SPI LCD Display

Links: LCD Display

Software: uVision + STM32 library files + starter project: .\Projects\LCD_Display_ex _Starter\
Hardware: Nucleo STM32F103 + mbed 016.1 board with display

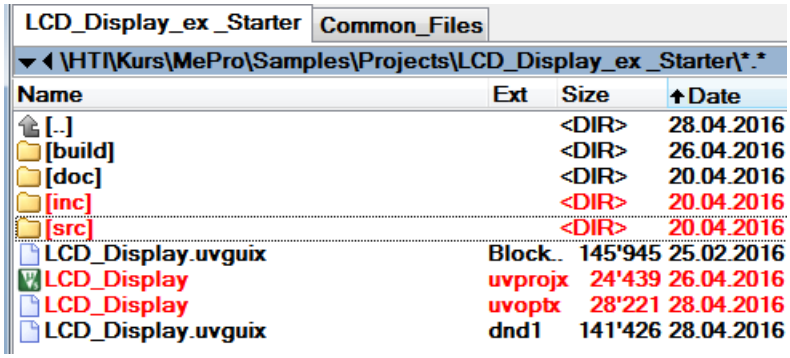
Learning targets:

1. Understand how the SPI interface works
2. Be able to setup all GPIO lines needed to drive the LCD display
3. Understand how the software interface of the LCD display works
4. Understand what contrast does
5. Be able to write text onto the LCD display
6. Understand how the logic analyser works and what the SPI Decoder does

Working targets

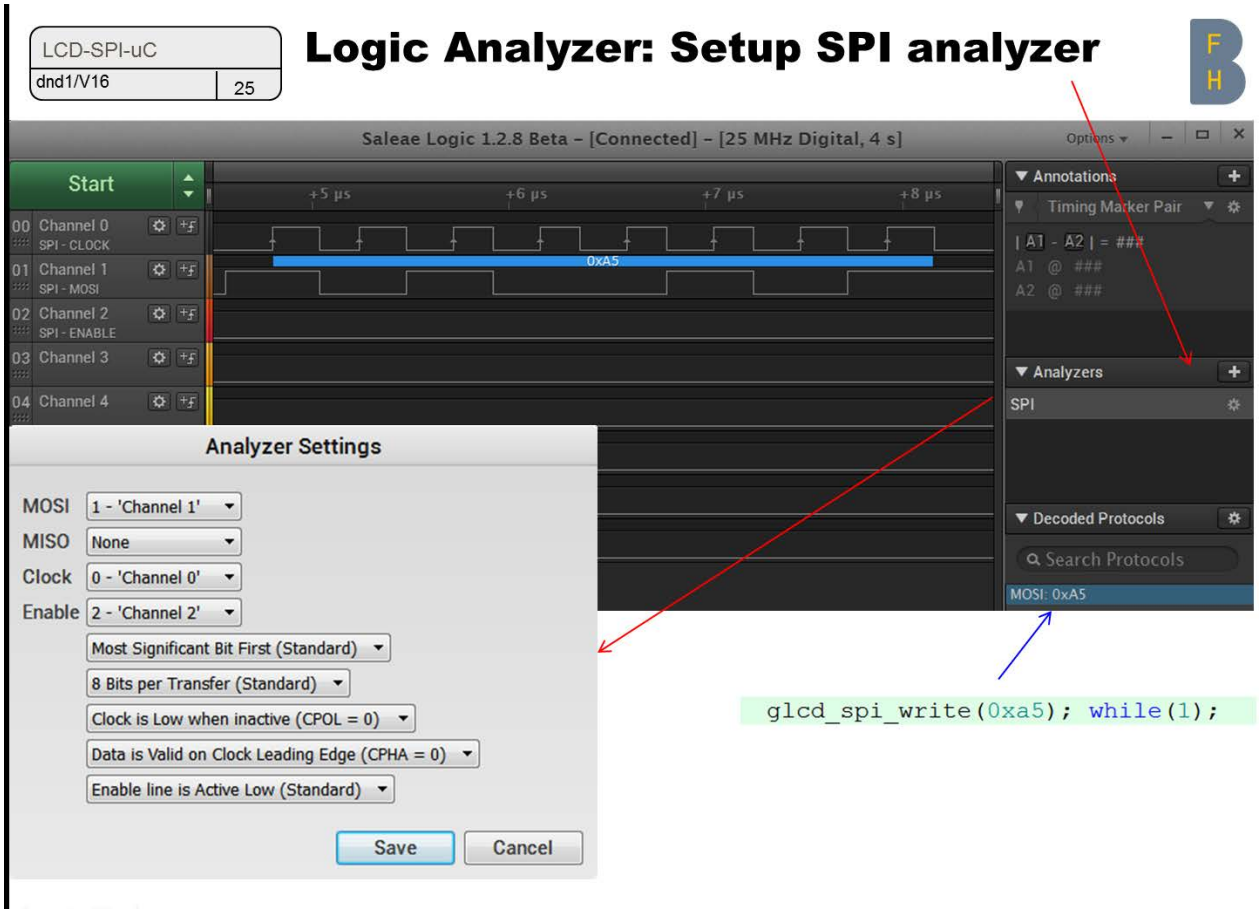
1. Complete the starter application such that:
   a. the SPI1 interface is initialised in transmission mode
   b. the logic analyser shows the correctly decoded SPI protocol
   c. the LCD display starts up correctly
   d. some friendly text is shown on the display
   e. the contrast of the display may be set with potentiometer POT1
   f. doxygen tags for file header, function headers, global variables

2. In case you hand in this project as a packed file containing all read items:



Please use “Kürzel/abbreviation”_LCD_Display.zip as file name.

Thank you in advance!


LCD-SPI-uC
dnd1/V16
25
Logic Analyzer: Setup SPI analyzer
Saleae Logic 1.2.8 Beta – [Connected] – [25 MHz Digital, 4 s]
Options
Start
+5 µs
+6 µs
+7 µs
+8 µs
00 Channel 0
SPI - CLOCK
01 Channel 1
SPI - MOSI
0xA5
02 Channel 2
SPI - ENABLE
03 Channel 3
04 Channel 4
Annotations
Timing Marker Pair
| A1 - A2 | = ###
A1 @ ###
A2 @ ###
Analyzers
SPI
Decoded Protocols
Search Protocols
MOSI: 0xA5
Analyzer Settings
MOSI 1 - 'Channel 1'
MISO None
Clock 0 - 'Channel 0'
Enable 2 - 'Channel 2'
Most Significant Bit First (Standard)
8 Bits per Transfer (Standard)
Clock is Low when inactive (CPOL = 0)
Data is Valid on Clock Leading Edge (CPHA = 0)
Enable line is Active Low (Standard)
Save
Cancel
glcd_spi_write(0xa5); while(1);