🖸 timer.c
                                              GPIO PORTF DATA R ^= 0x00;
   — 🖪 Timers.h
                                              GPIOIntEnable(GPIO_PORTF_BASE, GPIO_PIN_4|GPIO_PIN_0);

    Im4c123qh6pm.h

    - 📓 types.h
                                           void InitPortE(void)
  🗕 📹 Output
                                              SYSCTL RCGCGPIO R |= 0x00000010;
                                              while((SYSCTL PRGPIO R&0x00000010) == 0);
                                              GPIO_PORTE_DIR_R = 0xF3; //pins 4,5,1 for 2nd car traffic leds
                                              GPIO_PORTE_DEN_R = 0xF3;
                                           void InitPortA(void)
                                        □ {
                                              SYSCTL RCGCGPIO R |= 0x00000001;
                                              while((SYSCTL PRGPIO R&0x00000001) == 0);
                                              GPIO PORTA DIR R = 0xF0; //pins 4,5,6,7
                                               GPIO PORTA DEN R = 0 \times F0;
```



4. Drive link

Here you'll find the working video and the project file which include all files that used in the code.

 $\underline{https://drive.google.com/drive/folders/1lPrWFtdxIQT9vKurqavUPoFaofze7j5L?usp=sharing}$

That's all, thank you 3...