SPI

Monday, July 7, 2025 1:10 PM

SPI

- Always set the SPI flag/done flag before the while loop
- MSDK
  - always set the alternate function for GPIO
- Synchronous request
  - blocking
    - can not execute anything else before transaction is done
- Asynchronous request
  - non-blocking
    - allow other execution while handling SPI transaction
    - disable NVIC once entered the push button routine
    - enable NVIC right after finishing the push button routine

Blocking

```
main ( ) {
    // setup  SPI : pins, enable
    SPI_Transaction_SYNC ();
}
```

Non_Blocking

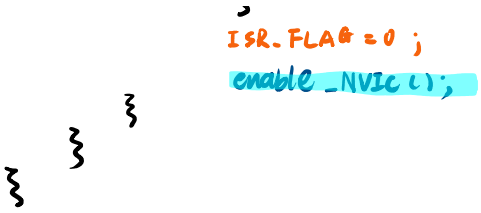
```
SPI_FLAG = 0   // start actual SPI routine
ISR_FLAG = 0   // start SPI through interrupt.

SPI_Handler( ) {
    // Checks what flag triggered the ISR, then perform tasks.
    // calls SPI callback when done
    // continues executing when SPI_FLAG = 1
}

SPI_callback ( ) {
    // clears the SPI_FLAG
    SPI_FLAG = 0;
}

Pushbutton_callback ( ) {
    disable_NVIC ( ) // prevent PB bounces
    ISR_FLAG = 1 ;
    // do some quick action ;
}

main ( ) {
    SPI_setup( ) // NVIC
    pushbutton_setup( )
    while(1) {
        if ( ISR_FLAG == 1 ) {
            SPI_FLAG = 1 ;
            SPI_transaction_async ( )
            while ( SPI_FLAG == 1 ){
                // Do other stuff when SPI is
                // handled in background
            }
            ISR_FLAG = 0 ;
            enable_NVIC ( );
```


ISR_FLAG = 0 ;
enable_NVIC ();