```
/*******************************************************************************
 Module
   LEDService.c

 Revision
   1.0.1

 Description
   This is a template file for implementing a simple service under the
   Gen2 Events and Services Framework.

 Notes

 History
 When           Who     What/Why
 -------------- ---     --------
 06/07/20 11:39 hbf     finalize for 218C project
 05/05/20 13:30 hbf     began conversion for Lab 10
 01/16/12 09:58 jec     began conversion from TemplateFSM.c
*******************************************************************************/
/*---------------------------- Include Files ----------------------------*/
/* include header files for this state machine as well as any machines at the
   next lower level in the hierarchy that are sub-machines to this machine
*/
#include "ES_Configure.h"
#include "ES_Framework.h"
#include "LED_Service.h"
#include "SwitchService.h"

/*---------------------------- Module Variables ---------------------------*/
// with the introduction of Gen2, we need a module level Priority variable
static uint8_t MyPriority;

/*---------------------------- Module Code ----------------------------*/
/*******************************************************************************
 Function
    InitLEDService

 Parameters
    uint8_t : the priorty of this service

 Returns
    bool, false if error in initialization, true otherwise

 Description
    Saves away the priority, and does any
    other required initialization for this service
 Notes

 Author
    H. Francis, 05/06/20, 14:00
*******************************************************************************/
bool InitLEDService(uint8_t Priority)
{
  ES_Event_t ThisEvent;

  MyPriority = Priority;

  //Set port lines to digital output
  ANSELB &= (BIT1LO & BIT3LO & BIT4LO & BIT5LO & BIT6LO);
  LATB &= (BIT1LO & BIT3LO & BIT4LO & BIT5LO & BIT6LO);
  //LATB |= (BIT1HI | BIT3HI | BIT4HI | BIT5HI | BIT6HI);
  TRISB &= (BIT1LO & BIT3LO & BIT4LO & BIT5LO & BIT6LO);
  printf("Initialized LEDs\r\n");
```

```
 // post the initial transition event
 ThisEvent.EventType = ES_INIT;
 if (ES_PostToService(MyPriority, ThisEvent) == true)
 {
  return true;
 }
 else
 {
  return false;
 }
}

/****************************************************************************
 Function
    PostLEDService

 Parameters
    EF_Event_t ThisEvent ,the event to post to the queue

 Returns
    bool false if the Enqueue operation failed, true otherwise

 Description
    Posts an event to this state machine's queue
 Notes

 Author
    H. Francis, 05/06/20, 14:15
****************************************************************************/
bool PostLEDService(ES_Event_t ThisEvent)
{
 return ES_PostToService(MyPriority, ThisEvent);
}

/****************************************************************************
 Function
   RunLEDService

 Parameters
  ES_Event_t : the event to process

 Returns
  ES_Event, ES_NO_EVENT if no error ES_ERROR otherwise

 Description
  Run this state machine; all to do is turn LEDs off if we are transmitting

 Notes

 Author
  H. Francis, 05/06/20, 14:16
****************************************************************************/
ES_Event_t RunLEDService(ES_Event_t ThisEvent)
{
 ES_Event_t ReturnEvent;
 ReturnEvent.EventType = ES_NO_EVENT; // assume no errors

 return ReturnEvent;
}
/****************************************************************************
 Function
   SetActiveLED

 Parameters
  none

 Returns
  none
```

```
 Description
   Turn RX/TX Active LED on

 Notes

 Author
   H. Francis, 05/09/20, 14:20
*****************************************************************************/
void SetActiveLED(void) {
    LATB |= BIT1HI;
}
/*****************************************************************************
 Function
    ClearActiveLED

 Parameters
   none

 Returns
   none

 Description
   Turn RX/TX Active LED off

 Notes

 Author
   H. Francis, 05/09/20, 14:22
*****************************************************************************/
void ClearActiveLED(void) {
    LATB &= (BIT3LO & BIT4LO & BIT5LO & BIT6LO);
}
/*****************************************************************************
 Function
    SetLEDs

 Parameters
   uint8_t denoting LED code to illuminate

 Returns
   none

 Description
   Takes a given 4-bit code to output on bar LED graph

 Notes

 Author
   H. Francis, 05/09/20, 14:35
*****************************************************************************/
void SetLEDs(uint8_t LEDCode) {
     uint8_t oldLATVal = LATB;
     uint8_t mask = (BIT3HI | BIT4HI | BIT5HI | BIT6HI);
     mask = oldLATVal & ~mask;

     //LED code is in lower 4 bits, shift left 3 to be in correct place
     LATB = (mask | (LEDCode<<3));
}
/*------------------------------ Footnotes -------------------------------*/
/*------------------------------ End of file -------------------------------*/
```