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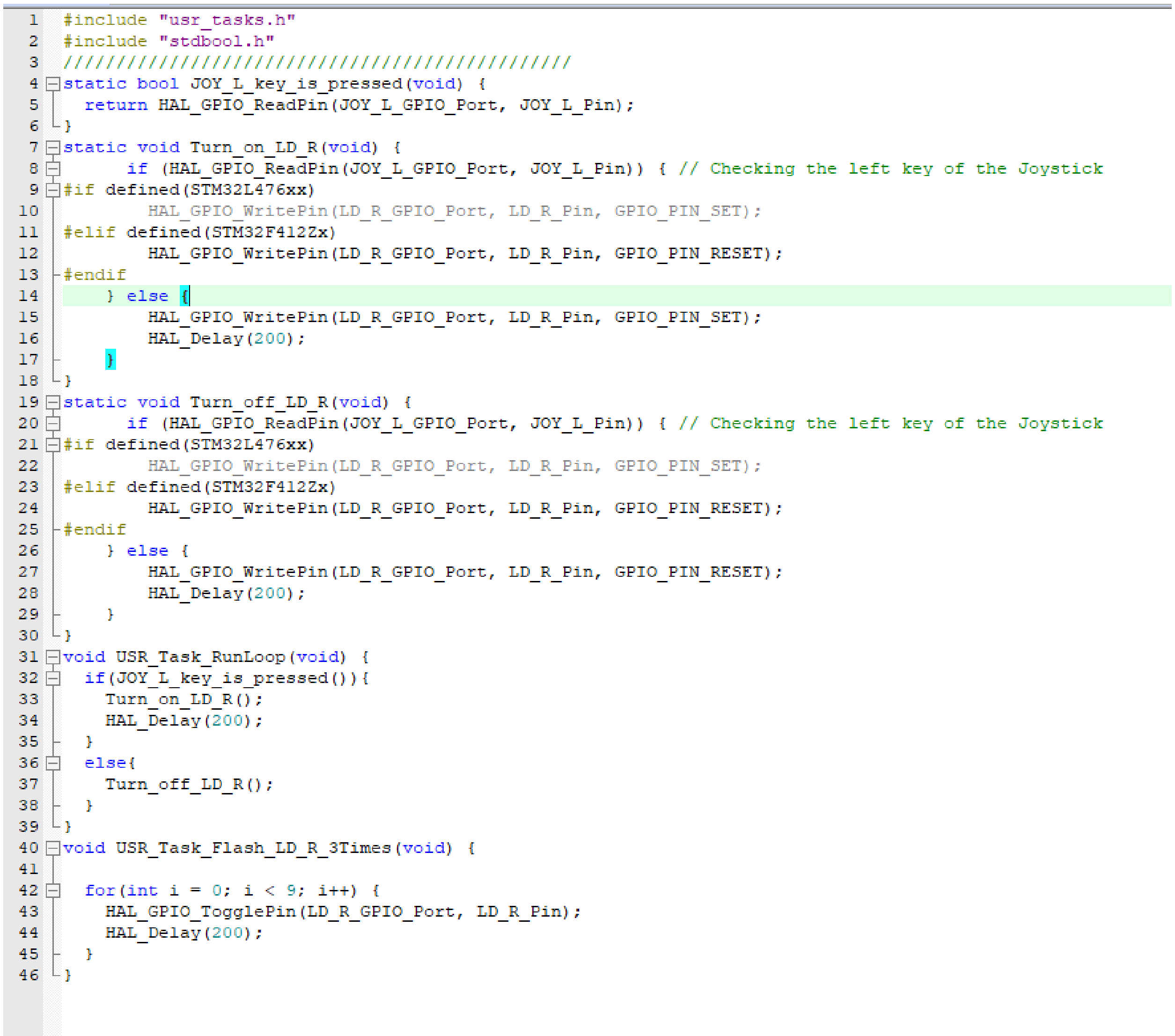
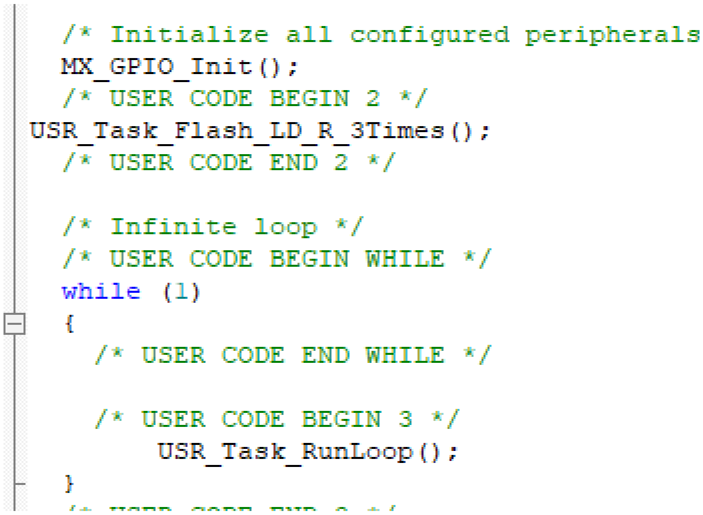
Source Code of user_tasks.c:



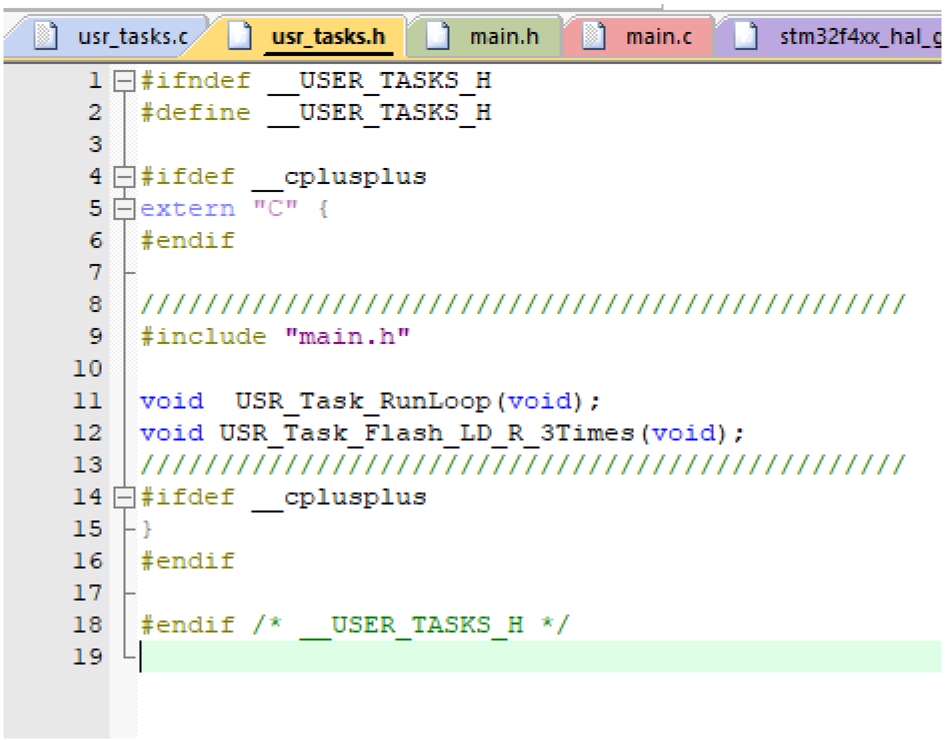
```c
#include "usr_tasks.h"
#include "stdbool.h"
////////////////////////////////////////////////
static bool JOY_L_key_is_pressed(void) {
  return HAL_GPIO_ReadPin(JOY_L_GPIO_Port, JOY_L_Pin);
}
static void Turn_on_LD_R(void) {
      if (HAL_GPIO_ReadPin(JOY_L_GPIO_Port, JOY_L_Pin)) { // Checking the left key of the Joystick
#if defined(STM32L476xx)
        HAL_GPIO_WritePin(LD_R_GPIO_Port, LD_R_Pin, GPIO_PIN_SET);
#elif defined(STM32F412Zx)
        HAL_GPIO_WritePin(LD_R_GPIO_Port, LD_R_Pin, GPIO_PIN_RESET);
#endif
    } else {
        HAL_GPIO_WritePin(LD_R_GPIO_Port, LD_R_Pin, GPIO_PIN_SET);
        HAL_Delay(200);
    }
}
static void Turn_off_LD_R(void) {
      if (HAL_GPIO_ReadPin(JOY_L_GPIO_Port, JOY_L_Pin)) { // Checking the left key of the Joystick
#if defined(STM32L476xx)
        HAL_GPIO_WritePin(LD_R_GPIO_Port, LD_R_Pin, GPIO_PIN_SET);
#elif defined(STM32F412Zx)
        HAL_GPIO_WritePin(LD_R_GPIO_Port, LD_R_Pin, GPIO_PIN_RESET);
#endif
    } else {
        HAL_GPIO_WritePin(LD_R_GPIO_Port, LD_R_Pin, GPIO_PIN_RESET);
        HAL_Delay(200);
    }
}
void USR_Task_RunLoop(void) {
  if(JOY_L_key_is_pressed()){
    Turn_on_LD_R();
    HAL_Delay(200);
  }
  else{
    Turn_off_LD_R();
  }
}
void USR_Task_Flash_LD_R_3Times(void) {

  for(int i = 0; i < 9; i++) {
    HAL_GPIO_TogglePin(LD_R_GPIO_Port, LD_R_Pin);
    HAL_Delay(200);
  }
}
```

Screenshot of the code snippet in main.c regarding the added code between USER CODE BEGIN 2 and USER CODE BEGIN 2.



```
  /* Initialize all configured peripherals
  MX_GPIO_Init();
  /* USER CODE BEGIN 2 */
USR_Task_Flash_LD_R_3Times();
  /* USER CODE END 2 */

  /* Infinite loop */
  /* USER CODE BEGIN WHILE */
  while (1)
  {
    /* USER CODE END WHILE */

    /* USER CODE BEGIN 3 */
          USR_Task_RunLoop();
  }
  /* USER CODE END 3 */
```

Code Snippet of header file usr_tasks.h



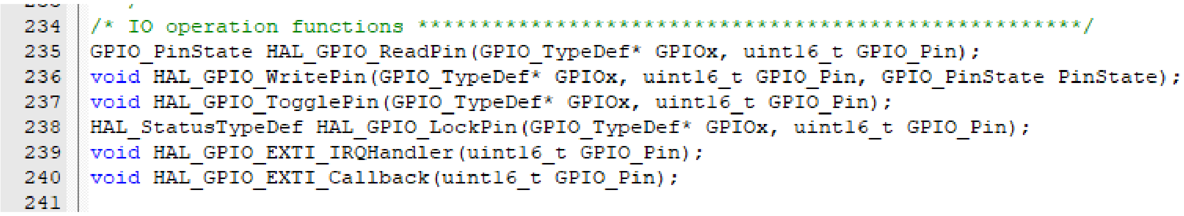
```
#ifndef __USER_TASKS_H
#define __USER_TASKS_H

#ifdef __cplusplus
extern "C" {
#endif

////////////////////////////////////////////////
#include "main.h"

void  USR_Task_RunLoop(void);
void USR_Task_Flash_LD_R_3Times(void);
////////////////////////////////////////////////
#ifdef __cplusplus
}
#endif

#endif /* __USER_TASKS_H */

```

Three Hal functions:

GPIO_PinState HAL_GPIO_ReadPin(GPIO_TypeDef* GPIOx, uint16_t GPIO_Pin);

void HAL_GPIO_WritePin(GPIO_TypeDef* GPIOx, uint16_t GPIO_Pin, GPIO_PinState PinState);

void HAL_GPIO_TogglePin(GPIO_TypeDef* GPIOx, uint16_t GPIO_Pin);



```
/* IO operation functions *****************************************************/
GPIO_PinState HAL_GPIO_ReadPin(GPIO_TypeDef* GPIOx, uint16_t GPIO_Pin);
void HAL_GPIO_WritePin(GPIO_TypeDef* GPIOx, uint16_t GPIO_Pin, GPIO_PinState PinState);
void HAL_GPIO_TogglePin(GPIO_TypeDef* GPIOx, uint16_t GPIO_Pin);
HAL_StatusTypeDef HAL_GPIO_LockPin(GPIO_TypeDef* GPIOx, uint16_t GPIO_Pin);
void HAL_GPIO_EXTI_IRQHandler(uint16_t GPIO_Pin);
void HAL_GPIO_EXTI_Callback(uint16_t GPIO_Pin);
```

Image for reference.