

lab_3 PWM and ADC

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Contents

1	File Index	1
1.1	File List	1
2	File Documentation	3
2.1	src/ADC.c File Reference	3
2.2	src/ADC.h File Reference	3
2.2.1	Function Documentation	3
2.2.1.1	convertWiFIREadc()	3
2.2.1.2	initWiFIREadc()	4
2.2.1.3	ReadPotentiometerWithADC()	4
2.3	src/configuration_bits.c File Reference	4
2.4	src/main.c File Reference	4
2.4.1	Function Documentation	4
2.4.1.1	main()	4
2.5	src/morse_code.c File Reference	4
2.5.1	Detailed Description	5
2.5.2	Function Documentation	5
2.5.2.1	__ISR()	5
2.5.2.2	blink_leds()	5
2.5.2.3	delay()	6
2.5.2.4	display_msg()	6
2.5.2.5	init_app()	6
2.5.2.6	init_gpio()	6
2.5.2.7	init_timer()	6

2.5.2.8	<code>morse_code_encoding()</code>	6
2.6	<code>src/morse_code.h</code> File Reference	7
2.6.1	Detailed Description	8
2.6.2	Macro Definition Documentation	8
2.6.2.1	<code>BLINK_DELAY</code>	8
2.6.2.2	<code>BTN_1</code>	8
2.6.2.3	<code>BTN_2</code>	8
2.6.2.4	<code>DEBOUNCE_DELAY</code>	8
2.6.2.5	<code>LED_1</code>	8
2.6.2.6	<code>LED_2</code>	9
2.6.2.7	<code>LED_3</code>	9
2.6.2.8	<code>LED_4</code>	9
2.6.2.9	<code>MAX_ADC_VALUE</code>	9
2.6.2.10	<code>PWM_FREQ_HZ</code>	9
2.6.2.11	<code>PWM_PERIOD_COUNTS</code>	9
2.6.2.12	<code>VR1_AN_CHAN_NUM</code>	9
2.6.3	Typedef Documentation	9
2.6.3.1	<code>STATES</code>	9
2.6.4	Enumeration Type Documentation	9
2.6.4.1	<code>states</code>	9
2.6.5	Function Documentation	10
2.6.5.1	<code>blink_leds()</code>	10
2.6.5.2	<code>delay()</code>	10
2.6.5.3	<code>display_msg()</code>	10
2.6.5.4	<code>init_app()</code>	10
2.6.5.5	<code>morse_code_encoding()</code>	11
2.6.6	Variable Documentation	11
2.6.6.1	<code>cur_delay_g</code>	11
2.6.6.2	<code>cur_state_g</code>	11
2.6.6.3	<code>encoded_msg_g</code>	11
2.6.6.4	<code>MSG</code>	11

Chapter 1

File Index

1.1 File List

Here is a list of all files with brief descriptions:

src/ ADC.c	3
src/ ADC.h	3
src/ configuration_bits.c	4
src/ main.c	4
src/ morse_code.c	
Description for initialization and system functions	4
src/ morse_code.h	
Definitions, macroses and function prototypes	7

Chapter 2

File Documentation

2.1 src/ADC.c File Reference

```
#include <stdint.h>
#include <stdbool.h>
#include "morse_code.h"
Include dependency graph for ADC.c:
```

2.2 src/ADC.h File Reference

This graph shows which files directly or indirectly include this file:

Functions

- void [initWiFIREadc](#) (void)
- int [convertWiFIREadc](#) (uint8_t channelNumber)
- int [ReadPotentiometerWithADC](#) (void)

2.2.1 Function Documentation

2.2.1.1 [convertWiFIREadc\(\)](#)

```
int convertWiFIREadc (
    uint8_t channelNumber )
```

2.2.1.2 initWiFIREadc()

```
void initWiFIREadc (  
    void )
```

2.2.1.3 ReadPotentiometerWithADC()

```
int ReadPotentiometerWithADC (  
    void )
```

2.3 src/configuration_bits.c File Reference

2.4 src/main.c File Reference

```
#include "morse_code.h"  
Include dependency graph for main.c:
```

Functions

- void [main](#) (void)

2.4.1 Function Documentation

2.4.1.1 main()

```
void main (  
    void )
```

2.5 src/morse_code.c File Reference

contains descroption for initialization and system functions

```
#include "morse_code.h"  
Include dependency graph for morse_code.c:
```


Functions

- void [morse_code_encoding](#) (const uint8_t msg[], uint8_t *res)
Converting text to morse code.
- void [init_timer](#) (void)
OC8 timer initialization to work in pwm mode.
- void [init_gpio](#) (void)
GPIO initialization, Disabling analog mode and setting pins directions Initialization for buttons and LEDs.
- void [init_app](#) (void)
App initialization, Calling all initialization functions.
- void [delay](#) (volatile uint32_t val)
- void [blink_leds](#) (uint32_t mode)
Setting LEDs on and off,.
- void [display_msg](#) (void)
Displaying converted msgs on LEDs,.
- void [__ISR](#) (_CHANGE_NOTICE_A_VECTOR, IPL2SOFT)
Buttons interrupt handler, Chanes program state when button is pressed.

2.5.1 Detailed Description

contains descroption for initialization and system functions

2.5.2 Function Documentation

2.5.2.1 __ISR()

```
void __ISR (
    _CHANGE_NOTICE_A_VECTOR ,
    IPL2SOFT )
```

Buttons interrupt handler, Chanes program state when button is pressed.

2.5.2.2 blink_leds()

```
void blink_leds (
    uint32_t mode )
```

Setting LEDs on and off,.

Parameters

in	<i>mode</i>	values: 1 - blink with one led, 3 - 2 leds
----	-------------	--

2.5.2.3 delay()

```
void delay (
    volatile uint32_t val )
```

2.5.2.4 display_msg()

```
void display_msg (
    void )
```

Displaying converted msgs on LEDs,.

2.5.2.5 init_app()

```
void init_app (
    void )
```

App initialization, Calling all initialization functions.

2.5.2.6 init_gpio()

```
void init_gpio (
    void )
```

GPIO initialization, Disabling analog mode and setting pins directions Initialization for buttons and LEDs.

2.5.2.7 init_timer()

```
void init_timer (
    void )
```

OC8 timer initialization to work in pwm mode.

2.5.2.8 morse_code_encoding()

```
void morse_code_encoding (
    const uint8_t msg[],
    uint8_t * res )
```

Converting text to morse code.

Parameters

in	<i>msg</i>	text message to be converted to morse code
in	<i>res</i>	array for storing converted msg

2.6 src/morse_code.h File Reference

contains definitions, macroses and function prototypes

```
#include <stdint.h>
#include <string.h>
#include <sys/attrs.h>
#include "ADC.h"
```

Include dependency graph for morse_code.h: This graph shows which files directly or indirectly include this file:

Macros

- #define [LED_1](#) LATGbits.LATG6
- #define [LED_2](#) LATDbits.LATD4
- #define [LED_3](#) LATBbits.LATB11
- #define [LED_4](#) LATGbits.LATG15
- #define [BTN_1](#) PORTAbits.RA5
- #define [BTN_2](#) PORTAbits.RA4
- #define [BLINK_DELAY](#) 1400
- #define [DEBOUNCE_DELAY](#) 10
- #define [PWM_FREQ_HZ](#) (1000)
- #define [PWM_PERIOD_COUNTS](#) (100000000/(256*[PWM_FREQ_HZ](#)))
- #define [MAX_ADC_VALUE](#) (4095)
- #define [VR1_AN_CHAN_NUM](#) (8)

Typedefs

- typedef enum [states](#) [STATES](#)

Enumerations

- enum [states](#) { [RESET](#) = 0, [START](#), [PAUSE](#) }

Functions

- void [delay](#) (volatile uint32_t val)
- void [init_app](#) (void)
App initialization, Calling all initialization functions.
- void [blink_leds](#) (uint32_t mode)
Setting LEDs on and off,.
- void [display_msg](#) (void)
Displaying converted msgs on LEDs,.
- void [morse_code_encoding](#) (const uint8_t msg[], uint8_t *res)

Variables

- const uint8_t [MSG](#) [] = "test msg"
- uint8_t [encoded_msg_g](#) [100]
- volatile uint32_t [cur_state_g](#)
- volatile uint32_t [cur_delay_g](#)

2.6.1 Detailed Description

contains definitions, macroses and function prototypes

2.6.2 Macro Definition Documentation

2.6.2.1 BLINK_DELAY

```
#define BLINK_DELAY 1400
```

2.6.2.2 BTN_1

```
#define BTN_1 PORTAbits.RA5
```

2.6.2.3 BTN_2

```
#define BTN_2 PORTAbits.RA4
```

2.6.2.4 DEBOUNCE_DELAY

```
#define DEBOUNCE_DELAY 10
```

2.6.2.5 LED_1

```
#define LED_1 LATGbits.LATG6
```

2.6.2.6 LED_2

```
#define LED_2 LATDbits.LATD4
```

2.6.2.7 LED_3

```
#define LED_3 LATBbits.LATB11
```

2.6.2.8 LED_4

```
#define LED_4 LATGbits.LATG15
```

2.6.2.9 MAX_ADC_VALUE

```
#define MAX_ADC_VALUE (4095)
```

2.6.2.10 PWM_FREQ_HZ

```
#define PWM_FREQ_HZ (1000)
```

2.6.2.11 PWM_PERIOD_COUNTS

```
#define PWM_PERIOD_COUNTS (100000000/(256*PWM_FREQ_HZ))
```

2.6.2.12 VR1_AN_CHAN_NUM

```
#define VR1_AN_CHAN_NUM (8)
```

2.6.3 Typedef Documentation

2.6.3.1 STATES

```
typedef enum states STATES
```

2.6.4 Enumeration Type Documentation

2.6.4.1 states

```
enum states
```

Enumerator

RESET	
START	
PAUSE	

2.6.5 Function Documentation**2.6.5.1 blink_leds()**

```
void blink_leds (
    uint32_t mode )
```

Setting LEDs on and off,.

Parameters

in	<i>mode</i>	values: 1 - blink with one led, 3 - 2 leds
----	-------------	--

2.6.5.2 delay()

```
void delay (
    volatile uint32_t val )
```

2.6.5.3 display_msg()

```
void display_msg (
    void )
```

Displaying converted msgs on LEDs,.

2.6.5.4 init_app()

```
void init_app (
    void )
```

App initialization, Calling all initialization functions.

2.6.5.5 morse_code_encoding()

```
void morse_code_encoding (
    const uint8_t msg[],
    uint8_t * res )
```

2.6.6 Variable Documentation

2.6.6.1 cur_delay_g

```
volatile uint32_t cur_delay_g
```

2.6.6.2 cur_state_g

```
volatile uint32_t cur_state_g
```

2.6.6.3 encoded_msg_g

```
uint8_t encoded_msg_g[100]
```

2.6.6.4 MSG

```
const uint8_t MSG[] = "test msg"
```


Index

- [__ISR](#)
 - [morse_code.c, 5](#)
- [ADC.h](#)
 - [convertWiFIREadc, 3](#)
 - [initWiFIREadc, 3](#)
 - [ReadPotentiometerWithADC, 4](#)
- [BLINK_DELAY](#)
 - [morse_code.h, 8](#)
- [BTN_1](#)
 - [morse_code.h, 8](#)
- [BTN_2](#)
 - [morse_code.h, 8](#)
- [blink_leds](#)
 - [morse_code.c, 5](#)
 - [morse_code.h, 10](#)
- [convertWiFIREadc](#)
 - [ADC.h, 3](#)
- [cur_delay_g](#)
 - [morse_code.h, 11](#)
- [cur_state_g](#)
 - [morse_code.h, 11](#)
- [DEBOUNCE_DELAY](#)
 - [morse_code.h, 8](#)
- [delay](#)
 - [morse_code.c, 6](#)
 - [morse_code.h, 10](#)
- [display_msg](#)
 - [morse_code.c, 6](#)
 - [morse_code.h, 10](#)
- [encoded_msg_g](#)
 - [morse_code.h, 11](#)
- [init_app](#)
 - [morse_code.c, 6](#)
 - [morse_code.h, 10](#)
- [init_gpio](#)
 - [morse_code.c, 6](#)
- [init_timer](#)
 - [morse_code.c, 6](#)
- [initWiFIREadc](#)
 - [ADC.h, 3](#)
- [LED_1](#)
 - [morse_code.h, 8](#)
- [LED_2](#)
 - [morse_code.h, 8](#)
- [LED_3](#)
 - [morse_code.h, 9](#)
- [LED_4](#)
 - [morse_code.h, 9](#)
- [MAX_ADC_VALUE](#)
 - [morse_code.h, 9](#)
- [MSG](#)
 - [morse_code.h, 11](#)
- [main](#)
 - [main.c, 4](#)
- [main.c](#)
 - [main, 4](#)
- [morse_code.c](#)
 - [__ISR, 5](#)
 - [blink_leds, 5](#)
 - [delay, 6](#)
 - [display_msg, 6](#)
 - [init_app, 6](#)
 - [init_gpio, 6](#)
 - [init_timer, 6](#)
 - [morse_code_encoding, 6](#)
- [morse_code.h](#)
 - [BLINK_DELAY, 8](#)
 - [BTN_1, 8](#)
 - [BTN_2, 8](#)
 - [blink_leds, 10](#)
 - [cur_delay_g, 11](#)
 - [cur_state_g, 11](#)
 - [DEBOUNCE_DELAY, 8](#)
 - [delay, 10](#)
 - [display_msg, 10](#)
 - [encoded_msg_g, 11](#)
 - [init_app, 10](#)
 - [LED_1, 8](#)
 - [LED_2, 8](#)
 - [LED_3, 9](#)
 - [LED_4, 9](#)
 - [MAX_ADC_VALUE, 9](#)
 - [MSG, 11](#)
 - [morse_code_encoding, 10](#)
 - [PWM_FREQ_HZ, 9](#)
 - [PWM_PERIOD_COUNTS, 9](#)
 - [STATES, 9](#)
 - [states, 9](#)
 - [VR1_AN_CHAN_NUM, 9](#)
- [morse_code_encoding](#)
 - [morse_code.h, 10](#)
- [morse_code_encoding](#)
 - [morse_code.c, 6](#)

PWM_FREQ_HZ

morse_code.h, [9](#)

PWM_PERIOD_COUNTS

morse_code.h, [9](#)

ReadPotentiometerWithADC

ADC.h, [4](#)

STATES

morse_code.h, [9](#)

src/ADC.c, [3](#)

src/ADC.h, [3](#)

src/configuration_bits.c, [4](#)

src/main.c, [4](#)

src/morse_code.c, [4](#)

src/morse_code.h, [7](#)

states

morse_code.h, [9](#)

VR1_AN_CHAN_NUM

morse_code.h, [9](#)