```c
#include "interrupt.h"

struct keys key[4] ={0};

uchar rx_arry[50];
uchar rx_data;
uchar rx_pointer;

void HAL_UART_RxCpltCallback(UART_HandleTypeDef *huart)
{
    if(huart->Instance == USART1)
    {
        rx_arry[rx_pointer++]=rx_data;
        HAL_UART_Receive_IT(huart,  (uint8_t *)&rx_data,  1);
    }
}
void HAL_TIM_PeriodElapsedCallback(TIM_HandleTypeDef *htim)
{
    if(htim->Instance == TIM6)
    {
        key[0].value = HAL_GPIO_ReadPin(GPIOB,GPIO_PIN_0);
        key[1].value = HAL_GPIO_ReadPin(GPIOB,GPIO_PIN_1);
        key[2].value = HAL_GPIO_ReadPin(GPIOB,GPIO_PIN_2);
        key[3].value = HAL_GPIO_ReadPin(GPIOA,GPIO_PIN_0);

        for(int i=0;i<4;i++)
        {
            switch(key[i].state)
            {
                case 0:
                    if(key[i].value == 0) key[i].state = 1;
                    break;
                case 1:
                    if(key[i].value == 0)
                    {
                        key[i].state = 2;
                        key[i].click_time = 0;
                    }
                    else key[i].state = 0;
                    break;
                case 2:
//                  if(key[i].value == 0)
//                      key[i].click_time++;
//                  else if(key[i].click_time>70)
//                  {
//                      key[i].long_flag = 1;
//                      key[i].state = 0;
//                  }
//                  else
//                  {
//                      switch(key[i].double_state)
//                      {
//                      case 0:
//                          key[i].double_state = 1;
//                          break;
//                      case 1:
//                          key[i].double_state = 0;
//                          key[i].double_flag = 1;
//                          break;
//                      }
//
//                      key[i].state = 0;
//                      key[i].double_time = 0;
//                  }

                    if(key[i].value == 0)
                        key[i].click_time++;
                    else
                    {
                        if(key[i].click_time >70)
                            key[i].long_flag = 1;
                        else key[i].short_flag = 1;

                        key[i].state = 0;
                    }

                    break;

            }

//          if(key[i].double_state == 1)
//          {
//              key[i].double_time++;
//              if(key[i].double_time>30)
//              {
//                  key[i].short_flag = 1;
//                  key[i].double_state = 0;
//              }
//          }
        }
    }

}
```