

MSOE Library Overview

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MSOE Library Overview

- MSOE_Lib is a set of library functions available for student use.
- Currently it supports:
 - Nokia 5110 LCD display functions
 - Limited Clock frequency functions
 - SysTick based delay functions
 - Miscellaneous functions
- After setting up the library in your workspace you will be able to access these functions

MSOE Library Overview

- Required LCD Circuit Configuration
 - msoe_lib_lcd.c, msoe_lib_lcd.h



Use SPI block in eUSCI on PORT 9

SCLK	P9.5	output
STE	P9.4	output
MOSI	P9.7	output
MISO	P9.6	unused

Use remaining GPIOs from PORT 9

D/C	P9.2	output
RST	P9.3	output
		note this is active low

MSOE Library Overview

- Alternate LCD Circuit Configuration
 - `msoe_lib_lcd_alt_io.c`, `msoe_lib_lcd_alt_io.h`



Use SPI block in eUSCI on PORT 2

SCLK	P2.1	output
STE	P2.0	output
MOSI	P2.3	output
MISO	P2.2	unused

Use additional GPIOs from PORT 1

D/C	P1.7	output
RST	P1.6	output
note this is active low		

MSOE Library Overview

- LCD Library
 - Read the `msoe_lib_lcd.h` file for function descriptions
- `#include "msoe_lib_lcd.h"`
- Alternate I/O: `#include "msoe_lib_lcd_alt_io"`

Function List:

```
void LCD_Config(void);
void LCD_goto_xy(uint8_t x, uint8_t y);
void LCD_home(void);
void LCD_row(uint8_t row);
void LCD_col(uint8_t col);
void LCD_print_char(char val);
void LCD_print_str(char *str_ptr);
void LCD_clear(void);
void LCD_print_bmpArray(const char *bmpArray_ptr);
void LCD_print_bigchar (uint8_t x, uint8_t y, char val );
void LCD_print_bigstr(uint8_t x, uint8_t y, char *str_ptr);

void LCD_contrast(uint8_t val);
```

```
void LCD_print_bin8(uint8_t val);
void LCD_print_bin16(uint16_t val);
void LCD_print_hex8(uint8_t val);
void LCD_print_hex16(uint16_t val);
void LCD_print_hex32(uint32_t val);
void LCD_print_udec3(uint8_t val);
void LCD_print_udec5(uint16_t val);
void LCD_print_udec10(uint32_t val);
void LCD_print_dec3(int8_t val);
void LCD_print_dec5(int16_t val);
void LCD_print_dec10(int32_t val);
void LCD_print_float(float val);
```

MSOE Library Overview

- Clock Library
 - Read the `msoe_lib_clk.h` file for function descriptions
- `#include "msoe_lib_clk.h"`

Function List:

```
int Clock_Init_48MHz(void);  
int Clock_48MHz_Divide(uint8_t divider);
```

MSOE Library Overview

- Delay Library
 - Read the `msoe_lib_delay.h` file for function descriptions
- `#include "msoe_lib_delay.h"`

Function List:

```
int Delay_48MHz_us(uint32_t val);  
int Delay_48MHz_ms(uint16_t val);  
int Delay_48MHz_sec(uint8_t val);
```

```
int Delay_3MHz_us(uint32_t val);  
int Delay_3MHz_ms(uint32_t val);  
int Delay_3MHz_sec(uint8_t val);
```

```
int Delay_us(uint32_t val, uint32_t freq);  
int Delay_ms(uint32_t val, uint32_t freq);  
int Delay_sec(uint32_t val, uint32_t freq);
```

MSOE Library Overview

- Miscellaneous Library
 - Read the `msoe_lib_misc.h` file for function descriptions
- `#include "msoe_lib_misc.h"`

Function List:

```
int Set_ports_to_out(void);  
int Stop_watchdog(void);
```


MSOE Library Overview

- Include all the MSOE libraries
- `#include "msoe_lib_all.h"`