IoT RGB Strip

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Contents

Chapter 1

README

Device IoT, which allows you to control the color and brightness of the RGB Strip. Using the application for a smartphone you can easily manage all the functionality of the device.

Chapter 2

File Index

2.1 File List

Here is a list of all files with brief descriptions:

Chapter 3

File Documentation

3.1 configuration_bits.c File Reference

3.2 main.c File Reference

```
#include <stdint.h>
#include <stdbool.h>
#include "user.h"
```

Functions

- int32_t main (void)

  Initialize I/O and Peripherals for application Setup functionality and port direction.

3.2.1 Function Documentation

3.2.1.1 main()

```
int32_t main (
            void  )
```

Initialize I/O and Peripherals for application Setup functionality and port direction.

Parameters

out	*none*	
in	*none*	

Returns

none

3.3 README.md File Reference

3.4 UART.c File Reference

```
#include "UART.h"
```

Functions

- void uart4_init (void)
- char uart4_getc (void)
- void uart4_putc (char c)
- void uart4_puts (char *s)
- void uart4_test (void)

3.4.1 Function Documentation

3.4.1.1 uart4_getc()

```
char uart4_getc (
            void  )
```

Function prototype:

void uart4_getc(void);

Description:

read char symboll from UART

Parameters:

none

Returns:

none

3.4.1.2 uart4_init()

```
void uart4_init (
             void  )
```

Function prototype:

void uart4_init(void);

Description:

initialize UART

Parameters:

none

Returns:

none

3.4.1.3 uart4_putc()

```
void uart4_putc (
             char c )
```

Function prototype:

void uart4_putc(char c);

Description:

put char symboll to UART

Parameters:

char symbol 'c'

Returns:

none

3.4.1.4 uart4_puts()

```
void uart4_puts (
             char * s )
```

Function prototype:

void uart4_puts(char *s);

Description:

put char array to UART

Parameters:

char array 's'

Returns:

none

3.4.1.5 uart4_test()

```
void uart4_test (
            void  )
```

Function prototype:

void uart4_test(void);

Description:

UART test and beginning program

Parameters:

none

Returns:

none

3.5 UART.h File Reference

```
#include <xc.h>
```

Functions

- void uart4_init (void)
- char uart4_getc (void)
- void uart4_putc (char c)
- void uart4_puts (char *s)
- void uart4_test (void)

3.5.1 Function Documentation

3.5.1.1 uart4_getc()

```
char uart4_getc (
            void  )
```

Function prototype:

void uart4_getc(void);

Description:

read char symboll from UART

Parameters:

none

Returns:

none

3.5.1.2 uart4_init()

```
void uart4_init (
             void  )
```

Function prototype:

void uart4_init(void);

Description:

initialize UART

Parameters:

none

Returns:

none

3.5.1.3 uart4_putc()

```
void uart4_putc (
             char c )
```

Function prototype:

void uart4_putc(char c);

Description:

put char symboll to UART

Parameters:

char symbol 'c'

Returns:

none

3.5.1.4 uart4_puts()

```
void uart4_puts (
             char * s )
```

Function prototype:

void uart4_puts(char *s);

Description:

put char array to UART

Parameters:

char array 's'

Returns:

none

3.5.1.5 uart4_test()

```
void uart4_test (
            void  )
```

Function prototype:

void uart4_test(void);

Description:

UART test and beginning program

Parameters:

none

Returns:

none

3.6 user.c File Reference

```
#include <stdint.h>
#include <stdbool.h>
#include <string.h>
#include "user.h"
#include <sys/attribs.h>
#include "UART.h"
```

Functions

- void init_gpio (void)

  Initialize input output Setup functionality and port direction.
- void InitTimer2AndOC5And4And8 (void)

  Initialize Timer2 Initialize Timer2. Configure OC4,OC5,OC8 control register. Configure PWM for RGB.
- void init_app (void)
- void rgb (int red, int green, int blue)
- void start_program ()

  all functional of programm
- void fade ()
- void delay (uint32_t n)
- void brightness (int bright)

3.6.1 Function Documentation

3.6.1.1 brightness()

```
void brightness (
            int bright )
```

func delay

Parameters

out	*none*	
in	*brigh(PWM)*	

Returns

none

3.6.1.2 delay()

```
void delay (
            uint32_t n )
```

func delay

Parameters

out	*none*	
in	*n*	- time in mills

Returns

none

3.6.1.3 fade()

```
void fade ( )
```

fade mode

Parameters

out	*none*	
in	*none*	

Returns

none

3.6.1.4 init_app()

```
void init_app (
            void  )
```

begins program

Parameters

out	*none*	
in	*none*	

Returns

none

3.6.1.5 init_gpio()

```
void init_gpio (
            void  )
```

Initialize input output Setup functionality and port direction.

Parameters

out	*none*	
in	*none*	

Returns

none

3.6.1.6 InitTimer2AndOC5And4And8()

```
void InitTimer2AndOC5And4And8 (
            void  )
```

Initialize Timer2 Initialize Timer2. Configure OC4,OC5,OC8 control register. Configure PWM for RGB.

Parameters

out	*none*	
in	*none*	

Returns

none

3.6.1.7 rgb()

```
void rgb (
            int red,
            int green,
            int blue )
```

func for control rgb led(set color)

Parameters

out	*none*	
in	*red,green,blue*	(PwM)

Returns

none

3.6.1.8 start_program()

```
void start_program ( )
```

all functional of programm

Functional: command a - turn on RGB led. command f - fade mode command c - set color command b - set brightness

Parameters

out	*none*	
in	*none*	

Returns

none

3.7 user.h File Reference

```
#include <stdint.h>
```

Macros

- #define LD1_PORT_BIT LATGbits.LATG6
- #define LD2_PORT_BIT LATDbits.LATD4
- #define LD3_PORT_BIT LATBbits.LATB11
- #define LD4_PORT_BIT LATGbits.LATG15
- #define BTN1_PORT_BIT PORTAbits.RA5
- #define BTN2_PORT_BIT PORTAbits.RA4
- #define PWM_FREQ_HZ (1000)
- #define PWM_PERIOD_COUNTS (100000000/(256∗PWM_FREQ_HZ))
- #define MAX_ADC_VALUE (4095)

Functions

- void init_app (void)

3.7.1 Macro Definition Documentation

3.7.1.1 BTN1_PORT_BIT

```
#define BTN1_PORT_BIT PORTAbits.RA5
```

3.7.1.2 BTN2_PORT_BIT

```
#define BTN2_PORT_BIT PORTAbits.RA4
```

3.7.1.3 LD1_PORT_BIT

```
#define LD1_PORT_BIT LATGbits.LATG6
```

3.7.1.4 LD2_PORT_BIT

```
#define LD2_PORT_BIT LATDbits.LATD4
```

3.7.1.5 LD3_PORT_BIT

```
#define LD3_PORT_BIT LATBbits.LATB11
```

3.7.1.6 LD4_PORT_BIT

```
#define LD4_PORT_BIT LATGbits.LATG15
```

3.7.1.7 MAX_ADC_VALUE

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

3.7.1.8 PWM_FREQ_HZ

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

3.7.1.9 PWM_PERIOD_COUNTS

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

3.7.2 Function Documentation

3.7.2.1 init_app()

```
void init_app (
            void  )
```

begins program

Parameters

out	*none*	
in	*none*	

Returns

none

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